



Established in 1938

MITIGATED NEGATIVE DECLARATION CHEVRON LONG WHARF MAINTENANCE AND EFFICIENCY PROJECT

Recirculated October 2016



CEQA Lead Agency:

California State Lands Commission
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825

Applicant:

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MISSION STATEMENT

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Latitude: N121.411788
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NAD83 Datum

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LIST OF ABBREVIATIONS AND ACRONYMS

A	AB	Assembly Bill
	ABAG	Association of Bay Area Governments
	ANSI	American National Standards Institute
	APM	Applicant Proposed Measure
	AT&SF	Atchison, Topeka, and Santa Fe
B	BAAQMD	Bay Area Air Quality Management District
	Bay	San Francisco Bay
	BCDC	San Francisco Bay Conservation and Development Commission
	BMP	Best Management Practice
C	CAAQS	California Ambient Air Quality Standards
	CalEEMod	California Emissions Estimator Model
	Caltrans	California Department of Transportation
	CARB	California Air Resources Board
	CCAA	California Clean Air Act
	CCHS	Contra Costa Health Services
	CDFW	California Department of Fish and Wildlife
	CEQA	California Environmental Quality Act
	CESA	California Endangered Species Act
	CGS	California Geological Survey
	CH ₄	methane
	Chevron	Chevron Products Company
	City	City of Richmond
	CMP	coastal management program
	CO	carbon monoxide
	CO ₂	carbon dioxide
	CO _{2e}	carbon dioxide equivalents
	CPUC	California Public Utilities Commission
	CRHR	California Register of Historical Resources
	CSLC	California State Lands Commission
	CUPA	Certified Unified Program Agency
	CWA	Clean Water Act
D	dB	decibels
	dBA	A-weighted decibels
	DDT	dichlorodiphenyltrichloroethane
	DEPM	Division of Environmental Planning and Management
	DOGGR	Division of Oil, Gas, and Geothermal Resources
	DPM	diesel particulate matter
	DPS	Distinct Population Segment
	DWT	dead weight tonnage
E	EBMUD	East Bay Municipal Utility District
	EBRPD	East Bay Regional Park District
	EFH	Essential Fish Habitat

EIR	Environmental Impact Report
ESU	Evolutionarily Significant Unit
F	
FCAA	Federal Clean Air Act
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
fps	foot (feet) per second
ft ²	square foot (feet)
G	
GHG	greenhouse gas
H	
HCP	Habitat Conservation Plan
Hz	hertz
I	
I-580	Interstate 580
I-80	Interstate 80
IPCC	Intergovernmental Panel on Climate Change
L	
LBP	lead-based paint
LDL	Larson Davis Laboratories
Lease	Long Wharf 30-year Lease Agreement
Lease EIR	Long Wharf Lease Agreement Environmental Impact Report
LED	light-emitting diode
Leq	equivalent sound level
Lmax	maximum sound level
Long Wharf	Richmond Refinery Long Wharf
LOS	level of service
LTMS	Long Term Management Strategy
M	
MBTA	Migratory Bird Treaty Act (federal)
MCE	Maximum Credible Earthquake
MEPD	Marine Environmental Protection Division
MM	mitigation measure
MMP	Mitigation Monitoring Program
MND	Mitigated Negative Declaration
MOTEMS	Marine Oil Terminal Engineering and Maintenance Standards
mph	miles per hour
MT	metric ton
N	
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NCCP	Natural Communities Conservation Plan
NMFS	National Marine Fisheries Service
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O	
O ₃	ozone

OES	Office of Emergency Services
P	
Pb	lead
PCB	polychlorinated biphenyl
PM	particulate matter
PM ₁₀	particulate matter less than 10 microns in diameter
PM _{2.5}	particulate matter less than 2.5 micrometers in diameter
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
Project	Chevron Long Wharf Maintenance and Efficiency Project
PTO	Permit to Operate
R	
RCRA	Resource Conservation and Recovery Act
RISO	Richmond Industrial Safety Ordinance
RMS	root-mean squared
ROG	reactive organic gas
S	
SB	Senate Bill
SEL	sound exposure level
SFBAAB	San Francisco Bay Area Air Basin
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SIP	State Implementation Plan
SMGB	State Mining and Geology Board
SO ₂	sulfur dioxide
SPERP	Spill Preparedness and Emergency Response Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T	
TAC	Toxic Air Contaminant
U	
URS	URS Corporation
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
V	
VdB	vibration decibels

GLOSSARY OF TERMS FREQUENTLY USED IN DOCUMENT

Benthic – Of, relating to, or occurring at the bottom of a body of water; of, relating to, or occurring in the depths of the ocean. Source: www.merriam-webster.com/.

Benthos – Organisms that live on or in the bottom of a body of water. Source: www.merriam-webster.com/.

Bollard – A post of metal or wood on a wharf around which to fasten mooring lines. Source: www.merriam-webster.com/.

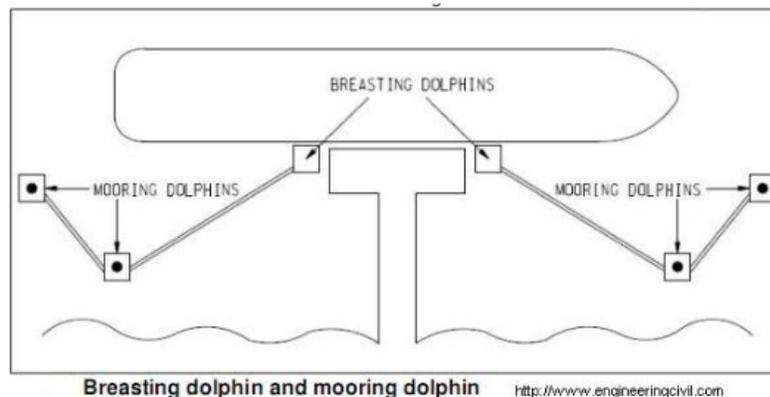
Breasting and Mooring Dolphins – A dolphin is an isolated marine structure for berthing and mooring of vessels. (See picture below.) Source: www.Engineeringcivil.com.

A **breasting dolphin** serves the following purposes:

- (i) Assists in berthing of vessels by absorbing some vessel berthing energy.
- (ii) Keeps the vessel from pressing against the pier structure.
- (iii) Serves as mooring points to restrict the longitudinal movement of the berthing vessel.

A **mooring dolphin** serves the following purpose:

- (i) When provided with mooring hardware (mooring hooks or bollards), mooring dolphins, as the name implies, are used for mooring only and for securing the vessels by using ropes. They are also commonly used near pier structures to control the transverse movement of berthing vessels.



Decibel – A unit for measuring how loud a sound is; a unit for expressing the ratio of two amounts of electric or acoustic signal power equal to 10 times the common logarithm of this ratio. Source: www.merriam-webster.com/.

Demurrage – The detention or delay of a ship by the freighter beyond the time allowed for loading, unloading, or sailing; a charge for detaining a ship. Source: www.merriam-webster.com/.

Fender – A cushion (as foam rubber or a wood float) between a boat and a dock or between two boats that lessens shock and prevents chafing; a pile or a row or cluster of piles placed to protect a dock or bridge pier from damage by ships or floating objects.

Source: www.merriam-webster.com/.

- **Standoff Fender** – An energy-absorbing bumper that extends out from the edge of a pier or wharf and is designed to absorb the energy of a docking vessel berthing against the pier or wharf. This type of fender extends farther out from a wharf or pier than a standard fender installed directly on a wharf or pier.
- **Yokohama Fender** – A very basic fender. Yokohama is a brand name, not a type of fender. However, since “Yokohama” has predominantly produced this type of fender, they are often casually referred to as “Yokohama” fenders. This is long cylindrical foam-filled fenders fender laid horizontally at the face of the wharf. Marine fenders are used at ports and docks on quay walls and other berthing structures. They absorb the kinetic energy of a berthing vessel and thus prevent damage to the vessel and the berthing structure.

Fire Monitor – A nozzle capable of turning completely round in a horizontal plane and having a limited play in a vertical plane, used in fire-extinguishing. Source: www.thefreedictionary.com/Monitor+nozzle.

Gangway – A raised platform or walkway providing a passage; a movable bridge linking a ship to the shore.

Source: www.oxforddictionaries.com/us/definition/american_english/gangway.

Hydroacoustics – Of, or relating to, the production of acoustic energy from the flow of fluids under pressure; of, or relating to, the transmission of sound in water. Source: www.merriam-webster.com/. Hydroacoustics, using sonar technology, is most commonly used for detection, assessment, and monitoring of underwater physical and biological characteristics.

H-pile [or H pile] – A steel pile having an H-shaped cross section. Source: www.merriam-webster.com/.

Lumen (plural lumens) – a unit of luminous flux equal to the light emitted in a unit solid angle by a uniform point source of one candle intensity. Source: www.merriam-webster.com/.

Turbidity – The measure of relative clarity of a liquid. It is an optical characteristic of water and is an expression of the amount of light that is scattered by material in the water when a light is shined through the water sample. The higher the intensity of scattered light, the higher the turbidity. Source: <http://water.usgs.gov/edu/turbidity.html>.

EXECUTIVE SUMMARY

1
2 This Mitigated Negative Declaration (MND) has been prepared by the California State
3 Lands Commission (CSLC), as lead agency under the California Environmental Quality
4 Act (CEQA) (Pub. Resources Code, § 21000 et seq.), to analyze and disclose the
5 potentially significant environmental effects associated with the proposed Chevron Long
6 Wharf Maintenance and Efficiency Project (Project). The Project would authorize Chevron
7 Products Company (Chevron or Applicant) to implement modifications to the Richmond
8 Refinery Long Wharf (Long Wharf) to: improve its efficiency; comply with Marine Oil
9 Terminal Engineering and Maintenance Standards (MOTEMS)¹ requirements; and
10 enhance the safety of crews and operators. Although the proposed Project is consistent
11 with the terms of Chevron’s existing CSLC Lease (PRC 8818) issued on January 29,
12 2009,² permits for the proposed activities must be obtained from local, state, and federal
13 agencies. Pursuant to Section 10.b(2)(E) of the Lease, CSLC’s discretionary approval is
14 required for “any activity or project that requires analysis under CEQA.”

15 The Initial Study prepared for the project identified potentially significant impacts related
16 to biological resources, hazards and hazardous materials, and water quality. This Initial
17 Study/MND describes design features that have been incorporated into the Project
18 including required mitigation measures that, when implemented by Chevron, will reduce
19 all potentially significant impacts to less than significant levels.

20 The CSLC originally issued an MND for the proposed Project for a 30-day public comment
21 period on August 5, 2016. The CSLC is recirculating the MND pursuant to State CEQA
22 Guidelines section 15073.5 because the August 2016 MND has been revised after public
23 notice of its availability to:

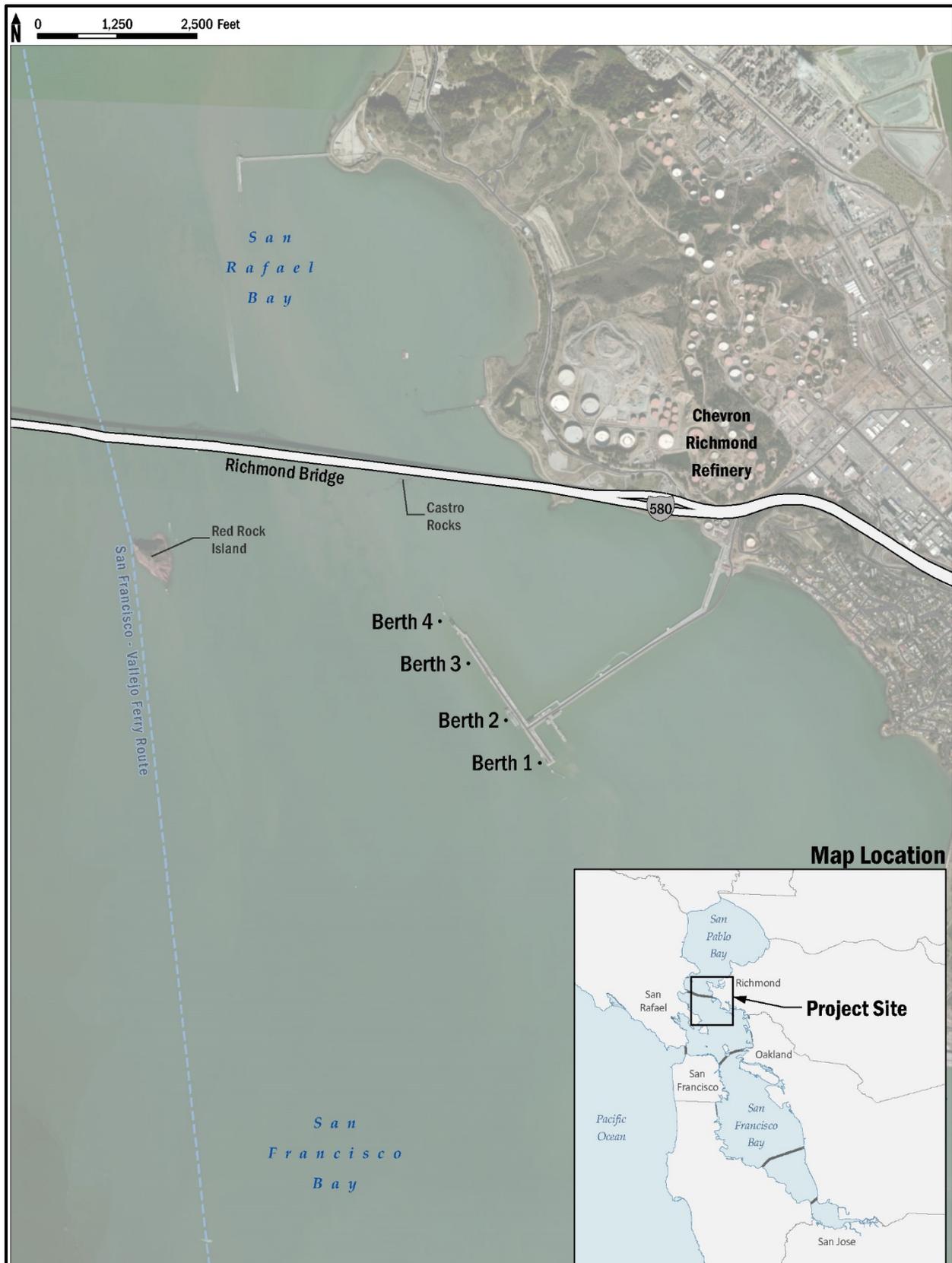
- 24 • include new information about emissions from tug boats proposed for use in
25 Project activities;
- 26 • include a discussion of updated National Marine Fisheries Service standards for
27 underwater noise released in July 2016;
- 28 • update mitigation measures for impacts to protected species to reflect further
29 consultation with California Department of Fish and Wildlife; and
- 30 • clarify the scope and type of changes that will be made to the Long Wharf lighting.

31 In addition, in response to public comments received on the August 2016 MND, this
32 Recirculated MND also clarifies the purposes of the Project and clarifies and amplifies
33 information on the use of lighting on the Long Wharf.

¹ MOTEMS are codified in California Code of Regulations, title 24, California Building Code, Chapter 31F—
Marine Oil Terminals (Cal. Code Regs., tit. 24, § 3101F et seq.).

² http://archives.slc.ca.gov/Meeting_Summaries/2009_Documents/01-29-09/Complete_Items/R42.pdf.

Figure ES-1. Project Location



1 PROJECT LOCATION AND BACKGROUND

2 The Project site is located in central San Francisco Bay (Bay), just south of the eastern
3 terminus of the Richmond-San Rafael Bridge, adjacent to the Chevron Refinery in
4 Richmond, Contra Costa County. Figure ES-1 shows the Project site and vicinity.

5 The Long Wharf, which is the largest marine oil terminal in California, was built in 1902
6 by the Pacific Coast Oil Company as a terminal for its refinery and has been in operation
7 continuously since. In 1905, the Long Wharf and Refinery were purchased by Standard
8 Oil of California. Over time, the Long Wharf has been modified several times. For
9 example, a 1942 San Francisco quadrant map shows only a portion of the current Long
10 Wharf extending to the northwest but not to its current length. In 1947, the original wooden
11 causeway that was supported by wooden piles was replaced with a concrete causeway
12 supported by concrete piles. In 1974, the Long Wharf was modified to accommodate
13 larger vessels with new berths being added.

14 The average water depth on the outside face of the Long Wharf is approximately 45 feet,
15 and the area surrounding the Long Wharf is dredged periodically. The Long Wharf
16 accommodates the transfer of roughly 145 million barrels per year of crude oil, refined oil
17 and petroleum products. Approximately 720 vessels, including tankers and barges, call
18 each year at the Long Wharf, which has a total of six active transfer berths for receiving
19 raw materials and shipping final products. Berths 1 through 4 are located on the outer
20 side of the Long Wharf, and Berths 9 and 11 are on the inner side and used only for
21 barges. No work is proposed at Berths 9 and 11.

22 PROPOSED PROJECT

23 The Project would involve modifications to four berths on the Long Wharf (Berths 1, 2, 3
24 and 4; see Figure A-1 in Appendix A). Currently, construction is anticipated to start in
25 2018 and be complete by the fourth quarter 2022. Specific Project modifications are listed
26 in Table ES-1.

Table ES-1. Proposed Modifications to Long Wharf Berths 1 through 4

Berth 1	• Install one new 24-foot x 20-foot mooring hook dolphin with one new hook to accommodate barges
	• Install one new 24-foot x 25-foot breasting dolphin and a 13-foot x 26-foot breasting point with standoff fenders to accommodate barges
	• Replace the existing gangway and add one new elevated fire monitor
	• Remove an existing catwalk and replace it with a new short catwalk at a slightly different location to provide access to the new breasting dolphin
Berth 2	• Install one new gangway, one new elevated fire monitor, and four new standoff fenders (to replace timber fender pile system)
	• Replace one bollard with one new hook

	<ul style="list-style-type: none"> • Replace existing auxiliary, hose, and vapor recovery hose cranes to accommodate the new standoff fenders • Removal of the three 22-inch square concrete jacketed piles
Berth 3	<ul style="list-style-type: none"> • Install one new gangway and one new elevated fire monitor
Berth 4	<ul style="list-style-type: none"> • Install two new 36-foot x 20-foot dolphins with standoff fenders (two per dolphin) and two catwalks • Seismically retrofit the Berth 4 loading platform

1 The Project would include installation of piles and over water structures. Piles to be
 2 installed are a combination of concrete piles, composite piles (concrete piles wrapped
 3 with a polymer material), steel H piles (H-shaped steel beams), and steel pipe piles.
 4 Concrete piles comprise the majority of the piles used for the Project and would be used
 5 to support components such as mooring and breasting dolphins, cranes, and gangways.
 6 The concrete piles would be driven into place with impact pile driving hammers.
 7 Composite piles would be used as “barrier” piles at Berth 4. These are concrete piles with
 8 a polymer wrap designed to reduce abrasion. These piles are not load bearing and would
 9 be installed using a vibratory pile driving hammer. Steel pipe piles would be used for the
 10 Berth 4 loading platform seismic retrofit. These piles would be driven into place using an
 11 impact pile driving hammer. The use of steel piles at this location would minimize the
 12 number of piles needed to support the structure. In this case, eight steel piles would be
 13 installed compared to 44 concrete piles to achieve the same seismic stability for the
 14 structure. To facilitate proper installation of the eight steel piles, twelve 24-inch diameter
 15 temporary steel pipe piles will be installed using a vibratory pile driving hammer to hold
 16 up a guide frame. The temporary pipe piles will be removed using a vibratory hammer
 17 when installation of the eight steel piles is complete.

18 Steel H-piles would be used for temporary fenders at Berth 2 and would be removed when
 19 the Berth 2 fender system is fully replaced. These piles would be installed, and later
 20 extracted, using a vibratory pile driving hammer. In addition, three 22-inch existing square
 21 concrete jacketed piles will be removed completely if possible. If complete removal is not
 22 possible during pile extraction, piles will be cut off as far below the mudline as possible.

23 As analyzed in Section 3 of this MND, and summarized below, these construction
 24 activities may cause a “Potentially Significant Impact” but the Applicant has agreed to
 25 Project revisions, including the implementation of mitigation measures (MMs), that reduce
 26 the impact to “Less than Significant with Mitigation.”

27 **Relationship of Proposed Project to Existing Operations**

28 None of the changes and improvements proposed as part of the Project are anticipated
 29 to change operations, including throughput levels, at the Long Wharf, or result in an
 30 increase in the number or size of ships calling at the Long Wharf. Vessel calls will remain
 31 within the ranges and fluctuations typically experienced over the 3-year baseline period

1 as described and analyzed in the Chevron Modernization Project Environmental Impact
2 Report (Modernization EIR) (State Clearinghouse No. 2011062042) and as authorized by
3 the Lease. Further, even if the Project were to result in an increase in the number of
4 vessel calls at the Refinery, any potentially significant environmental effects of those
5 increased vessel calls have already been mitigated to less than significant as a result of
6 legally enforceable emissions limits imposed by the City of Richmond as part of its 2014
7 approval of Chevron's Modernization Project at the Richmond Refinery. As a result, there
8 would be no change in operational emissions as a result of the Project.

9 **SUMMARY OF ENVIRONMENTAL SETTING**

10 The overall character of the Long Wharf is industrial. The nearest housing to the Project
11 site is southeast of the Refinery along San Francisco Bay shore in the community of Point
12 Richmond. There are homes approximately 1 mile from the western extent of the Long
13 Wharf. The Project Area does not contain agricultural or mineral resources and does not
14 have public access for recreational uses. The nearest recreation area to the Long Wharf
15 is the Miller/Knox Regional Shoreline Park, located about 1 mile southeast. The Project
16 site does not contain any known historical, archaeological, or paleontological resources;
17 terrestrial and underwater prehistoric and historic sites within 1 mile (but outside) of the
18 Project area include three prehistoric shell middens and eight historic shipwrecks (CSLC
19 2006). Since the Long Wharf has been augmented several times, it is not eligible for
20 inclusion on the National Register of Historic Places.

21 The Long Wharf is located in open Bay habitat which is used by anadromous fish as a
22 migratory corridor between their upstream spawning grounds and the Pacific Ocean. San
23 Francisco Bay provides habitat to more than 100 species of fish, roughly 120 waterbird
24 species, and several marine mammal species. The Project site does not contain natural
25 terrestrial habitat, though the Long Wharf itself is used for roosting and occasional nesting
26 by waterbird species. Listed fish species that use this portion of the Bay include Steelhead
27 (*Oncorhynchus mykiss*; Central California Coast and Central Valley steelhead), Chinook
28 salmon (*O. tshawytscha*; Sacramento River winter-run and Central Valley spring-run),
29 Green sturgeon (*Acipenser medirostris*), and Longfin smelt (*Spirinchus thaleichthys*). The
30 most common marine mammals in San Francisco Bay, and those most likely to occur in
31 the Project vicinity, are the Pacific harbor seal (*Phoca vitulina*) and the California sea lion
32 (*Zalophus californianus*). Other species that could occur but are much less likely include
33 the grey whale (*Eschrichtius robustus*) and harbor porpoise (*Phocoena phocoena*).

34 **ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES**

35 The environmental factors checked below in Table ES-2 would be potentially affected by
36 this Project; a checked box indicates that at least one impact would be a "Potentially
37 Significant Impact" but the Applicant has agreed to Project revisions, including the
38 implementation of MMs, that reduce the impact to "Less than Significant with Mitigation,"

- 1 as detailed in Section 3 of this MND. Table ES-3 lists proposed MMs designed to reduce
- 2 or avoid potentially significant impacts. With implementation of the proposed MMs, all
- 3 Project-related impacts would be reduced to less than significant.

Table ES-2. Environmental Issues and Potentially Significant Impacts

<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Agriculture and Forest Resources	<input type="checkbox"/> Air Quality
<input checked="" type="checkbox"/> Biological Resources (Terrestrial and Marine)	<input type="checkbox"/> Cultural Resources	<input type="checkbox"/> Geology and Soils
<input type="checkbox"/> Greenhouse Gas Emissions	<input checked="" type="checkbox"/> Hazards and Hazardous Materials	<input checked="" type="checkbox"/> Hydrology and Water Quality
<input type="checkbox"/> Land Use and Planning	<input type="checkbox"/> Mineral Resources	<input type="checkbox"/> Noise
<input type="checkbox"/> Population and Housing	<input type="checkbox"/> Public Services	<input type="checkbox"/> Recreation
<input type="checkbox"/> Transportation/Traffic	<input type="checkbox"/> Utilities and Service Systems	
<input checked="" type="checkbox"/> Mandatory Findings of Significance		
<input type="checkbox"/> Other Major Areas of Concern: Commercial Fishing and Environmental Justice		

Table ES-3. Summary of Proposed Project Mitigation Measures

Biological Resources
MM BIO-1: Work Windows
MM BIO-2: Soft Start
MM BIO-3: Underwater Sound Reduction
MM BIO-4: Hydroacoustic and Marine Mammal Monitoring
MM BIO-5: Off-Site Mitigation
MM BIO-6: Pre-Construction Surveys
Hazards and Hazardous Materials
MM HAZ-1: Spill Preparedness and Emergency Response Plan (SPERP)
MM HAZ-2: Employee Training
Hydrology and Water Quality
MM HYD-1: Spill Prevention
MM HYD-2: Construction Waste
MM HYD-3: Minimize Cutting Over Water
MM HYD-4: Demobilize Equipment

4

1.0 PROJECT AND AGENCY INFORMATION

1.1 PROJECT TITLE

Chevron Long Wharf Maintenance and Efficiency Project (Project)

1.2 LEAD AGENCY AND PROJECT SPONSOR

Lead Agency: California State Lands Commission 100 Howe Avenue, Suite 100-South Sacramento, CA 95825	Contact person: Sarah Mongano, Senior Environmental Scientist Division of Environmental Planning and Management Sarah.Mongano@slc.ca.gov (916) 574-1889
Applicant: Chevron Products Company 841 Chevron Way Richmond, CA 94802	Contact person: Karen Boven Karen.Boven@chevron.com (510) 242-9052

1.3 PROJECT LOCATION

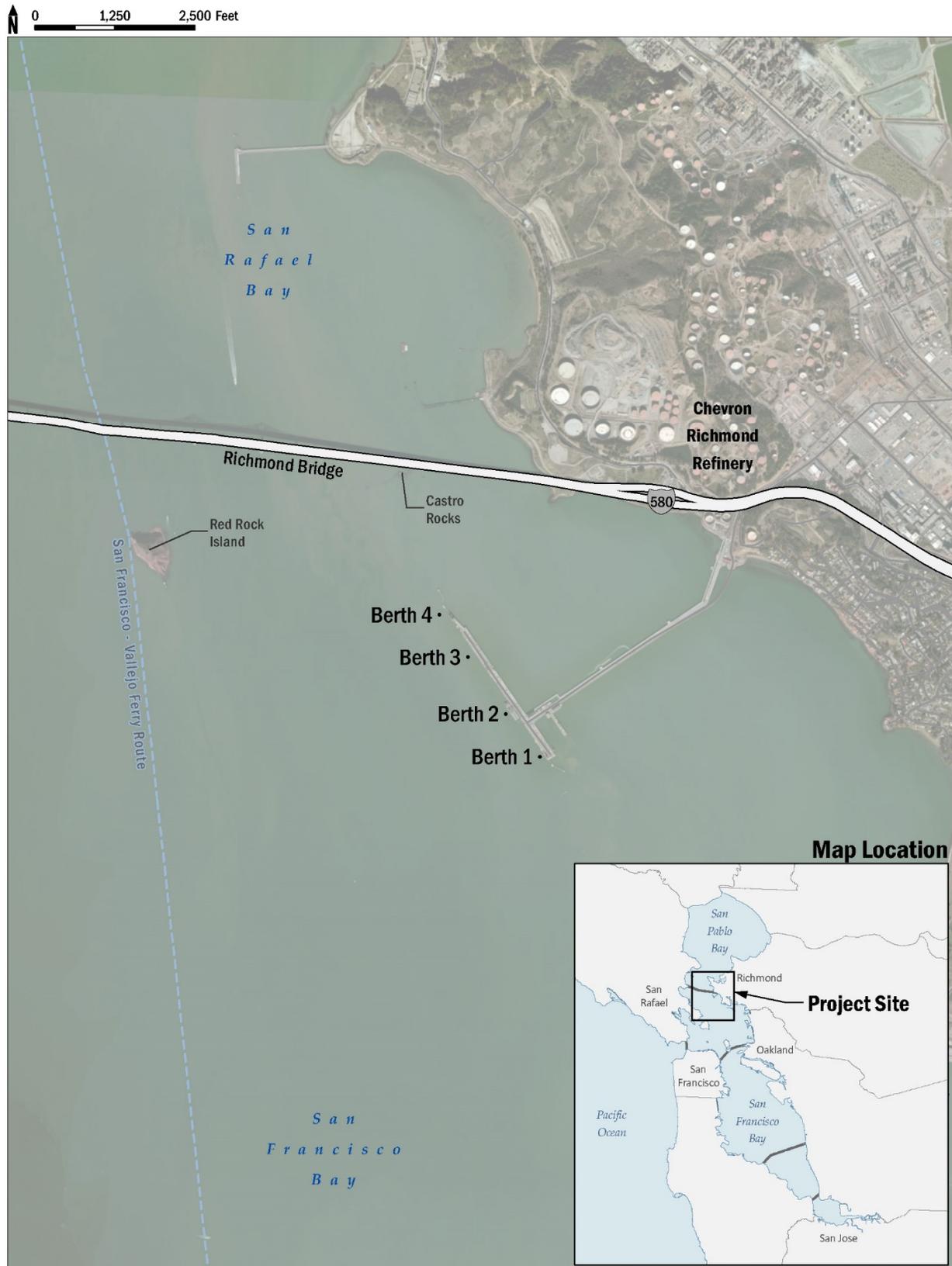
The Project is located at the Chevron Products Company (Chevron or Applicant) Richmond Refinery Long Wharf (Long Wharf). The Long Wharf lies offshore of Pt. Richmond, adjacent to the Chevron Richmond Refinery in central San Francisco Bay, and just south of the eastern terminus of the Richmond-San Rafael Bridge in Contra Costa County. Figure 1-1 illustrates the Project vicinity and specific location. The Long Wharf is the largest marine oil terminal in California.

1.4 ORGANIZATION OF MITIGATED NEGATIVE DECLARATION

This Mitigated Negative Declaration (MND) is intended to provide the California State Lands Commission (CSLC), as lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), and other responsible agencies with the information required to exercise their discretionary responsibilities with respect to the proposed Project. The document is organized as follows:

- Section 1 provides agency and applicant information, identifies the Project location, background, and objectives, summarizes the public review and comment process, and lists anticipated agency actions.
- Section 2 describes the proposed Project including its layout, equipment, and facilities. Section 2 also provides an overview of the Project's operations and schedule.

Figure 1-1. Project Location



- 1 • Section 3 provides the Initial Study, prepared by the CSLC pursuant to State CEQA
2 Guidelines section 15063,³ including the environmental setting, identification and
3 analysis of potential impacts, and discussion of Project changes and measures
4 that, if incorporated into the Project, would mitigate or avoid those impacts, such
5 that no significant effect on the environment would occur.
- 6 • Section 4 includes an environmental justice analysis and discussion consistent
7 with CSLC Policy.
- 8 • Section 5 presents the Mitigation Monitoring Program (MMP).
- 9 • Section 6 presents information on report preparation and references.
- 10 • Appendices. The appendices include specifications, technical data, and other
11 information supporting the analysis presented in this MND.
 - 12 ○ Appendix A: Oversized Figures
 - 13 ○ Appendix B: Abridged List of Major Federal and State Laws, Regulations,
14 and Policies Potentially Applicable to the Project
 - 15 ○ Appendix C: Visual Impact Assessment
 - 16 ○ Appendix D: Lighting Visual Impact Assessment

17 **1.5 PROJECT BACKGROUND AND OBJECTIVES**

18 The Long Wharf has been in its current location since the early 1900s.⁴ The Long Wharf
19 can accommodate the transfer of up to 145 million barrels per year of crude oil, refined
20 oil, and petroleum products pursuant to the Permit to Operate from the Bay Area Air
21 Quality Management District (BAAQMD). During 2014 and 2015 The Long Wharf had an
22 average of 710 vessel and barge calls per year. It has a total of six active transfer berths
23 for receiving raw materials and shipping final products. The existing gangways, which are
24 used to access ships that call at the Long Wharf, were installed in 1972.

25 The Long Wharf's operations are regulated primarily by the CSLC through a State Lands
26 lease (PRC 8818), CSLC regulations (Cal. Code Regs., tit. 2, § 2300 et seq.), and the
27 Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS).⁵ In 2009,
28 Chevron and the CSLC executed the Long Wharf 30-year Lease Agreement (Lease) and
29 certified the Chevron Richmond Long Wharf Marine Terminal Lease Consideration EIR
30 (Lease EIR). A subsequent lawsuit challenged the Lease EIR pursuant to CEQA, and in
31 2011, the California Court of Appeal upheld the Lease EIR and Lease in *Citizens for East*
32 *Shore Parks v. State Lands Commission* (2011) 202 Cal. App. 4th 549.

³ The State CEQA Guidelines are found in California Code of Regulations, title 14, section 15000 et seq.

⁴ A detailed history of Long Wharf construction and operations is available in the Environmental Impact Report for the Chevron Richmond Long Wharf Marine Terminal Lease Consideration (CSLC 2006).

⁵ MOTEMS are codified in California Code of Regulations, title 24, California Building Code, Chapter 31F—Marine Oil Terminals (Cal. Code Regs., tit. 24, § 3101F et seq.).

1 Execution of the Lease triggered Chevron's compliance requirements pursuant to
2 Attachment D, Mitigation Monitoring Program (MMP) of the Lease EIR. To demonstrate
3 compliance with the conditions in the Lease EIR MMP, CSLC representatives have
4 conducted a series of annual onsite audits of Chevron's Lease compliance
5 documentation. The audits were scheduled annually through 2014. Since 2010, CSLC
6 staff has found Chevron to be in full compliance with all of the Lease EIR MMP
7 requirements. Due to consistent compliance with all conditions, the audits were changed
8 to a bi-annual schedule in 2015.

9 Efficiency at the Long Wharf would be improved by eliminating berthing vessel approach
10 velocity restrictions at Berth 2 and balancing use of Berths 1, 2, and 3 by modifying Berth
11 1 to accept barges. The Berth 4 loading platform would also be seismically retrofitted in
12 compliance with MOTEMS to stiffen the structure and minimize the movement in the
13 event of a Level 1 or 2 earthquake.

14 Replacing portable gangways with permanent gangways at Berths 1, 2 and 3 will improve
15 the safety of crews and operators. The new gangways are needed to accommodate
16 changes in the vessel fleet (e.g., hull geometry) and to accommodate sea level rise. The
17 existing Berth 2 fender system (timber pile and whaler) was designed and installed in
18 1940. Since then, design requirements have changed and vessel size has increased
19 significantly. The timber pile fender system at Berth 2 does not meet current MOTEMS
20 standards for berthing velocity, whereas existing fenders at Berths 1 and 4 are MOTEMS
21 compliant.

22 The objectives of the Project, therefore, are to upgrade Berths 1-4 to:

- 23 • Comply with current MOTEMS requirements
- 24 • Improve efficiency of the Long Wharf
- 25 • Perform a seismic retrofit to the Berth 4 loading platform in compliance with
26 MOTEMS to stiffen the structure and minimize the movement in the event of a
27 Level 1 or 2 earthquake,
- 28 • Eliminate berthing velocity restrictions at Berth 2
- 29 • Improve safety conditions for crews and operators
- 30 • Accommodate all sizes of vessels that will visit the Long Wharf

31 This Project does not modify the terms of the Lease, but rather, makes improvements
32 consistent with the Lease and MOTEMS. Pursuant to Section 10.b(2)(E) of the Lease,
33 CSLC's discretionary approval is required for "any activity or project that requires analysis
34 under CEQA." CSLC is acting as lead agency pursuant to CEQA for the Project consistent
35 with this requirement.

1 1.6 PUBLIC REVIEW AND COMMENT

2 In accordance with State CEQA Guidelines sections 15072 and 15073, the CSLC is
3 releasing this MND for a minimum 30-day public review period to provide local and State
4 agencies and the public the opportunity to review and comment on the document. In
5 accordance with State CEQA Guidelines section 15074, subdivision (b), the CSLC will
6 review and consider the MND, together with any comments received during the public
7 review process and any modifications made in response to comments, prior to taking
8 action on the MND and Project.

9 The CSLC originally circulated an MND for the proposed Project for a period of 30 days
10 commencing August 5, 2016. The CSLC received twelve comments during the public
11 comment period. In response to comments received by the public the CSLC determined
12 that the MND would benefit from the addition of information that clarifies, amplifies, and
13 helps to better explain the Project and its potential effects. This recirculated MND does
14 not identify new significant impacts or introduce new mitigation measures. Because
15 substantially revisions to the MND, as defined in State CEQA Guidelines section 15073.5,
16 are not necessary and were not made, the CSLC is not required to recirculate this MND;
17 however, the CSLC decided that in the interest of transparency and to more fully explain
18 the Project and its impacts, the CSLC is recirculating this MND for a new 30-day comment
19 period. The following new information was added to this Recirculated MND.

- 20 • new information about emissions from tug boats proposed for use in Project
21 activities;
- 22 • updated mitigation measures for impacts to protected species to reflect further
23 consultation with the California Department of Fish and Wildlife;
- 24 • a discussion of updated National Marine Fisheries Service standards for
25 underwater noise released in July 2016; and
- 26 • clarification of the scope and changes that will be made to Long Wharf lighting.

27 1.7 APPROVALS AND REGULATORY REQUIREMENTS

28 The CSLC's jurisdictional authority over the Project is set forth in division 6 of the Public
29 Resources Code, and California Code of Regulations, title 2, sections 1900–2970. The
30 CSLC has authority to issue leases or permits for the use of sovereign lands held in the
31 public trust, including all ungranted tidelands, submerged lands, and the beds of
32 navigable lakes and waterways, as well as certain residual and review authority for
33 tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub.
34 Resources Code, §§ 6301, 6306). All tidelands and submerged lands, granted or
35 ungranted, as well as navigable lakes and waterways, are subject to the protections of
36 the Common Law Public Trust. As general background, the State of California acquired
37 sovereign ownership of all tidelands and submerged lands and beds of navigable lakes

1 and waterways upon its admission to the U.S. in 1850. The State holds these lands for
 2 the benefit of all people of the State for statewide Public Trust purposes, which include
 3 but are not limited to waterborne commerce, navigation, fisheries, water-related
 4 recreation, habitat preservation and open space. On tidal waterways, the State's
 5 sovereign fee ownership extends landward to the mean high tide line, except for areas of
 6 fill or artificial accretion. For the proposed Project, the CSLC is conducting the
 7 environmental review and considering Project approval pursuant to an existing lease.

8 The CSLC must comply with CEQA when it undertakes an activity defined by CEQA as
 9 a "project" that must receive some discretionary approval (i.e., the CSLC has the authority
 10 to deny the requested entitlement, or other approval) which may cause either a direct
 11 physical change in the environment or a reasonably foreseeable indirect change in the
 12 environment. The CEQA requires the CSLC to identify the significant environmental
 13 impacts of its actions and to avoid or mitigate those impacts, if feasible.

14 In addition to the CSLC, the Project is subject to the review and approval of other federal,
 15 state, and local entities with statutory and/or regulatory jurisdiction over various aspects
 16 of the Project (see Table 1-1).

Table 1-1. Agencies with Review/Approval over Project Activities

Permitting Agency		Anticipated Approvals/Regulatory Requirements
Local	City of Richmond	Ministerial Building Permits in accordance with the California Building Code and City of Richmond Zoning Ordinance
State	California State Lands Commission	Environmental review and project approval pursuant to an existing lease
	California Department of Fish and Wildlife (CDFW)	California Endangered Species Act section 2081
	San Francisco Bay Regional Water Quality Control Board (SFBRWQCB)	Clean Water Act Section 401 Water Quality Certification
	San Francisco Bay Conservation and Development Commission (BCDC)	Amendment to Refinery Long Wharf Permit No. M1987.015
Federal	U.S. Army Corps of Engineers (USACE)	Clean Water Act (CWA) Section 404 (under Nationwide Permit No. 3)
	U.S. Fish and Wildlife Service (USFWS)	Section 7 Consultation under federal Endangered Species Act (if necessary)
	National Marine Fisheries Service (NMFS)	Marine Mammal Protection Act – Incidental Harassment Authorization

17 As described in the Lease EIR, operations at the Long Wharf are subject to a Permit to
 18 Operate (PTO) issued by the BAAQMD. Chevron currently operates under the conditions
 19 of this permit. The Project does not modify any sources subject to the PTO or amend any
 20 existing permit limits; therefore, no amendment to the PTO or new permit is required.

2.0 PROJECT DESCRIPTION

As discussed in Section 1.5, Project Background and Objectives, Chevron Products Company (Chevron or Applicant) is proposing maintenance and efficiency improvements to enhance long term reliability of the Richmond Refinery Long Wharf (Long Wharf) through the Chevron Long Wharf Maintenance and Efficiency Project (Project) in Contra Costa County (see Section 1.3, Project Location, and Figure 1-1). The Long Wharf accommodates the transfer of roughly 145 million barrels per year of crude oil as well as refined oil and petroleum products, and during 2014 and 2015 had an average of 710 vessel and barge calls per year. It has a total of six active transfer berths for receiving raw materials and shipping final products. The existing gangways, which are used to access ships that call at the Long Wharf, were installed in 1972. Project modifications are required by, and will be implemented under the direction of, the California State Lands Commission (CSLC) pursuant to the Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS).⁶

Actions proposed for MOTEMS compliance purposes include:

- Berth 2 fender replacement
- Berth 4 loading platform seismic retrofit

Actions being taken to improve safety include:

- Install Berth 1 permanent gangway and fire monitor
- Install Berth 2 permanent gangway and fire monitor
- Install Berth 3 permanent gangway and fire monitor

Actions being taken for operational efficiency include:

- Install Berth 1 gangway to accommodate barges
- Install Berth 1 mooring hook dolphin and fender additions to accommodate barges
- Install Berth 4 fender intermediate fender points

2.1 PROJECT OVERVIEW

The Project would involve modifications to four berths (Berths 1, 2, 3, and 4) as shown on Figure A-1 through Figure A-5 in Appendix A. Proposed modifications to the Long Wharf include replacing gangways and cranes, adding new mooring hooks and standoff fenders, adding new dolphins and catwalks, and modifying the fire water system at Berths 1, 2, 3 and/or 4, as well as the seismic retrofit to the Berth 4 loading platform.

⁶ MOTEMS are codified in California Code of Regulations, title 24, California Building Code, Chapter 31F—Marine Oil Terminals (Cal. Code Regs., tit. 24, § 3101F et seq.).

1 The Project would include installation of piles and over water structures. Piles to be
2 installed are a combination of concrete piles, composite piles (concrete piles wrapped
3 with a polymer material), steel H piles (H-shaped steel beams), and steel pipe piles. Piles
4 to be installed for each Project component are summarized in Tables 2-1 and 2-2.

5 Concrete piles comprise the majority of the piles used for the Project and would be used
6 to support components such as mooring and breasting dolphins, cranes and gangways.
7 The concrete piles would be driven into place with impact pile driving hammers.
8 Composite piles with a polymer wrap designed to reduce abrasion would be used as
9 barrier piles at Berth 4. These piles are not load bearing and would be installed using a
10 vibratory pile driving hammer.

11 Steel pipe piles would be used for the Berth 4 loading platform seismic retrofit. These
12 piles would be driven into place using an impact pile driving hammer. The use of steel
13 piles at this location would minimize the number of piles needed to support the structure.
14 In this case, eight steel piles would be installed, compared to 44 concrete piles which
15 would alternatively be required to achieve the same seismic stability for the structure. To
16 facilitate proper installation of the eight steel piles, twelve 24-inch-diameter temporary
17 steel pipe piles will be installed using a vibratory pile driving hammer to hold up a guide
18 frame. Temporary pipe piles will be removed using a vibratory hammer when installation
19 of the eight steel piles is complete.

20 The steel H piles would be used as part of the temporary fender system at Berth 2 and
21 would be removed when the Berth 2 fender system is fully replaced. These piles would
22 be installed, and later extracted, using a vibratory pile driving hammer. In addition, three
23 22-inch existing square concrete jacketed piles will be removed completely if possible. If
24 complete removal is not possible during pile extraction, piles will be cut off as far below
25 the mudline as possible.

26 The Project will improve the operational efficiency of the Long Wharf by installing a
27 permanent gangway, a mooring dolphin, and fenders at Berth 1 so it can accept barges.
28 This will enable more balanced use of Berths 1, 2, and 3, making operations more
29 efficient. Currently, the inability to use Berth 1 for barges can cause significant delays in
30 loading and offloading materials. This upgrade is not anticipated to change the total
31 number of ship calls permitted pursuant to the Lease.

32 At Berth 2, fenders will be replaced to comply with MOTEMS. The new fenders will allow
33 an increase in the allowable approach berthing velocity of vessels. Berthing velocity limits
34 are based on the vessel size, and currently range from 0.19 foot per second (fps) for a
35 61,000 dead weight tonnage (DWT) vessel to 0.26 fps for a 15,000 DWT vessel. The new
36 fenders will allow vessels to approach in compliance with MOTEMS and will range from
37 0.38 fps for a 61,000 DWT vessel to 0.61 fps for a 15,000 DWT vessel.

Table 2-1. Fill Areas and Volume Calculations (Permanent)

Item	Description	Structure Area (ft ²)	No. Piles	Pile Fill Area (ft ²)	Pile Installation / Removal Method	Pile Volume Below Water (ft ³)	
New Installation	1 Berth 1 Mooring Hook Dolphin	480	13	52	Impact	2,244	
	2 Berth 1 Outer Breasting Dolphin	692	17	68	Impact	2,832	
	3 Berth 1 Inner Breasting Point	489	8	32	Impact	1,280	
	4 Berth 1 Gangway	0	4	16	Impact	640	
	5 Berth 1 Walkways	438	0	-	-	-	
	6 Berth 2 South Outside Fender	92	10	40	Impact	1,192	
	7 Berth 2 South Inside Fender	92	10	40	Impact	1,192	
	8 Berth 2 North Inside Fender	92	9	36	Impact	1,132	
	9 Berth 2 North Outside Fender	92	10	40	Impact	1,192	
	10 Berth 2 Main Hose Crane	0	4	16	Impact	262	
	11 Berth 2 Aux Crane	0	4	16	Impact	440	
	12 Berth 2 Vapor Recovery Hose Crane	0	0	0	-	-	
	13 Berth 2 Gangway	0	4	16	Impact	276	
	14 Berth 3 Gangway	0	4	16	Impact	525	
	15 Berth 4 South Breasting Dolphin	904	22	88	Impact	4,774	
	16 Berth 4 North Breasting Dolphin	904	22	88	Impact	4,691	
	17 Berth 4 Walkways	340	0	-	-	-	
	Total 24-inch Square Concrete Piles		4,614	141	564		22,672
	18	Berth 4 Loading Platform Retrofit (60-inch-diameter Steel Piles)	1070	8	157	Impact	2,483
19	Berth 4 Barrier Piles (4 Clusters of 13 Composite Piles)	56	52	56	Vibrate	840	
Total Additional Fill		5,740	201	777		25,996	
Permanent Removal	20 Berth 1 Pile Removal	-	-2	-4.5	Vibrate	-185	
	21 Berth 2 Pile Removal (106 Wooden - Actual Count)	-	-106	-148	Vibrate	-5,299	
	22 Berth 2 Whaler Removal (excluding wooden Piles)	-509.02	-	-	-	-	
	23 Berth 2 Brace Piles (22-inch Square Concrete Jacketed Timber Piles)	-	-3	-10.1	Cut	-315	
	24 Berth 4 Concrete Pile Removal	-	-2	-8	Cut	-127	
	25 Berth 1 Existing Walkway	-400	-	-	-	-	
Total Removal		-909	-113	-171		-5,926	
Net Change		4,831	88	606	-	20,070	
Approximate Total Area of Long Wharf (ft ²) including Causeway		670,000					
Increase of Net Fill Due to Project		0.70%					

Table 2-2. Fill Areas and Volume Calculations (Temporary)

Item	Description	Structure Area (ft ²)	No. Piles	Pile Fill Area (ft ²)	Pile Installation / Removal Method	Pile Volume Below Water (ft ³)	
Temporary Fill	26	Temporary Piles for Yokohama Temporary Fenders	13	36	13	Vibrate	466
	27	Yokohama Temporary Fender	448	-	-	-	-
	28	B4 Loading Platform Template and Piles (24-inch Round Steel)	192	12	38	Vibrate	565
	Total Fill from Temporary Fenders		653				

1 The Project would also install new permanent gangways at Berths 2 and 3 to allow safer
2 access and egress from vessels, whose configuration has changed since the gangways
3 were installed. In some cases, the existing gangways are not designed for current vessel
4 configurations (i.e., cannot accommodate larger vessels that now call at the Long Wharf),
5 are portable, and create potential safety concerns for crews and operators. Currently,
6 construction is anticipated to start in 2018 and be complete by the fourth quarter 2022.

7 As analyzed in Section 3 of this MND, construction activities may cause a Potentially
8 Significant Impact but the Applicant has agreed to implement mitigation measures (MMs)
9 that reduce the impact to Less than Significant with Mitigation.

10 *Effect on Long Wharf Operations*

11 The Long Wharf is the exclusive means by which the Richmond Refinery imports
12 feedstocks and is the primary means, in conjunction with trucks and trains, by which
13 finished products from the Refinery are exported for sale. The Long Wharf itself does not
14 process feedstocks. For purposes of off-loading crude and gas oil and other feedstocks
15 from marine vessels calling at the Long Wharf, all materials are transferred from the
16 vessels through pipelines to storage tanks at the Refinery, from which the feedstocks are
17 then blended and processed by the Refinery. (Refinery operations are described in detail
18 in Chapter 3 and Appendix 3 of the EIR prepared by the City of Richmond for the Chevron
19 Richmond Modernization Project [Modernization EIR], which is available for review at:
20 <http://chevronmodernization.com/>.)⁷ Throughput levels of all product across the Long
21 Wharf are driven by demand from the Refinery.

⁷ On July 29, 2014, the City of Richmond approved Conditional Use Permit and Design Review Permit No. PLN11-089 (CUP)). CUP condition A2 incorporates the Project mitigation monitoring and reporting program (MMRP) and makes all mitigation measures enforceable conditions of approval of the Modernization Project. All Modernization Project-related documents are available for review on-line at <http://chevronmodernization.com/>. On February 11, 2015, the Bay Area Air Quality Management District (District) reissued Authority to Construct No. 12842 (ATC) authorizing the same. In approving the CUP and the ATC, the City and the District relied upon the EIR. The EIR analyzed, and the CUP and ATC approved, the Reduced Sulfur Processing/No Increase in Refinery Greenhouse Gas Emissions Alternative, generally referred to as Alternative 11.

1 The sources of emissions at the Long Wharf relate to the loading and off-loading of
2 feedstocks and finished products, respectively. The source of the majority of emissions
3 from Long Wharf operations is ship and barge engine combustion. (Lease EIR, p. 4.6-
4 19.) Other emissions sources include the thermal oxidizer, the Vapor Recovery System
5 (which is separately regulated pursuant to Bay Area Air Quality Management District
6 (BAAQMD) Regulation 8-44), and fugitive emissions from pumps, valves, flanges, and
7 pressure relief device (which are separately regulated pursuant to BAAQMD Regulation
8 8-18). The Long Wharf itself does not process any crude or gas oil or other feedstocks.

9 None of the changes and improvements proposed as part of the Project alter the
10 throughput capacity of the Long Wharf to the Refinery; nor do the proposed improvements
11 alter or modify the Vapor Recovery System, the thermal oxidizer, or the sources (i.e.,
12 ships) that connect to the system.

13 The changes to the berths will allow the Long Wharf to better manage vessel mooring
14 and calls across Berths 1 through 4, which will have the added benefit of reducing idling
15 time of marine vessels as they queue for space at the Wharf. Specifically, as described
16 in the Lease EIR, “Berths No. 1 and No. 4 are used for ship cargo transfers, and Berths
17 2 and 3 are used for ship and barge cargo transfers.” Since Berths 2 and 3 are the only
18 berths that receive ocean going barges, each is occupied by vessels (both ships and
19 barges) nearly 75 percent of the time, which is a very high utilization rate that can cause
20 delays for vessels attempting to berth. Such delays result in increased demurrage as well
21 as increased emissions from ships and barges that must idle for longer periods of time.
22 The improvements to Berth 1 will allow Berth 1 to receive ocean going barges that
23 otherwise would be required to use Berths 2 or 3. This will better balance utilization across
24 Berths 1, 2 and 3, which will reduce demurrage and idling time of ships that currently must
25 queue for Berths 2 and 3.

26 Further, the modifications to Berth 4 will allow it to accommodate newer vessels, which
27 have more modern, fuel-efficient hull designs. The more modern hull designs use
28 shortened parallel mid-bodies, which reduce friction and make it easier for vessels to
29 propel through water, thus reducing fuel consumption. By modifying Berth 4 to
30 accommodate newer vessels, the Project will enable the Long Wharf to berth more fuel
31 efficient vessels that are replacing older vessels with less efficient hull designs. The
32 modifications will not increase the size of the largest vessel that can call at Berth 4.

33 The Project does not enable the Long Wharf to accommodate larger vessels or result in
34 an increase in the number of ships calling at the Long Wharf. As stated in Chevron’s
35 Statement of Terminal Operations, which is provided to the CSLC pursuant to MOTEMS,
36 the largest vessels that can currently berth at the Long Wharf are SuezMax ships at
37 Berths 1 and 4, and smaller Panamax vessels at Berths 2 and 3. This will continue to
38 be the case after the Project is implemented, though the smaller ships will be able to be
39 accommodated at Berths 1 and more fuel-efficient ships will be accommodated at Berth

1 4. The average number of vessel calls during the 2008-2010 baseline period analyzed in
2 the Modernization EIR was 706, consistent with the recent average experienced during
3 2014-2015 of 710. Since vessel calls and throughput are driven by Refinery demand and
4 not by how many vessels the Long Wharf can accommodate, the number of vessel calls
5 and throughput at the Long Wharf would remain consistent with past operations.

6 In any event, any increase in emissions from increased vessel calls or throughput will be
7 mitigated to less than significant as a result of legally enforceable limits on emissions,
8 including from marine vessels and Long Wharf operations, imposed by the City of
9 Richmond as part of its approval of the Modernization Project. Because of the
10 interconnection between the Refinery's and the Long Wharf's operations, the
11 Modernization EIR analyzed Long Wharf operations, including emissions from marine
12 vessels. As explained on p. 4.3-40 of the Modernization EIR, the EIR analyzed a "100%
13 facility utilization" scenario that "includes emissions estimates ... developed in
14 collaboration with BAAQMD staff and relevant regulatory guidance, for Facility
15 transportation related marine shipping, trucking and rail activities. ... [T]he EIR includes
16 a comprehensive analysis of transportation-related air emissions that could vary with
17 Facility utilization levels. In general, higher Facility utilization levels generate a higher
18 level of shipping, trucking, and rail activity and associated air emissions. ... Certain
19 transportation levels, particular related to shipping, also vary in accordance with the types
20 of vessels serving the Long Wharf, which itself varies with the amount of crude blend and
21 purchased oil shipped to and processed in the Facility." (Emphasis added). The shipping
22 methodology and EIR calculate emissions from ocean-going vessels (OGV; i.e., tanker
23 ships), barges and tugs (also referred to as harbor craft). (The BAAQMD-approved
24 methodology for assessing emissions from marine vessels serving the Long Wharf is
25 described in the Modernization EIR, p. App 4.3-SHP-1-2.)

26 By analyzing a 100 percent utilization scenario, the Modernization EIR identified the
27 maximum level of emissions, including emissions from marine vessels, which could occur
28 from the combined operation of the Long Wharf and the Refinery. Of particular relevance,
29 the Health Risk Assessment prepared for the Modernization Project identified increased
30 emissions of diesel particulate matter (DPM) from marine vessels as the primary driver of
31 health risk from toxic air contaminants ("TACs"). The Modernization EIR imposes
32 mitigation measures to ensure that Facility emissions, including emissions from marine
33 vessels, will not exceed baseline emission levels for the 2008-2010 period.

34 Construction on the Refinery Modernization Project has commenced and initial operations
35 are currently scheduled for 2018, at which point the enforceable emissions limits and
36 required mitigation measures imposed by the City's CUP will take effect. The Long Wharf
37 Project is not scheduled to commence construction until 2018, and has a five-year
38 construction period before the berth modifications will be complete and any changes in
39 shipping activity as a result of the Project could even occur. Thus, the Modernization
40 Project limits will be in place before any alleged operational changes at the Long Wharf

1 could occur. These legally enforceable obligations are akin to a regulatory mandate and
2 are therefore adequate under CEQA for purposes of identifying and assessing potential
3 impacts. See generally *Oakland Heritage Alliance v. City of Oakland* (2011) 195
4 Cal.App.4th 884,906 [“requiring compliance with regulations is a common and reasonable
5 mitigation measure”]; *City of Maywood v. Los Angeles Unified School Dist.* (2012) 208
6 Cal.App.4th 362, 411-412 [citing compliance with regulatory standards as adequately
7 addressing hazardous materials at school site]; *North Coast Rivers Alliance v. Marin*
8 *Municipal Water Dist. Bd. of Directors* (2013) 216 Cal. App. 4th 614, 647-648 [mitigation
9 requiring compliance with existing consultation requirements under federal permitting
10 process is adequate mitigation under CEQA]; *Clover Valley Foundation v. City of Rocklin*
11 (2011) 197 Cal.App.4th 200, 236-237 [mitigation requiring compliance with regulatory
12 permitting is adequate under CEQA].)

13 CEQA requires a lead agency to analyze impacts of a proposed project on the existing
14 environment. (State CEQA Guidelines, § 15125, subd. (a).) The impacts are ordinarily
15 compared to the actual environmental conditions existing at the time of CEQA analysis,
16 or the “baseline” conditions. The general rule is that the baseline must reflect the physical
17 conditions existing at the time environmental analysis begins. (*Communities for a Better*
18 *Environment v. South Coast Air Quality Management District* (2010) 48 Cal.4th 310, 320,
19 323.)

20 Here, because the Project being evaluated is the improvements to mooring, seismic, and
21 safety structures on Berths 1, 2, 3, and 4, which are intended to support the existing
22 operations at the Long Wharf, and because substantial evidence supports a conclusion
23 that the Project will not increase vessel calls or throughput at the Long Wharf, there would
24 be no changed conditions resulting in operational impacts to aesthetics,
25 agriculture/forestry, air quality, biological resources, cultural resources, geology and soils,
26 greenhouse gas emissions, hazards/hazardous materials, hydrology/water quality, land
27 use/planning, mineral resources, noise, population/housing, public services, recreation,
28 transportation/traffic, or utilities/service systems. For this reason, potential operational
29 impacts are not evaluated. Further, even if vessel calls and throughput did increase, the
30 potentially significant environmental effects of such an increase have been analyzed and
31 mitigated to less than significant as part of the Modernization Project. Therefore, the Initial
32 Study Checklist analyzes only the Project’s construction-related impacts to applicable
33 resource areas.

34 **2.2 PROJECT ELEMENTS**

35 **2.2.1 Overall Project Modifications**

36 The combined modifications to Berths 1 through 4 would require installation of 141 new
37 permanent concrete piles to support new and replacement equipment and their
38 associated structures. The Berth 4 loading platform would add eight, 60-inch-diameter

1 steel piles as part of the seismic retrofit. The Project would also add four clusters of 13
2 composite piles each (52 total) as markers and protection of the new batter piles on the
3 east side of the Berth 4 retrofit. The Project would remove 106 existing timber piles, two
4 existing 18-inch, two existing 24-inch concrete piles, and three existing 22-inch square
5 concrete-jacketed timber piles.

6 The Project would add 5,740 square feet (ft²) of new overwater structures, but would
7 remove 909 ft² for a net 4,831 ft² (0.11 acre) increase in cantilever fill. The area of new
8 overwater structures is divided among the various berths and is not contiguous. The
9 Project would install 201 new permanent piles, representing approximately 777 ft² of fill
10 on Bay bottom habitat, but would remove a total of 110 piles, representing 160 ft² for an
11 approximate net 616 ft² (0.01 acre) of permanent Bay fill from piles. Fill areas and
12 numbers of piles are summarized in Tables 2-1 and 2-2.

13 To minimize visual effects, most of the new structures above the Long Wharf deck will be
14 painted in a neutral color that blends with and complements the setting. Aluminum
15 structures such as gangways and catwalks are not painted but are a light grey which also
16 blends with and complements the setting. Proposed lighting will use 3000 Kelvin
17 wavelength light-emitting diode (LED) bulbs of the blue spectrum and will be adjusted
18 such that light is cast downward and confined as much as possible to the immediate work
19 areas. Lights would be shielded to prevent stray light.

20 **2.2.2 Berth 1 Modifications**

21 Proposed modifications at Berth 1 are shown in Figure A-2 and include the following:

- 22 • Install one new 24-foot x 20-foot mooring hook dolphin to accommodate barges
- 23 • Install one new 24-foot x 25-foot breasting dolphin and 13-foot x 26-foot breasting
24 point with standoff fenders to accommodate barges
- 25 • Replace the existing gangway and add one new elevated fire monitor
- 26 • Remove an existing catwalk and replace it with a new short catwalk at a slightly
27 different location to provide access to the new breasting dolphin.

28 Only the installation of piles and fenders would require in-water activity; the rest will occur
29 above the water. The mooring hook dolphin (13 new piles), breasting dolphin (17 new
30 piles), breasting point (8 new piles), and new gangway (four new piles) would require
31 using impact driving methods to install new 24-inch-square concrete piles as shown in
32 Table 2-3.

Table 2-3. Berth 1 Pile Requirements

Structure	Pile Type	# Piles	Installation/Removal Method
New Mooring Hook Dolphin	24-inch square concrete	13	Impact pile driving hammer
New Outer Breasting Dolphin	24-inch square concrete	17	Impact pile driving hammer
New Inner Breasting Point	24-inch square concrete	8	Impact pile driving hammer
Replacement Gangway	24-inch square concrete	4	Impact pile driving hammer
New Walkways	None	0	
Removal of Existing Walkways	Concrete	-2	Vibratory method
Total Piles		40	

1 2.2.3 Berth 2 Modifications

2 Proposed modifications at Berth 2 are shown on Figure A-3 and include the following:

- 3 • Install one new gangway, one new elevated fire monitor, and four new standoff
- 4 fenders (to replace timber fender pile system)
- 5 • Replace one bollard with one new hook
- 6 • Replace existing auxiliary, hose, and vapor recovery hose cranes to accommodate
- 7 new standoff fenders.

8 The modifications will require using an impact driving hammer to install 51 new 24-inch
 9 square concrete piles for the standoff fender system (39 new piles), hose crane, auxiliary
 10 crane, and gangway (four new piles each) (see Table 2-4).

Table 2-4. Berth 2 Pile Requirements

Structure	Pile Type	# Piles	Installation/Removal Method
New South Outside Fender	24-inch square concrete	10	Impact pile driving hammer
New South Inner Fender	24-inch square concrete	10	Impact pile driving hammer
New North Inner Fender	24-inch square concrete	9	Impact pile driving hammer
New North Outside Fender	24-inch square concrete	10	Impact pile driving hammer
Replacement Hose Crane	24-inch square concrete	4	Impact pile driving hammer
Replacement Aux Crane	24-inch square concrete	4	Vibratory method
Replacement Vapor Recovery Hose Crane	None	0	
New Gangway	24-inch square concrete	4	Impact pile driving hammer
Total New Piles		51	
Removal of Existing Wooden Fender System and Wooden Whaler	Wooden timber	-106	Vibratory method
Total Piles after removal of Existing Fender System and Whaler		-55	
Temporary Fenders to Support Yokohama Temporary Fenders	"H" piles	36	Vibratory method. Piles will be removed after the completion of the new fender system.

1 To keep Berth 2 operational during construction, four temporary fenders will be installed,
 2 supported by 36 temporary 14-inch H piles driven using vibratory methods. It is expected
 3 that the H piles would largely sink under their own weight and that few of these would
 4 require pile driving. The H piles and temporary fenders would be removed once the
 5 permanent standoff fenders were installed. The new gangway would be installed within
 6 the existing footprint of the Long Wharf and would not create any new overwater structure
 7 or shadowing (sometimes referred to as “cantilever fill”). In addition, the existing cranes
 8 at Berth 2 are being replaced by cranes with longer reach to accommodate the additional
 9 distance of the new standoff fenders. The new hose and auxiliary cranes would replace
 10 existing cranes and require four new piles each. The existing vapor recovery hose crane
 11 pedestal would be modified and the new crane mounted in compliance with MOTEMS.
 12 Finally, three existing brace piles (22-inch square concrete jacketed timber piles) would
 13 be removed completely if possible. If complete removal is not possible during pile
 14 extraction, piles will be cut off as far below the mudline as possible.

15 Replacing the Berth 2 vapor recovery hose crane (which is used to lift the vapor recovery
 16 hose from the Long Wharf deck up onto the ships prior to loading, and to lower the hoses
 17 after loading is complete) will not alter or modify the Vapor Recovery System or marine
 18 loading thermal oxidizer. The new cranes have a longer reach than the existing cranes,
 19 which is necessary to accommodate the new standoff fenders at Berth 2. The new
 20 standoff fenders extend farther out from the face of the Long Wharf than the existing
 21 fenders. There are no physical or other changes being made to the vapor recovery system
 22 or marine loading thermal oxidizer as part of the Project.

23 Since there are no physical or operational changes being made to the Vapor Recovery
 24 System, marine loading thermal oxidizer, or sources (vessels) as part of the Project, no
 25 alteration or modification would occur as defined in BAAQMD Regulation 2-1-233 and 2-
 26 1-234, respectively, and no permit is required. No physical changes to the Long Wharf
 27 would increase vessel calls, Long Wharf throughput, or emissions. As a result, there is
 28 no requirement to obtain a new permit or amended existing permit from the BAAQMD.

29 **2.2.4 Berth 3 Modifications**

30 Proposed modifications at Berth 3 are shown in Figure A-4 and include adding one new
 31 gangway and one new elevated fire monitor. The gangway would be supported by four,
 32 24-inch square concrete piles. This would be the only modifications at Berth 3. The piles
 33 would be installed using an impact pile driving hammer (see Table 2-5).

Table 2-5. Berth 3 Pile Requirements

Structure	Pile Type	# Piles	Installation/Removal Method
New Gangway	24-inch square concrete	4	Impact pile driving hammer
New Elevated Fire Monitor	None	0	
Total New Piles		4	

1 2.2.5 Berth 4 Modifications

2 Proposed modifications at Berth 4 are shown in Figure A-5 and include the following:

- 3 • Install two new 36-foot x 20-foot dolphins with standoff fenders (two per dolphin)
- 4 and two catwalks
- 5 • Seismically retrofit the Berth 4 loading platform in accordance with MOTEMS to
- 6 stiffen the structure and minimize the movement in the event of a Level 1 or 2
- 7 earthquake
- 8 • Install two intermediate fender points at Berth 4 to accommodate shorter parallel-
- 9 mid body ships that are more hydrodynamic/fuel efficient. The proposed fenders
- 10 will not increase the largest vessel that can call at Berth 4

11 This work would require driving eight, 60-inch-diameter hollow batter (driven at an angle)

12 steel piles using impact pile driving. Installation of the batter piles requires that twelve 24-

13 inch round steel piles be temporarily installed using a vibratory pile driving hammer to

14 hold up a guide frame. The temporary pipe piles will be removed using a vibratory hammer

15 after the eight steel piles are installed. The Project would also add four clusters of 13

16 composite piles each (52 total) as markers and protection of the new batter piles on the

17 east side of the retrofit. This adds an additional 56 square feet of structural area (shadow

18 fill) to the loading platform. As part of the retrofit, two 24-inch square concrete piles will

19 be will be removed completely if possible. If complete removal is not possible during pile

20 extraction, piles will be cut off as far below the mudline as possible. Berth 4 pile

21 requirements are summarized in Table 2-6.

Table 2-6. Berth 4 Pile Requirements

Structure	Pile Type	# Piles	Installation/Removal Method
New South Breasting Dolphin	24-inch square concrete	22	Impact pile driving hammer
New North Breasting Dolphin	24-inch square concrete	22	Impact pile driving hammer
New Walkways	24-inch square concrete	0	
New Loading Platform Retrofit	60-inch diameter steel	8	Impact pile driving hammer
New Clusters ¹	Round Composite (13 piles per cluster)	52	Vibratory method
Removal of existing piles	24-inch square concrete	-2	Vibratory method
	Total Piles	102	

Notes: ¹ The new clusters will act as Barrier Piles to keep vessels from contacting the east side of the Long Wharf in this area

1 **2.3 SITE ACCESS, TRAFFIC, EQUIPMENT, & SCHEDULE**

2 The new piles and most of the construction equipment would be brought into the Project
3 site by barge. A barge-based pile driver would be used to place the new concrete and
4 steel piles.

5 Project construction and staging areas would be limited to the existing CSLC leased area.
6 Barge and truck haul routes used for regular operations and maintenance of the Long
7 Wharf would also be used for the delivery of Project construction equipment and crew.
8 Construction staging areas would be on the Long Wharf itself or elsewhere at the Refinery
9 site. The length of the Project timeline would allow for construction traffic to be spread out
10 over the course of multiple years. This would decrease the possibility of a noticeable
11 increase in truck traffic near the site.

12 **2.3.1 Equipment**

13 Construction equipment will include barge-mounted and wharf-deck-based cranes,
14 impact and vibratory pile driving hammers, air compressors, generators, concrete pumps,
15 rubber tired loaders, manlifts, welders, and winches. Much of the equipment and materials
16 would be delivered by barge, though equipment mobilization and deliveries would also be
17 transported on local roadways. Chevron and their contractor have committed that all
18 barges delivering equipment and materials operate and travel exclusively within the Bay
19 and so will not increase the spread of nonindigenous aquatic species.

20 **2.3.2 Schedule**

21 Construction would begin following approval of the final Project design and issuance of
22 necessary Project approvals and permits. The Project schedule assumes that permits,
23 approvals, and funding would be obtained in 2017. Construction would then start in 2018
24 and be complete by the fourth quarter 2022. Pile driving activities would be timed to occur
25 within the standard National Marine Fisheries Service work windows to the extent
26 practical.

27 Construction would be scheduled such that the Long Wharf is able to remain operational
28 during construction. The general construction sequence is as follows:

- 29 • Berth 2 hose cranes replacements
- 30 • Berth 4 loading platform seismic work
- 31 • Berth 2 fender construction
- 32 • Berth 1 dolphin and mooring hook construction
- 33 • Berth 1 inner breasting dolphin construction
- 34 • Berth 4 inner fender construction
- 35 • Berth 1 gangway tower installation

- 1 • Berth 2 gangway tower installation
- 2 • Berth 3 gangway tower installation

3 There would be periods when more than one of the above Project features would be
4 under construction at the same time. This is necessary to accommodate the Project
5 schedule and to ensure minimal disruption to Long Wharf operations.

6 **2.4 STANDARD IMPLEMENTATION MEASURES**

7 The following standard implementation measures have been used for previous projects
8 at the Long Wharf and would be incorporated into the Project and followed:

- 9 1) The Project would comply with Chevron's current CSLC Lease Agreement
10 requirements, and would be completed within the existing operational footprint of
11 the Long Wharf with no expansion of the CSLC Lease or dredge footprint.
- 12 2) Barges would be used to haul and move materials throughout the Project's
13 duration. A flat barge would serve as a staging area to carry materials along with
14 any debris generated. The barges would only be used in open water areas near
15 the Long Wharf.
- 16 3) Whenever possible, existing piles would be extracted by attempting to vibrate
17 them out. If a pile cannot be extracted by vibration, it would be cut off as far below
18 the mudline as possible. Piles that have been removed would be placed on the
19 material barge and transported from the site by a properly licensed transporter for
20 disposal in accordance with California Code of Regulations, title 22, division 4.5.

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3.0 ENVIRONMENTAL CHECKLIST AND ANALYSIS

1
2 This section contains the Initial Study that was completed for the proposed Chevron
3 (Chevron or Applicant) Long Wharf Maintenance and Efficiency Project (Project) in
4 accordance with the requirements of California Environmental Quality Act (CEQA). The
5 Initial Study identifies site-specific conditions and impacts, evaluates their potential
6 significance, and discusses ways to avoid or lessen impacts that are potentially
7 significant. The information, analysis, and conclusions included in the Initial Study provide
8 the basis for determining the appropriate document needed to comply with CEQA. For
9 the Project, based on the analysis and information contained herein, California State
10 Lands Commission (CSLC) staff has found that the Initial Study shows that there is
11 substantial evidence that the Project may have a significant effect on the environment,
12 but revisions to the Project would avoid the effects or mitigate the effects to a point where
13 clearly no significant effect on the environment would occur. As a result, the CSLC has
14 concluded that a Mitigated Negative Declaration (MND) is the appropriate CEQA
15 document for the Project.

16 The evaluation of environmental impacts provided in this Initial Study is based in part on
17 the impact questions contained in Appendix G of the State CEQA Guidelines; these
18 questions, which are included in an impact assessment matrix for each environmental
19 category (Aesthetics, Agriculture/Forest Resources, Air Quality, Biological Resources,
20 etc.), are “intended to encourage thoughtful assessment of impacts.” Each question is
21 followed by a check-marked box with column headings that are defined below.

- 22 • **Potentially Significant Impact.** This column is checked if there is substantial
23 evidence that a Project-related environmental effect may be significant. If there are
24 one or more “Potentially Significant Impacts,” a Project Environmental Impact
25 Report (EIR) would be prepared.
- 26 • **Less than Significant with Mitigation.** This column is checked when the Project
27 may result in a significant environmental impact, but the incorporation of identified
28 Project revisions or mitigation measures would reduce the identified effect(s) to a
29 less than significant level.
- 30 • **Less than Significant Impact.** This column is checked when the Project would
31 not result in any significant effects. The Project’s impact is less than significant
32 even without the incorporation of Project-specific mitigation measures.
- 33 • **No Impact.** This column is checked when the Project would not result in any impact
34 in the category or the category does not apply.

35 The environmental factors checked below would be potentially affected by this Project; a
36 checked box indicates that at least one impact would be a “Potentially Significant Impact.”
37 However, the Applicant has agreed to Project revisions, including the implementation of
38 mitigation measures, that reduce the impact to “Less than Significant with Mitigation.”

<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Agriculture and Forest Resources	<input type="checkbox"/> Air Quality
<input checked="" type="checkbox"/> Biological Resources	<input type="checkbox"/> Cultural Resources	<input type="checkbox"/> Geology and Soils
<input type="checkbox"/> Greenhouse Gas Emissions	<input checked="" type="checkbox"/> Hazards and Hazardous Materials	<input checked="" type="checkbox"/> Hydrology and Water Quality
<input type="checkbox"/> Land Use and Planning	<input type="checkbox"/> Mineral Resources	<input type="checkbox"/> Noise
<input type="checkbox"/> Population and Housing	<input type="checkbox"/> Public Services	<input type="checkbox"/> Recreation
<input type="checkbox"/> Transportation/Traffic	<input type="checkbox"/> Utilities and Service Systems	
<input checked="" type="checkbox"/> Mandatory Findings of Significance		
<input type="checkbox"/> Other Major Areas of Concern: Commercial Fishing and Environmental Justice		

1 Detailed descriptions and analyses of impacts from Project activities and the basis for
 2 their significance determinations are provided for each environmental factor on the
 3 following pages, beginning with Section 3.1, Aesthetics. Relevant laws, regulations, and
 4 policies potentially applicable to the Project are listed in the Regulatory Setting for each
 5 environmental factor analyzed in this Initial Study.

6 **AGENCY STAFF DETERMINATION**

7 Based on the environmental impact analysis provided by this Initial Study:

- I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

8 _____
 Signature

 Date

9 Sarah Mongano, Senior Environmental Scientist
 10 Division of Environmental Planning and Management
 11 California State Lands Commission

1 **3.1 AESTHETICS**

AESTHETICS – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 **3.1.1 Environmental Setting**

3 The Project area includes the Chevron Long Wharf (Long Wharf), which juts into San
 4 Francisco Bay just south of the Richmond-San Rafael Bridge. The Long Wharf connects
 5 to the Chevron Richmond Refinery (Refinery) site at the end of Western Avenue.

6 The overall character of the Project site is industrial, further defined by docked vessels
 7 and related structures such as cranes and fire monitors. Views from shore are mainly of
 8 the water and the hills of Marin in the background. The Long Wharf structure from most
 9 viewpoints is visible primarily as a black line at the surface of the water. Vessels docked
 10 at the berths stand out because of their size, but from the various viewpoints from the
 11 shore, the finer/thinner structures such as gangways and cranes on the Long Wharf are
 12 not very discernable and do not block views of the Marin hills across the Bay.

13 A Visual Impact Assessment and a Lighting Assessment were prepared to evaluate
 14 potential visual impacts of the Project. These reports contain depictions of existing and
 15 simulated views of the Project from various vantage points, and are included as Appendix
 16 C and Appendix D to this MND.

17 **3.1.2 Regulatory Setting**

18 Federal and state laws and regulations pertaining to aesthetics and relevant to the Project
 19 are identified in Appendix B. At the local level, the most applicable land planning guidance
 20 is from the General Plan of the City of Richmond (City) (city of Richmond 2012a). A
 21 primary goal of the City’s General Plan is to “promote a sense of 'place' and create a
 22 community of pleasant contrasts through land use planning, urban design, and use of

1 visual elements such as scenic routes....” The Open Space Element of the General Plan
2 contains the following policies addressing the protection of the natural character of
3 Richmond:

- 4 • Policy CN2.1: Preserve open space areas along the shoreline, creeks, and in the
5 hills to protect natural habitat and maintain the integrity of hillsides, creeks and
6 wetlands. Protect existing open space, agricultural lands and parks.
- 7 • Policy CN.2.1: Minimize the impacts of development on the shoreline with special
8 attention to intensity, density, and proximity to the water. Conserve, protect and
9 enhance natural and cultural resources along the Richmond shoreline. Promote a
10 balance of uses along the shoreline that supports multiple community needs such
11 as economic development, recreation, historic preservation and natural resource
12 protection.

13 Similarly, Contra Costa County General Plan policies for open space and aesthetics
14 mandate that new development be based on preserving important natural areas and
15 maintaining the current identity of surrounding communities (Contra Costa County 2005).

16 3.1.3 Impact Analysis

17 a) *Have a substantial adverse effect on a scenic vista?*

18 **Less than Significant Impact.** The Project site does not contain any public scenic vistas,
19 nor is it located within or adjacent to a public scenic vista or viewshed. Additionally, the
20 City’s General Plan does not identify the Project site as being within a scenic area (City
21 of Richmond 2012a). Visual simulations in Appendix C show that from most of the vantage
22 points, the existing scenic vistas that dominate the viewshed are the Bay and the hills in
23 the backdrop, which offer higher visual quality than the Long Wharf itself. The Long Wharf
24 is visible as a lean horizontal feature, and the vertical structures consisting of vessels and
25 other related equipment on the Long Wharf are indistinct from most of the vantage points
26 in comparison to the hills and the Bay. The Project will add and/or replace similar
27 equipment. While upgraded gangways will include new elevated fire monitors, these
28 would not block existing views or otherwise obstruct or degrade any public scenic vistas
29 or views from surrounding locations. The Project will not have an adverse effect on a
30 scenic vista, because views of the Project area during and after construction will remain
31 similar to the existing views of tanker ships and barges, loading and unloading equipment,
32 and gangways consistent with the existing industrial character of the site. Therefore,
33 impacts to scenic vistas are considered less than significant.

34 b) *Substantially damage scenic resources, including, but not limited to, trees, rock* 35 *outcroppings, and historic buildings within a state scenic highway?*

1 **No Impact.** Scenic resources include trees, rock outcroppings, historic buildings within
2 scenic highways, etc. The Project site and surrounding areas are not located in a General
3 Plan scenic area. The Project site is located just south of the Richmond-San Rafael Bridge
4 (also known as John T. Knox Freeway/Interstate 580 [I-580]), which is not identified as
5 an Eligible State Scenic Highway by the California Scenic Highways Mapping System.
6 There is no vegetation on the Project site. Therefore, no impacts will occur.

7 **c) Substantially degrade the existing visual character or quality of the site and its**
8 **surroundings?**

9 **Less than Significant Impact.** The visual character and quality of the Project site and
10 surroundings is fairly uniform but varies somewhat depending on the vantage point. The
11 predominant character is of a commercial/industrial wharf structure in the Bay, adjacent
12 to a hillside residential neighborhood to the east, and bounded by I-580 to the north. The
13 industrial character of the Long Wharf is most evident as viewed from the nearest
14 residential neighborhood at the northern end of Western Drive. As the distance from the
15 Long Wharf increases, the Bay and hills in the background dominate the visual character.
16 Installation of new or upgraded cranes, elevated fire monitors, gangway towers, mooring
17 hook dolphins, piles, and standoff fenders will occur within the same area as existing
18 equipment and structures.

19 The visual impact assessment prepared for the Project (Appendix C) contains visual
20 simulations that depict the change in visual character from five viewpoints surrounding
21 the site; the simulations indicate that the changes in the visual character of the Long
22 Wharf due to the Project modifications would be difficult to discern from these viewpoints.
23 The new gangways with the raised fire monitors at Berths 2 and 3 may be somewhat
24 apparent from closer viewpoints, however the impact is expected to be minimal. Views of
25 the vessels and I-580 are more predominant from Viewpoints 4 and 5, and any changes
26 in the visual character due to proposed Project components would not be noticeable.

27 The Project would not alter the existing visual character of the Project site, as the
28 proposed improvements are minor compared to the existing Long Wharf. Once
29 constructed, the improvements will blend into the overall industrial character of the Long
30 Wharf. In addition, the new structures above the Long Wharf deck will be a neutral color,
31 one that blends with and complements the setting and also meets Occupational Safety
32 and Health Administration standards for the maritime industry. The Project would not
33 degrade the existing visual character or quality of the site, since Project construction and
34 subsequent operations will be similar to the existing industrial operations of the site.

35 **d) Create a new source of substantial light or glare which would adversely affect**
36 **day or nighttime views in the area?**

1 **Less than Significant Impact.** Existing facilities at the Project site include nighttime
2 lighting. The Project proposes the following additional lighting, required for MOTEMS
3 compliance and operational safety, at the Long Wharf (Figure A-6 in Appendix A):

- 4 • Berth 1 - One additional LED fixture (11,500 Lumens) for the new hook dolphin
5 and five additional LED fixtures (34,500 Lumens total) for the gangway will be
6 installed for a total increase of 46,000 Lumens.
- 7 • Berth 2 - Five additional LED fixtures for the gangway will be installed for a total
8 increase of 34,500 Lumens.
- 9 • Berth 3 - Five additional LED fixtures for the gangway will be installed for a total
10 increase of 34,500 Lumens.
- 11 • Berth 4 - Five additional LED fixtures for the fenders will be installed for a total
12 increase of 34,500 Lumens.

13 The Project would not introduce significant light sources or include large areas of highly
14 reflective material that would produce glare. The upgraded facilities would include new
15 lighting fixtures (described above) located within existing areas of the Long Wharf, would
16 be surrounded by existing lighted equipment, and would not affect adjacent residential or
17 industrial uses. Combined changes associated with the completed Project will add a 1.05
18 percent increase over the existing light intensity at the Long Wharf.

19 The visual impact of new and relocated lighting on the Long Wharf was assessed from
20 five vantage points using computer simulations of the lighting changes as viewed from
21 the five viewpoints. These computer simulations are included in the Lighting Visual Impact
22 Assessment report (Appendix D). Overall, the simulations and evaluation indicate that the
23 visual change resulting from the proposed new lighting for the Project would not change
24 existing views to any significant extent. Therefore, although the proposed Project would
25 add new sources of artificial lighting to the Long Wharf that would increase ambient
26 lighting levels, this change would be small, and would not significantly alter the existing
27 lighting environment currently experienced in the area.

28 All LED lighting installed as part of the Project would be blue spectrum, 3000 Kelvin
29 wavelength, adjusted so that light is cast downward and confined as much as possible to
30 the immediate work areas, and shielded to prevent stray light. Additionally, no night
31 construction work will be performed at the Long Wharf. Therefore, the Project will not
32 significantly increase light or glare for residential receptors considering the distance
33 between the Long Wharf and residences. The impacts will be less than significant.

34 **3.1.4 Mitigation Summary**

35 The Project would not result in significant impacts to Aesthetics; therefore, no mitigation
36 is required.

1 **3.2 AGRICULTURE AND FOREST RESOURCES**

AGRICULTURE AND FOREST RESOURCES ⁸ - Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Natural Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Pub. Resources Code, § 12220, subd. (g)), timberland (as defined by Pub. Resources Code, § 4526), or timberland zoned Timberland Production (as defined by Gov. Code, § 51104, subd. (g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.2.1 Environmental Setting**

3 The Project area is the Long Wharf which juts into the San Francisco Bay from the City
 4 of Richmond. The Project area does not contain any agriculture or forested lands and
 5 would not convert any lands from their existing land uses.

6 **3.2.2 Regulatory Setting**

7 Federal and state laws and regulations pertaining to agriculture and forest resources and
 8 relevant to the Project are identified in Appendix B. At the local level, the Richmond
 9 General Plan 2030 includes the following agricultural policies of relevance to this Project
 10 (City of Richmond 2012a):

⁸ In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the State’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

- 1 • Policy LU4.2: Preserve open space areas along the shoreline, creeks, and in the
2 hills to protect natural habitat. Maintain the integrity of hillsides, creeks and
3 wetlands. Protect existing open space, agricultural lands and parks.

4 The Contra Costa General Plan has similar policies related to agriculture, discouraging
5 development on agricultural lands (Contra Costa County 2005).

6 **3.2.3 Impact Analysis**

7 **a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance**
8 **(Farmland), as shown on the maps prepared pursuant to the Farmland Mapping**
9 **and Monitoring Program of the California Natural Resources Agency, to non-**
10 **agricultural use?**

11 **b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?**

12 **c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in**
13 **Pub. Resources Code, § 12220, subd. (g)), timberland (as defined by Pub.**
14 **Resources Code, § 4526), or timberland zoned Timberland Production (as**
15 **defined by Gov. Code, § 51104, subd. (g))?**

16 **d) Result in the loss of forest land or conversion of forest land to non-forest use?**

17 **e) Involve other changes in the existing environment which, due to their location**
18 **or nature, could result in conversion of Farmland, to non-agricultural use or**
19 **conversion of forest land to non-forest use?**

20 **a) to e) No Impact.** There are no farm or forest lands located in the vicinity of the Project
21 site (California Department of Conservation 2015, Contra Costa County 2012); therefore,
22 the Project would not impact agricultural or forest lands.

23 **3.2.4 Mitigation Summary**

24 The Project would have no impacts to Agricultural and Forestry Resources; therefore, no
25 mitigation is required.

1 **3.3 AIR QUALITY**

AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) 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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 **3.3.1 Environmental Setting**

3 The Project site is located in central San Francisco Bay and just south of the eastern
 4 terminus of the Richmond-San Rafael Bridge, in Contra Costa County. This area is part
 5 of the San Francisco Bay Area Air Basin (SFBAAB), which is generally bordered on the
 6 west by the Pacific Ocean, on the north by the Coast Ranges, and on the east and south
 7 by the Diablo Range. The SFBAAB is comprised of complex terrain types, including
 8 coastal mountain ranges, inland valleys, and the San Francisco Bay.

9 **3.3.1.1 Topography, Meteorology, and Climate**

10 Meteorological conditions in the SFBAAB are warm and mainly dry in summers, and mild
 11 and moderately wet in winters. Marine air has a moderating effect on the climate
 12 throughout much of the year. Winds flow through the Golden Gate from the Pacific Ocean,
 13 but direct flow into eastern Alameda County is impeded by the East Bay hills. Marine air
 14 mostly is blocked from the area until late afternoons or on days when deep marine
 15 inversions develop with strong onshore flows. The Project area is within the climatological
 16 subregion of Northern Alameda and Western Contra Costa Counties, stretching from
 17 Richmond to San Leandro. In this area, marine air traveling through the Golden Gate, as
 18 well as across San Francisco and through the San Bruno Gap, is a dominant weather
 19 factor. The Oakland-Berkeley Hills cause the westerly flow of air to split off to the north

1 and south of Oakland, which causes diminished wind speeds. The prevailing winds for
2 most of this subregion are from the west. At the northern end, near Richmond, prevailing
3 winds are from the south-southwest.

4 3.3.1.2 Local Air Quality Conditions

5 The determination of whether a region’s air quality is healthful or unhealthful is made by
6 comparing contaminant levels in ambient air samples to the California Ambient Air Quality
7 Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS). Ambient air
8 concentrations are monitored at various locations throughout the SFBAAB and used by
9 both the California Air Resources Board (CARB) and U.S. Environmental Protection
10 Agency (USEPA) to designate an area’s attainment status with respect to the CAAQS
11 and NAAQS, respectively, for criteria air pollutants. The purpose of these designations is
12 to identify areas with air quality problems and thereby initiate planning efforts for
13 improvement. The three basic designation categories are “nonattainment,” “attainment,”
14 and “unclassified.” The “unclassified” designation is used in an area that cannot be
15 classified on the basis of available information as meeting or not meeting the standards.
16 The most recent attainment designations with respect to the SFBAAB are shown in Table
17 3.3-1, below. With respect to the CAAQS, the SFBAAB is designated as a nonattainment
18 area for ozone, particulate matter (PM) less than 10 microns in diameter (PM₁₀), and
19 particulate matter less than 2.5 micrometers in diameter (PM_{2.5}), and as an attainment or
20 unclassified area for all other pollutants. With respect to the NAAQS, the SFBAAB is
21 designated as a marginal nonattainment area for ozone and PM_{2.5}, and as an attainment
22 or unclassified area for all other pollutants.

23 The Bay Area Air Quality Management District (BAAQMD) maintains a number of air
24 quality monitoring stations that continually measure the ambient concentrations of major
25 air pollutants throughout the Bay Area. The closest such monitoring station to the Project
26 site is San Pablo-Rumrill Blvd., about 4 miles to the northeast. All criteria pollutants are
27 monitored at this station. Table 3.3-2 summarizes ambient air quality data recorded at
28 this station for the past 5 years. As shown, only concentrations for ozone and 24-hour
29 PM_{2.5} exceeded standards in one or two occasions during this period.

30 This subregion contains a variety of industrial air pollution sources, including but not
31 limited to airport facilities, and major chemical, petroleum, and shipping operations. Some
32 industries are quite close to residential areas, for example in the communities of
33 Richmond and West Oakland. The subregion is also traversed by frequently congested
34 major freeways, including I-580 and the Richmond-San Rafael Bridge, located just north
35 of the Project site. Traffic and congestion, and the motor vehicle emissions they generate,
36 are increasing due to population increase in the San Francisco Bay Area.

Table 3.3-1. NAAQS, CAAQS, and SFBAAB Attainment Status

Pollutant	Averaging Time	California Standards ¹		National Standards ²	
		Concentration	Status	Primary	Status
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)	Nonattainment	—	—
	8 Hours	0.070 ppm (137 µg/m ³)	Nonattainment ⁹	0.070 ppm (147 µg/m ³)	Nonattainment ⁴
Respirable Particulate Matter (PM ₁₀)	24 Hours	50 µg/m ³	Nonattainment	150 µg/m ³	Unclassified
	AAM	20 µg/m ³	Nonattainment ⁷	—	—
Fine Particulate Matter (PM _{2.5})	24 Hours	—	—	35 µg/m ³ ¹⁰	Nonattainment
	AAM	12 µg/m ³	Nonattainment ⁷	12.0 µg/m ³ ¹⁵	Attainment/ Unclassified
Carbon Monoxide (CO)	8 Hours	9.0 ppm (10 mg/m ³)	Attainment	9 ppm (10 mg/m ³)	Attainment ⁶
	1 Hour	20 ppm (23 mg/m ³)	Attainment	35 ppm (40 mg/m ³)	Attainment
Nitrogen Dioxide (NO ₂) ⁷	AAM	0.030 ppm (57 µg/m ³)	Attainment	0.053 ppm (100 µg/m ³)	Attainment
	1 Hour	0.18 ppm (339 µg/m ³)	Attainment	0.100 ppm (188 µg/m ³) ¹¹	Unclassified
Sulfur Dioxide (SO ₂) ¹²	24 Hours	0.04 ppm (105 µg/m ³)	Attainment	0.14 ppm (365 µg/m ³)	Attainment
	1 Hour	0.25 ppm (655 µg/m ³)	Attainment	0.075 ppm (196 µg/m ³)	Attainment
	AAM	—	—	0.030 ppm (80 µg/m ³)	Attainment
Lead (Pb) ¹³	30-Day Average	1.5 µg/m ³	Attainment	—	—
	Calendar Quarter	—	—	1.5 µg/m ³	Attainment
	Rolling 3-Month Average ¹⁴	—	—	0.15 µg/m ³	Attainment ¹⁴
Visibility-Reducing Particles (VRP) ¹¹	8 Hours	See footnote ⁸	Unclassified	No national standards	
Sulfates	24 Hours	25 µg/m ³	Attainment		
Hydrogen Sulfide (H ₂ S)	1 Hour	0.03 ppm (42 µg/m ³)	Unclassified		
Vinyl Chloride (C ₂ H ₃ Cl)	24 Hours	0.010 ppm (26 µg/m ³)	No information available		

Source: BAAQMD 2015.

Acronyms: mg/m³ = milligrams per cubic meter; ppm = parts per million; µg/m³ = micrograms per cubic meter; AAM = Annual Arithmetic Mean; CARB = California Air Resources Board; NAAQS = National Ambient Air Quality Standards; SIP = State Implementation Plan; USEPA = U.S. Environmental Protection Agency.

Table 3.3-1. NAAQS, CAAQS, and SFBAAB Attainment Status

Pollutant	Averaging Time	California Standards ¹		National Standards ²	
		Concentration	Status	Primary	Status
Notes:					
<p>¹ California standards for O₃, CO (except Lake Tahoe), SO₂ (1-hour and 24-hour), NO₂, suspended particulate matter - PM₁₀, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, lead, H₂S and C₂H₃Cl are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and PM₁₀ annual standard), then some measurements may be excluded. In particular, measurements are excluded that CARB determines would occur less than once per year on the average.</p> <p>² National standards shown are the "primary standards" designed to protect public health. National standards other than for O₃, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour O₃ standard is attained when the 3-year average of the 4th highest daily concentrations is 0.075 ppm (75 parts per billion [ppb]) or less. The 24-hour PM₁₀ standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m³. The 24-hour PM_{2.5} standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m³. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM₁₀ is met if the 3-year average falls below the standard at every site. The annual PM_{2.5} standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.</p> <p>³ National air quality standards are set by the USEPA at levels determined to be protective of public health with an adequate margin of safety.</p> <p>⁴ Final designations effective July 20, 2012.</p> <p>⁵ The national 1-hour O₃ standard was revoked by the USEPA on June 15, 2005.</p> <p>⁶ In April 1998, the Bay Area was redesignated to attainment for the national 8-hour CO standard.</p> <p>⁷ In June 2002, CARB established new annual standards for PM_{2.5} and PM₁₀.</p> <p>⁸ Statewide VRP Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.</p> <p>⁹ The 8-hour California ozone standard was approved by CARB in 2005 effective May 17, 2006.</p> <p>¹⁰ On January 9, 2013, the USEPA issued a final rule to determine that the Bay Area attains the 24-hour PM_{2.5} national standard. This USEPA rule suspends key SIP requirements as long as monitoring data continue to show that the Bay Area attains the standard. Despite this USEPA action, the Bay Area would continue to be designated as "non-attainment" for the national 24-hour PM_{2.5} standard until such time as the Air District submits a "redesignation request" and a "maintenance plan" to the USEPA, and the USEPA approves the proposed redesignation.</p> <p>¹¹ To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).</p> <p>¹² On June 2, 2010, the USEPA established a new 1-hour SO₂ standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO₂ NAAQS however must continue to be used until 1 year following the USEPA's initial designations of the new 1-hour SO₂ NAAQS.</p> <p>¹³ CARB has identified lead and C₂H₃Cl as "toxic air contaminants" with no threshold level of exposure below which there are no adverse health effects determined.</p> <p>¹⁴ National lead standard, rolling 3-month average: Final designations effective December 31, 2011.</p> <p>¹⁵ In 2012, the USEPA strengthened the annual PM_{2.5} NAAQS from 15.0 to 12.0 µg/m³. In December 2014, the USEPA issued final area designations for the 2012 primary annual PM_{2.5} NAAQS. Areas designated "unclassifiable/attainment" must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.</p>					

Table 3.3-2. Criteria Air Pollutants Data Summary (San Pablo, Rumrill Boulevard Station)

Pollutant	Averaging Time	Applicable Standard	2010	2011	2012	2013	2014
Ozone (O ₃)	1-Hour	Maximum Concentration (ppm)	0.097	0.078	0.086	0.074	0.075
		Days > CAAQS (0.09 ppm)	1	0	0	0	0
	8-Hour	4 th Maximum Concentration (ppm) ^a	0.081	0.058	0.059	0.065	0.061
		Days > NAAQS (0.075 ppm) Days > CAAQS (0.07 ppm)	1 1	0 0	0 0	0 0	0 0
Particulate Matter (PM ₁₀)	24-Hour	Maximum Concentration (µg/m ³)	41.2	73.4	46.7	48.1	46.3
		Days > CAAQS (50 µg/m ³)	0	6	0	0	0
		Days > NAAQS (150 µg/m ³)	0	0	0	0	0
Annual	State Annual Average (20 µg/m ³)	16.1	19.7	15.7	17.8	16	
Particulate Matter (PM _{2.5})	24-Hour	Maximum Concentration (µg/m ³)	n/a	n/a	12.8	41.2	38.2
		Days > NAAQS (35 µg/m ³)	n/a	n/a	0	2	1
		National Std. 98 th Percentile ^b	n/a	n/a	13	27.4	23.4
	Annual	National Annual (12.0 µg/m ³) ^c	n/a	n/a	7.3	11.9	10.5
Carbon Monoxide (CO) ^d	1-Hour	Maximum Concentration (ppm)	1.6	1.9	1.6	2.2	1.8
		Days > CAAQS (20 ppm)	0	0	0	0	0
		Days > NAAQS (35 ppm)	0	0	0	0	0
	8-Hour	Maximum Concentration (ppm)	0.91	0.99	0.92	1.0	1.0
		Days > CAAQS (9.0 ppm)	0	0	0	0	0
Nitrogen Dioxide (NO ₂)	1-hour	Maximum Concentration (ppm)	0.049	0.050	0.055	0.047	0.052
		Days > CAAQS (0.18 ppm)	0	0	0	0	0
	Annual	Arithmetic Average (0.053 ppm)	n/a	0.009	0.009	0.010	0.010

Source: CARB 2015; USEPA 2015.

Notes:
 Annual Arithmetic Mean; CAAQS; µg/m³; NAAQS; ppm; n/a – sufficient data not available to determine the value
 Estimated/measured numbers of recorded concentrations above national standards are shown in **bold**.
 Note: Ambient data for SO₂ and airborne Pb, are not included in this table since the Basin is currently in compliance with state and federal standards for these pollutants.
^a The 8-hour ozone standard is attained when the fourth highest concentration in a year, averaged over 3 years, is equal to or less than the new national standard of 0.075 ppm (effective May 27, 2008).
^b Attainment condition for PM_{2.5} is that the 3-year average of the 98th percentile of 24-hour concentrations at each monitor within an area must not exceed the standard (35 µg/m³).
^c On December 14, 2012, the national annual PM_{2.5} primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³.
^d Eight-hour CO averages and related statistics are available at San Pablo-Rumrill Blvd between 2002 and 2012. 8- hour data for 2013 and 2014, as well as 1-hour CO monitored data are from USEPA AirData Web site www.epa.gov/airdata/ad_rep_mon.html.

1 **Sensitive Receptors**

2 Some receptors are considered more sensitive than others to air pollutants. The reasons
3 for variations in sensitivity include pre-existing health problems, proximity to emissions
4 sources, or duration of exposure to air pollutants. The BAAQMD identifies a sensitive
5 receptor as “facilities or land uses that include members of the population that are
6 particularly sensitive to the effects of air pollutants, such as children, the elderly, and
7 people with illnesses. Examples include schools, hospitals and residential areas.”
8 Recreational uses may also be considered sensitive due to the greater exposure to
9 ambient air quality conditions, because people engaging in vigorous exercise have higher
10 breathing rates. The land surrounding the Project site is primarily industrial. The nearest
11 residential sensitive receptors are located approximately 4,400 feet northeast of the
12 Project site. The closest school is Washington Elementary School, located about 1.1
13 miles east of the Project site. The nearest medical facility to the Project site is 860 Harbor
14 South Medical Center located approximately 2.2 miles southwest of the Project site.

15 **3.3.2 Regulatory Setting**

16 Federal and state laws and regulations pertaining to air quality and relevant to the Project
17 are identified in Appendix B. At the local level, the City’s General Plan 2030 (City of
18 Richmond 2012a) includes a Conservation, Natural Resources, and Open Space
19 element. This element contains “Goal CN4 – Improved Air Quality” to improve and
20 maintain air quality for the benefit of residents and the local economy. The policies and
21 actions associated with this goal focus on supporting local and regional rulemaking and
22 program implementation, and are not directly applicable to the Project.

23 The Project site is located in Contra Costa County, which is part of the SFBAAB. The
24 BAAQMD is the regional agency with jurisdiction over the nine-county SFBAAB, which
25 includes Contra Costa, San Francisco, Alameda, Marin, San Mateo, Santa Clara, Napa,
26 southern portion of Sonoma, and southwestern portion of Solano Counties. The BAAQMD
27 is responsible for attaining and maintaining air quality in the SFBAAB within federal and
28 state air quality standards, as established by the Federal Clean Air Act (FCAA) and the
29 California Clean Air Act (CCAA), respectively. Specifically, the BAAQMD has the
30 responsibility to monitor ambient air pollutant levels throughout the SFBAAB and to
31 develop and implement strategies to attain applicable federal and state standards. The
32 BAAQMD (2010) adopted the most recent air quality plan, the 2010 Clean Air Plan, on
33 September 15, 2010. The 2010 Clean Air Plan serves to:

- 34 • Update the Bay Area 2005 Ozone Strategy in accordance with the requirements
35 of the CCAA to implement all feasible measures to reduce ozone
- 36 • Provide a control strategy to reduce ozone, particulate matter, air toxics, and
37 greenhouse gases (GHGs) in a single, integrated plan
- 38 • Establish emission-control measures to be adopted or implemented

1 The 2010 Clean Air Plan contains the following primary goals:

- 2 • Attain air quality standards
- 3 • Reduce population exposure and protect public health in the SFBAAB
- 4 • Reduce GHG emissions and protect the climate

5 The 2010 Clean Air Plan represents the most current applicable air quality plan for the
6 SFBAAB. Consistency with this plan is the basis for determining whether the Project
7 would conflict with or obstruct implementation of air quality plans.

8 The BAAQMD identified significance thresholds for exposure to Toxic Air Contaminants
9 (TACs) and fine particulate matter (PM_{2.5}) as part of its May 2011 CEQA Air Quality
10 Guidelines. Those significance thresholds were later called into question by a court order
11 issued March 5, 2012, in *California Building Industry Association v. Bay Area Air Quality*
12 *Management District* (Alameda Superior Court Case No. RGI0548693). The order
13 required BAAQMD to set aside its approval of the thresholds until it had conducted
14 environmental review under CEQA. In August 2013, the Appellate Court struck down the
15 lower court’s order to set aside the thresholds. (No. A135335, A136212.) In December
16 2015, the Supreme Court reviewed a CEQA scoping issue implicated by the thresholds
17 and issued new guidance on when agencies have to analyze the effect of the existing
18 environment on the future users of the project. (*California Building Industry Association*
19 *v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, 392-393.) The validity
20 of the BAAQMD thresholds have yet to be conclusively determined as the Supreme Court
21 remanded to the Appellate Court to consider the thresholds in light of the guidance
22 provided by the Supreme Court on the scoping issue. (*Ibid.*) The Court of Appeal has yet
23 to issue its opinion.

24 In a decision published August 12, 2016, *California Building Industry Assn. v. Bay Area*
25 *Air Quality Management District* (A135335 & A136212, Aug. 12, 2016) __ Cal.App.4th __
26 [2016 Cal. App. LEXIS 758], the First District Court of Appeal determined that BAAQMD’s
27 TAC thresholds “need not be set aside in their entirety. However, [they] are misleading to
28 the extent they contemplate an application of the [TAC] Thresholds to evaluate the effect
29 of the existing environment on all new receptors as a matter of course. . . .” Though the
30 Court of Appeal identified specific circumstances where the TAC thresholds could validly
31 be applied (e.g., in school siting decisions), the Court of Appeal warned that “any effort
32 by an agency to require an EIR, mitigating measures, or other CEQA review under the
33 Receptor Thresholds when one is not authorized would be subject to a strong legal
34 challenge.” To that end, the Court of Appeal held that the TAC thresholds cannot be used
35 by a lead agency to require an EIR to impose mitigation measures solely because the
36 occupants or users of a new project would be subjected to contaminant levels above
37 BAAQMD’s thresholds. The appellate court remanded the case to the trial court with
38 instructions to issue an order invalidating the portions of the BAAQMD Guidelines that

1 suggested that lead agencies should routinely assess the effect of existing environmental
2 considerations on future users of a project.

3 The 2010 Thresholds have been used in this analysis because they were established
4 based on substantial statistical evidence. The BAAQMD released the “Proposed
5 Thresholds of Significance” in 2009, which listed the proposed thresholds for criteria
6 pollutants, GHGs, community risk and hazards, and odors. BAAQMD researched existing
7 and projected sources of air quality contaminants and designed the 2010 Thresholds to
8 comply with state and federal standards (see Table 3.3-3). The report “provides the
9 substantial evidence in support of the thresholds of significance...” (emphasis added)
10 (BAAQMD 2009). The thresholds for criteria pollutants were developed through a
11 quantitative examination of the efficacy of fugitive dust mitigation measures and a
12 quantitative examination of statewide non-attainment emissions.

13 The issues identified in *California Building Industry Association v. Bay Area Air Quality*
14 *Management District* are not relevant to the scientific soundness of the BAAQMD’s
15 analysis of the level at which a pollutant would potentially significantly affect air quality.
16 At this stage, the focus of the litigation is solely on whether the thresholds unlawfully
17 require a lead agency to consider the effect of the existing environment on the future
18 users of the project. (*California Building Industry Association v. Bay Area Air Quality*
19 *Management District, supra*, 62 Cal.4th at pp. 392-393.) Therefore, use of the 2010
20 Thresholds is consistent with the BAAQMD’s direction that thresholds should be based
21 on substantial evidence. Further, the 2010 Thresholds were used in the Modernization
22 Project EIR for purposes of assessing air quality impacts, including specifically health
23 risks, from marine vessels servicing the Long Wharf. (Modernization EIR, pp. 4.3-53 –
24 4.3-54.)

Table 3.3-3. Criteria Air Pollutant and Health Risk Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (pounds/day)	Average Daily Emissions (pounds/day)	Maximum Annual Emissions (tons/year)
ROG	54	54	10
NOx	54	54	10
PM10	82 (exhaust)	82	15
PM2.5	54 (exhaust)	54	10
Fugitive Dust	Construction Dust Ordinance or other BMPs	Not Applicable	
Risk and Hazards for new sources and receptors (Individual Project)	Same as Operational Thresholds	Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient PM2.5 increase: > 0.3 µg/m ³ annual average	
Risk and Hazards for new sources and receptors	Same as Operational Thresholds	Compliance with Qualified Community Risk Reduction Plan OR Cancer: > 100 in a million (from all local sources)	

Table 3.3-3. Criteria Air Pollutant and Health Risk Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (pounds/day)	Average Daily Emissions (pounds/day)	Maximum Annual Emissions (tons/year)
(Cumulative Threshold)		Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic) PM _{2.5} : > 0.8 µg/m ³ annual average (from all local sources)	
Acronyms: µg/m ³ = micrograms per cubic meter; BMP = Best Management Practice; NO _x = oxides of nitrogen; PM ₁₀ = particulate matter with aerodynamic diameter less than 10 microns; PM _{2.5} = particulate matter with aerodynamic diameter less than 2.5 micrometers; ROG = reactive organic gases.			

1 3.3.2.1 Criteria Air Pollutants

2 In accordance with the state and federal clean air acts, air pollutant standards are
 3 identified for the following six criteria air pollutants: ozone, CO, PM, nitrogen dioxide
 4 (NO₂), sulfur dioxide (SO₂), and lead (Pb). These air pollutants are termed criteria air
 5 pollutants because they are regulated by developing specific public health- and welfare-
 6 based criteria as the basis for setting permissible levels. In general, the SFBAAB
 7 experiences low concentrations of most pollutants when compared to federal or state
 8 standards. The SFBAAB is designated as either in attainment or unclassified for most
 9 criteria pollutants with the exception of ozone, PM_{2.5}, and PM₁₀, which are designated as
 10 non-attainment for either the federal or state standards (see Table 3.3-1, above).

11 By its very nature, regional air pollution is largely a cumulative impact in that no single
 12 project is typically sufficient in size to, by itself, result in non-attainment of air quality
 13 standards. Instead, a project’s individual emissions contribute to existing cumulative air
 14 quality impacts. If a project’s incremental contribution to cumulative air quality impacts is
 15 considerable, then the project’s impact on air quality would be considered cumulatively
 16 significant.

17 Land use projects may contribute to regional criteria air pollutants during the construction
 18 and operational phases of a project. Table 3.3-3 identifies air quality significance
 19 thresholds followed by a discussion of each threshold, based on the BAAQMD’s CEQA
 20 Air Quality Guidelines.

21 Projects that would result in criteria air pollutant emissions below these significance
 22 thresholds would not violate an air quality standard, contribute substantially to an air
 23 quality violation, or result in a cumulatively considerable net increase in criteria air
 24 pollutants within the SFBAAB.

1 3.3.2.2 Ozone Precursors

2 The SFBAAB is currently designated as non-attainment for ozone and PM. Ozone is a
3 secondary air pollutant produced in the atmosphere through a complex series of
4 photochemical reactions involving reactive organic gases (ROGs) and nitrogen oxides
5 (NO_x). The potential for a project to result in a cumulatively considerable net increase in
6 criteria air pollutants, which may contribute to an existing or projected air quality violation,
7 are based on the CCAA and federal CAA emissions limits for stationary sources.
8 BAAQMD Regulation 2, Rule 2 requires that any new source that emits criteria air
9 pollutants above a specified emissions limit must offset those emissions. For ozone
10 precursors ROG and NO_x, the offset emissions level is an annual average of 10 tons per
11 year (or 54 pounds per day). These levels represent emissions by which new stationary
12 sources are not anticipated to contribute to an air quality violation or result in a
13 considerable net increase in criteria air pollutants.

14 3.3.2.3 Particulate Matter (PM₁₀ and PM_{2.5}) and Fugitive Dust

15 The federal New Source Review program was created by the CAA to ensure that
16 stationary sources of air pollution are constructed in a manner that is consistent with
17 attainment of federal health-based ambient air quality standards. For PM₁₀ and PM_{2.5}, the
18 emissions limits under New Source Review are 15 and 10 tons per year (82 and 54
19 pounds per day), respectively. These emissions limits represent levels at which a source
20 is not expected to have an impact on air quality. Although the regulations specified above
21 apply to new or modified stationary sources, land use development projects also result in
22 ROG, NO_x, PM₁₀, and PM_{2.5} emissions from increases in vehicle trips, architectural
23 coating, and construction activities. Therefore, the above thresholds can be applied to the
24 construction and operational phases of land use projects and those projects that result in
25 emissions below these thresholds would not be considered to contribute to an existing or
26 projected air quality violation or result in a considerable net increase in ozone precursors
27 or particulate matter. Due to the temporary nature of the Project's construction related
28 activities, only the average daily thresholds are applicable to construction-phase
29 emissions.

30 Fugitive dust emissions are typically generated during construction phases. Studies have
31 shown that the application of Best Management Practices (BMPs) at construction sites
32 significantly control fugitive dust. Individual measures have been shown to reduce fugitive
33 dust by anywhere from 10 to 98 percent (Western Regional Air Partnership 2006). The
34 BAAQMD has identified a number of BMPs to control fugitive dust emissions from
35 construction activities.

1 3.3.2.4 Local Health Risks and Hazards

2 In addition to criteria air pollutants, individual projects may emit TACs. TACs collectively
3 refer to a diverse group of air pollutants that are capable of causing chronic (i.e., of long
4 duration) and acute (i.e., severe but of short-term) adverse effects to human health,
5 including carcinogenic effects. Human health effects of TACs include birth defects,
6 neurological damage, cancer, and mortality. There are hundreds of different types of
7 TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they
8 present; at a given level of exposure, one TAC may pose a hazard that is many times
9 greater than another.

10 Unlike criteria air pollutants, TACs do not have ambient air quality standards but are
11 regulated by the BAAQMD using a risk-based approach to determine which sources and
12 pollutants to control as well as the degree of control. A health risk assessment is an
13 analysis in which human health exposure to toxic substances is estimated, and
14 considered together with information regarding the toxic potency of the substances, to
15 provide quantitative estimates of health risks. The main TAC of concern from the
16 proposed project is diesel particulate matter (DPM), which are emitted from on-road
17 vehicles and off-road equipment. Diesel exhaust is a complex mixture of thousands of
18 gases and fine particles emitted by a diesel-fueled internal combustion engine. The
19 composition will vary depending on engine type, operating conditions, fuel composition,
20 lubricating oil, and whether an emission control system is present. CARB identified DPM
21 as a TAC in 1998, primarily based on evidence demonstrating cancer effects in humans
22 (CARB 1998). The estimated cancer risk from exposure to diesel exhaust is much higher
23 than the risk associated with any other TAC routinely measured in the region. In health
24 risk analyses, PM₁₀ emissions are generally used as a surrogate for DPM.

25 In addition to TACs, the BAAQMD also recommends that exposure to PM_{2.5} be evaluated
26 for potential health impacts. PM_{2.5} are composed of a mixture of substances, including
27 elements such as carbon and metals; compounds such as nitrates, organics, and
28 sulfates; and other complex mixtures such as wood smoke or exhaust. Exposures to
29 PM_{2.5} are associated with mortality, respiratory diseases, and lung development in
30 children, and other endpoints such as hospitalization for cardiopulmonary disease. Due
31 to differing adverse health effects, PM_{2.5} emissions are analyzed separately from PM₁₀
32 even though by definition PM_{2.5} totals are included in totals of PM₁₀.

33 The BAAQMD CEQA Air Quality Guidelines establish a relevant zone of influence for an
34 assessment of project-level and cumulative health risks to sensitive receptors within
35 1,000 feet of a project site from exposure to TACs. Project construction-related or
36 operational TAC impacts to sensitive receptors within the zone of influence that exceed
37 any of the following thresholds are considered significant:

1 • An excess cancer risk level of more than 10 in 1,000,000, or a non-cancer hazard
2 index greater than 1.0.

3 • An incremental increase of greater than 0.3 $\mu\text{g}/\text{m}^3$ for annual average $\text{PM}_{2.5}$
4 concentrations.

5 Cumulative impacts from TACs emitted from freeways, state highways or high volume
6 roadways (i.e., the latter defined as having traffic volumes of 10,000 vehicles or more per
7 day or 1,000 trucks per day), and from all BAAQMD-permitted stationary sources within
8 the zone that exceed any of the following thresholds at any sensitive receptor, are
9 considered cumulatively significant:

10 • A combined excess cancer risk levels of more than 100 in 1,000,000

11 • A combined non-cancer hazard index greater than 10

12 • A combined incremental increase in annual average $\text{PM}_{2.5}$ concentrations greater
13 than 0.8 $\mu\text{g}/\text{m}^3$

14 • These local health risk and hazard thresholds are also listed above in Table 3.3-3

15 3.3.3 Impact Analysis

16 ***a) Conflict with or obstruct implementation of the applicable air quality plan?***

17 **Less than Significant Impact.** The BAAQMD CEQA Air Quality Guidelines recommend
18 determining potential conflicts with the 2010 Clean Air Plan by evaluating a project's
19 consistency with the BAAQMD CEQA significance thresholds. The Project would
20 generate emissions during construction from construction equipment, impact pile driving
21 hammers, marine engines (including work boats and tug boats), and haul and worker
22 vehicle trips (see Table 3.3-4). As discussed below (see Item b) emissions of ROG, NO_x ,
23 and PM generated during Project construction would not exceed BAAQMD CEQA
24 significance thresholds. The Project would improve the operational efficiency of the Long
25 Wharf by installing and replacing various new structures at Berths 1, 2, and 3. As
26 discussed in Item b, the Project would not result in an increase in the operational capacity
27 of the Long Wharf. Therefore, the Project would not result in a substantial increase in
28 operational emissions compared to existing conditions, and would not result in operational
29 emissions exceeding the BAAQMD CEQA significance thresholds.

30 Because construction and operational emissions would not exceed the BAAQMD CEQA
31 significance thresholds, the Project would not have regionally significant impacts
32 impeding the implementation of the control strategies or the attainment of goals set in the
33 BAAQMD's 2010 Clean Air Plan (BAAQMD 2010).

1 **b) Violate any air quality standard or contribute substantially to an existing or**
2 **projected air quality violation?**

3 **Project Construction Emissions**

4 **Less than Significant Impact.** Project emissions during construction would be
5 generated by construction equipment, impact hammers, marine engines (including work
6 boats and tug boats), and haul and worker vehicle trips. Emissions were calculated for
7 the Compliance and Upgrade components of the Project construction activities.
8 Emissions from construction equipment, impact hammers, and vehicle trips were
9 calculated using the California Emissions Estimator Model (CalEEMod) v2013.2.2.
10 CalEEMod uses widely accepted models for emission estimates and default data from
11 sources such as USEPA AP-42 emission factors, CARB vehicle emission models, and
12 California Energy Commission and other agency studies (California Air Pollution Control
13 Officers Association [CAPCOA] 2013). Project specific data, including equipment lists and
14 operating schedules (see Table 3.3-4) and vehicle trip generation rates, were used as
15 inputs to the model. Tug boats used in Project construction were modeled based on the
16 schedule and specifications summarized below in Table 3.3-5. As shown, all operating
17 hours throughout the construction period were conservatively modeled using the fleet
18 operator’s largest Harbor Tug Vessel.

19 Work boat engine emissions were estimated using manual spreadsheet calculations
20 based on Project-specific equipment lists and activity data (listed in Table 3.3-4), and
21 emission factors derived from CARB’s OFFROAD2007. Although CARB has released
22 more recent OFFROAD2011 modules that serve as an update to OFFROAD2007, the
23 emission factors for the project construction marine engine types were not available in
24 OFFROAD2011; therefore, OFFROAD2007 emissions data were used.

25 Total Project emissions from construction activities were estimated, and a daily average
26 emissions rate was calculated for comparison with applicable significance thresholds.
27 Because Project construction would be scheduled to allow the Long Wharf to remain
28 operational during construction, Project construction activities would be intermittent in
29 nature. While the construction schedule for the Project assumes 5-year construction time
30 period, this analysis conservatively assumes that construction activities would be
31 completed over a period of approximately 4 years. Average daily emissions were
32 calculated using this 4-year construction duration, assuming 260 working days per year.

Table 3.3-4. Project Construction Equipment List

Work Component	Equipment Type	Number of Pieces	Operating Hours per Day	Total Days of Use	Engine HP	
Compliance Work	Air Compressors	1	8	196	49	
	Air Compressors: Dive Setup/ Compressors	1	8	7	10	
	Cranes:	45-Ton Grove Crane	1	8	11	215
		Boom Truck	1	8	7	250
		Carrydeck Crane	1	8	80	110
	Challenger Crane Barge:	Draw-works Engine	1	8	158	364
		Deck Generator	1	8	158	129
		Air Compressor	1	8	158	49
		Spud Winch	1	8	158	120
	DB Alameda Derrick Barge:	Draw-works Engine	1	8	96	400
		Generator Set Engine	1	8	96	400
		Deck Air Compressor	1	8	96	49
		Anchor/Spud Winch Engine A	1	8	96	117
		Anchor/Spud Winch Engine B	1	8	96	117
		Deck Generator	1	8	96	274
		Excavators: CX80 Excavator	1	8	16	53
		Other: APE 200 Vibratory Hammer	1	8	78	595
		Other: APE 600 Vibratory Hammer	1	8	40	1,200
		Pumps: Concrete Pump	1	8	30	73
		Rubber Tired Loaders: Loader	1	8	4	260
	Welders	1	8	50	25	
	D180 Impact Hammer	1	8	40	280	
	D62 Impact Hammer	1	8	79	105	
	Work Boat	1	8	45	50	
	Tug Boats	data summarized in Table 3.3-5				
Upgrade Work	Aerial Lifts: 65-inch Manlift	1	8	27	67	
	Air Compressors	1	8	57	49	
	Air Compressors: Dive Setup/ Compressors	1	8	2	10	
	Cranes:	45-Ton Grove Crane	1	8	8	215
		Carrydeck Crane	1	8	86	110
	Challenger Crane Barge:	Draw-works Engine	1	8	105	364
		Deck Generator	1	8	105	129
		Air Compressor	1	8	105	49
		Spud Winch	1	8	105	120
	DB Alameda Derrick Barge:	Draw-works Engine	1	8	92	400
		Generator Set Engine	1	8	92	400
		Deck Air Compressor	1	8	92	49
		Anchor/Spud Winch Engine A	1	8	92	117
		Anchor/Spud Winch Engine B	1	8	92	117
	Deck Generator	1	8	92	274	
Upgrade Work (continued)	Excavators: CX80 Excavator	1	8	6	53	
	Pumps: Concrete Pump	1	8	27	73	
	D62 Impact Hammer	1	8	10	105	
	D70 Impact Hammer	1	8	270	105	
	Work Boat	1	8	10	50	
	Tug Boats	data summarized in Table 3.3-5				

Notes: Impact hammer engine size was assumed based on fuel consumption rates.

Table 3.3-5. Tug Boat Characteristics and Usage During Construction

Tug Boat	Main Engines Characteristics		Auxiliary Engines Characteristics		Tugs Usage during 4-year Construction Activities		
	Model Year	Power (HP)	Model Year	Power (HP)	Percent Usage	Total Operating Hours	
						Compliance Work	Upgrade Work
Solana	2013	1,000	2009	73	100%	1,193	1,482
Notes: All operating hours conservatively modeled using the fleet operator's largest Harbor Tug. Assumed two main engines and both auxiliary engines operate at a time.							

- 1 Emissions calculations for each category of pollutant are summarized in Table 3.3-6. The
- 2 Project would not violate any air quality standards or contribute substantially to any
- 3 existing or projected air quality violation because Project-related emissions do not exceed
- 4 the BAAQMD's thresholds of significance.

Table 3.3-6. Project Construction Criteria Pollutant Emissions

Work Component	Construction Source	Construction Source Emissions (tons)			
		ROG	NO _x	Exhaust PM ₁₀	Exhaust PM _{2.5}
Compliance Work	Construction Equipment	0.63	5.10	0.23	0.23
	Impact Hammers	0.03	0.36	0.02	0.02
	Marine Engines*	0.56	3.89	0.16	0.16
	Worker Vehicles	< 0.01	< 0.01	< 0.01	< 0.01
Upgrade Work	Construction Equipment	0.40	3.37	0.16	0.15
	Impact Hammers	0.08	0.68	0.05	0.05
	Marine Engines*	0.64	4.83	0.19	0.18
	Worker Vehicles	< 0.01	< 0.01	< 0.01	< 0.01
Total Construction Emissions (tons)		2.34	18.24	0.82	0.79
Average Daily Construction Emissions (lbs/day)		4.5	35.1	1.6	1.5
BAAQMD Daily Threshold (lbs/day)		54	54	82	54
Exceeds Threshold?		No	No	No	No
Acronyms: BAAQMD = Bay Area Air Quality Management District; lbs/day = pounds per day; NO _x = oxides of nitrogen; PM ₁₀ = particulate matter less than or equal to 10 microns in diameter; PM _{2.5} = particulate matter less than or equal to 2.5 microns in diameter; ROG = reactive organic gases.					
Notes: * Marine engines emissions include emissions from tug boats and work boats used during construction. Totals may not add up due to rounding. Average daily emissions calculated assuming construction activities occur over 4 years at 260 working days per year.					

- 5 The estimated tug emissions in Table 3.3-6 have changed since the original publication
- 6 of the MND, which provided estimates for larger ocean-going tugs with Tier 2 tug boat
- 7 engines. Since smaller harbor tugs, not ocean-going tugs, will be used for Project
- 8 construction in the Bay, the tug emissions have been recalculated, conservatively using
- 9 the fleet operator's largest available harbor tug, outfitted with Tier 3, twin 1,000

1 horsepower engines. (In 2017, prior to the start of Project construction, the tug company
2 will outfit the tugs with Tier 3 engines.)

3 The BAAQMD does not have quantitative mass emissions thresholds for fugitive PM₁₀
4 and PM_{2.5} dust. Instead, the BAAQMD recommends that applicable BMPs, such as those
5 listed as Basic Construction Mitigation Measures in the BAAQMD 2011 CEQA Air Quality
6 Guidelines and presented in Table 3.3-7, be implemented to reduce fugitive dust
7 emissions, as applicable. The Project would incorporate applicable dust control measures
8 that are consistent with the BAAQMD recommended control measures. Note that many
9 of these BAAQMD recommended control measures, such as BMPs 1 through 5 and 8 in
10 Table 3.3-7, would not be applicable due to the nature of construction activity for this
11 Project. The Project would use marine equipment that does not generate fugitive dust,
12 would involve minimal earth disturbing activities, and does not occur on unpaved routes.
13 BMPs 6 and 7 in Table 3.3-7 would be applicable and the Project would not conflict with
14 these BMPs. Fugitive dust impacts from Project construction would be less than
15 significant.

**Table 3.3-7. BAAQMD Recommended Basic Construction Mitigation Measures
for Fugitive Dust**

<ol style="list-style-type: none">1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.8. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.
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16 **Project Operational Emissions**

17 The Project will improve the operational efficiency of the Long Wharf by installing a
18 permanent gangway, a mooring dolphin, and fenders at Berth 1 so it can accept barges.

1 This will balance use of Berths 1, 2, and 3, making operations more efficient. Currently,
2 the inability to use Berth 1 for barges causes logistical issues in scheduling barges and
3 ships, and sometimes significant delays in loading and offloading materials.

4 At Berth 2, fenders will be replaced to comply with the Marine Oil Terminal Engineering
5 and Maintenance Standards (MOTEMS), California Building Code Chapter 31F. The new
6 fenders will allow an increase in the allowable approach berthing velocity of ships.
7 Berthing velocity limits are based on the vessel size, and currently range from 0.19 fps
8 for a 61,000 deadweight ton (DWT) vessel to 0.26 fps for a 15,000 DWT vessel. The new
9 fenders will allow vessels to approach in compliance with MOTEMS and will range from
10 0.38 fps for a 61,000 DWT vessel to 0.61 fps for a 15,000 DWT vessel.

11 The sources of operational emissions at the Long Wharf relate to the loading and off-
12 loading of feedstocks and finished products, respectively. The overwhelming source of
13 emissions from Long Wharf operations is ship and barge engine combustion. (Lease EIR,
14 p. 4.6-19.) Other emissions sources include the Vapor Recovery System and marine
15 thermal oxidizer (which are separately regulated pursuant to BAAQMD Regulation 8-44),
16 and fugitive emissions from pumps, valves, flanges, and pressure relief devices (which
17 are separately regulated pursuant to BAAQMD Regulation 8-18). The Long Wharf itself
18 does not process any crude or gas oil or other feedstocks.

19 None of the changes and improvements proposed as part of the Project alter the
20 throughput capacity of the Long Wharf to the Refinery; nor do the proposed improvements
21 alter the Vapor Recovery System or the thermal oxidizer. The modifications to the various
22 berths will allow the Long Wharf to better manage vessel calls across Berths 1 – 4, which
23 will have the attendant benefit of reducing idling time of marine vessels as they queue for
24 space at the berths. Specifically, as described in the Lease EIR, “Berths 1 and 4 are used
25 for ship cargo transfers, and Berths 2 and 3 are used for ship and barge cargo transfers.”

26 Since Berths 2 and 3 are the only berths that receive ocean going barges, each is
27 occupied by vessels (both ships and barges) nearly 75 percent of the time, a very high
28 utilization rate that can cause delays for vessels attempting to berth. Such delays result
29 in increased demurrage costs to Chevron, as well as increased emissions from ships and
30 barges that must idle for longer periods of time. The modifications to Berth 1 will allow
31 Berth 1 to receive ocean going barges that otherwise would be required to use Berths 2
32 or 3. This will better balance utilization across Berths 1, 2 and 3, which will reduce
33 demurrage and idling time of ships that currently must queue for Berths 2 and 3.

34 Further, the modifications to Berth 4 will allow it to accommodate newer vessels, which
35 have more modern, fuel-efficient hull designs. The more modern hull designs use
36 shortened parallel mid-bodies, which reduce friction and make it easier for vessels to
37 propel through water, thus reducing fuel consumption. By modifying Berth 4 to
38 accommodate these newer vessels, the Project will enable the Long Wharf to berth more

1 fuel efficient vessels that are replacing older vessels with less efficient hull designs. The
2 modifications will not increase the largest vessel that can call at Berth 4.

3 The Project does not enable the Long Wharf to accommodate larger vessels overall.
4 Pursuant to Chevron’s Statement of Terminal Operations, which is provided to the State
5 Lands Commission pursuant to MOTEMS audit submittals to the Commission during the
6 period of 2009-2016, the largest vessels that can currently berth at the Long Wharf are
7 SuezMax ships at Berths 1 and 4, and smaller Panamax vessels at Berths 2 and 3.
8 This will continue to be the case after the Project is implemented, though the smaller ships
9 will be able to be accommodated at Berths 1 and more fuel efficient ships will be
10 accommodated at Berth 4.

11 The Long Wharf is the exclusive means by which the Richmond Refinery imports
12 feedstocks and is the primary means, in conjunction with trucks and trains, by which
13 finished products from the Refinery are exported for sale. The Long Wharf itself does not
14 process feedstocks. For purposes of off-loading crude and gas oil and other feedstocks
15 from marine vessels calling at the Long Wharf, all materials are pumped from the vessels
16 through pipelines to storage tanks inside the Refinery, from which the feedstocks are then
17 blended and processed by the Refinery. Throughput levels across and vessel calls to the
18 Long Wharf are driven by demand from the Refinery. Because of this, the number of
19 vessel calls and throughput at the Long Wharf are anticipated to remain consistent with
20 past operations since the Project does not include any modifications that would allow the
21 Refinery to increase its throughput or production levels.

22 In any event, any increase in emissions from increased vessel calls or throughput will be
23 mitigated to less than significant as a result of legally enforceable limits on emissions,
24 including from marine vessels and Long Wharf operations, imposed by the City of
25 Richmond as part of its approval of the Modernization Project. Because of the
26 interconnection between the Refinery’s and the Long Wharf’s operations, the
27 Modernization EIR analyzed Long Wharf operations, including emissions from marine
28 vessels. As explained on p. 4.3-40 of the Modernization DEIR, the EIR analyzed a “100%
29 utilization” scenario that:

30 *“includes emissions estimates ... developed in collaboration with BAAQMD staff and*
31 *relevant regulatory guidance, for Facility transportation related marine shipping,*
32 *trucking and rail activities. ... [T]he EIR includes a comprehensive analysis of*
33 *transportation-related air emissions that could vary with Facility utilization levels. In*
34 *general, higher Facility utilization levels generate a higher level of shipping, trucking,*
35 *and rail activity and associated air emissions. ... Certain transportation levels,*
36 *particular related to shipping, also vary in accordance with the types of vessels serving*
37 *the Long Wharf, which itself varies with the amount of crude blend and purchased oil*
38 *shipped to and processed in the Facility.” (Emphasis added). The BAAQMD-approved*
39 *methodology for assessing emissions from marine vessels serving the Long Wharf is*

1 described in Appendix 4.3-SHP. The shipping methodology and EIR calculate
2 emissions from ocean-going vessels, i.e., tanker ships (“OGV”), barges and tugs (also
3 referred to as harbor craft). (Modernization DEIR, p. App 4.3-SHP-1-2.)

4 By analyzing a 100 percent utilization scenario, the Modernization EIR identified the
5 maximum level of emissions, including emissions from marine vessels, which could occur
6 from the combined operation of Long Wharf and Refinery. Of particular relevance to the
7 Project, the Health Risk Assessment prepared for the Modernization Project identified
8 increased emissions of diesel particulate matter (DPM) from marine vessels as the
9 primary driver of health risk from toxic air contaminants (TACs). The Modernization EIR
10 imposes mitigation measures to ensure that Facility emissions, including emissions from
11 marine vessels, will not exceed baseline emission levels for the 2008-2010 period.

12 Based on information reported by Chevron to the Bay Area Air Quality Management
13 District for permit compliance purposes (which is subject to protection from disclosure
14 pursuant to Pub. Resources Code, § 21160 and State CEQA Guidelines, §15120, subd.
15 (d)), but which has been independently verified, the number of vessel calls during the
16 2014 and 2015 calendar years (i.e., the most recent two full calendar years for which data
17 are available) was consistent with the number of vessel calls during the Modernization
18 Project EIR baseline period. Thus, even if the efficiencies gained from the Project result
19 in an increase in vessel calls, which, based on the discussion in Section 2.1, Project
20 Overview, is unlikely, any increase in emissions from marine vessels, as well as any
21 increased emissions from Long Wharf and Refinery operations as the result of greater
22 throughput from the Long Wharf, are already subject to enforceable limits such that
23 emissions cannot exceed the BAAQMD level of significance, and must be mitigated to
24 the baseline levels identified in the Modernization Project EIR, which are at or below
25 current levels of operations.

26 Construction on the Modernization Project has commenced and initial operations are
27 currently scheduled for 2018, at which point the enforceable emissions limits and required
28 mitigation measures imposed by the City’s CUP will take effect. The Project is not
29 scheduled to commence construction until 2018, and has a five-year construction period
30 before the berth modifications will be complete and any increases in shipping activity
31 could occur. Thus, the Modernization Project limits will be in place before any potential
32 operational changes at the Long Wharf could occur. These legally enforceable obligations
33 are akin to a regulatory mandate and are therefore adequate under CEQA for purposes
34 of identifying and assessing potential impacts. See generally *Oakland Heritage Alliance*
35 *v. City of Oakland* (2011) 195 Cal.App.4th 884,906 [“ requiring compliance with
36 regulations is a common and reasonable mitigation measure”]; *City of Maywood v. Los*
37 *Angeles Unified School Dist.* (2012) 208 Cal.App.4th 362, 411-412 [citing compliance with
38 regulatory standards as adequately addressing hazardous materials at school site]; *North*
39 *Coast Rivers Alliance v. Marin Municipal Water Dist. Bd. of Directors* (2013) 216 Cal. App.
40 4th 614, 647-648 [mitigation requiring compliance with existing consultation requirements

1 under federal permitting process is adequate mitigation under CEQA]; *Clover Valley*
2 *Foundation v. City of Rocklin* (2011) 197 Cal.App.4th 200, 236-237 [mitigation requiring
3 compliance with regulatory permitting is adequate under CEQA].)

4 **c) Result in a cumulatively considerable net increase of any criteria pollutant for**
5 **which the Project region is non-attainment under an applicable federal or state**
6 **ambient air quality standard (including releasing emissions which exceed**
7 **quantitative thresholds for ozone precursors)?**

8 **Less than Significant Impact.** The SFBAAB is currently designated as a nonattainment
9 area for state and national ozone standards and national particulate matter ambient air
10 quality standards. Past, present and future development projects contribute to the
11 region's adverse air quality impacts on a cumulative basis. In developing thresholds of
12 significance for air pollutants, BAAQMD considered the emission levels for which a
13 project's individual emissions would be cumulatively considerable. If a project does not
14 exceed the identified significance thresholds, its emissions would not be cumulatively
15 considerable, resulting in less-than-significant air quality impacts on the region's existing
16 air quality conditions. Therefore, additional analysis to assess cumulative impacts is
17 unnecessary.

18 Based on the Project-level analysis described above in Item b, Project construction and
19 operational criteria pollutant emissions would not exceed the BAAQMD CEQA
20 significance thresholds. Therefore, pursuant to the BAAQMD CEQA Air Quality
21 Guidelines, the Project would not be cumulatively considerable, and would result in a less
22 than significant cumulative impact.

23 **d) Expose sensitive receptors to substantial pollutant concentrations?**

24 **Less than Significant Impact.** Project activities would generate DPM exhaust emissions
25 from the use of diesel-fueled equipment. DPM emissions during project construction
26 activities are associated with the use of heavy equipment and tugboats. DPM emissions
27 from these construction sources were calculated using the methodology described in Item
28 b, and are shown in Table 3.3-8. DPM is a complex mixture of thousands of gases and
29 fine particles emitted by a diesel-fueled internal combustion engine. As such, for
30 estimating DPM emissions, the total PM₁₀ exhaust emissions from diesel fueled
31 equipment are used as a surrogate for DPM emissions from construction equipment and
32 tugboat engines. Note that based on current in-use vehicle engine types, work boats and
33 worker vehicles were assumed to be gasoline fueled, and therefore do not emit DPM.

Table 3.3-8. Project Construction Diesel Particulate Matter Emissions

Work Component	Construction Source	Diesel PM Emissions (tons)
Compliance Work	Construction Equipment	0.23
	Impact Hammers	0.02
	Marine Engines (tugs)	0.15
	Worker Vehicles	0.00
Upgrade Work	Construction Equipment	0.16
	Impact Hammers	0.05
	Marine Engines (tugs)	0.19
	Worker Vehicles	0.00
Total Construction Emissions (tons)		0.81
Average Daily Construction Emissions (lbs/day)		1.6
Notes: Diesel PM is considered to be equal to the total PM ₁₀ exhaust emissions from diesel fueled equipment. Work boat engines and on-road worker vehicles were assumed to be gasoline fueled; therefore, do not emit diesel PM. Totals may not add up due to rounding. Average daily emissions calculated assuming construction activities occur over 4 years at 260 working days per year.		

1 As described previously, DPM has been classified as a TAC by the CARB, and poses
 2 potential carcinogenic and chronic non-cancer health risks. The exposure of sensitive
 3 receptors to Project-generated TACs would be less than significant because there are no
 4 sensitive receptors within the 1,000-foot zone-of-influence around the Project site
 5 recommended by the BAAQMD for screening of Project-level and cumulative health risks.
 6 In addition to the dispersive properties of DPM (Zhu et al. 2002), the closest sensitive
 7 receptors (houses and schools) to the area of construction activity around the Long Wharf
 8 are approximately 4,400 feet or more to the northeast in the City. Therefore, the Project
 9 would not result expose sensitive receptors to substantial pollutant concentrations and
 10 this impact would be considered less than significant.

11 **e) Create objectionable odors affecting a substantial number of people?**

12 **Less than Significant Impact.** The occurrence and severity of odor impacts depends on
 13 numerous factors, including the nature, frequency, and intensity of the source; wind speed
 14 and direction; and the sensitivity of the receptors. Although offensive odors rarely cause
 15 any physical harm, they can be very unpleasant, leading to considerable distress among
 16 the public and can cause citizens to submit complaints to local governments and
 17 regulatory agencies. Projects with the potential to frequently expose individuals to
 18 objectionable odors are deemed to have a significant impact. Typical facilities that
 19 generate odors include wastewater treatment facilities, sanitary landfills, composting
 20 facilities, petroleum refineries, chemical manufacturing plants, and food processing
 21 facilities.

1 As described above, Project construction equipment would generate DPM exhaust, which
2 can be considered offensive by some individuals; however, these Project activity areas
3 would be located approximately 4,400 feet from potential sensitive receptors. Because of
4 this distance and the intermittent nature of construction activities, the potential for
5 objectionable odors to reach the nearest receptor is expected to be negligible. These
6 distant, intermittent, and temporary activities are not expected to cause a significant odor
7 impact on a substantial number of sensitive receptors, nor would they expose a
8 substantial number of receptors to odor emissions, therefore the Project's impact would
9 be less than significant.

10 **3.3.4 Mitigation Summary**

11 The Project would not result in significant impacts to Air Quality; therefore, no mitigation
12 is required.

1 **3.4 BIOLOGICAL RESOURCES**

BIOLOGICAL RESOURCES – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.4.1 Environmental Setting**

3 This section describes the existing habitats in the Project area and the special status
 4 species⁹ with the potential to occur within the project site. The environmental setting and
 5 checklist discussion in this section are based on the Biological Assessment prepared by
 6 URS Corporation (URS) for National Marine Fisheries Service (NMFS) in 2014. The
 7 purpose of the Biological Assessment was to present technical information about the

⁹ Special status species are federally and state species listed as endangered, threatened or candidate species, and state species of concern.

1 potential effects of the Project on federally listed species that fall under the jurisdiction of
2 the NMFS under Section 7 of the Federal Endangered Species Act (FESA), and for
3 Essential Fish Habitat (EFH)¹⁰ under the Magnuson-Stevens Fishery Conservation and
4 Management Act. The Biological Assessment included a discussion of the Project,
5 environmental setting, life history of the federally listed species that may be affected by
6 the Project, and an evaluation of the potential effects (direct, indirect, and cumulative) on
7 the listed species, critical habitat, and EFH. Longfin smelt, a species protected under the
8 California Endangered Species Act is discussed below in this Initial Study.

9 San Francisco Bay contains more than 100 species of fish and roughly 120 waterbird
10 species. The most common marine mammals in San Francisco Bay are the Pacific harbor
11 seal (*Phoca vitulina*) and the California sea lion (*Zalophus californianus*). Other marine
12 mammal species that are less common in San Francisco Bay include the gray whale
13 (*Eschrichtius robustus*), harbor porpoise (*Phocoena phocoena*), bottlenose dolphins
14 (*Tursiops truncatus*), northern elephant seal (*Mirounga angustirostris*), northern fur seal
15 (*Callorhinus ursinus*), and the southern sea otter (*Enhydra lutris*). Though most marine
16 mammals occurring in the Bay are not special status species, all marine mammals are
17 protected under the Marine Mammal Protection Act. The Project site does not include any
18 terrestrial species (URS 2014).

19 The Long Wharf is the largest marine oil terminal in California, and is located in central
20 San Francisco Bay just south of the eastern terminus of the Richmond-San Rafael Bridge
21 in Contra Costa County. The Long Wharf is located in open Bay habitat which is used by
22 anadromous fish as a migratory corridor between their upstream spawning grounds and
23 the Pacific Ocean. In San Francisco Bay, many benthic invertebrates (bottom-dwelling
24 organisms) live within sedimentary or soft-bottom habitats, usually within the top 2 to 10
25 centimeters of the soft sediment. Some benthic invertebrates also live on hard substrates,
26 such as the existing Long Wharf structure, which are much less common in San Francisco
27 Bay compared to sedimentary habitats.

28 Based on underwater noise measurements taken near the Long Wharf in July 2015, the
29 baseline ambient underwater noise in the area averages approximately 150 decibels (dB)
30 root-mean square (RMS). The California Department of Transportation (Caltrans), in their
31 compendium of underwater sound measurements (Caltrans 2012), reported baseline
32 ambient underwater sound levels averaging 133 dB RMS in other open water portions of
33 San Francisco Bay. Ambient noise levels in the Bay are primarily due to shipping and
34 boating activities as well as surface waves generated by wind.

¹⁰ EFHs are geographically designated areas that contain habitat that fish species use to feed, breed, spawn and grow. The EFH that occurs within the Project site were designated under the Pacific groundfish, coastal pelagic, and Pacific Salmon Fisheries Management Plans.

1 3.4.1.1 Special Status Species

2 Special status species are considered species that are listed as endangered, threatened
3 or candidate under FESA and California Endangered Species Act (CESA). Other species,
4 such as marine mammals and migratory birds, are protected under other federal and state
5 laws and regulations, as discussed in Section 3.4.2.

6 The following special status species have potential to occur within the Project site during
7 construction.

- 8 • Steelhead (*Oncorhynchus mykiss*), consisting of the following Distinct Population
9 Segments (DPSs).
 - 10 ○ Central California Coast (federally listed as threatened)
 - 11 ○ Central Valley (federally listed as threatened)
- 12 • Chinook salmon (*O. tshawytscha*), consisting of the following Evolutionarily
13 Significant Units (ESUs).
 - 14 ○ Sacramento River winter-run (federally and state-listed as endangered)
 - 15 ○ Central Valley spring-run (federally and state-listed as threatened)
- 16 • Green sturgeon (*Acipenser medirostris*) Southern DPS, federally listed as
17 threatened
- 18 • Longfin smelt (*Spirinchus thaleichthys*), state listed as threatened

19 The Project site is located more than 1,000 feet from any terrestrial habitats. Therefore,
20 impacts to terrestrial species and habitats would not occur and are not discussed further
21 in this document.

22 Information on special status species potentially present in the Project site area was
23 obtained from the following sources (URS 2014): (1) CDFW, Wildlife Habitat Relations
24 System, used to identify the habitat requirements and distribution of special status
25 species; (2) CalFish database, a California cooperative fish and habitat data program that
26 tracks occurrence and habitat for anadromous fish; and (3) species-specific studies
27 presented in scientific journals and other publications.

28 **Steelhead**

29 Steelhead are anadromous fish that are born in fresh water and migrate into the ocean to
30 mature before returning back to freshwater to spawn. The amount of time that steelhead
31 spend in freshwater during their lives varies greatly. Throughout their range, individuals
32 typically remain at sea for one to four growing seasons before returning to freshwater to
33 spawn (Burgner et al. 1992). The spawning season for steelhead extends from late
34 December through April of the following year, although they will often move up coastal
35 streams in the fall and then hold in deep pools until the spawning period.

1 Steelhead likely enter the Bay in early winter in preparation for the spawning migration.
2 However, little is known about transit times and migratory pathways of steelhead within
3 San Francisco Bay. An ongoing study of outmigration and distribution of juvenile
4 hatchery-raised steelhead released in the lower Sacramento River is currently being
5 conducted. Results from 2008-2009 show that steelhead spend an average of 2.5 days
6 in transit time within San Pablo and San Francisco bays. The study concluded that transit
7 time was greater in the upper estuary than in the lower estuary within San Francisco Bay
8 (Klimley et al. 2009). This could be due to the lower salinity in the upper estuary which
9 serves as a transition zone between freshwater and saltwater, allowing steelhead to
10 transition from freshwater to saltwater. Once steelhead reach San Francisco Bay,
11 salinities are similar to ocean water, which may lead steelhead to spend less time in this
12 portion of the estuary. Migratory pathways of juvenile steelhead were largely inconclusive
13 due to equipment loss and data gaps. A review of literature and the CalFish database, a
14 California cooperative fish and habitat data program, have verified that steelhead are
15 known to spawn in several drainages of San Francisco Bay including Coyote Creek, the
16 Guadalupe River, and San Francisquito Creek. They are likely to occur throughout the
17 Sacramento–San Joaquin River Delta (Delta) and San Francisco Bay during the migration
18 season of December 1 through May 31 of the following year (CalFish 2013).

19 For all of these reasons, both steelhead DPSs have the potential to be present in the
20 marine portions of the Project site, although at low densities.

21 **Chinook Salmon**

22 Similar to steelhead, Chinook salmon are also anadromous fish. Adult Chinook salmon
23 spend up to 5 years in the ocean before returning to their natal stream to spawn. The
24 Sacramento River winter-run Chinook salmon are likely to occur throughout the Delta and
25 San Francisco Bay during periods of migration (CalFish 2013). A 1997 study conducted
26 by the NMFS Tiburon Laboratory found that residency time of juvenile Sacramento River
27 winter-run Chinook salmon within the San Francisco Bay Estuary was about 40 days, with
28 little growth occurring at that time (NMFS 2001). This would indicate that juvenile
29 Sacramento River winter-run Chinook salmon do not spend much time foraging in the
30 Bay before moving to the ocean. Sacramento River winter-run Chinook salmon are
31 assumed to be present in the marine portions of the Project site, at low densities during
32 the upstream and downstream migration period.

33 The Central Valley spring-run Chinook salmon are likely to occur throughout the Delta
34 and the northern portion of San Francisco Bay during periods of migration (CalFish 2013).
35 Central Valley spring-run Chinook salmon do not spawn in southern San Francisco Bay
36 and their typical migration routes between the ocean and the Sacramento River are likely
37 similar to that of Sacramento River winter-run Chinook salmon. For this reason, the
38 Central Valley spring-run Chinook salmon are assumed to be present in the marine

1 portions of the Project site, at low densities during the upstream and downstream
2 migration period.

3 **Green Sturgeon**

4 The green sturgeon is also an anadromous species. Juveniles rear in freshwater for as
5 long as 2 years before migrating to sea. Green sturgeon are thought to spawn every 3 to
6 5 years in deep pools with turbulent water velocities and prefer cobble substrates but can
7 use substrates ranging from clean sand to bedrock. Once green sturgeon emigrate from
8 freshwater, they disperse widely and are considered the most broadly distributed and
9 wide-ranging species of the sturgeon family. Juvenile green sturgeon occur throughout
10 the Sacramento River Delta and San Francisco Bay (CalFish 2013). Adults are found
11 throughout the San Francisco Bay and Delta during periods of migration, while juveniles
12 are present in the southern San Francisco Bay year-round, mostly south of the
13 Dumbarton Bridge. CDFW estimates that one-fifth of the sturgeon landed in the estuary
14 are green sturgeon and the rest are white sturgeon (Moyle 2002). Green sturgeon have
15 the potential to be present throughout all marine portions of the Project site throughout
16 the year.

17 **Longfin Smelt**

18 Longfin smelt are native within the San Francisco Estuary, including the Delta, Suisun
19 Marsh, and San Francisco Bay (CDFG 2009). Longfin smelt spawning primarily occurs
20 between February and April in areas with low salinity; however, spawning can occur
21 between early-November to late-June (Moyle 2002; CDFG 2009). There are no current
22 data on specific spawning locations in San Francisco Bay; however, recently published
23 reports indicate spawning probably occurs near the mixing zones between fresh and
24 brackish water (Rosenfield and Baxter 2007). According to Moyle (2002), populations of
25 longfin smelt in California have historically been known from the San Francisco estuary.
26 Adults occur seasonally throughout San Francisco Bay, but they are concentrated in
27 Suisun, San Pablo, and North San Francisco bays. They concentrate in most years in
28 San Pablo Bay in April through June and become more dispersed (many moving into
29 Central San Francisco Bay) in late summer. The exact distribution pattern varies from
30 year to year. During winter months, when fish are moving upstream to spawn, high
31 outflows may push many back into San Francisco Bay, whereas drought years may find
32 them concentrating in Suisun Bay. The population found within San Francisco Bay
33 represents the largest known longfin smelt population in California (Rosenfield and Baxter
34 2007). Longfin smelt have the potential to be present throughout the year.

35 The Project is located within designated critical habitat for Steelhead, Chinook salmon
36 and green sturgeon. The Project is also within an area designated as EFH under the
37 Magnuson-Stevens Fishery Conservation and Management Act.

1 **Marine Mammals and Migratory Birds**

2 The marine mammals with potential to occur within the Project vicinity are the Pacific
3 harbor seal and the California sea lion. Other species that could occur but are much less
4 likely include the grey whale and harbor porpoise. None of these are federal or state listed
5 as threatened or endangered species, however, all marine mammals are protected under
6 the Marine Mammal Protection Act of 1972 (see description in Section 3.4.2).

7 Migratory birds (and their eggs and nests) are protected under the Migratory Bird Treaty
8 Act (MBTA) (see description in Section 3.4.2). Common migratory birds occurring in the
9 Project vicinity include the common loon (*Gavis immer*), American white pelican
10 (*Pelecanus erythrorhynchos*), California brown pelican (*Pelecanus occidentalis*
11 *californicus*), double-breasted cormorant (*Phalacrocorax auritis*), Aleutian Canada goose
12 (*Branta canadensis kucooparcia*), Barrow's golden eye (*Bucephala islandica*), California
13 gull (*Larus californicus*), osprey (*Pandion haliaetus*), and elegant tern (*Sterna elegans*).

14 **3.4.2 Regulatory Setting**

15 Federal and state laws and regulations pertaining to biological resources that are relevant
16 to the Project are identified in Appendix B.

17 At the local level, the Contra Costa General Plan has policies related to biological
18 resources, discouraging development on and preserving important wildlife habitats
19 (Contra Costa County 2005). The Richmond General Plan 2030 includes the following
20 policy of relevance to this Project (City of Richmond 2012a):

- 21 • Policy CN1.1: Natural habitat is essential to ensuring biodiversity and protecting
22 sensitive biological resources. Protect these areas and work with the California
23 Department of Fish and Game, the San Francisco Bay Regional Water Quality
24 Control Board, the East Bay Regional Park District and other regional agencies to
25 identify areas for special protection and establish appropriate protection measures.

26 **3.4.3 Impact Analysis**

27 CEQA requires that projects analyze the potential impacts on special status plant and
28 animal species, as well as on sensitive habitats, wildlife corridors, and waters of the
29 United States. Impacts on wildlife species that are not considered special status under
30 CEQA are generally not considered significant unless impacts are associated with the
31 species' migration routes or movements, or the species are considered locally important.

32 **a) Have a substantial adverse effect, either directly or through habitat**
33 **modifications, on any species identified as a candidate, sensitive, or special**
34 **status species in local or regional plans, policies, or regulations, or by the**
35 **California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

1 **Less than Significant with Mitigation.** Construction activities have the potential to
2 directly affect individuals of the following special status species and their habitat:

- 3 • Steelhead, Central California Coast DPS (federally listed as threatened)
- 4 • Steelhead, Central Valley DPS (federally listed as threatened)
- 5 • Chinook salmon, Sacramento River winter-run ESU (federally and state-listed as
6 endangered)
- 7 • Chinook salmon, Central Valley spring-run (federally and state-listed as
8 threatened)
- 9 • Green sturgeon Southern DPS, federally listed as threatened.
- 10 • Longfin smelt, state listed as threatened

11 Each construction activity and associated potential impacts are discussed below.
12 Following completion of Project construction, no in-water work would occur. Operational
13 activities would continue in the same manner as current activities. As a result, there would
14 be no post-construction operational impacts to biological resources.

15 **Noise During Pile Driving**

16 Underwater sound and acoustic pressure resulting from pile driving could affect aquatic
17 resources by causing behavioral avoidance of the construction area and/or injury to the
18 special status species listed above. As described above, marine mammals commonly
19 occurring in the Bay, though not considered special status species (e.g., threatened or
20 endangered), are protected under the Marine Mammal Protection Act and harassment to
21 these mammals due to underwater noise requires authorization in the form of an
22 Incidental Harassment Authorization from NMFS.

23 The Project would involve both impact and vibratory pile driving methods. Use of impact
24 pile driving (when a pile driving hammer strikes a pile), creates a pulse that propagates
25 through the pile and radiates sound into the water and the ground substrate, as well as
26 the air. In contrast to impact pile driving, vibratory pile drivers work by “liquefying” the
27 substrate (Bay sediments) immediately below and around the pile, causing a small zone
28 of liquefaction. This allows the pile to sink downward into the sediment. Noise produced
29 during vibratory driving is lower in intensity, but is considered a continuous sound in
30 comparison to the pulse-type noise produced during impact pile driving. Peak noise levels
31 from vibratory driving are typically 10 to 20 dB lower than impact driving for a particular
32 pile type (Caltrans 2012). A vibratory pile driver can be used to drive a pile into the
33 substrate as well as vibrate a pile to facilitate extraction of an existing pile. Both vibratory
34 pile driving and extraction would be used by the Project.

1 Pile driving (and generation of underwater pile driving noise) would not be a continuous
 2 activity during construction. On days when piles are installed, pile driving would occur for
 3 up to 60 minutes per day, in 5- to 10-minute increments with time between to set up the
 4 next pile (based on an estimate of 5 to 10 minutes to drive a pile and installation of
 5 approximately six piles per day). Driving time of the eight 60-inch steel piles would take
 6 up to approximately 2 hours each, but only one pile per week would be driven due to set
 7 up times. These piles would therefore generate up to 16 hours of underwater noise, but
 8 spread in 2-hour increments over an 8-week period. Therefore, generation of underwater
 9 noise would only occur incrementally over the 4-year construction schedule.

10 **Impacts to Fish**

11 In 2008, the Fisheries Hydroacoustic Working Group (FHWG)¹¹ issued interim threshold
 12 criteria based on best available science for the onset of injury to fish from noise generated
 13 during impact pile driving (FHWG 2008). These thresholds are shown in Table 3.4-1. The
 14 FHWG determined that noise at or above the 206 dB (peak) SPL threshold can cause
 15 barotrauma to auditory tissues, the swim bladder, or other sensitive organs. Noise levels
 16 above the cumulative SEL may cause temporary hearing thresholds shifts in fish.
 17 Behavioral effects (e.g., fleeing the area or temporary cessation of feeding or spawning
 18 behaviors) are not covered under these criteria, but could occur at these levels or lower.
 19 Although these criteria are not formal regulatory standards, they are generally accepted
 20 as viable criteria to evaluate the potential for injury to fish from pile driving. Because these
 21 criteria were developed for impact pile driving only, and there are no established criteria
 22 for vibratory pile driving (Caltrans 2015), the interim criteria for impact pile driving will be
 23 used for both pile driving methods in this analysis.

24 Larval forms of listed fish under 2 grams in weight are not expected in the Project area,
 25 as these species spawn upstream and are typically larger when they enter the Bay, so
 26 the 206 dB peak level and 187 dB sound exposure level (SEL) are used in this analysis
 27 as thresholds for effects.

Table 3.4-1. NMFS Underwater Noise Thresholds for Effects on Fish

	Peak Noise (dB)	Accumulated Noise (SEL) (dB)
Impulse and Continuous Sound		
Fish under 2 grams in weight	>206	>183
Fish over 2 grams in weight	>206	>187
Source: URS 2014.		
Acronyms: > = greater than; dB = decibel; NMFS = National Marine Fisheries Service; SEL = sound exposure level		

¹¹ Members of the FHWG include: NMFS's Southwest and Northwest Divisions; California, Washington and Oregon Departments of Transportation; CDFW; and U.S. Federal Highway Administration.

1 The SEL is a cumulative measure and depends on the length of time it takes to drive piles
 2 as well as the number of piles driven per day. Noise levels above the accumulated SEL
 3 may cause temporary hearing-threshold shifts in fish, but no permanent damage.
 4 Exceedance of the peak threshold can cause physical injury or mortality and would be
 5 considered a significant impact for purposes of this analysis.

6 Underwater sound measurement data for similar projects were reviewed to estimate
 7 sound levels for Project-related vibratory and extraction and impact pile driving. Pile
 8 driving sounds from similar type and sized piles measured from other projects can be
 9 used to estimate Project-generate noise levels. Data used were from the Caltrans (2012)
 10 Compendium of Pile Driving Sound Data, which contains measured underwater noise
 11 levels for various pile types and environments. Measurements are typically taken within
 12 33 feet (10 meters) of the pile during driving activities. As sound spreads through the
 13 water from the point of origin, it loses intensity (transmission loss). The analysis in this
 14 MND relies on sound measurements obtained from similar projects and uses the practical
 15 spreading loss model, which is an accepted method to estimate transmission loss of
 16 sound through water (NMFS 2012) to calculate the sound levels at various distances from
 17 the point of origin. Table 3.4-2 summarizes results of the noise analysis for fish.

Table 3.4-2. Expected Pile Driving Noise Levels and Distances of Criteria Level Exceedance with Impact and Vibratory Driver

Pile Type	Maximum Source Levels (dB)			Distance to Threshold* (feet)	
	Peak Noise Level	SEL, single strike**	SEL, accumulated	206 dB Peak	187 dB SEL
Impact Driving					
60-inch steel pipe (unattenuated) (1 per day)	210	185	215	61	2,413
60-inch steel pipe (with bubble curtain) (1 per day)	200	175	205	NE	520
24-inch square concrete (1-2 per day)	185	160	188	NE	37
Vibratory Driving/Extraction					
24-inch temporary steel pipe pile (4 per day)	184	163	197	NE	148
14-inch steel H pile (2 per day)	178	165	198	NE	120
14-inch composite barrier piles (5 per day)	168	155	190	NE	75
Wood and concrete pile extraction (12 per day)	164	150	185	NE	32
Acronyms: dB = decibels; NE = threshold not exceeded; SEL = sound exposure level. Notes: * The distance from the pile over which the effects threshold of 206 dB peak sound level and 187 dB accumulated SEL would be exceeded. These threshold values apply to fish over 2 grams in weight. ** For vibratory driving, the single strike SEL represents the SEL of 1 second of pile driving.					

1 Installation of the 60-inch steel piles, 24-inch concrete piles, 14-inch steel H piles, and
2 14-inch composite fender piles, and vibratory extraction of the timber and concrete piles,
3 have the potential to produce accumulated SEL values above the 187 dB SEL threshold
4 and may cause temporary hearing shifts in fish that remain within the distances shown in
5 Table 3.4-2 for the duration of time it takes to drive the pile. Impact driving of the 60-inch
6 steel piles without sound attenuation would cause exceedance of the 206 dB peak
7 threshold and has to potential to injure or kill listed fish species. The affected for the area
8 for the various pile types is shown on Figure 3.4-1.

9 NMFS considers underwater noise above 150 dB RMS to potentially cause temporary
10 behavioral changes (startle and stress) in fish. As described, pile driving would be
11 conducted during work windows when sensitive life stages of a number listed salmonid
12 species would not be present and the pile driving activities would not overlap with the
13 herring spawning season. The area is not used for spawning by other fish species.
14 Temporary avoidance of the area may occur during pile driving. Underwater noise from
15 pile driving would be temporary, short in duration, and intermittent over the construction
16 period and would not disrupt spawning activity or create a barrier to migrating species.
17 Additionally, background noise levels at the Long Wharf are high, as found by monitoring
18 that was conducted during the preparation of the document, so behavior effects within the
19 affected area may be limited. Once temporary pile driving noise ceases, fish can resume
20 normal behavioral patterns. Temporary avoidance of the construction area, especially in
21 San Francisco Bay where there are wide expanses of suitable habitat, does not rise to
22 the level that there is a likelihood of injury due to disruption of normal behavioral patterns
23 and the impact would be less than significant.

24 The following mitigation measures would be implemented to reduce effects to fish:

25 **MM BIO-1: Work Windows.** Chevron shall conduct pile driving activities in
26 accordance with the NMFS Long Term Management Strategy (LTMS) work
27 window of June 1-November 30 to avoid sensitive life stage periods of special
28 status species.

29 **MM BIO-2: Soft Start.** Chevron shall use “soft starts” during impact pile driving
30 (gradually increasing the force during the first few blows) to give fish (as well as
31 marine mammals) an opportunity to move out of the area away from the sound
32 source. Soft starts would be implemented at the start of each day's pile driving and
33 at any time following the cessation of pile driving for a period of 30 minutes or
34 longer. Examples of typical soft starts are identified below.

- 35 • Vibratory pile drivers. Sound is initiated for 15 seconds at reduced energy
36 followed by a 30-second waiting period. Repeat two additional times.
- 37 • Impact drivers. An initial set of strikes at reduced energy is followed by a
38 30-second waiting period, then two subsequent reduced energy strike sets.

Figure 3.4-1. Underwater Noise Impact Areas (Distance to 187 dB SEL)



1 **MM BIO-3: Underwater Sound Reduction.** Chevron shall deploy bubble curtains
2 during driving of the 60-inch diameter steel piles to reduce underwater noise. In
3 addition, wood cushion blocks shall be used during impact driving of concrete piles
4 to reduce sound levels and reduce the area of Bay affected by underwater noise.

5 A bubble curtain consists of a ring with small holes placed around the base of the pile
6 prior to driving. Compressed air is pumped through the ring, creating a curtain of bubbles
7 in the water column around the pile. Sound radiating from the pile during driving is
8 disrupted and reduced as it spreads outward. Bubble curtains are not effective at reducing
9 continuous noise produced during vibratory driving, however peak levels are not
10 exceeded during vibratory driving. Use of a bubble curtain during driving of the 60-inch
11 steel piles will eliminate exceedance of the 206 dB peak threshold that could cause
12 physical injury or mortality and reduce this impact to less than significant. The bubble
13 curtain will also reduce the area where fish might experience temporary hearing effects
14 from 2,413 feet to 520 feet from the pile (see Table 3.4-2).

15 The bubble curtain that would be used during driving of the 60-inch steel batter (angled)
16 piles would be designed to provide coverage for the full extent of the underwater portion
17 of the angled pile. To do this, the bubble curtain would be designed with an oblong shape
18 to provide coverage from the area where the pile intersects the bottom to the point where
19 the pile reaches the surface when the water is at maximum depth. Maximum water depth
20 in the area where the piles would be driven is approximately 20 feet. The area west of
21 Berth 4, where the 60-inch piles would be driven, is relatively shallow with low currently
22 velocities. The design of the bubble curtain will take into account the pile batter, the pile
23 hammer size, pile material, and the anticipated current. The bubble curtain design would
24 follow Caltrans specification guidelines on parameters such as required air flow, pipe and
25 pipe opening size, and number of required rings (Caltrans 2012).

26 Implementation of the above measures would reduce impacts to fish to temporary and
27 behavioral effects, and impacts would be considered less than significant.

28 **Impacts to Marine Mammals**

29 The most abundant marine mammals in the Project area are Pacific harbor seals, which
30 haul-out at Castro Rocks (approximately 0.4 mile north of the northernmost point on the
31 Long Wharf), and California sea lions. Although rare in the Project area, harbor porpoises
32 and gray whales may be present in the vicinity and may be exposed to underwater noise
33 should they move into the area during active pile driving.

34 In 2010, NMFS established interim thresholds, which are still in place, regarding the
35 exposure of marine mammals to high-intensity noise that may be considered take under
36 the Marine Mammal Protection Act (Table 3.4-3). Cetaceans (whales/dolphins/porpoises)
37 and pinnipeds (seals/sea lions) exposed to impulsive noise of 180 and 190 dB RMS or
38 greater, respectively, are considered to have been taken by Level A (i.e., injurious)
39 harassment. Behavioral harassment (Level B; non-injurious) is considered to have

1 occurred when marine mammals are exposed to noise levels of 160 dB RMS or greater
 2 for impulse noise (e.g., impact pile driving) and 120 dB RMS for continuous noise (e.g.,
 3 vibratory pile extraction and driving). NMFS also has thresholds for behavioral
 4 harassment of marine mammals from airborne noise, which can, for example, affect
 5 harbor seals hauled-out on nearby rocks.

Table 3.4-3. Injury and Behavioral Effects Thresholds for Airborne and Underwater Noise

Marine Mammals	Airborne Marine Construction Threshold (Impact and Vibratory Pile Driving) (re 20 µPa)	Underwater Continuous Noise Thresholds (e.g., vibratory pile driving) (re 1 µPa)		Underwater Pulsed Noise Thresholds (e.g., impact pile driving) (re 1 µPa)	
		Level A	Level B	Level A	Level B
Thresholds (dB RMS)					
	Level B¹	Level A	Level B	Level A	Level B
Pinnipeds (Pacific harbor seal)	90 (unweighted)	190	120	190	160
Pinnipeds (California sea lion)	100 (unweighted)	190	120	190	160
Cetaceans (whale, porpoise)	N/A	180	120	180	160
Acronyms: dB = decibel; RMS = root mean square; µPa = microPascal,					
Notes: The airborne disturbance guideline applies to hauled-out pinnipeds.					

6 It should be noted that during the original circulation of this MND, NMFS adopted new
 7 guidelines for the assessment of noise on marine mammals (NMFS 2016). The NMFS
 8 Technical Guidance provides a new method for calculation of the onset of Permanent
 9 Threshold Shifts (PTS; or Level A harassment) for various marine mammal groups based
 10 on the hearing characteristics of the groups (e.g., high-, mid-, and low-frequency range
 11 cetaceans, etc.). The NMFS Technical Guidance does not address mitigation or
 12 monitoring requirements, nor does it make any changes with respect to the Level B
 13 behavioral harassment thresholds. Mitigation and monitoring requirements associated
 14 with a Marine Mammal Protection Act authorization or permit are independent
 15 management decisions made in the context of the proposed activity and the
 16 comprehensive effects analysis, and are beyond the scope of the Technical Guidance.

17 Airborne Noise During Pile Driving

18 Pile driving generates airborne noise that could potentially result in behavioral disturbance
 19 to pinnipeds (e.g., sea lions and harbor seals) which are hauled-out or at the water's
 20 surface. Unlike underwater noise levels, there are no defined airborne noise level
 21 thresholds set by the regulatory agencies. Instead, documented airborne noise levels at

1 which pinnipeds exhibit haul-out behavioral disturbance are used to determine potential
 2 disturbance from airborne construction noise. Similar to underwater noise analysis,
 3 information from other projects was used to determine the extent over which airborne
 4 noise levels may result in harassment of marine mammals (Table 3.4-3) (Laughlin 2011;
 5 NAVFAC 2012).

6 Airborne noise levels for similar piles averaged 97 dB at 50 feet. Table 3.4-4 provides
 7 distances using the average levels which would conservatively estimate the distance to
 8 the NMFS guideline levels of 90 dB (harbor seals) and 100 dB (sea lions).

Table 3.4-4. Modeled Extent of Sound Pressure Levels for Airborne Noise

Pile Driving Activity	Distance to Level B Thresholds	
	100 dB RMS (California Sea Lion)	90 dB RMS (Pacific Harbor Seal)
Impact Driving – 60-inch Steel Piles	62 feet	196 feet
Impact Driving – 24-inch Concrete Piles	39 feet	126 feet
Vibratory Extraction and Driving – all Pile types	35 feet	110 feet

9 Although airborne pile-driving noise levels are above the NMFS guidelines within a short
 10 distance from the Project, the levels will not extend to the Castro Rocks haul-out site.
 11 Castro Rocks haul out is subject to high levels of background noise from the Richmond
 12 Bridge, ongoing vessel activity at the Long Wharf, ferry traffic, and other general boat
 13 traffic. As a result, pile-driving noise is not expected to incite a reaction from hauled out
 14 harbor seals at Castro Rocks. Therefore, airborne noise during pile driving is not expected
 15 to be a significant impact.

16 Underwater Noise during Pile Driving

17 Similar to the above noise analysis for fish, a review of underwater sound measurements
 18 for similar projects was undertaken to estimate the near-source sound levels for vibratory
 19 pile extraction and driving and impact pile driving using data from Caltrans (2012). The
 20 subsequent analysis also uses the practical spreading loss model to incorporate sound
 21 transmission loss (NMFS 2012). This analysis also assumes an attenuation factor of 17
 22 (~5 dB per doubling of distance) within the action area. This is a conservative value for
 23 attenuation in shallow water of pile driving sound (average depths of less than 45 feet);
 24 the attenuation in the action area will likely be greater than 17 (Caltrans 2012). Table 3.4-
 25 5 summarizes the noise impact analysis.

26 Without the use of a bubble curtain, noise level estimates for the Project were calculated
 27 to exceed the Level A threshold up to 71 feet away from the source of the noise for
 28 pinnipeds and up to 328 feet away for cetaceans during driving of the 60-inch steel piles
 29 at Berth 4 (Caltrans 2012) and may be different when calculated under the new guidance.

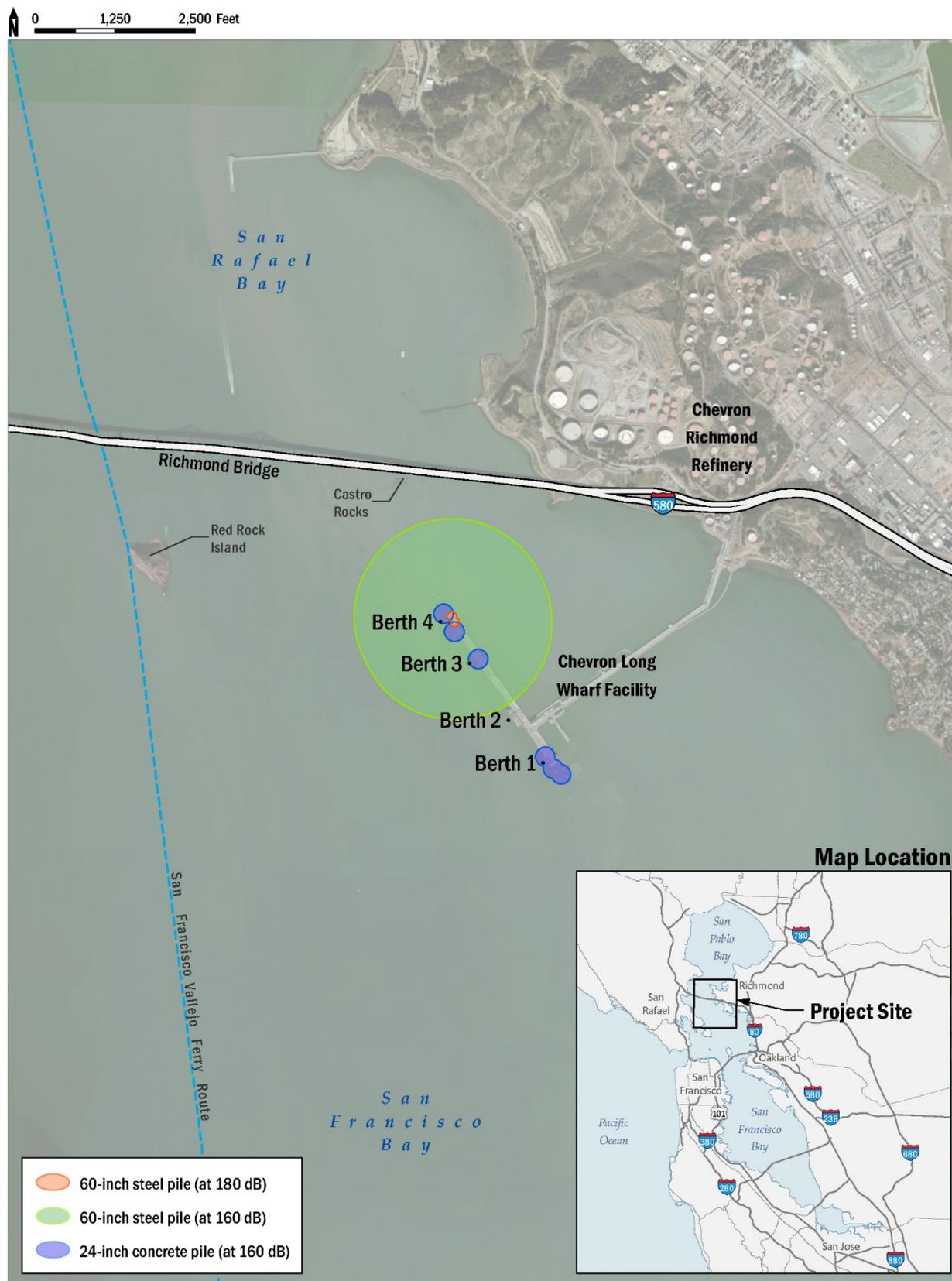
1 As described for fish, Chevron will implement mitigation measure MM BIO 3 (use of a
 2 bubble curtain) to reduce underwater noise levels during driving of the 60-inch piles. With
 3 a bubble curtain, a Level A zone during driving of the 60-inch steel piles would still occur
 4 (Figure 3.4-2). Marine mammals approaching within the Level A zone during pile driving
 5 activities could experience non-auditory physiological effects or injuries such as stress,
 6 neurological effects and different types of organ or tissue damage which would be
 7 considered a significant impact. Although the size of the Level A zone may change based
 8 on the new NMFS Technical Guidance, impacts to marine mammals would not change
 9 from what is described herein. Mitigation measure MM BIO-4 would delay pile driving if
 10 marine mammals are within the Level A zone, regardless of the specific size of the zone.

Table 3.4-5. Expected Pile Driving Noise Levels and Distances of Threshold Exceedance with Impact and Vibratory Driver

Pile Type	Source Levels at 33 feet (dB)		Distance to Threshold (feet)		
	Peak Noise Level	RMS	190 dB RMS (Level A)**	180 dB RMS (Level A)**	160/120 dB RMS (Level B)*
Impact Driving					
60-inch steel pipe pile (without bubble curtain) (1 per day)	210	195	71	328	7,067
60-inch steel pipe pile (with bubble curtain) (1 per day)	200	185	NE	70	1,520
24-inch square concrete pile (1-2 per day)	188	170	NE	NE	150
Vibratory Driving/Extraction					
24-inch temporary steel pipe pile (4 per day)	184	163	NE	NE	>3,000
14-inch steel H pile (2 per day)	178	170	NE	NE	>3,000
14-inch composite barrier pile (5 per day)	178	168	NE	NE	>3,000
Wood and concrete pile extraction (12 per day)	164	150	NE	NE	3,000
Acronyms: dB=decibel; NE=threshold not exceeded within 10 meters of pile; RMS=root mean square.					
Notes: For underwater noise:					
* The Level B harassment threshold is 160 dB for impulsive noise and 120 dB for continuous noise.					
** The Level A harassment threshold for cetaceans is 180 dB and 190 dB for pinnipeds.					

11 Marine mammals may experience behavioral harassment (Level B) at up to 1,500 feet
 12 from the pile during impact driving of 60-inch steel piles (with bubble curtain deployed)
 13 and 150 feet during impact driving of concrete piles (Figure 3.4-2). Vibratory pile
 14 extraction and driving does not generate high-peak sound pressure levels commonly
 15 associated with physiological damage. The calculations indicate that during vibratory
 16 driving, noise levels could exceed the Level B threshold of 120 dB RMS at distances
 17 greater than 3,000 feet. The noise would not cause injury to marine mammals, but may
 18 temporarily affect their behavior, causing them to avoid the area during pile driving.

Figure 3.4-2. Underwater Impact Driving Noise



1 Ambient underwater noise measurements taken near the Long Wharf in July 2015
2 indicated that baseline ambient underwater noise in the area averages approximately 150
3 dB RMS. Caltrans, in its compendium of underwater sound measurements (Caltrans
4 2012), reported baseline ambient underwater sound levels averaging 133 dB RMS in
5 other open water portions of San Francisco Bay. Ambient noise levels in the Bay are
6 primarily due to shipping and boating activities as well as surface waves generated by
7 wind. Since average baseline underwater noise conditions in San Francisco Bay are
8 typically higher than the 120 dB RMS threshold for continuous noise, it is likely that
9 underwater noise from vibratory driving would largely be masked by the higher existing
10 ambient sound levels, and thus behavioral changes are less likely to occur.

11 Chevron will obtain an Incidental Harassment Authorization through NMFS under the
12 Marine Mammal Protection Act for Level B behavioral harassment. According to
13 permitting standards established by the regulatory agencies, temporary stress, such as
14 harassment, is not necessarily a significant impact. Permission for incidental harassment
15 of marine mammals (Sections 101(a)(5)(A) and (D) of the MMPA) may be granted if
16 NMFS finds that the taking will have no more than a negligible impact on the species or
17 stock(s) and that the permissible methods of taking and requirements pertaining to the
18 monitoring and reporting of such taking are set forth. NMFS has defined “negligible
19 impact” in 50 CFR 216.103 as “an impact resulting from the specified activity that cannot
20 be reasonably expected to, and is not reasonably likely to, adversely affect the species
21 or stock through effects on annual rates of recruitment or survival.” The incidental
22 behavioral harassment that could occur due to project pile driving activities would be a
23 less than significant impact.

24 Because pile driving may cause significant impacts to marine mammals, **MMs BIO-2,**
25 **BIO-3,** the following mitigation measure would be implemented to reduce impacts from
26 underwater noise generated during pile driving to less than significant levels:

27 **MM BIO-4: Hydroacoustic and Marine Mammal Monitoring.** To ensure that no
28 Level A (injurious) harassment occurs during pile-driving activities, Chevron shall
29 conduct site-specific hydroacoustic and marine mammal monitoring using Marine
30 Mammal Observers approved by California State Lands Commission (CSLC) staff,
31 in consultation with National Marine Fisheries Service (NMFS) and California
32 Department of Fish and Wildlife (CDFW) staffs. Such monitoring shall include at
33 least the following elements.

- 34 • Underwater noise levels shall be measured and visual marine mammal
35 monitoring conducted during all construction activities that involve pile
36 driving.
- 37 • Monitoring shall include hydroacoustic measurements during driving of
38 each type of pile.

- 1 • The approved Marine Mammal Observers shall monitor the calculated Level
2 A zone for the presence of marine mammal species. If no marine mammals
3 are sighted within the Level A zone (exclusion zone) for 20 minutes, pile
4 driving may begin.
- 5 • If a marine mammal is sighted in the exclusion zone, or approaching the
6 exclusion zone during this time, pile driving activities shall be delayed until
7 the animal has left and no marine mammals have been sighted within the
8 zone for another 20 minutes.
- 9 • The approved Marine Mammal Observers shall record sightings and animal
10 behavior within the Level B zone during pile driving activities.
- 11 • Results shall be reported to CSLC staff annually.

12 Additionally, the implementation of **MMs BIO-2, BIO-3, and BIO-4** would reduce impacts
13 to marine mammals to temporary, Level B (non-injurious) behavioral harassment
14 (permitted through an Incidental Harassment Authorization from NMFS) and impacts
15 would be considered less than significant.

16 **Impacts to Bay Habitat**

17 The Bay is used by the special status species discussed above. The Project would result
18 in Bay fill from placement of piles as well as “cantilever fill” (overhanging above water
19 structures). As shown in Table 2-1, the Project would install 201 new permanent piles and
20 remove 110 piles for a total increase of 616 ft² (0.01 acre) of permanent Bay fill and loss
21 of Bay bottom habitat from piles. The Project would also add 5,740 ft² of new cantilever
22 fill and remove 909 ft² of existing cantilever fill for a net total increase in fill of 4,831 ft²
23 (0.11 acre). The total increase of 0.11 acre of Bay fill represents a small portion of the
24 total Project area and the Bay as a whole. As a result, benthic species would not be
25 prevented from using adjacent areas as habitat. In addition, installation of the new piles
26 will create additional hard vertical substrate that organisms can colonize.

27 Vibratory and impact pile drivers also have the potential to increase turbidity and alter the
28 food-prey relationship under the water due to temporary decreased visibility. Turbidity
29 increases are expected to be temporary, localized to the immediate vicinity of the pile,
30 and minimal, and are not considered a significant impact.

31 **MM BIO-5** would be implemented to offset the loss of benthic habitat.

32 **MM BIO-5: Off-Site Mitigation.** To reduce temporary and permanent benthic habitat
33 loss and increased cantilever fill as a result of the Project, prior to commencing
34 construction Chevron shall purchase credits at a ratio of 1:1 (0.11 acre) at the
35 Liberty Island Conservation Bank (or an equivalent location, subject to agency
36 concurrence). In addition, prior to commencing construction, Chevron will fund a
37 pile removal and habitat enhancement project to fulfill mitigation obligations with

1 the Bay Conservation & Development Commission (BCDC), NMFS, United States
2 Army Corps of Engineers (USACE), and California Department of Fish and Wildlife
3 (CDFW), subject to agency concurrence.

4 Chevron has evaluated a number of potential sites in San Francisco Bay to conduct pile
5 removal and habitat enhancement. One fill removal option Chevron is pursuing is a State
6 Coastal Conservancy project involving pile removal and habitat enhancement known as
7 Terminal Four on the north end of the San Pablo Peninsula in Richmond. The State
8 Coastal Conservancy plans to remove more than 2,000 piles (a combination of concrete
9 and creosote piles), above water decking, and removal of wooden decking and debris
10 that has collapsed onto the bay bottom. The project furthers the objectives of, and will be
11 consistent with the McAteer-Petris Act, BCDC's Bay Plan, the federal and state
12 endangered species acts, the Magnuson-Stevens Fishery Conservation and
13 Management Act, and the Fish and Wildlife Coordination Act. The project will enhance
14 subtidal and intertidal habitat for the benefit of fish and other wildlife.

15 The Terminal Four project is currently in the planning and design phase (30% design has
16 been completed) and the Coastal Conservancy is will be conducting final design, CEQA
17 clearance and permitting. The fill removal would be conducted in 2018, 2019 or 2020,
18 within the timeframe of the Project. Chevron would contribute funds to this, or an
19 equivalent project, covering the costs of 0.11 acres of the project.

20 Implementation of this measure would reduce Bay fill impacts to a less than significant
21 level because the loss of Bay bottom habitat would be offset by removal of fill in other
22 nearby areas.

23 **Impacts to Migratory Birds**

24 Migratory birds (including seagulls) protected under the federal Migratory Bird Treaty Act
25 (MBTA) and under the California Fish and Game Code could, when actively nesting,
26 construct nests on the Long Wharf. Osprey (*Pandion haliaetus*) have nested on Chevron
27 property. During the nesting season, construction activities may cause nesting birds to
28 exhibit behavioral changes that could result in nest abandonment. This impact would be
29 considered significant.

30 If construction occurs during the nesting season (April 1 through August 31), Chevron will
31 implement mitigation measure MM BIO-6. If an active nest is found, Chevron will consult
32 with the resource agencies on how to proceed without affecting the nest.

33 **MM BIO-6: Pre-Construction Surveys.** Chevron shall conduct pre-construction
34 surveys for nesting birds if construction is to take place during the nesting season
35 (April 1 through August 31). A qualified wildlife biologist shall conduct a pre-
36 construction nest survey no more than 5 days prior to initiation of construction
37 activities to search for active migratory bird or raptor nests. If active nests are

1 encountered, species-specific avoidance buffers to prevent abandonment of the
2 nest until the young have fledged and/or measures such as nest relocation or
3 removal and incubation of eggs shall be implemented by a qualified biologist in
4 consultation with state and/or federal resource agencies.

5 Implementation of **MM BIO-6** would reduce impacts to migratory birds to less than
6 significant.

7 **Nighttime Lighting**

8 Nighttime lighting has been shown to affect wildlife, including fish, birds, and marine
9 mammals. For example, lighting can attract fish which in turn can attract predators such
10 as marine mammals. An assessment of lighting is provided in Appendix D. This
11 assessment showed that nighttime lighting intensity (measured in lumens) at the Long
12 Wharf would increase an average of 1.05 percent due to the project. The new lighting will
13 be used to light new gangways and a catwalk for safety reasons and to light new dolphins
14 and mooring hooks at Berth 1. Temporary lighting would also be installed for the Berth 4
15 seismic retrofit during construction. This lighting would be removed when the retrofit is
16 complete. The lighting impact assessment also describes a number of lighting design
17 measures that will be implemented. The design measures include minimizing stray
18 lighting by using shielded 3000 Kelvin wavelength LED lighting minimizing the blue
19 spectrum. The shielding will be designed to cast light downward at the wharf deck and
20 keep the light confined to the immediate work area. This will minimize light spillage onto
21 the water surface. Prismatic glass reflectors would also be used to minimize the spread
22 of the illumination.

23 Given the minor change in total light intensity in an already lighted area, in addition to the
24 Project lighting design measures that minimize light spillage, impact to fish, birds, and
25 marine mammals would be less than significant.

26 **Impacts from Nonindigenous Aquatic Species through Vessel Biofouling**

27 The San Francisco Bay Estuary and Sacramento-San Joaquin River Delta region is a
28 highly invaded ecosystem, among the most invaded aquatic ecosystems in North
29 America. Since 1970, the rate of invasion has been one new species every 24 weeks
30 (Cohen and Carlton 1995). In some parts of the San Francisco Bay Estuary, introduced
31 species account for the majority of species diversity, dominate the estuary's food webs,
32 and may result in profound structural changes to habitat (Cohen and Carlton 1995).
33 The rate of species introductions, and thus, the risk of invasion by species with detrimental
34 impacts, has increased significantly during recent decades. In North America, and
35 particularly in California, the rate of reported introductions in marine and estuarine waters
36 has increased exponentially over the last 200 years (Ruiz 2000a, 2011). Prior to the
37 implementation of ballast water management regulations in California, a new species was
38 believed to become established every 14 weeks, on average, in the San Francisco Bay

1 Estuary (Cohen and Carlton 1998). Estuaries and sheltered coastal areas that are historic
2 centers of anthropogenic disturbance from shipping, industrial development, and
3 urbanization are among the most invaded aquatic habitats and the most likely to be
4 invaded in the future (Ray 2005). Once established, nonindigenous aquatic species can
5 have severe ecological, economic, and human health impacts in the receiving
6 environment.

7 Much of the equipment and materials for the Project would be delivered to the Long Wharf
8 by barge, though equipment mobilization and deliveries would also be transported on
9 local roadways. Barges can introduce nonindigenous aquatic species through vessel
10 biofouling.

11 Many marine organisms that have a sessile or sedentary life stage in which they are
12 attached or associated with hard substrata can readily colonize ships' hulls or "niche
13 areas," such as sea chests, bow thrusters, propeller shafts, and inlet gratings, which are
14 inadequately protected by anti-fouling systems. The most common biofouling organisms
15 are barnacles, mussels, seaweed, anemones, and sea squirts (OSPR 2008). Mobile
16 organisms, such as shrimps, worms, and snails, can reside in the crevices created by
17 colonies of barnacles and mussels. Biofouling organisms are then transported by vessels
18 into new environments, where they may be transferred from the ship into the new
19 environment by spawning, detachment, or mechanical removal.

20 Thus, vessel biofouling has been identified as one of the most important mechanisms for
21 marine nonindigenous aquatic species introductions in several regions, including
22 Australia, North America, Hawaii, the North Sea, and California (Ruiz 2000b, Ruiz et al.
23 2011, Eldredge and Carlton 2002, Gollasch 2002). The CSLC, which regulates vessel
24 biofouling under the Marine Invasive Species Act of 2003, states that all vessels pose
25 some level of risk from biofouling (CSLC 2013c). Since 2008, the CSLC has required
26 vessels operating in State waters to submit an annual Hull Husbandry Reporting Form.

27 **No Impact.** Chevron and their construction contractor have committed that all barges
28 delivering equipment and materials operate and travel exclusively within the Bay.
29 Because the barges do not travel outside of the Bay, they are not exposed to and so will
30 not introduce any additional nonindigenous aquatic species. The barges would also be
31 governed by the applicable CSLC requirements for biofouling management.

32 ***b) Have a substantial adverse effect on any riparian habitat or other sensitive***
33 ***natural community identified in local or regional plans, policies, regulations or***
34 ***by the California Department of Fish and Wildlife or U.S. Fish and Wildlife***
35 ***Service?***

36 **Less than Significant with Mitigation.** See discussion under a) above.

1 **c) Have a substantial adverse effect on federally protected wetlands as defined by**
2 **Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal**
3 **pool, coastal, etc.) through direct removal, filling, hydrological interruption, or**
4 **other means?**

5 **No Impact.** No wetlands, as defined by Section 404 of the Clean Water Act, would be
6 affected by the Project. The Bay, however, is regulated as other waters of the United
7 States under Section 404. As described above, the Project would affect a total of 0.11
8 acre of Bay waters and would require a permit under Section 404 for impacts to other
9 waters of the United States, as well as navigable waters under Section 10 of the Rivers
10 and Harbors Act. Mitigation measures to offset the loss of benthic habitat and impacts to
11 marine species noted above will be implemented (see MM BIO-5). The Project however
12 would have no impact specifically on wetlands.

13 **d) Interfere substantially with the movement of any native resident or migratory**
14 **fish or wildlife species or with established native resident or migratory wildlife**
15 **corridors, or impede the use of native wildlife nursery sites?**

16 **Less than Significant Impact.** The Project would generate underwater noise during pile
17 driving activities, which may cause fish and marine mammals to temporarily avoid the
18 immediate vicinity of the Long Wharf while this activity is occurring. This activity, which
19 would occur over only a small portion of the total construction time, would not block
20 migration of fish to spawning grounds or harbor seals to the haul-out site at Castro Rocks,
21 as the affected areas are small relative to the surrounding area of the Bay (e.g., see
22 Figures 3.4-1 and 3.4-2). The temporary effect on the movement of fish and marine
23 mammals during pile driving would be less than significant.

24 The Project does not include any physical barriers that would prevent the physical
25 movement of fish or wildlife. The Project's in-water work would be temporary, intermittent,
26 and limited to the specific area of pile driving or removal only, and would not interfere
27 substantially with the movement of species around the piles.

28 **e) Conflict with any local policies or ordinances protecting biological resources,**
29 **such as a tree preservation policy or ordinance?**

30 **No Impact.** The Project is consistent with the City's General Plan 2030 overall goal to
31 preserve and restore natural habitat and protect biological diversity. The Project would
32 comply with the General Plan 2030 Policy CN 1.1 (Habitat and Biological Protection and
33 Restoration). The Project would not impact creeks, wetlands, the Richmond shoreline or
34 other natural areas. As a result, the Project would be consistent with Policy CN 2.1 (Open
35 Space and Conservation Areas) and CN 2.2 (Richmond Shoreline) (City of Richmond
36 2012a).

1 The Contra Costa General Plan includes conservation and goals that are specific to areas
2 designated as a Significant Ecological Resource Area and harbors (Contra Costa County
3 2005). Because the Project does not occur within any of these areas, it is also consistent
4 with the Contra Costa County General Plan.

5 **f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural**
6 **Community Conservation Plan, or other approved local, regional, or State**
7 **habitat conservation plan?**

8 **No Impact.** The Project would not conflict with a Habitat Conservation Plan (HCP) or
9 Natural Communities Conservation Plan (NCCP), or convert oak woodlands. The Project
10 site is not included in an HCP or NCCP. As the Project is over the Bay, no oak woodlands
11 exist.

12 **3.4.4 Mitigation Summary**

13 Implementation of the following mitigation measure(s) would reduce the potential for
14 Project-related impacts to Biological Resources to less than significant.

- 15 • MM BIO-1: Work Windows
- 16 • MM BIO-2: Soft Start
- 17 • MM BIO-3: Underwater Sound Reduction
- 18 • MM BIO-4: Hydroacoustic and Marine Mammal Monitoring
- 19 • MM BIO-5: Off-Site Mitigation
- 20 • MM BIO-6: Pre-Construction Surveys

1 **3.5 CULTURAL AND PALEONTOLOGICAL RESOURCES**

CULTURAL AND PALEONTOLOGICAL RESOURCES- Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource (as defined in State CEQA Guidelines, § 15064.5)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource (pursuant to State CEQA Guidelines, § 15064.5)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code section 21074?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.5.1 Environmental Setting**

3 The Project site does not contain any known historical, archaeological, or paleontological
 4 resources (CSLC 2006). In addition, annual maintenance dredging is performed the area
 5 immediately around the Long Wharf to maintain an adequate depth for vessels so the
 6 Project site is regularly disturbed. There are terrestrial and underwater prehistoric and
 7 historic sites within 1 mile (but outside) of the project area, including three prehistoric shell
 8 middens and eight historic shipwrecks (CSLC 2006).

9 The existing City was an undeveloped and rural area until 1899 when the Atchison,
 10 Topeka, and Santa Fe (AT&SF) Railroad located its Point Richmond terminus in the Bay
 11 Area. The AT&SF Railroad subsequently built maintenance yards, warehouses, and
 12 wharf facilities at Point Richmond. Freight and passengers arriving at Point Richmond by
 13 train were taken to San Francisco by boat or barge.

14 The Long Wharf itself was built in 1902 by the Pacific Coast Oil Company as a marine
 15 terminal for its Refinery and has been in operation continuously since. The Long Wharf
 16 and Refinery were purchased by Standard Oil of California in 1905. Over time, the Long
 17 Wharf has been modified several times. A 1942 San Francisco quadrant map shows only
 18 a portion of the current Long Wharf extending to the northwest but not to its current length.
 19 In 1947, the original timber causeway that was supported by timber piles was replaced
 20 with a concrete causeway supported by concrete piles. In 1974, the Long Wharf was
 21 modified to accommodate larger vessel with new berths being added. Since the Long
 22 Wharf has been augmented several times, it is not eligible for inclusion on the NRHP.

1 **3.5.2 Regulatory Setting**

2 Federal and state laws and regulations pertaining to cultural and paleontological
3 resources and relevant to the Project are identified in Appendix B. At the local level, the
4 Richmond General Plan 2030 includes the following cultural resource policies of
5 relevance to this Project (City of Richmond 2012a):

- 6 • Policy HR1.1: Preserve and enhance the diverse range of historic, cultural and
7 archaeological sites and resources in the City for the benefit of current and future
8 residents and visitors
- 9 • Policy HR1.2: Promote adaptive reuse, rehabilitation and retrofitting of historic
10 buildings that are no longer in their original use and explore approaches to
11 integrate preservation with economic revitalization objectives.
- 12 • Policy HR1.3: Promote context-sensitive design that respects and celebrates the
13 history and historical character of sites and resources while meeting contemporary
14 needs of the community.
- 15 • Policy HR1.4: Encourage the reuse and retrofitting of existing structures to support
16 an environment-friendly approach to redevelopment and revitalization of existing
17 areas of the City.

18 The Contra Costa General Plan has similar policies related to cultural resources,
19 designed to identify and preserve cultural/historic resource lands of the county (Contra
20 Costa County 2005).

21 **3.5.3 Impact Analysis**

22 **a) Cause a substantial adverse change in the significance of a historical resource**
23 **(as defined in State CEQA Guidelines, § 15064.5)?**

24 **b) Cause a substantial adverse change in the significance of an archaeological**
25 **resource (pursuant to State CEQA Guidelines, § 15064.5)?**

26 **c) Cause a substantial adverse change in the significance of a tribal cultural**
27 **resource as defined in Public Resources Code section 21074?**

28 **d) Directly or indirectly destroy a unique paleontological resource or site or unique**
29 **geologic feature?**

30 **e) Disturb any human remains, including those interred outside of formal**
31 **cemeteries?**

32 **a) to e) No Impact.** The Project would not cause a substantial adverse change to any
33 archaeological resources, destroy a unique paleontological or geologic feature, or disturb

1 any human remains since none are known to exist in the project site, and no ground
2 disturbance is proposed as part of the Project.

3 The only potential historical resource in the Project area is the Long Wharf, originally a
4 timber wharf built in 1902. As assessed in the EIR for the Long Wharf Marine Terminal
5 Lease Consideration (CSLC 2006), the Long Wharf has been rebuilt several times,
6 upgrading to concrete (1947) and then steel pile supports (1999). The Long Wharf has
7 never been evaluated for the NRHP nor the California Register of Historical Resources
8 (CRHR), however it appears that the Long Wharf would not be determined eligible
9 because it lacks integrity due to these modifications (CSLC 2006).

10 **3.5.4 Mitigation Summary**

11 The Project would have no impacts to Cultural and Paleontological Resources; therefore,
12 no mitigation is required.

1 **3.6 GEOLOGY AND SOILS**

GEOLOGY AND SOILS – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.6.1 Environmental Setting**

3 The Refinery lies within the northern portion of the Coast Ranges Geomorphic Province,
 4 which is characterized by north- to northwest-trending elongated mountain ranges and
 5 intervening valleys. In the Project area, the Coast Ranges are composed of thick,
 6 Cretaceous age sedimentary strata of the Great Valley Sequence, which are locally
 7 overlain by Tertiary age sedimentary and volcanic rocks. These younger rocks are then
 8 overlain at the proposed project alignment by Quaternary alluvial and marine deposits
 9 locally known as Bay Mud: predominantly soft, unconsolidated, saturated silty clay.

10 The Bay Mud varies in overall thickness from approximately 50 to 150 feet and increases
 11 in thickness westward from the shore to the Long Wharf. The top layer of the Bay Mud is

1 referred to as Younger Bay Mud and is of Holocene age. It consists of gray silty clay that
2 is typically soft in the upper portions of the unit and semi-consolidated in the lower
3 portions. Underlying the Younger Bay Mud is Bay Sand and Older Bay Mud. The Bay
4 Sand consist of fine sand and interfingers with the Older Bay Mud, a dark greenish-gray,
5 silty clay, with varying amounts of sand and fine gravel. Older Bay Mud and Bay Sand
6 typically have higher in-place densities and lower water contents than Younger Bay Mud
7 (CSLC 2006).

8 The northwest-trending San Andreas Fault system is the primary boundary between the
9 Pacific and North American plates and it controls the regional tectonics and defines the
10 earthquake hazard. It covers a broad region, 100 to 200 km wide, centered on the plate
11 boundary, and including much of the Coast Ranges. Movement across this fault system
12 is dominated at present by the primarily dextral horizontal shear caused by the relative
13 motion of the two plates. In the San Francisco Bay region, the plate boundary is a 100-
14 km-wide zone of deformation consisting of several major strike-slip fault zones including
15 the San Gregorio, San Andreas, Hayward-Rodgers Creek, Calaveras, and Concord-
16 Green Valley faults. The formation and uplift of individual ranges and the subsidence of
17 structural valleys within the Coast Ranges is primarily the result of transform tectonics.
18 The Project site is located in the San Francisco Bay off the coast of the San Pablo
19 Peninsula approximately 4 miles from the active Hayward Fault line which runs from the
20 San Pablo Bay to San Jose.

21 **3.6.2 Regulatory Setting**

22 Federal and state laws and regulations pertaining to geology and soils and relevant to the
23 Project are identified in Appendix B. The requirements of the MOTEMS generally
24 represent the best current practice of industry and meet the standards of the “best
25 achievable protection of public health and safety and the environment” as prescribed by
26 Public Resources Code section 8755.

27 At the local level, the Richmond General Plan 2030 includes the following geologic and
28 seismic safety policy of relevance to this Project (City of Richmond 2012a):

- 29
- 30 • Policy SN1.1: Minimize risk of injury, loss of life and property damage from
31 seismically induced and other known geologic hazards. Regulate land use and
32 apply development standards and construction practices to reduce the risk to
humans and property in the event of an earthquake or other geological activity.

33 The Contra Costa General Plan has similar policies related to geologic and seismic
34 hazards, designed to identify areas prone to seismic activity and create land use policies
35 that consider this impact in development review, and assure structures for human
36 occupancy are built to perform satisfactorily under earthquake conditions (Contra Costa
37 County 2005).

1 **3.6.3 Impact Analysis**

2 **a) Expose people or structures to potential substantial adverse effects, including**
3 **the risk of loss, injury, or death involving:**

4 **i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-**
5 **Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area**
6 **or based on other substantial evidence of a known fault? Refer to Division of**
7 **Mines and Geology Special Publication 42.**

8 **No Impact.** The Project site lies outside of mapped Alquist-Priolo Earthquake Fault Zones
9 which delineate the surface traces of faults known by the California Geological Survey
10 (CGS) to be active, and therefore fault rupture will not impact this Project.

11 **ii) Strong seismic ground shaking?**

12 **iii) Seismic-related ground failure, including liquefaction?**

13 **iv) Landslides?**

14 **a) ii) to iv) Less than Significant Impact.** Subsurface exploration at the site indicates
15 that the predominant soil strata are Young Bay Mud Deposits overlying Old Bay Clay
16 Deposits (URS 2013). Based on existing borings at the Long Wharf as well as laboratory
17 testing, the soils are neither highly sensitive nor susceptible to liquefaction or collapse
18 (URS 2009). The site lies within a gently sloping area of bay bottom that has a low
19 potential for slope failure (URS 2009). The Project would be designed in compliance with
20 the California Building Code to withstand shaking associated with MOTEMS Level 1 and
21 2 seismic events¹². The Project is expected to have a less than significant impact in
22 exposing people or structures to substantial adverse effects related to strong ground
23 shaking and seismic-related ground failure.

24 **b) Result in substantial soil erosion or the loss of topsoil?**

25 **No Impact.** The Project site occurs in and above the water and would not have an impact
26 on topsoil erosion or loss.

27 **c) Be located on a geologic unit or soil that is unstable, or that would become**
28 **unstable as a result of the Project, and potentially result in on- or off-site**
29 **landslide, lateral spreading, subsidence, liquefaction or collapse?**

¹² Level 1 Earthquake: No or minor structural damage without interruption in service or with minor temporary interruption in service. Level 2 Earthquake: Controlled inelastic behavior (prevention of structural collapse) with repairable damage resulting in temporary closure, service restorable within months, and the prevention of a major spill, defined as 1200 barrels of a petroleum product.

1 **d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building**
2 **Code (1994), creating substantial risks to life or property?**

3 **c) and d) Less than Significant Impact.** Sand, silt and clay deposits, estuarine (tidal
4 marsh), and artificial fill (placed by humans for bay reclamation) underlie the Bay margins.
5 In the upper several feet, Bay Mud is unconsolidated silty clay that is saturated with water.
6 Deeper Bay sediments are more consolidated. Older alluvial and estuarine deposits
7 underlie the Bay Mud. They are variable in composition and include gravel, sand, and silt.
8 The Long Wharf is supported on deep foundation piles driven into the Bay bottom to
9 achieve adequate foundation bearing capacity and new components would be placed in
10 accordance with MOTEMS. Foundation support would be derived from materials that
11 would not liquefy, subside, laterally spread, or collapse. Thus the Project would be at
12 minimal risk of damage from these types of soil instability. Bay sediments are not
13 considered “soils” and while the clays may have some capacity for expansion and
14 contraction, being under water at all times, they are not prone to changes in moisture
15 content and to the resulting expansion and contraction. Therefore, the impacts related to
16 unstable and expansive soils are less than significant.

17 **e) Have soils incapable of adequately supporting the use of septic tanks or**
18 **alternative waste water disposal systems where sewers are not available for the**
19 **disposal of waste water?**

20 **No Impact.** The Project does not include septic tanks or any waste water disposal
21 systems and would therefore have no impact.

22 **3.6.4 Mitigation Summary**

23 The Project would not result in significant impacts to Geology and Soils; therefore, no
24 mitigation is required.

1 **3.7 GREENHOUSE GAS EMISSIONS**

GREENHOUSE GAS EMISSIONS –Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.7.1 Environmental Setting**

3 Greenhouse gases are defined as any gas that absorbs infrared radiation in the
 4 atmosphere. GHGs include, but are not limited to, water vapor, carbon dioxide (CO₂),
 5 methane (CH₄), nitrous oxide (N₂O), and fluorocarbons. These GHGs lead to the trapping
 6 and buildup of heat in the atmosphere near the earth’s surface, commonly known as the
 7 Greenhouse Effect. The atmosphere and the oceans are reaching their capacity to absorb
 8 CO₂ and other GHGs without significantly changing the earth’s climate. Unlike criteria
 9 pollutants and TACs, which are pollutants of regional and local concern; GHGs and
 10 climate change are a local, regional, and global issue. As stated on California’s Climate
 11 Change Portal (www.climatechange.ca.gov):

12 *Climate change is expected to have significant, widespread impacts on California's*
 13 *economy and environment. California's unique and valuable natural treasures -*
 14 *hundreds of miles of coastline, high value forestry and agriculture, snow-melt fed fresh*
 15 *water supply, vast snow and water fueled recreational opportunities, as well as other*
 16 *natural wonders - are especially at risk.*

17 *In addition, the Intergovernmental Panel on Climate Change (IPCC), in the section of*
 18 *its Fifth Assessment Report by Working Group II, Climate Change 2014: Impacts,*
 19 *Adaptation, and Vulnerability (IPCC 2014) specific to North America (Chapter 26),*
 20 *stated in part: North American ecosystems are under increasing stress from rising*
 21 *temperatures, CO₂ concentrations, and sea-levels, and are particularly vulnerable to*
 22 *climate extremes (very high confidence). Climate stresses occur alongside other*
 23 *anthropogenic influences on ecosystems, including land-use changes, non-native*
 24 *species, and pollution, and in many cases would exacerbate these pressures (very*
 25 *high confidence). [26.4.1; 26.4.3]. Evidence since the Fourth Assessment Report*
 26 *(IPCC 2014) highlights increased ecosystem vulnerability to multiple and interacting*
 27 *climate stresses in forest ecosystems, through wildfire activity, regional drought, high*
 28 *temperatures, and infestations (medium confidence) [26.4.2.1; Box 26-2]; and in*
 29 *coastal zones due to increasing temperatures, ocean acidification, coral reef*

1 *bleaching, increased sediment load in run-off, sea level rise, storms, and storm surges*
2 *(high confidence) [26.4.3.1].*

3 Climate change is having widespread impacts on California's economy and environment,
4 and will continue to affect communities across the state in the future. Many impacts,
5 including increased fires, floods, severe storms, and heat waves are occurring already
6 (California Climate Change Center 2012). Documented effects of climate change in
7 California include increased average, maximum, and minimum temperatures; decreased
8 spring run-off to the Sacramento River; shrinking glaciers in the Sierra Nevada; a rise in
9 sea level at the Golden Gate; warmer temperatures in major lakes such Lake Tahoe,
10 Clearlake, and Mono Lake; and changes in elevations for plant and animal species (Office
11 of Environmental Health Hazard Assessment 2013).

12 According to the IPCC, the concentration of CO₂, the primary GHG, has increased from
13 approximately 280 ppm in pre-industrial times to well over 380 ppm. The current rate of
14 increase in CO₂ concentrations is about 1.9 ppm/year; present CO₂ concentrations are
15 higher than any time in at least the last 650,000 years. To meet the statewide GHG
16 reduction target for 2020, requiring California to reduce its total statewide GHG emissions
17 to the level they were in 1990 (Health & Saf. Code, § 38550), and the 2050 goal of 80
18 percent below 1990 levels (Executive Order S-3-05), not only must projects contribute to
19 slowing the increase in GHG emissions, but, ultimately, projects should contribute to
20 reducing the State's output of GHGs. To reach California's targets, per capita emissions
21 would need to be reduced by slightly less than five percent per year during the 2020 to
22 2030 period, with continued reductions required through midcentury.

23 In its 2008 "Report on Climate Change: Evaluating and Addressing GHG emissions from
24 Projects Subject to the California Environmental Quality Act," the CAPCOA (2008) stated:

25 *While it may be true that many GHG sources are individually too small to make any*
26 *noticeable difference to climate change, it is also true that the countless small sources*
27 *around the globe combine to produce a very substantial portion of total GHG*
28 *emissions.*

29 The quantification of GHG emissions associated with a project can be complex and relies
30 on a number of assumptions. GHG emissions are generally classified as direct and
31 indirect. Direct emissions are associated with the production of GHG emissions from the
32 immediate Project area. These include the combustion of natural gas as well as the
33 combustion of fuel in engines and construction vehicles used on the site. Indirect
34 emissions include the emissions from vehicles (both gasoline and diesel) delivering
35 materials and equipment to the site (e.g., haul trucks).

36 Carbon dioxide is the most common reference gas for climate change. To account for the
37 warming potential of different GHGs, emissions are often quantified and reported as CO₂

1 equivalents (CO₂e). With the warming potential of CO₂ set at a reference value of 1, CH₄
2 has a warming potential of 25 (i.e., 1 ton of CH₄ has the same warming potential as 25
3 tons of CO₂ [IPCC 2007]), while N₂O has a warming potential of 298. There is widespread
4 international scientific consensus that human-caused increases in GHG have and will
5 continue to contribute to climate change, although there is uncertainty concerning the
6 magnitude and rate of the warming.

7 **3.7.2 Regulatory Setting**

8 Federal and state laws and regulations pertaining to GHGs and relevant to the Project
9 are identified in Appendix B. The revisions to the State CEQA Guidelines adopted
10 December 30, 2009 (§ 15064, subd. (h)(3)), provide a basis for assessing cumulative
11 impacts of GHG emissions. Section 15064 indicates that a lead agency may determine
12 that a project's incremental contribution to a cumulative effect is not cumulatively
13 considerable if the project will comply with the requirements in a previously approved plan
14 or mitigation program (e.g., water quality control plan, air quality attainment or
15 maintenance plan, integrated waste management plan, habitat conservation plan, natural
16 community conservation plan, plans or regulations for the reduction of GHG emissions)
17 that provides specific requirements that will avoid or substantially lessen the cumulative
18 problem within a project's geographic area. The guidance also encourages lead agencies
19 to quantify GHG emissions where possible. Except for very large projects, individual
20 project GHGs are typically less than significant at the Project scale, whereas cumulative
21 GHG emissions may have a substantial environmental impact.

22 The following plan elements and strategies are relevant at the regional and local levels.

- 23 • On July 18, 2013, the Metropolitan Transportation Commission (MTC) and
24 Association of Bay Area Governments (ABAG) approved the Plan Bay Area, which
25 includes integrated land use and transportation strategies for the region developed
26 through OneBayArea, a joint initiative between ABAG, BAAQMD, MTC, and
27 BCDC. The Plan's transportation policies focus on maintaining and more efficiently
28 using the extensive existing transportation network (ABAG and MTC 2013).
- 29 • In December 2015, Contra Costa County released a Climate Action Plan for the
30 unincorporated parts of the County for public review and comment. The Plan
31 identifies measures to enable the County to achieve a GHG reduction target of 15
32 percent below baseline levels by the year 2020 (Contra Costa County 2015).
- 33 • The City General Plan 2030 includes an Energy and Climate Change element and
34 the City is developing a Climate Action Plan (City of Richmond 2015).

35 **3.7.3 Impact Analysis**

- 36 **a) Generate greenhouse gas emissions, either directly or indirectly, that may**
37 **have a significant impact on the environment?**

1 **Less than Significant Impact.** The Assembly Bill (AB) 32 Climate Change Scoping Plan
2 (CARB 2008) establishes GHG reduction strategies and goals for California’s future. The
3 plan primarily aims to deal with large contributors to California’s GHG emissions such as
4 power generation and transportation. This is in large part due to the global nature of
5 climate change where significant contributors are on a much larger scale than the Project.
6 The BAAQMD has adopted 1,100 MT CO_{2e}/year as a GHG operational emissions
7 significance criterion for development projects. However, the BAAQMD has not adopted
8 any thresholds for evaluating GHG emissions from construction activities. Construction
9 activities are short term in nature, and direct comparison of construction GHG emissions
10 with long-term thresholds would not be appropriate because these emissions would
11 cease upon the completion of construction. Other districts, including the South Coast Air
12 Quality Management District (2008) and San Luis Obispo County Air Pollution Control
13 District (2012), recommend that GHG emissions from construction activities (and other
14 short-term sources) be evaluated as part of the total project GHG emissions by amortizing
15 the total emissions during construction over the operational lifetime of the Project for
16 comparison with long-term GHG emissions significance thresholds. For this analysis, the
17 amortization method was applied, and the Project’s operational lifetime was assumed to
18 be 21 years as discussed below.

19 Total construction GHG emissions were calculated and amortized over 21-years, which
20 is the amount of time that will be remaining on the Lease when construction is scheduled
21 to commence in 2018, and compared to the BAAQMD operational threshold. GHG
22 emissions were calculated using the methods and assumptions described in the Air
23 Quality section. GHG emissions for each construction source are summarized in Table
24 3.7-1. The Project would generate a total of 2,212 MT CO_{2e} over the entire construction
25 period. Amortized over the Project’s anticipated 21-year operational lifetime, construction
26 would result in amortized emissions of 105.4 MT CO_{2e} per year. Amortized annual
27 construction emissions would not exceed the threshold of significance; therefore, GHG
28 emissions would be less than significant.

29 Because construction emissions would not exceed the threshold of significance, GHGs
30 from Project construction activities, either emitted directly or indirectly, would not have a
31 significant impact on the environment and would not substantially contribute to the global
32 GHG emissions. As operational emissions would not change, the Project would not
33 conflict with any County or State policy for reducing GHG emissions, including Executive
34 Orders S-3-05, S-01-07, B-30-15, and B-16-2012. Therefore, Project GHG emissions
35 would not have a significant impact on the environment or conflict with applicable plans,
36 policies, or regulations.

Table 3.7-1. Project Construction Greenhouse Gas Emissions

Work Component	Construction Source	CO ₂ e
Compliance Work	Construction Equipment	618.77
	Haul/Worker Vehicle	2.55
	Impact Hammers	33.11
	Marine Engines	487.94
Upgrade Work	Construction Equipment	413.61
	Haul/Worker Vehicle	1.93
	Impact Hammers	49.69
	Marine Engines	604.79
Total construction emissions (metric tons)		2,212.39
GHGs amortized over project operational lifetime (metric tons/year)		105.35
BAAQMD Project Threshold of Significance (metric tons/year)		1,100
Exceeds Threshold?		No

1 As described in Section 3.3, Air Quality, the estimated tug emissions have been updated
 2 since the original publication of the MND, which provided estimates for larger ocean-going
 3 tugs with Tier 2 tug boat engines. Since smaller harbor tugs, not ocean-going tugs, will
 4 be used for Project construction in the Bay, the tug emissions have been recalculated,
 5 conservatively using the fleet operator's largest available harbor tug, outfitted with Tier 3,
 6 twin 1,000 horsepower engines. (In 2017, prior to the start of Project construction, the tug
 7 company will outfit the tugs with Tier 3 engines.)

8 After construction of the Project is completed, GHG emissions from operation of the Long
 9 Wharf and from marine vessels will be subject to the cap on GHG emissions imposed on
 10 the Refinery imposed by the City of Richmond pursuant to its approval of the Chevron
 11 Richmond Refinery Modernization Project. (See Section 2.1, Project Overview.) This cap
 12 prevents the Refinery from exceeding GHG emissions during the 2008-2010 baseline
 13 period established in the Modernization EIR. As explained in the Modernization EIR, the
 14 primary sources of GHG emissions from Long Wharf operations are from marine vessels.
 15 Based on information reported by Chevron to the Bay Area Air Quality Management
 16 District for permit compliance purposes (which is subject to protection from disclosure
 17 pursuant to Pub. Resources Code § 21160 and State CEQA Guidelines § 15120, subd.
 18 (d)), but which has been independently verified, the number of vessel calls during the
 19 2014 and 2015 calendar years (i.e., the most recent two full calendar years for which data
 20 are available) was consistent with the number of vessel calls during the Modernization
 21 Project EIR baseline period. Thus, even if the Project resulted in additional vessel calls
 22 above the baseline period, which for the reasons set forth in Section 2.1 of this MND is
 23 highly unlikely, any increase in GHG emissions from those marine vessels, as well as any
 24 increased GHG emissions from Long Wharf and Refinery operations as the result of
 25 greater throughput from the Long Wharf, are already subject to an enforceable cap that
 26 prevent GHG emission from exceeding the 2008-2010 baseline period.

1 Construction on the Modernization Project has commenced and initial operations are
2 currently scheduled for 2018, at which point the enforceable emissions limits and required
3 mitigation measures imposed by the City’s CUP will take effect. The Project is not
4 scheduled to commence construction until 2018, and has a five-year construction period
5 before the berth modifications will be complete and any increases in shipping activity
6 could occur. Thus, the Modernization Project cap on GHG emissions will be in place
7 before any potential operational changes at the Long Wharf could occur. This legally
8 enforceable obligation is akin to a regulatory mandate and is therefore adequate under
9 CEQA for purposes of identifying and assessing potential impacts. See generally *Oakland*
10 *Heritage Alliance v. City of Oakland* (2011) 195 Cal.App.4th 884,906 [“ requiring
11 compliance with regulations is a common and reasonable mitigation measure”]; *City of*
12 *Maywood v. Los Angeles Unified School Dist.* (2012) 208 Cal.App.4th 362, 411-412 [citing
13 compliance with regulatory standards as adequately addressing hazardous materials at
14 school site]; *North Coast Rivers Alliance v. Marin Municipal Water Dist. Bd. of Directors*
15 (2013) 216 Cal. App. 4th 614, 647-648 [mitigation requiring compliance with existing
16 consultation requirements under federal permitting process is adequate mitigation under
17 CEQA]; *Clover Valley Foundation v. City of Rocklin* (2011) 197 Cal.App.4th 200, 236-237
18 [mitigation requiring compliance with regulatory permitting is adequate under CEQA].)

19 Because construction emissions would be short-term and would cease upon completion,
20 GHGs from construction activities would not substantially contribute to the global GHG
21 emissions burden. Additionally, Project construction would not conflict with any County or
22 State policy to reduce GHG emissions, including Executive Orders S-3-05, S-01-07, and
23 B-30-15. Further, the Project cannot result in any increase in operational GHG emission
24 based in the legally enforceable cap imposed by the City of Richmond. Given the above
25 measures, GHG emissions would be less than significant.

26 ***b) Conflict with an applicable plan, policy or regulation adopted for the purpose of***
27 ***reducing the emissions of greenhouse gases?***

28 **No Impact.** As described under Checklist Item a) above, Project construction emissions
29 would not exceed BAAQMD thresholds of significance. GHGs from construction activities
30 emitted either directly or indirectly would not have a significant impact on the environment
31 or substantially contribute to global GHG emissions. Therefore, the Project would not
32 conflict with applicable plans, policies, or regulations adopted for the purposes of reducing
33 GHG emissions. Further, as operational emissions of the Long Wharf would not change
34 following Project completion, the Project would not conflict with established GHG
35 reduction targets.

36 **3.7.4 Mitigation Summary**

37 The Project would not result in significant impacts to Greenhouse Gas Emissions;
38 therefore, no mitigation is required.

1 **3.8 HAZARDS AND HAZARDOUS MATERIALS**

HAZARDS AND HAZARDOUS MATERIALS – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.8.1 Environmental Setting**

3 Oil refineries handle, store, and process large quantities of flammable materials and
4 acutely hazardous materials. Vessels carry crude oil and unrefined petroleum products
5 to the Long Wharf and refined products from the Refinery. Due to the inherent risks of
6 leaks, spills, and fire, the Refinery and Long Wharf use the Refinery Spill Preparedness
7 and Emergency Response Plan (SPERP) that details emergency cleanup procedures for
8 the hazardous materials used or stored on site. In order to ensure the effective use of
9 these plans in the event of an accidental release, Chevron reports that an ongoing training

1 and drills program is carried out at the Refinery including the Long Wharf. The training
2 and drills program is intended to provide members of the response team with the basic
3 knowledge, skills, and practical experience necessary to achieve safe and effective spill
4 response operations (City of Richmond 2014). Construction will use typical construction
5 chemicals, paints, solvents, and hydraulic fluids.

6 **3.8.2 Regulatory Setting**

7 Federal and state laws and regulations pertaining to hazards and hazardous materials
8 and relevant to the Project are identified in Appendix B. At the local level, the City of
9 Richmond Industrial Safety Ordinance (RISO), described in Appendix B, requires
10 additional measures to prevent and reduce the probability of accidental releases of
11 regulated substances from industrial facilities. The RISO imposes requirements designed
12 to improve industrial safety, by requiring reviews, inspections, and audits that supplement
13 existing federal and state requirements, as well as imposing additional safety measures
14 to protect public health and safety from accidental releases. Contra Costa Health Services
15 (CCHS) enforces the RISO on behalf of the City of Richmond. The RISO codifies and
16 expands the federal and state hazardous material and worker safety standards at a local
17 level. The RISO requires review of accidental release prevention efforts of stationary
18 sources and provides for the conduct of investigations and analyses for the determination
19 of root cause for certain incidents, using a specified methodology or methodology
20 approved by the County, for all major chemical accidents or releases and provides for the
21 establishment of a public outreach and information program. Further, the City of
22 Richmond General Plan 2030 includes the following policy (City of Richmond 2012a):

- 23 • Policy SN1.3: Require safe production, transportation, handling, use and disposal
24 of hazardous materials that may cause air, water or soil contamination. Encourage
25 best practices in hazardous waste management and ensure consistency with City,
26 West Contra Costa County and OSHA guidelines, standards and requirements.
27 Protect Richmond's shoreline and other natural resources from accidental
28 occurrences by controlling the location of new hazardous waste facilities and by
29 limiting the expansion of existing hazardous waste facilities adjacent to the
30 shoreline and along streams or creeks. Coordinate with federal, state and local
31 agencies and law enforcement to prevent the illegal transportation and disposal of
32 hazardous waste.

33 The Contra Costa General Plan has similar policies related to the handling of hazards
34 and hazardous materials, requiring strict regulation of the handling and storage of
35 hazardous materials (Contra Costa County 2005).

36 **3.8.3 Impact Analysis**

37 **a) Create a significant hazard to the public or the environment through the routine**
38 **transport, use, or disposal of hazardous materials?**

1 **b) Create a significant hazard to the public or the environment through reasonably**
2 **foreseeable upset and accident conditions involving the release of hazardous**
3 **materials into the environment?**

4 **a) and b) Less than Significant Impact with Mitigation.** The Project would involve the
5 routine transport, storage, use, and disposal of hazardous materials such as construction
6 equipment fuels and lubricants and hydraulic fluid and solvents used during construction.
7 Many of these types of materials are currently in daily use at the Long Wharf. The storage
8 and handling of these materials would be managed in accordance with applicable laws
9 and regulations, which include developing project-specific hazardous materials
10 management and spill control plans, storing incompatible hazardous materials
11 separately, using secondary containment for hazardous materials storage, requiring the
12 contractor to use trained personnel for hazardous materials handling, keeping spill clean-
13 up kits available on-site, and designating appropriate sites within the construction area as
14 refueling stations for construction vehicles.

15 Routine transport, storage, use, or disposal of hazardous materials during construction
16 would not create substantial hazards to the public or the environment; however, the
17 following mitigations measures would be implemented to ensure the impacts are less than
18 significant.

19 **MM HAZ-1: Spill Preparedness and Emergency Response Plan (SPERP).**
20 Chevron will review and, as needed, revise the existing Refinery SPERP to
21 address the emergency cleanup of any hazardous material that would be stored
22 or used on site.

23 **MM HAZ-2: Employee Training.** Chevron will train workers, contractor crews, and
24 supervisors regarding the health and safety of the Project and hazardous materials
25 used on site to ensure they understand how to safely use and dispose of all
26 hazardous materials.

27 **c) Emit hazardous emissions or handle hazardous or acutely hazardous materials,**
28 **substances, or waste within one-quarter mile of an existing or proposed**
29 **school?**

30 **No Impact.** There are no planned or existing schools within one quarter mile of the Project
31 site. The nearest school is Washington Elementary School which is located 1.1 miles east
32 of the Project.

33 **d) Be located on a site which is included on a list of hazardous materials sites**
34 **compiled pursuant to Government Code section 65962.5 and, as a result, would**
35 **it create a significant hazard to the public or the environment?**

36 **Less than Significant Impact.** The Refinery is listed as a Resource Conservation and
37 Recovery Act (RCRA) permitted hazardous waste producing facility (DTSC 2015). The

1 Chevron Historical Pipeline and Chevron land disposal site are listed as active cleanup
2 and disposal sites (SWRCB 2015). However, the Project site itself is not on the Cortese
3 List, and the site does not create a significant hazard to the public.

4 **e) For a project located within an airport land use plan or, where such a plan has**
5 **not been adopted, within 2 miles of a public airport or public use airport, would**
6 **the project result in a safety hazard for people residing or working in the project**
7 **area?**

8 **f) For a project within the vicinity of a private airstrip, result in a safety hazard for**
9 **people residing or working in the project area?**

10 **g) Impair implementation of or physically interfere with an adopted emergency**
11 **response plan or emergency evacuation plan?**

12 **e) to g) No Impact.** The Project is not located within an airport land use plan, is not near
13 a private airstrip, and would not interfere with emergency evacuation plans.

14 **h) Expose people or structures to a significant risk of loss, injury or death involving**
15 **wildland fires, including where wildlands are adjacent to urbanized areas or**
16 **where residences are intermixed with wildlands?**

17 **No Impact.** The proposed project is not located within an area that is classified by the
18 Fire and Resource Assessment program (CDF 2001) as at risk. Project activities would
19 occur primarily along a developed stretch of San Francisco Bay, generating no risk of
20 wildfire.

21 **3.8.4 Mitigation Summary**

22 Implementation of the following mitigation measure(s) would reduce the potential for
23 Project-related impacts to Hazards and Hazardous Materials to less than significant.

- 24 • MM HAZ-1: Spill Preparedness and Emergency Response Plan (SPERP)
- 25 • MM HAZ-2: Employee Training

1 **3.9 HYDROLOGY AND WATER QUALITY**

HYDROLOGY AND WATER QUALITY – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 **3.9.1 Environmental Setting**

3 San Francisco Bay is the largest estuary on the West Coast of the contiguous United
 4 States and covers 450 square miles. The majority of the San Francisco Bay is roughly
 5 parallel to the coastline in a north-south orientation about 5 miles inland from the

1 coastline. San Pablo Bay is a large area north of the Richmond-San Rafael Bridge. From
2 San Pablo Bay, San Francisco Bay extends eastward through the Carquinez Strait, past
3 Suisun Bay, to the Delta of the Sacramento and San Joaquin Rivers. The Project area is
4 located in the Central Bay section of San Francisco Bay.

5 Water quality of San Francisco Bay is affected by factors including the geographic
6 configuration of the Bay, tidal exchange with the ocean, freshwater inflows, industrial and
7 municipal wastewater discharges, dredging and dredge material disposal, runoff from
8 highly urbanized areas adjacent to the Bay, agricultural land drainage from much of
9 nearby central California, marine vessel discharges, historical mining discharges, leaks
10 and spills, and atmospheric depositions (CSLC 2006). San Francisco Bay temperature
11 and salinity vary spatially and temporally based on the relative contributions of fresh and
12 salt water. Off the coast of Richmond, water temperatures range from 52 to 71 degrees
13 Fahrenheit (NOAA 2015). The salinity of the Bay ranges from 0.1 parts per thousand to
14 30 parts per thousand depending on location and distance to the Pacific Ocean.

15 San Francisco Bay Basin Plan designates beneficial uses from waterbodies covered by
16 the Plan. Designated beneficial uses for waters in and around the Project area include
17 ocean commercial and sport fishing, estuarine habitat, industrial service supply, fish
18 migration, navigation, industrial process supply, preservation of rare and endangered
19 species, water contact recreation, noncontact water recreation, shellfish harvesting, fish
20 spawning, and wildlife habitat. San Francisco Bay is on the California 303(d) list of
21 impaired waterbodies for a variety of pollutants including chlordane,
22 dichlorodiphenyltrichloroethane (DDT), diazinon, dieldrin, dioxin compounds, furan
23 compounds, mercury, polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers,
24 selenium, invasive species, and trash (SWRCB 2010).

25 The Refinery has a National Pollutant Discharge Elimination System (NPDES) permit to
26 discharge into the Bay (NPDES Permit Number #CA0005134). Project construction does
27 not include any releases of water into the Bay, but does include work in the Bay.

28 **3.9.2 Regulatory Setting**

29 Federal and state laws and regulations pertaining to hydrology and water quality and
30 relevant to the Project are identified in Appendix B. The Project area is within the
31 jurisdiction of the San Francisco Bay Regional Water Quality Control Board
32 (SFBRWQCB). The Water Quality Control Plan for the San Francisco Bay Basin (Basin
33 Plan) (SFBRWQCB 2015) is the applicable basin plan for the Project study area. The
34 Basin Plan designates beneficial uses for specific surface water and groundwater
35 resources, establishes water quality objectives to protect those uses, and sets forth
36 policies to guide the implementation of programs to attain the objectives.

1 At the local level, the Richmond General Plan 2030 includes the following water quality
2 improvement policies of relevance to this Project (City of Richmond 2012a):

- 3 • Policy CN3.1: Develop strategies to promote stormwater management techniques
4 that minimize surface water runoff in public and private developments. Utilize low-
5 impact development techniques to best manage stormwater through conservation,
6 on-site filtration and water recycling.
- 7 • Policy CN3.2: Work with public and private property owners to reduce stormwater
8 runoff in urban areas to protect water quality in creeks, marshlands and water
9 bodies and the bays. Promote the use of sustainable and green infrastructure
10 design, construction and maintenance techniques on public and private lands to
11 protect natural resources. Incorporate integrated watershed management
12 techniques and to improve surface water and groundwater quality, protect habitat
13 and improve public health by coordinating infrastructure and neighborhood
14 planning and establishing best practices for reducing non-point runoff.
- 15 • Policy CN3.3: Minimize the flood hazard risks to people, property and the
16 environment. Address potential damage from a 100-year flood, tsunami, sea level
17 rise and seiche, and implement and maintain flood management measures in all
18 creeks and in all watersheds.
- 19 • Policy CN3.4: Promote water conservation. Encourage residents, public facilities,
20 businesses and industry to conserve water especially during drought years. Work
21 with East Bay Municipal Utility District to advance water recycling programs
22 including using treated wastewater to irrigate parks, golf courses and roadway
23 landscaping and by encouraging rainwater catchment and graywater usage
24 techniques in buildings.
- 25 • Policy CN3.5: Continue to modernize wastewater treatment facilities to avoid
26 overflows of untreated sewage

27 The Contra Costa General Plan has similar policies related to hydrology and water quality,
28 mandating that the county shall support local, state, and federal government efforts to
29 improve water quality (Contra Costa County 2005).

30 **3.9.3 Impact Analysis**

31 ***a) Violate any water quality standards or waste discharge requirements?***

32 **Less than Significant with Mitigation.** The Project requires in-water and over-water
33 work with heavy equipment that has the potential to create excess turbidity or release
34 chemicals or other foreign materials into the Bay if spills occur or construction waste
35 materials or debris were to fall into the water. Construction materials might include fuels
36 and hydraulics fluids for equipment, fresh cement or asphalt, construction debris such as
37 asphalt or cement when cutting through the existing decking, and paints, solvents or other

1 such materials used during construction. In addition, pulling existing piles from the Bay
2 could create turbidity if Bay muds adhering to the pile are washed back into the Bay.

3 Chevron will prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to
4 the SFBRWQCB, as required, that includes BMPs to treat stormwater runoff during the
5 construction period (and achieve water quality objectives) at least 10 days prior to
6 commencement of construction activities. The BMPs included in the SWPPP will be
7 implemented during construction. The Project would not result in discharges of
8 wastewater or change operations after construction.

9 Release of construction materials, including liquids or solid waste materials, into the Bay
10 could degrade water quality and would be considered a significant impact. Incorporation
11 of the following mitigation measures to reduce or eliminate construction materials from
12 entering the Bay would result in less than significant impacts to water quality.

13 **MM HYD-1: Spill Prevention.** The following practices shall be followed to prevent
14 spills from entering the Bay:

- 15 • Equipment shall be inspected daily by the operator for leaks or spills. If leaks
16 or spills are encountered, the source of the leak shall be identified, leaked
17 material shall be cleaned up, and the cleaning materials shall be collected
18 and properly disposed. Equipment leaks shall be repaired.
- 19 • All fuel, waste, oils, and solvents shall be stored away from the construction
20 site. Fueling of land and marine-based equipment shall be conducted in
21 accordance with Best Management Practices described in the SWPPP. Any
22 spills shall be contained and properly disposed. Chevron will be notified by
23 the contractor of all spills, regardless of size.
- 24 • Containment booms and sorbent materials shall be available during all work
25 activities and will be deployed immediately in the event of a spill to limit its
26 spread.
- 27 • When cutting and boring, any debris generated will be contained and
28 prevented from entering the Bay by using platforms below the piers to catch
29 debris.
- 30 • Equipment and utility barges will be equipped with precautionary safety and
31 spill containment equipment.
- 32 • If any materials or wastes are inadvertently released to the Bay, the
33 contractor will immediately stop all work and use all available resources to
34 assure containment and removal.

35 **MM HYD-2: Construction Waste.** Fresh cement or asphalt concrete will not be
36 allowed to enter the Bay. Construction waste shall be collected and transported to
37 an authorized upland disposal or recycle site by a properly licensed transporter (in
38 accordance with Cal. Code Regs., tit. 22, div. 4.5). During pile extraction, removed

1 piles will be lifted and placed directly on a barge for transport to an approved offsite
2 facility for disposal. Excess mud that may cling to the extracted piles will not be
3 washed into the Bay.

4 **MM HYD-3: Minimize Cutting Over Water.** Chevron shall minimize cutting and
5 boring that occurs over the water. Any debris generated will be contained and
6 prevented from entering the Bay through the use of protective devices such as
7 tarps and plywood sheets to catch falling debris before it enters the Bay.

8 **MM HYD-4: Demobilize Equipment.** Upon Project completion, Chevron shall ensure
9 that all equipment and materials are safely demobilized from the Project site(s) and
10 that (in accordance with Cal. Code Regs., tit. 22, div. 4.5):

- 11 • all debris is unloaded from barges and placed into trucks for proper
12 disposal; and
- 13 • all construction materials, wastes, debris, sediment, rubbish, trash, fencing,
14 etc., is removed from the site and transported to an authorized disposal or
15 recycle site by a properly licensed transporter.

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

21 **c) Substantially alter the existing drainage pattern of the site or area, including**
22 **through the alteration of the course of a stream or river, in a manner which**
23 **would result in substantial erosion or siltation on- or off-site?**

24 **d) Substantially alter the existing drainage pattern of the site or area, including**
25 **through the alteration of the course of a stream or river, or substantially**
26 **increase the rate or amount of surface runoff in a manner which would result in**
27 **flooding on- or off-site?**

28 **e) Create or contribute runoff water which would exceed the capacity of existing**
29 **or planned stormwater drainage systems or provide substantial additional**
30 **sources of polluted runoff?**

31 **b) to e) No Impact.** The Project would have no impact on groundwater supplies, site
32 drainage, or runoff since the Project is located on water and would not create or contribute
33 to runoff.

34 **f) Otherwise substantially degrade water quality?**

35 **Less than Significant with Mitigation.** See a) above.

1 **g) Place housing within a 100-year flood hazard area as mapped on a federal Flood**
2 **Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation**
3 **map?**

4 **h) Place within a 100-year flood hazard area structures which would impede or**
5 **redirect flood flows?**

6 **i) Expose people or structures to a significant risk of loss, injury or death**
7 **involving flooding, including flooding as a result of the failure of a levee or dam?**

8 **g) to i) No Impact.** The Project would have no impact on flooding since it would not place
9 new housing or additional structures in the floodplain and does not impact the movement
10 of flood flows. Since it would not change the existing use of the site, it would not expose
11 people or structures to risk from flooding.

12 **j) Inundation by seiche, tsunami, or mudflow?**

13 **Less than Significant Impact.** According to the Richmond Tsunami Inundation Map
14 (California Emergency Management Agency 2009), the Project site is located in a tsunami
15 area. However, since the Project would not change the existing use of the site, it would
16 not expose people or structures to increased risk from a tsunami.

17 **3.9.4 Mitigation Summary**

18 Implementation of the following mitigation measure(s) would reduce the potential for
19 Project-related impacts to Hydrology and Water Quality to less than significant.

- 20 • MM HYD-1: Spill Prevention
- 21 • MM HYD-2: Construction Waste
- 22 • MM HYD-3: Minimize Cutting Over Water
- 23 • MM HYD-4: Demobilize Equipment

1 **3.10 LAND USE AND PLANNING**

LAND USE AND PLANNING – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.10.1 Environmental Setting**

3 According to the City General Plan the area attached to the Long Wharf is designated as
 4 industrial, and the Long Wharf itself does not have a designation (City of Richmond
 5 2012a). The Long Wharf is zoned as industrial. The San Francisco Bay Plan (Bay Plan)
 6 designates the Long Wharf as water-related industry (BCDC 2006).

7 **3.10.2 Regulatory Setting**

8 Federal and state laws and regulations pertaining to land use and planning and relevant
 9 to the Project are identified in Appendix B. The State of California owns tide and
 10 submerged lands waterward of the ordinary high watermark. The CSLC has primary
 11 responsibility for determination of the precise boundary between these public tidelands
 12 and private lands, and has administrative responsibility over state tidelands. Access and
 13 use of state shoreline areas can be obtained through purchase or lease agreements. The
 14 Project area is currently operated in holdover status under agreement with the CSLC.

15 At the local level, the Richmond shoreline has been the subject of numerous regulations
 16 and plans aimed at establishing guidelines for development along the shoreline. A brief
 17 description of these plans, policy documents, and regulations follows.

18 The City’s General Plan 2030 establishes a broad vision and framework for land use for
 19 urban design in Richmond. The General Plan defines and locates general land uses
 20 throughout the City; specifies acceptable building heights per land use type; describes
 21 the intent and direction of Richmond’s urban design; links allowable land uses with
 22 recommended urban design components; describes area-specific recommendations for
 23 street typology, character of buildings, and treatment of the public realm; and includes
 24 overarching citywide design principles, goals and policies to achieve a high-quality urban
 25 environment. The General Plan includes goals such as creating an “economically-

1 sustainable environment that takes advantage of existing infrastructure and public
2 facilities.” The General Plan also recognizes that large industrial areas, such as the
3 Project area, offer economic development opportunities that allow the City to link the
4 needs of Richmond residents to the 21st century global economy.

5 Chapter 15 of the Richmond Municipal Code serves as the City’s Zoning Ordinance. The
6 purpose of the Zoning Ordinance is to specify permitted and conditionally permitted uses
7 within zoning districts; establish development standards for the City as well as for
8 neighborhoods, specific building types, and corridors, among others; regulate density
9 (number of residential dwelling units per acre) and intensity (floor area ratio) of
10 development; specify standards for site design including open space, building orientation,
11 massing, setbacks, and relationship to the street and adjacent properties, and parking
12 requirements; and provide incentives for affordable housing, transit-oriented
13 development, and other types of development.

14 **3.10.3 Impact Analysis**

15 ***a) Physically divide an established community?***

16 ***b) Conflict with any applicable land use plan, policy, or regulation of an agency***
17 ***with jurisdiction over the Project (including, but not limited to the general plan,***
18 ***specific plan, local coastal program, or zoning ordinance) adopted for the***
19 ***purpose of avoiding or mitigating an environmental effect?***

20 ***c) Conflict with any applicable habitat conservation plan or natural community***
21 ***conservation plan?***

22 **a) to c) No Impact.** The Project would not divide an established community since it would
23 maintain the existing land uses and does not contain any new physical features in a
24 community. The Project would not conflict with any applicable land use plan or policy
25 including the Richmond General Plan and the Bay Plan; and would not conflict with any
26 applicable habitat conservation plans or natural community conservation plans since
27 there are no such plans in effect in the project area (CDFW 2014).

28 **3.10.4 Mitigation Summary**

29 The Project would have no impacts to Land Use and Planning; therefore, no mitigation is
30 required.

1 **3.11 MINERAL RESOURCES**

MINERAL RESOURCES – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.11.1 Environmental Setting**

3 Mineral production in Richmond has been largely limited to sand, gravel, and rock
 4 products (City of Richmond 2012a). No production of geothermal resources, natural gas,
 5 or petroleum exist in Richmond. The Project site is focused on the movement of petroleum
 6 and petroleum products in and out of the Refinery.

7 **3.11.2 Regulatory Setting**

8 Federal and state laws and regulations pertaining to mineral resources and relevant to
 9 the Project are identified in Appendix B. At the local level, the Richmond General Plan
 10 2030 includes the following mineral resources policies of relevance to this Project (City of
 11 Richmond 2012a):

- 12 • Policy CN2.8: Preserve mineral resources in undeveloped areas that have been
 13 classified by the State Mining and Geology Board as having statewide or regional
 14 significance for possible future extraction. Avoid nuisances, hazards or adverse
 15 environmental, public health and safety impacts associated with mineral extraction
 16 by employing methods such as development setbacks, buffers, screening and
 17 other appropriate measures. In locations where mineral extraction is no longer a
 18 viable practice, provide environmentally sensitive remediation and reuse.

19 The Contra Costa General Plan has similar policies related to mineral resources, working
 20 to preserve known mineral resource sites and ensuring that development near known
 21 mineral resource sites analyzes all impacts to the sites prior to construction (Contra Costa
 22 County 2005).

23 **3.11.3 Impact Analysis**

24 **a) Result in the loss of availability of a known mineral resource that would be of**
 25 **value to the region and the residents of the State?**

1 ***b) Result in the loss of availability of a locally important mineral resource recovery***
2 ***site delineated on a local general plan, specific plan or other land use plan?***

3 **a) and b) No Impact.** The Project would not result in the loss of availability of known
4 mineral resources or imported mineral resources. The Project site does not include
5 mineral resource extraction or changes to the existing land use. The Project would
6 maintain the existing land use and continue the same operations at the site.

7 **3.11.4 Mitigation Summary**

8 The Project would have no impacts to Mineral Resources; therefore, no mitigation is
9 required.

1 **3.12 NOISE**

NOISE – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.12.1 Environmental Setting**

3 The existing noise environment surrounding the Long Wharf is characterized by the
 4 sounds of ships and barges arriving and departing, and other industrial sounds that can
 5 include horns, cranes, and pumps operating. The Project site is located at the eastern
 6 end of the Richmond-San Rafael Bridge / Interstate 580 and traffic noise on the freeway
 7 contributes to the background noise in the area.

8 **3.12.1.1 Sound, Noise, and Acoustics**

9 Sound is the mechanical energy of a vibrating object transmitted by pressure waves
 10 through a liquid or gaseous medium (e.g., air). Noise is defined as sound that is unwanted
 11 (i.e., loud, unexpected, or annoying). Acoustics is the physics of sound.

12 The amplitude of pressure waves generated by a sound source determines the perceived
 13 loudness of that source. A logarithmic scale is used to describe sound pressure level in
 14 terms of decibels (dB). The threshold of human hearing (near-total silence) is
 15 approximately 0 dB. A doubling of sound energy corresponds to an increase of 3 dB. In

1 other words, when two sources at a given location are each producing sound of the same
2 loudness, the resulting sound level at a given distance from that location is approximately
3 3 dB higher than the sound level produced by only one of the sources. For example, if
4 one automobile produces a sound pressure level of 70 dB when it passes an observer,
5 two cars passing simultaneously do not produce 140 dB; rather, they combine to produce
6 73 dB.

7 The typical human ear is not equally sensitive to all frequencies of the audible sound
8 spectrum. As a consequence, when assessing potential noise impacts, sound is
9 measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hertz
10 (Hz) and above 5,000 Hz in a manner corresponding to the human ear's decreased
11 sensitivity to low and extremely high frequencies instead of the frequency mid-range. This
12 method of frequency weighting is referred to as A-weighting and is expressed in units of
13 A-weighted decibels (dBA). All noise levels reported in this section are in terms of A-
14 weighting. There is a strong correlation between A-weighted sound levels and community
15 response to noise. As discussed above, doubling sound energy results in a 3-dB increase
16 in sound. In typical noisy environments, noise-level changes of 1 to 2 dB are generally
17 not perceptible by the healthy human ear; however, people can begin to detect 3-dB
18 increases in noise levels. An increase of 5 dB is generally perceived as distinctly
19 noticeable and a 10-dB increase is generally perceived as a doubling of loudness. The
20 following are the sound level descriptors commonly used in environmental noise analysis:

- 21 • **Equivalent sound level (Leq):** An average of the sound energy occurring over a
22 specified time period. In effect, the Leq is the steady-state sound level containing
23 the same acoustical energy as the time-varying sound that actually occurs during
24 the same period. The 1-hour, A-weighted equivalent sound level (Leq[h]) is the
25 energy average of A-weighted sound levels occurring during a 1-hour period. The
26 Leq shows very good correlation with community response to noise.
- 27 • **Maximum sound level (Lmax):** The highest instantaneous sound level measured
28 during a specified period.

29 Sound from a localized source (i.e., point source) propagates uniformly outward in a
30 spherical pattern, and the sound level attenuates (decreases) at a rate of 6 dB for each
31 doubling of distance from a point/stationary source. Roadways and highways and, to
32 some extent, moving trains consist of several localized noise sources on a defined path;
33 these are treated as "line" sources, which approximate the effect of several point sources.
34 Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.
35 Therefore, noise from a line source attenuates less with distance than noise from a point
36 source. Construction noise from the Project would be characterized as point source noise.

1 3.12.1.2 Groundborne Vibration

2 Groundborne vibration is energy transmitted in waves through the ground. Vibration
 3 attenuates at a rate of approximately 50 percent for each doubling of distance from the
 4 source. This approach considers only the attenuation from geometric spreading and tends
 5 to provide for a conservative assessment of vibration level at the receiver.

6 Vibration is an oscillatory motion that can be described in terms of the displacement,
 7 velocity, or acceleration. Vibration typically is described by its peak and root-mean-square
 8 (RMS) amplitudes. The RMS value can be considered an average value over a given time
 9 interval. The peak vibration velocity is the same as the “peak particle velocity” (PPV),
 10 generally presented in units of inches per second. PPV is the maximum instantaneous
 11 positive or negative peak of the vibration signal and is generally used to assess the
 12 potential for damage to buildings and structures. Table 3.12-1 shows general human and
 13 structural responses at various PPV levels. The RMS amplitude typically is used to
 14 assess human annoyance to vibration.

Table 3.12-1. General Human and Structural Responses to Vibration Levels

Response	Peak Vibration Threshold (PPV)
Structural damage to commercial structures	6
Structural damage to residential structures	2
Architectural damage to structures (cracking, etc.)	1
General threshold of human annoyance	0.1
Approximate threshold of human perception	0.01
Source: Caltrans 2013a.	
Acronyms: in./sec. = inches per second; PPV = inches/second peak particle velocity	

15 3.12.1.3 Existing Noise and Vibration Conditions

16 Existing noise sources in the Project area include the existing operations at six active
 17 transfer berths (including an average of 720 vessel calls per year) and other activities
 18 related to operating and maintaining the Long Wharf, vehicular traffic (Interstate 580 to
 19 the north with approximately 45,000 average daily vehicle trips), and natural noise (i.e.,
 20 wildlife vocalizations, wind). There is rail activity on shore to the east of the Project area,
 21 approximately 1 mile from the nearest noise sensitive receptor to the Project area. There
 22 are no airports or airstrips in the vicinity of the Project site.

23 The existing vibration sources in the Project area would be from vehicular traffic
 24 attributable to Interstate 580 or from wave action at the Project site. The nearest
 25 significant vibration source to the Project area would be railroad traffic vibration, but the
 26 nearest rail line is approximately 1 mile away.

1 The surrounding land uses in the vicinity of the site are industries, including the existing
 2 Refinery facilities to the northeast of the Project site; however, there is substantial
 3 topographical shielding between these uses and the Project site, and residences of the
 4 Point Richmond Area to the east of the Project site. The closest noise-sensitive receptors
 5 are residences located along Ocean Avenue, approximately 4,700 feet east of the Project
 6 site (Figure 3.12-1).

7 Ambient noise measurements were conducted near existing noise-sensitive uses at
 8 various locations in the Project area (Figure 3.12-1) to reflect a typical weekday existing
 9 noise environment without Project related noise. A weekday was selected for ambient
 10 measurements because Project construction and its related noise would occur on
 11 weekdays. Table 3.12-2 summarizes the results of the ambient noise-level
 12 measurements. Four short-term (1-hour) measurements of ambient noise levels were
 13 conducted in the Project area during daytime hours on July 20, 2015. The existing noise
 14 environment in the Project vicinity was dominated by local and distant traffic sources,
 15 noise generated by existing operations at the Long Wharf, and natural sources (e.g., wind
 16 and birds). As shown in Table 3.12-2, measured ambient noise levels at the noise-
 17 sensitive land uses closest to the Long Wharf range from 50 to 55 dB Leq.

Table 3.12-2. Summary of Ambient Noise Level Survey Results in the Project Area

Receiver	Location		Survey date (Monday July 20, 2015)		Measured Sound Level (dB) Daytime (7 a.m.–7 p.m.)	
			Duration (hours: minutes)	L _{eq}	L _{max}	
	Time					
ST-01	Berth 4	11:22 a.m.	1:00	62	68	
ST-02	Berth 1	12:43 p.m.	1:00	62	86	
ST-03	875 Ocean Avenue, West of Residential Properties	2:31 p.m.	1:02	55	70	
ST-04	827 Ocean Avenue, Park	4:10 p.m.	1:02	50	62	

Source: Data compiled by AECOM in 2015.

Acronyms: dB = decibels; L_{eq} = equivalent sound level (the sound energy averaged over a continuous period of 1 hour); L_{max} = maximum instantaneous sound level; ST = short-term measurement (1 hour).

Notes: Noise-level measurements were completed using a Larson Davis Laboratories (LDL) Model 824 precision integrating sound-level meter. The meter was calibrated before the measurements using an LDL Model CAL200 acoustical calibrator. The meter was programmed to recorded A-weighted sound levels using a “slow” response. The equipment used complies with all pertinent requirements of the American National Standards Institute for Class 1 sound-level meters (ANSI S1.4).

Figure 3.12-1. Noise Level Measurement Location



1 **3.12.2 Regulatory Setting**

2 Federal and state regulations related to noise generally cover situations where new,
 3 permanent noise sources would be constructed (such as construction of a factory or new
 4 roadway) or increases in permanent sources of noise would occur (such as widening a
 5 road that would allow increased traffic and an associated noise increase). Federal and
 6 state laws and regulations pertaining to noise and relevant to the Project are identified in
 7 Appendix B.

8 At the local level, noise and vibration levels in the area of analysis are regulated by local
 9 laws and policies. Municipal Code section 9.52.110, temporary construction activity,
 10 establishes maximum noise limits for stationary and construction noise sources, as
 11 follows: Where technically and economically feasible temporary construction activity shall
 12 be conducted in such a manner that the maximum sound levels at affected properties
 13 shall not exceed the noise levels shown in Table 3.12-3.

Table 3.12-3. Allowable Maximum Construction Noise Levels

	SFR-1, SFR-2, SFR-3 Zoning Districts (Single- Family Residential)	MR-1, MR-2, MR-3 Zoning District (Multi- Family Residential)	Commercial and Industrial Zoning Districts
Weekdays, 7:00 a.m. to 7:00 p.m.	60 dBA	65 dBA	70 dBA
Weekends, including legal holidays, 9:00 a.m. to 8:00 p.m.	55 dBA	60 dBA	65 dBA
Source: City Municipal Code.			
Acronyms: dBA = A-weighted decibels; SFR - Single-Family Residential; MR – Multifamily Residential.			

14 **3.12.3 Impact Analysis**

15 There would be no change in existing Long Wharf operations, so there would be no new
 16 noise impacts. Thus, this analysis focuses on construction noise. To assess the potential
 17 short-term noise impacts from construction, sensitive receptors and their relative
 18 exposure were identified. Construction noise generated by activities within the Project
 19 Area was predicted using the federal Transit Noise and Vibration Impact Assessment
 20 methodology for construction noise prediction (FTA 2006). Emission noise levels and
 21 usage factors were referenced from the Federal Highway Administration (FHWA)
 22 Roadway Construction Noise Model (FHWA and DOT 2006).

23 **a) Result in exposure of persons to or generation of noise levels in excess of**
 24 **standards established in the local general plan or noise ordinance, or applicable**
 25 **standards of other agencies?**

1 **Less than Significant Impact.** Noise would be generated during Project construction as
2 a result of operating construction equipment on the Project site and transporting
3 construction equipment and materials by barge. The City Noise Control Ordinance
4 (Section 9.52.110b, “Temporary construction activity”, “(b) Stationary Construction
5 Equipment- Maximum Sound Levels”) was used for this analysis. Pursuant to the Noise
6 Ordinance, Project-related construction noise at noise-sensitive residential properties
7 (buildings) in the Project vicinity would be considered significant if it would exceed 60 dB
8 Leq during weekday daytime hours (7 a.m. to 7 p.m.) or 55 dB Leq during weekends and
9 legal holidays from 9:00 a.m. to 8:00 p.m. No nighttime construction would occur. These
10 are the most restrictive criteria for evaluating construction noise (mobile and stationary)
11 established by the City and provide the most conservative assessment of noise impacts
12 at existing noise-sensitive uses in the Project vicinity.

13 Project-related construction noise was estimated using the FHWA Roadway Construction
14 Noise Model (FHWA and DOT 2006) and a list of expected construction equipment
15 source noise levels, as shown in Table 3.12-4.

16 Construction equipment noise levels at the Project site (at 50 feet) would be as high as
17 95 dBA Leq during compliance phase activities (such as the Berth 4 seismic retrofit), and
18 93 dBA Leq for maintenance phase activities (see Table 3.12-2). Assuming the standard
19 spherical spreading loss (-6 dB per doubling of distance) and the highest unmitigated
20 construction noise level of 95 dBA Leq at 50 feet, Project construction noise levels are
21 estimated to be 54–56 dBA Leq at the edge of the nearest noise-sensitive uses (Ocean
22 Avenue residences), as shown in Table 3.12-5. These results represent the worst-case,
23 conservative noise exposure because they do not consider noise attenuation associated
24 with intervening structures and atmospheric absorption. Therefore, actual construction
25 equipment noise levels at the nearest residences could be lower. Expected noise levels
26 of (54–56 dBA Leq) associated with the project construction activities would not exceed
27 the City Noise Control Ordinance weekday threshold of 60 dBA Leq. Thus, impacts related
28 to construction noise would be less than significant.

29 Assuming standard construction practices were incorporated when building the adjacent
30 residential uses, an interior to exterior noise reduction of up to 25 dB is expected.
31 Therefore, resulting interior noise levels at the closest residences would be 31 to 41 dBA.
32 Construction activities will not occur at night or on weekends or legal holidays.

33 With respect to construction-related traffic noise, workers would travel by bus to the Long
34 Wharf from the Gate 91B parking lot (near the Chemtrade Chemicals US LLC entrance
35 off Castro Street). This shuttle would generate only 2 trips per day on the Long Wharf. A
36 passenger van generates noise levels of 60 dB to 75 dB (at 50 feet) for speeds of 30 mph
37 to 70 mph and would be much lower given that the speed limit on the Long Wharf is 10
38 mph. Construction-related traffic noise levels from these van trips would be negligible.

Table 3.12-4. Construction Phases, Equipment, Anticipated Duration of Use, and Calculated Noise Levels

Phase	Anticipated Number and Type of Equipment that May Be used by the Contractor		Anticipated Pieces of Equipment	Total Days of Use	Noise Level at 50 Feet	
					L _{max} , dBA	L _{eq} , dBA
Compliance Phase	Air Compressors	Air Compressor	1	196	80	76
		Dive Setup	1	7	80	76
	Cranes	45 Ton Grove Crane	1	11	85	77
		Boom Truck	1	7	85	77
		Carrydeck Crane	1	80	85	77
	Draw-works Engine (crane)		1	158	85	77
	Deck Generator		1		82	79
	Air Compressor		1		80	76
	Spud Winch		1		70	67
	Draw-works Engine (crane)		1	96	85	77
	Genset Engine - main house		1		70	67
	Deck Air Compressor		1		80	76
	Anchor/Spud Winch Engine A		1		70	67
	Anchor/Spud Winch Engine B		1		70	67
	Deck Generator		1		82	79
	Excavators-CX80 Excavator		1	16	85	81
	Vibratory Hammer	APE 200	1	78	95	88
		APE 600	1	40	95	88
	Impact Hammer	D180	1	40	95	88
		D62	1	79	95	88
	Other-Work Boat		1	45	73	60
	Pumps-Concrete Pump		1	30	82	75
	Rubber Tired Loaders-Loader		1	4	80	76
Welders-Welder		1	50	73	60	
Max. and Combined Noise Level					95	95
Maintenance Phase	Aerial Lifts-65' Manlift		1	27	85	78
	Air Compressors	Air Compressor	1	57	80	76
		Dive Setup	1	2	80	76
	Cranes-45 Ton Grove Crane		1	8	85	77
	Cranes-Carrydeck Crane		1	86	85	77
	Draw-works Engine (crane)		1	105	85	77
	Deck Generator		1		82	79
	Air Compressor		1		80	76
	Spud Winch		1		70	67
	Draw-works Engine (crane)		1	92	85	77
	Genset Engine - main house		1		70	67
	Deck Air Compressor		1		80	76
	Anchor/Spud Winch Engine A		1		70	67
	Anchor/Spud Winch Engine B		1		70	67
	Deck Generator		1		82	79
	Excavators-CX80 Excavator		1	6	85	81

Table 3.12-4. Construction Phases, Equipment, Anticipated Duration of Use, and Calculated Noise Levels

Phase	Anticipated Number and Type of Equipment that May Be used by the Contractor	Anticipated Pieces of Equipment	Total Days of Use	Noise Level at 50 Feet	
				L _{max} , dBA	L _{eq} , dBA
	Other-D62 Impact Hammer	1	10	95	88
	Other-D70 Impact Hammer	1	270	95	88
	Other-Work Boat	1	10	73	60
	Pumps-Concrete Pump	1	27	82	75
Max. and Combined Noise Level				95	93
Acronyms: dB = decibels; L _{eq} = equivalent sound level (the sound energy averaged over a continuous 15-minute to 1-hour period); L _{max} = maximum instantaneous sound level					

Table 3.12-5. Construction Equipment Noise Levels at the Nearest Noise-Sensitive Uses in the Project Area

Receiver	Location	Shortest Distance between Noise-Sensitive Uses and Proposed Construction Areas (feet)	Noise Level, dB L _{eq}			
			Exterior		Interior (with Project Noise)	
			Ambient Noise	With Project Noise	Doors / Windows Open ¹	Doors / Windows Closed ²
ST-03	875 Ocean Avenue, West of the Residential Property	4,700	54.5	56	41	31
ST-04	827 Ocean Avenue, Park	4,700	50.2	56	NA	NA
<p>Source: Data compiled by AECOM in 2015</p> <p>Notes: dB = decibels; L_{eq} = equivalent sound level (the sound energy averaged over a continuous 15-minute to 1-hour period); NA = Not Applicable.</p> <p>¹ 15 dB reduction for doors/windows open (USEPA 1974).</p> <p>² 25 dB reduction for doors/windows closed (USEPA 1974).</p> <p>* Conservatively assumed 50 feet from the proposed construction activities.</p>						

1 **Best Management Practices** - Although construction noise impacts are less than
 2 significant without additional mitigation, the following Applicant Proposed Measures
 3 (APMs) will be implemented to further minimize potential construction noise at the source.
 4 These practices will be incorporated into the Project specifications as appropriate:

5 **APM NOI-1.** Chevron will provide written notification to potentially affected residents
 6 before construction, identifying the type, duration, and frequency of construction
 7 activities to residences directly exposed to the Project construction noise.
 8 Notification materials shall identify a mechanism for residents to register
 9 complaints with the appropriate jurisdiction if construction noise levels are overly
 10 intrusive or construction occurs outside the permitted hours. Recommendations to
 11 assist noise-sensitive land uses in reducing interior noise levels (e.g., closing
 12 windows and doors) shall be included in the notification.

1 **APM NOI-2.** Chevron will designate a disturbance coordinator and conspicuously post
2 this person's number around the Project site, in adjacent public spaces, and in
3 construction notifications. The disturbance coordinator shall be responsible for
4 responding to any complaints about construction activities. The disturbance
5 coordinator shall receive all public complaints about construction disturbances and
6 be responsible for determining the cause of the complaint and implementation of
7 feasible measures to be taken to alleviate the problem.

8 **APM NOI-3.** Prohibit the start-up of machines or equipment before 7 a.m. and after 7
9 p.m. Monday through Friday.

10 **APM NOI-4.** Use electrically powered equipment instead of internal combustion
11 equipment where practicable and feasible.

12 **APM NOI-5.** Restrict the use of bells, whistles, alarms, and horns to safety-warning
13 purposes.

14 **APM NOI-6.** Equip all construction equipment with noise-reduction devices such as
15 mufflers to minimize construction noise and operate all internal combustion
16 engines with exhaust and intake silencers.

17 **APM NOI-7.** Locate fixed construction equipment (e.g., compressors and generators),
18 construction staging and stockpiling areas, and construction vehicle routes as far
19 as feasible from noise-sensitive receptors.

20 **APM NOI-8.** Use noise-attenuating buffers such as structures or truck trailers between
21 noise generation sources and sensitive receptors, where feasible and particularly
22 in locations subject to prolonged construction.

23 ***b) Result in exposure of persons to or generation of excessive ground-borne***
24 ***vibration or ground-borne noise levels?***

25 **Less than Significant Impact.** Construction vibration would occur during equipment
26 operation at the Project site. Equipment and materials transported to the site by barge
27 would not produce groundborne vibrations. The City does not have adopted groundborne
28 vibration standards. Since the Project is over the water, much of the vibration created by
29 pile driving would primarily impact the Bay. The Project would install new permanent piles
30 using both vibratory and impact pile driving hammers as well as temporary piles using
31 vibratory hammers. The impacts of pile installation to wildlife in the Bay are discussed in
32 Section 3.4, Biological Resources. The vibratory and impact pile driving would produce
33 ground-borne vibrations measuring approximately 93 to 112 vibration decibels (VdB)¹³
34 (0.644 to 1.518 in/sec PPV) at a distance of 25 feet (Caltrans 2013a; FTA 2006). The
35 distance between proposed construction activities and the closest noise sensitive

¹³ The abbreviation VdB is used in this document for vibration decibels to reduce the potential for confusion with sound decibels.

1 residential uses to the east of the Project Area would be approximately 4,700 feet (Table
2 3.12-5). Assuming a standard reduction of 9 VdB per doubling of distance (FTA 2006),
3 the Project-related construction vibration level at the nearest sensitive receivers would be
4 approximately 44 VdB (0.001 in/sec PPV). This level of vibration is well below the
5 perceptible threshold of 65 VdB and 0.2 in/sec PPV (FTA 2006). Therefore, this impact
6 would be less than significant.

7 **c) Result in a substantial permanent increase in ambient noise levels in the project**
8 **vicinity above levels existing without the project?**

9 **No Impact.** The Project would not result in operational changes or other changes at the
10 Long Wharf that would result in a permanent increase in noise levels. Any increased noise
11 from the Project would be generated by temporary construction activities and would cease
12 at the end of the construction period.

13 **d) Result in a substantial temporary or periodic increase in ambient noise levels**
14 **in the project vicinity above levels existing without the project?**

15 **Less than Significant Impact.** As assessed above under Checklist Item A, Project
16 construction noise levels are estimated to be 54–56 dBA Leq at the nearest noise-
17 sensitive uses (Table 3.12-2). While at times, noise from construction activities at the
18 Long Wharf may be perceptible at the nearest residences, they would be below criteria
19 set by the City for daytime construction activities and would not be considered a
20 substantial increase in ambient noise. This impact would be less than significant.

21 **e) For a project located within an airport land use plan or, where such a plan has**
22 **not been adopted, within 2 miles of a public airport or public use airport, would**
23 **the project expose people residing or working in the project area to excessive**
24 **noise levels?**

25 **f) For a project within the vicinity of a private airstrip, would the project expose**
26 **people residing or working in the project area to excessive noise levels?**

27 **e) and f) No Impact.** The Project site is not located in an airport land use plan, within 2
28 miles of a public airport, or within the vicinity of a private airstrip. Therefore, the Project
29 would have no impact.

30 **3.12.4 Mitigation Summary**

31 The Project would not result in significant impacts to Noise; therefore, no mitigation is
32 required. **APM-NOI-1** through **APM-NOI-8** will be implemented to further minimize
33 potential construction noise at the source.

1 **3.13 POPULATION AND HOUSING**

POPULATION AND HOUSING – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.13.1 Environmental Setting**

3 The Project site is located at the Long Wharf off the coast of the Richmond, CA. In 2010,
 4 Richmond had a population of 103,701 people (a 4.5 percent increase over the population
 5 in 2000) (City of Richmond 2014). The City is continuing to grow and is expected to have
 6 a population of 118,700 by 2020. The average household in Richmond has 2.83 persons
 7 per household, slightly higher than Contra Costa County as a whole. In 2010, there were
 8 36,093 households in Richmond. The nearest housing to the Project site is southeast of
 9 the Refinery along San Francisco Bay shore in the community of Point Richmond. There
 10 are homes approximately 1 mile from the western extent of the Long Wharf.

11 **3.13.2 Regulatory Setting**

12 No federal or state laws relevant to this issue area are applicable to the Project. Local
 13 goals, policies, and/or regulations applicable to this issue area are listed below.

14 The City’s General Plan 2030 establishes the City’s plan for accommodating the housing
 15 needs in the City. As a part of the City’s Housing Element, the City has established a well-
 16 defined long-term plan to address the physical, economic, cultural and social needs of
 17 people of all physical abilities, social strata, and income levels. The City aims to be an
 18 inclusive city where the built environment is functional and accessible to all residents,
 19 development impacts are shared equitably, and new development is sensitive to a diverse
 20 array of social, cultural, and environmental contexts. The City’s Housing Element
 21 indicates the City values safe housing and neighborhoods with a wide range of housing
 22 types and price levels to accommodate diverse socioeconomic backgrounds and lifestyle
 23 choices (City of Richmond 2012a).

1 **3.13.3 Impact Analysis**

2 **a) Induce substantial population growth in an area, either directly (for example, by**
3 **proposing new homes and businesses) or indirectly (for example, through**
4 **extension of roads or other infrastructure)?**

5 **b) Displace substantial numbers of existing housing, necessitating the**
6 **construction of replacement housing elsewhere?**

7 **c) Displace substantial numbers of people, necessitating the construction of**
8 **replacement housing elsewhere?**

9 **a) to c) No Impact.** The Project would not induce population growth, displace housing,
10 or people. The Project would use the existing footprint of the Long Wharf and existing
11 access routes (truck routes and vessel routes) to complete construction. Construction
12 activities would be consistent with the industrial nature of the site and would not impact
13 nearby people or housing by inducing growth or displacing housing. The site would
14 continue to operate similarly to the existing condition once construction is complete.

15 **3.13.4 Mitigation Summary**

16 The Project would have no impacts to Population and Housing; therefore, no mitigation
17 is required.

1 **3.14 PUBLIC SERVICES**

PUBLIC SERVICES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.14.1 Environmental Setting**

3 The Project site is part of the Refinery, which has its own Emergency Services Division
 4 to handle security for the Refinery as well as respond to emergencies such as fire and
 5 medical. In addition, the City maintains a police department and fire department for the
 6 City. Richmond Police Department response times vary from 3 to 5 minutes for top priority
 7 calls. The Richmond Fire Department response times vary from between 2 and 5 minutes,
 8 when called (City of Richmond 2014).

9 The Project area is located within the Washington Elementary attendance area, which
 10 feeds to Portola Middle School and Kennedy High School in Richmond.

11 The closest parks and recreation areas are the San Francisco Bay Trail, Washington
 12 Park, and the Miller/Knox Regional Shoreline Park. The Bay Trail supports hiking, jogging,
 13 and bicycling. Washington Park offers sports facilities and picnics. Miller/Knox Regional
 14 Shoreline Park is a 295-acre park that includes picnics and beach swimming.

15 **3.14.2 Regulatory Setting**

16 Federal and state laws and regulations pertaining to public services and relevant to the
 17 Project are identified in Appendix B. At the local level, the City’s General Plan is the
 18 primary policy document currently governing the Project site. The General Plan provides
 19 goals, policies, and actions with regard to public services for areas within the City. Such
 20 goals include providing high levels of police and fire service; providing for efficient use

1 and adequate maintenance of facilities and infrastructure; and providing an integrated
2 system of parks, green streets, and trails.

3 3.14.3 Impact Analysis

4 **a) *Would the Project result in substantial adverse physical impacts associated***
5 ***with the provision of new or physically altered governmental facilities, need for***
6 ***new or physically altered governmental facilities, the construction of which***
7 ***could cause significant environmental impacts, in order to maintain acceptable***
8 ***service ratios, response times or other performance objectives for any of the***
9 ***public services:***

- 10 • **Fire protection?**
- 11 • **Police protection?**
- 12 • **Schools?**
- 13 • **Parks?**
- 14 • **Other public facilities?**

15 **No Impact.** The Refinery's Emergency Services Division, Security Department (Security
16 Department) handles security response for the Refinery. The Security Department is
17 responsible for maintaining access control into and out of the Refinery, conducting
18 internal traffic control, investigating internal motor vehicle accidents, thefts, and drug and
19 alcohol cases, and conducting contraband inspections. The Security Department uses a
20 contract security guard service inside the Refinery to assist primarily with access control
21 and security. Chevron also requests assistance from the Richmond Police Department
22 for other incidents involving burglaries, thefts, stolen vehicles, auto accidents, suspicious
23 persons, and threatening telephone calls.

24 The Richmond Police Department's current authorized force is 198 sworn personnel
25 comprising nine beats. Beat one covers the geographic area in which the Refinery is
26 located, and less than 1 percent of that beat's activities are associated with serving the
27 Refinery, on either an active or stand-by basis (Gagan 2013). Richmond Police
28 Department response times vary, depending on the availability of personnel and type of
29 call. The response system is based on priorities, and it maintains a response time of 3 to
30 5 minutes (or less) for top priority calls (e.g., robberies in progress, imminent danger to
31 life).

32 The Security Department operates its own internal fire department (Chevron Fire
33 Department). The Chevron Fire Department consists of approximately 34 uniformed
34 personnel. This organization is supplemented by a more than 300-person volunteer fire
35 brigade. The Richmond Fire Department responds to fire and emergency medical events
36 at the Facility only when called by the Chevron Fire Department (on average, no more
37 than six times a year).

1 During Project construction, there could be an increase in the number of incidents
2 necessitating calls to the Richmond Police Department and an increase in the number of
3 calls to the Richmond Fire Department, and possibly more assistance calls for medical
4 emergencies. However, since the anticipated maximum number of construction workers
5 (30) represents a small increase in the total number of workers at the Refinery
6 (approximately 3,000), these potential increases would not result in the need for new,
7 altered, or expanded fire service facilities.

8 Since operations at the Long Wharf would not change following construction and there
9 would be no increase in permanent employees, there would be no need for increased
10 police and fire response following construction of the Project, and response times would
11 not be affected.

12 **3.14.4 Mitigation Summary**

13 The Project would have no impacts to Public Services; therefore, no mitigation is required.

1 **3.15 RECREATION**

RECREATION	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.15.1 Environmental Setting**

3 The Project site does not include any recreational areas. The nearest recreation area to
 4 the Long Wharf is the Miller/Knox Regional Shoreline Park, located about 1 mile
 5 southeast. The Project is also in the vicinity of the planning area for the San Francisco
 6 Bay Trail, a planned 500-mile shoreline walking and bicycling path. Access in and around
 7 the Refinery is restricted by the Code of Federal Regulations (Title 6, Ch. 1, Part 27, §§
 8 27.100-27.410), which require implementation of a security program to address homeland
 9 security concerns. While designations in the Zoning Ordinance need not necessarily
 10 reflect these requirements, individual land use decisions made in reliance on the Zoning
 11 Ordinance will need to be consistent with these regulations. Nevertheless, Chevron has
 12 granted an easement to East Bay Regional Park District (EBRPD) in the area north of the
 13 Richmond Bridge on the Point San Pablo Peninsula for Bay Trail access, and EBRPD is
 14 in the process of developing engineering plans for the construction of the trail. Bay Trail
 15 access south of the Richmond Bridge is part of the Richmond-San Rafael Bridge Access
 16 Improvement Project.

17 **3.15.2 Regulatory Setting**

18 No federal laws relevant to recreation are applicable to the Project. Relevant state laws
 19 are listed in Appendix B. At the regional level, regional parklands in Alameda and Contra
 20 Costa County, including the Project area, are within the planning area of the EBRPD.
 21 Parklands are classified into categories, including regional parks, preserves, open space,
 22 shoreline areas, wilderness, recreation areas, trails, and land banks. The purpose of the
 23 District is to acquire, preserve, protect, develop, and operate parklands in the two
 24 counties in perpetuity for public use. The EBRPD's 2013 Master Plan, developed to
 25 achieve this purpose, contains policies, goals, and programs for current operations and
 26 long-range growth of EBRPD parklands. The District also takes a role in the preservation
 27 of non-park open space through participation and cooperation with the development of
 28 open space plans at the federal, state, regional, county, and city level.

1 At the local level, the Parks and Recreation Element of the City’s General Plan 2030
2 provides direction for developing and maintaining a comprehensive system of quality
3 parks, recreational facilities, programs, support services and open space. The Parks and
4 Recreation Element stresses the importance of high-quality parks and recreation facilities.
5 General Plan goals, policies, and implementing actions are focused on the preservation
6 of resources and enrichment of parks and recreational offerings. The Parks and
7 Recreation Element provides a framework to guide future decisions about important
8 parkland resources and beneficial programs and services. The Richmond City Council
9 adopted the Parks Master Plan in December 2010 as an implementation tool to achieve
10 the goals in the General Plan 2030. The Parks Master Plan provides a long-term strategy
11 for park system improvements and maintenance in addition to specific policies to address
12 more immediate needs.

13 **3.15.3 Impact Analysis**

14 **a) *Would the project increase the use of existing neighborhood and regional parks***
15 ***or other recreational facilities such that substantial physical deterioration of the***
16 ***facility would occur or be accelerated?***

17 **b) *Does the project include recreational facilities or require the construction or***
18 ***expansion of recreational facilities which might have an adverse physical effect***
19 ***on the environment?***

20 **a) and b) No Impact.** The construction work force for the Project is small (approximately
21 30 workers). Construction workers could, during lunch times, temporarily increase the
22 usage of local parks or segments of the Bay Trail along Western Drive. However, such a
23 minor increase in use would have no impact. Furthermore, time constraints getting to and
24 from the work area within the Project site to these areas would be a disincentive for
25 workers to leave the Project site during work hours. The Project would not result in
26 increased use of recreational facilities.

27 The Project does not include parks or recreational facilities, nor would the Project require
28 the expansion or construction of any recreational facility.

29 **3.15.4 Mitigation Summary**

30 The Project would have no impacts to Recreation; therefore, no mitigation is required.

1 **3.16 TRANSPORTATION/TRAFFIC**

TRANSPORTATION/TRAFFIC – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with an applicable congestion management program, including, but not limited to level of service (LOS) standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2 **3.16.1 Environmental Setting**

3 Regional roadway access to the site is provided via I-580 and Interstate 80 (I-80). Local
 4 site access is provided via Castro Street and Richmond Parkway. I-580 is a six-lane
 5 freeway that connects I-80 east of the project with U.S. Highway 101 in Marin County via
 6 the four-lane Richmond-San Rafael Bridge. I-80 is a major east-west freeway link
 7 providing access between Richmond and Oakland/San Francisco to the south and west,
 8 and Sacramento to the east. Castro Street/Richmond Parkway is a major local road
 9 providing access to freeways in the cities of Richmond and San Pablo. It connects I-580
 10 in the south and I-80 in the north. The Refinery is accessed by Gates 31 and 91 located
 11 on Castro Street. Additional parking is located elsewhere on the Chevron Refinery

1 campus. The average daily traffic volumes on the Castro Street and Richmond Parkway
2 are about 23,600 and 14,800 vehicles respectively (City of Richmond 2014).

3 On average, 75 vessels (35 tankers and 40 barges) per month call on the Long Wharf.
4 Vessels and barges are assisted by tugs in berthing and unberthing. The number of tugs
5 used in docking or maneuvering of vessels is dependent on the size of the vessel and
6 environmental conditions but varies from one to four. Vessels maintain standard shipping
7 lanes and access points approved by the U.S. Coast Guard (USCG).

8 The Project proposes to use existing truck and shipping transportation routes to move
9 construction equipment and supplies. Construction crews would park in the existing
10 Refinery parking lots.

11 **3.16.2 Regulatory Setting**

12 Federal and state laws and regulations pertaining to this transportation/traffic and relevant
13 to the Project are identified in Appendix B. Interstate highways, State routes, and bridges
14 are governed by the FHWA and Caltrans, while rail facilities are regulated in the State by
15 the California Public Utilities Commission (CPUC). Train operations are also subject to
16 CPUC guidelines; the design and operation of railroad grade crossings are subject to
17 Federal Railroad Administration guidelines. Numerous other federal agencies also have
18 regulatory authority over rail transportation. At the local level, county roads are governed
19 by Contra Costa County and other local street and highways are governed by the City. In
20 all cases, specific standards apply with respect to the planning, design, and operation of
21 roadways and intersections. Not all governing agencies impose the same criteria (e.g.,
22 cross sections and rights-of-way for the same street may differ from jurisdiction to
23 jurisdiction).

24 **3.16.3 Impact Analysis**

25 **a) *Conflict with an applicable plan, ordinance or policy establishing measures of***
26 ***effectiveness for the performance of the circulation system, taking into account***
27 ***all modes of transportation including mass transit and non-motorized travel and***
28 ***relevant components of the circulation system, including but not limited to***
29 ***intersections, streets, highways and freeways, pedestrian and bicycle paths,***
30 ***and mass transit?***

31 **No Impact.** The Project would not conflict with any transportation plans nor would it
32 change air traffic patterns, roadway design since the Project would not change the
33 existing use or character of the project site or include any new transportation features.
34 The Project would maintain operation of the Long Wharf during construction using existing
35 truck and barge routes.

1 **b) Conflict with an applicable congestion management program, including, but not**
2 **limited to level of service standards and travel demand measures, or other**
3 **standards established by the county congestion management agency for**
4 **designated roads or highways?**

5 **Less than Significant Impact.** Regional access to the site would be via I-580 and I-80.
6 Local site access would be via Castro Street and Richmond Parkway. The average daily
7 traffic volume on I-580 at the Castro Street Interchange is about 69,000 vehicles. The
8 average daily traffic volume on I-80 just south of I-580 is about 268,000 vehicles (Caltrans
9 2013b; City of Richmond 2014). The average daily traffic volumes on Castro Street and
10 Richmond Parkway are about 23,600 vehicles and 14,800 vehicles respectively (City of
11 Richmond 2012b).

12 During construction, worker transportation to the Project site would result in a small
13 additional number of vehicles on highways and local roads. The increase in vehicles on
14 the road would be temporary, small (approximately 24 to 30 vehicles) and would not
15 significantly impact vehicle miles traveled or emergency access.

16 All construction contractors would park at the Gate 91B parking lot (near the Chemtrade
17 Chemicals US LLC entrance off Castro Street). Contractors would then be bused through
18 the Refinery to the Long Wharf. This would require only one bus at the start of the work
19 shift and one bus at the end of the shift. This bussing would have negligible impact on
20 traffic volume or flow in the Refinery.

21 **c) Result in a change in air traffic patterns, including either an increase in traffic**
22 **levels or a change in location that results in substantial safety risks?**

23 **d) Substantially increase hazards due to a design feature (e.g., sharp curves or**
24 **dangerous intersections) or incompatible uses (e.g., farm equipment)?**

25 **e) Result in inadequate emergency access?**

26 **f) Conflict with adopted policies, plans or programs regarding public transit,**
27 **bicycle, or pedestrian facilities, or otherwise decrease the performance or**
28 **safety of such facilities?**

29 **c) to f) No Impact.** See a) above.

30 **3.16.4 Mitigation Summary**

31 The Project would not result in significant impacts to Transportation/Traffic; therefore, no
32 mitigation is required.

1 **3.17 UTILITIES AND SERVICE SYSTEMS**

UTILITIES AND SERVICE SYSTEMS – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2 **3.17.1 Environmental Setting**

3 East Bay Municipal Utility District (EBMUD) provides potable water as well as wastewater
 4 treatment services to the Refinery including the Long Wharf. The Project site is located
 5 within the Richmond Sewer District and is serviced by the Richmond Municipal Sewer
 6 District Water Pollution Control Plant for sanitary sewage. In addition, the Refinery has its
 7 own industrial wastewater treatment facility. Almost all wastewater processed by the on-
 8 site wastewater treatment facility comes from the various processing plants. Sources of
 9 this process wastewater include cooling tower blowdown, condensed steam used for
 10 process heating, and plant wash-up water. Process wastewater is treated in the effluent
 11 treatment system prior to release into the Bay.

12 Chevron uses treated Refinery water for firewater tanks and other non-potable water
 13 uses. Richmond Sanitary Service provides solid waste and recycling collection. Non-

1 recyclable solid waste is sent to the Potrero Hill Landfill in Solano County. Its remaining
2 capacity is more than 13,000,000 cubic yards.

3 The Refinery currently generates 125 megawatts of electric power and in addition,
4 purchases an additional 2 megawatts from Pacific Gas and Electric. Chevron also imports
5 natural gas which it processes and also uses to run the Refinery.

6 **3.17.2 Regulatory Setting**

7 Federal and state laws and regulations pertaining to Utilities and Service Systems and
8 relevant to the Project are identified in Appendix B. No local policies relevant to utilities
9 and service systems are applicable to the project.

10 **3.17.3 Impact Analysis**

11 ***a) Exceed wastewater treatment requirements of the applicable Regional Water***
12 ***Quality Control Board?***

13 ***b) Require or result in the construction of new water or wastewater treatment***
14 ***facilities or expansion of existing facilities, the construction of which could***
15 ***cause significant environmental effects?***

16 ***c) Require or result in the construction of new storm water drainage facilities or***
17 ***expansion of existing facilities, the construction of which could cause***
18 ***significant environmental effects?***

19 ***d) Have sufficient water supplies available to serve the Project from existing***
20 ***entitlements and resources, or are new or expanded entitlements needed?***

21 ***e) Result in a determination by the wastewater treatment provider which serves or***
22 ***may serve the Project that it has adequate capacity to serve the Project's***
23 ***projected demand in addition to the provider's existing commitments?***

24 **a) to e) No Impact.** The Refinery's process wastewater and most of the stormwater runoff
25 is collected and managed in the existing industrial wastewater treatment system that is
26 regulated by the SFBRWQCB. Since construction and operation of the Project would not
27 create any increase in fresh water usage or wastewater generation, there would be no
28 increase in demand for fresh water supply and no increase in wastewater flow to the
29 treatment system. The Refinery's existing onsite wastewater treatment system has
30 sufficient capacity to treat wastewater under current operations, and this capacity would
31 be unaffected by construction or operation of the Project.

32 ***f) Be served by a landfill with sufficient permitted capacity to accommodate the***
33 ***Project's solid waste disposal needs?***

1 **g) Comply with federal, state, and local statutes and regulations related to solid**
2 **waste?**

3 **f) and g) Less than Significant Impact.** All construction material, wastes, debris,
4 sediment, rubbish, trash, fencing, etc. would be removed from the site once Project
5 construction is complete and transported from the site by a licensed transporter for
6 disposal. Therefore, the Project would have a less than significant impact on landfills and
7 would comply with solid waste regulations.

8 **3.17.4 Mitigation Summary**

9 The Project would not result in significant impacts to Utilities and Service Systems;
10 therefore, no mitigation is required.

1 **3.18 MANDATORY FINDINGS OF SIGNIFICANCE**

2 The lead agency shall find that a project may have a significant effect on the environment
 3 and thereby require an EIR to be prepared for the project where there is substantial
 4 evidence, in light of the whole record, that any of the following conditions may occur.
 5 Where prior to commencement of the environmental analysis a project proponent agrees
 6 to MMs or project modifications that would avoid any significant effect on the environment
 7 or would mitigate the significant environmental effect, a lead agency need not prepare an
 8 EIR solely because without mitigation the environmental effects would have been
 9 significant (per State CEQA Guidelines, § 15065).

MANDATORY FINDINGS OF SIGNIFICANCE –	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of past, present and probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10 **3.18.1 Impact Analysis**

11 ***a) Does the project have the potential to degrade the quality of the environment,***
 12 ***substantially reduce the habitat of a fish or wildlife species, cause a fish or***
 13 ***wildlife population to drop below self-sustaining levels, threaten to eliminate a***
 14 ***plant or animal community, reduce the number or restrict the range of a rare or***
 15 ***endangered plant or animal, or eliminate important examples of the major***
 16 ***periods of California history or prehistory?***

17 **Less than Significant With Mitigation.** As described in Sections 3.4, Biological
 18 Resources, and 3.9 Hydrology and Water Quality, the Project would not significantly

1 adversely affect fish or wildlife habitat, cause a fish or wildlife population to drop below
2 self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the
3 number or restrict the range of an endangered, rare, or threatened species. With
4 implementation of mitigation measures described in those sections, the minor and
5 localized impacts to special-status species and their habitats would be less than
6 significant. The Project's potential effects on historic and archaeological resources are
7 described in Section 3.5, Cultural Resources; no resources are known to be present
8 within the Project footprint.

9 ***b) Does the project have impacts that would be individually limited, but***
10 ***cumulatively considerable? (“Cumulatively considerable” means that the***
11 ***incremental effects of a project are considerable when viewed in connection***
12 ***with the effects of past projects, the effects of other current projects, and the***
13 ***effects of probable future projects.)***

14 **Less than Significant Impact.** The Project proposes to modify the existing Long Wharf
15 by bringing it to current standards and would not alter the existing use of the site. As
16 discussed in more detail below, Project construction is not anticipated to have a
17 cumulatively considerable significant impact on the environment. As defined in the State
18 CEQA Guidelines, cumulative impacts are the incremental effects of an individual project
19 when viewed in connection with the effects of past, current, and probable future projects
20 within the cumulative study area. The Project involves modifications to four berths (Berths
21 1, 2, 3, and 4), including replacing gangways and cranes, adding mooring dolphins and
22 new standoff fenders, and modifying the fire water system at Berths 1, 2, & 3, as well as
23 seismic retrofit to Berth 4. As demonstrated below, because of the temporary nature of
24 the potential construction impacts of the Project, there would be no cumulatively
25 considerable impacts as a result of the Project. In addition, because the majority of the
26 improvements are associated with an existing structure, the Project would not result in
27 cumulatively considerable impacts.

28 Unless otherwise specified, the cumulative study area for the analysis of the issue areas
29 identified below is the Project vicinity within the City, which is predominantly urban.

30 **Aesthetics**

31 For the analysis of aesthetics, the cumulative study area is the Project site and
32 surrounding Refinery site at the end of Western Avenue. Project implementation would
33 result in minor changes to the overall visual character of the Project site, although those
34 changes would be barely perceptible to the average person from any of the visual study
35 areas. No views from public view locations would be significantly blocked or impeded by
36 the Project's temporary construction activities. As the Project would not impact aesthetics
37 or visual resources within the Project area, the Project's contribution to potential
38 cumulative visual/aesthetic impacts in the study area would be less than significant.

1 **Agriculture and Forestry Resources**

2 The Project area does not contain any agriculture or forested lands and would not convert
3 any lands from their existing land uses, and thus would have no cumulative impacts to
4 agricultural and forestry resources.

5 **Air Quality**

6 For the analysis of air quality, the cumulative study area is the SFBAAB, which is identical
7 to the boundaries of the Bay Area Air Quality Management District (BAAQMD). As
8 described in Section 3.3, Project construction and operational criteria pollutant emissions
9 would not exceed the BAAQMD CEQA significance thresholds. Therefore, pursuant to
10 the BAAQMD CEQA Air Quality Guidelines, the Project would not be cumulatively
11 considerable, and would result in a less than significant cumulative impact.

12 **Biological Resources**

13 As described in Section 3.4, underwater sound and acoustic pressure from pile driving
14 could affect aquatic resources by causing temporary behavioral avoidance of the
15 construction area and/or injury to sensitive species during construction activities. In
16 addition, migratory birds protected under the MBTA and under the California Fish and
17 Game Code that are actively nesting within the vicinity of the Project could be temporarily
18 impacted by construction activities. Implementation of **MMs BIO-1** through **BIO-6** would
19 render Project impacts less than significant. Because the Project would not result in
20 significant biological resources impacts within the Project area, the Project's contribution
21 to potential cumulative biological resources impacts in the study area would be less than
22 significant.

23 **Cultural Resources**

24 As described in Section 3.5, the Project site does not contain any known historical,
25 archaeological, or paleontological resources. The Project and its temporary construction
26 activities would not cause a substantial adverse change to any historical resources or
27 archaeological resources, destroy a unique paleontological or geologic feature, or disturb
28 any human remains. Accordingly, the Project's contribution to potential cumulative
29 cultural resources impacts in the study area would be less than significant.

30 **Geology and Soils**

31 The City contains a mix of residential, commercial, and industrially developed land.
32 Development projects in the Project vicinity may have the potential to be exposed to
33 seismic hazards. These projects would be required to mitigate for impacts through
34 compliance with the California Building Code. Seismic design criteria account for Peak
35 Ground Acceleration, soil profile, and other site conditions, and establish corresponding

1 design standards intended primarily to protect public safety and minimize property
2 damage. It is reasonable to assume that other development projects would be required
3 to comply with all applicable laws and regulations that would reduce Project-level impacts
4 to a less than significant level. Therefore, the potential cumulative geology and soils
5 impacts in the study area would be less than significant.

6 **Greenhouse Gas Emissions**

7 The cumulative study area for the analysis of greenhouse gas (GHG) emissions is the
8 SFBAAB. Because temporary construction emissions would not exceed the threshold of
9 significance, GHGs from construction activities, emitted either directly or indirectly by the
10 Project, would not have a significant impact on the environment and would not
11 substantially contribute to the global GHG emissions. Therefore, the potential cumulative
12 greenhouse gas impacts in the study area would be less than significant.

13 **Hazards and Hazardous Materials**

14 The Project would involve the routine transport, storage, use, and disposal of hazardous
15 materials such as construction equipment fuels and lubricants, hydraulic fluid and
16 solvents used during temporary construction activities. Routine transport, storage, use or
17 disposal of hazardous materials, during temporary construction activities would not create
18 substantial hazards to the public or the environment after **MM HAZ-1** and **MM HAZ-2** are
19 implemented, rendering impacts less than significant. Therefore, the potential cumulative
20 hazards and hazardous materials impacts in the study area would be less than significant.

21 **Hydrology and Water Quality**

22 Since the Project requires temporary in-water work with heavy equipment that has the
23 potential to create excess turbidity or release chemicals in the Bay, there is a potential to
24 impact water quality. However, incorporation of **MMs HD-1** through **HYD-4** would render
25 hydrology impacts caused by temporary construction activities less than significant.
26 Moreover, although the Project is located in a tsunami area, the Project would not change
27 the existing use of the site, nor expose people or structures to risk from a tsunami.
28 Because the Project would not result in significant hydrology and water quality impacts
29 within the Project area, the Project's contribution to potential cumulative hydrology and
30 water quality impacts in the study area would be less than significant.

31 **Land Use and Planning**

32 The Project consists of modifications to an existing structure. The Project would not result
33 in any physical division of established communities or neighborhoods and would not be
34 located in areas with habitat conservation or natural community conservation plans. The

1 Project would comply with all applicable local land use plans and regulations. Accordingly,
2 the cumulative effects of the Project on land use would be less than significant.

3 **Mineral Resources**

4 The Project site does not include mineral resources or include changing existing land use
5 to impact mineral resources. Because the Project would, therefore, not result in the loss
6 of availability of known mineral resources, the Project would not contribute to potential
7 cumulative mineral resources impacts in the study area.

8 **Noise**

9 As discussed in Section 3.12, the greatest unweighted maximum noise levels that would
10 be experienced during temporary construction activities would be below both the
11 conditionally acceptable and normally acceptable noise level for industrial sites. Because
12 the project would have a less than significant impact on noise within the Project area, the
13 Project's contribution to potential cumulative noise impacts in the study area would be
14 less than significant.

15 **Population and Housing**

16 The Project would not induce population growth, displace housing, or people. The Project
17 would use the existing footprint of the Long Wharf to complete construction. Because the
18 Project would not result in significant population and housing impacts within the Project
19 area, the Project's contribution to potential cumulative population and housing impacts in
20 the study area would be less than significant.

21 **Public Services**

22 The Project would maintain the existing site use and character and would not induce
23 population growth or activity such that additional public services would be needed.
24 Because the Project would not result in significant public services impacts within the
25 Project area, the Project's contribution to potential cumulative public services impacts in
26 the study area would be less than significant.

27 **Recreation**

28 The Project would not substantially increase the use of existing parks and recreational
29 facilities. In addition, the Project does not include or require recreational facilities.
30 Because the Project would not result in significant recreation impacts within the Project
31 area, the Project's contribution to potential cumulative recreation impacts in the study
32 area would be less than significant.

1 **Transportation and Traffic**

2 Cumulative construction-related traffic impacts with other construction projects would
3 depend on the timing of individual projects with coinciding locations. The Project would
4 not result in any increase in vehicular traffic beyond the temporary increases described
5 in Section 3.16. The Project may result in temporary obstructions of traffic, but the
6 temporary increase in vehicles (24 to 30 vehicles) is nominal and would not be considered
7 significant. Accordingly, the Project's contribution to potential cumulative transportation
8 and traffic impacts in the study area would be less than significant.

9 **Utilities and Service Systems**

10 The Project would not result in any new utilities demands. The Project would need no
11 utilities or service systems except for a minimal amount of temporary construction waste
12 disposal. Because the Project would have a less than significant impact on landfills and
13 would comply with solid waste regulations, the Project's contribution to cumulative utilities
14 and service systems impacts in the study area would be less than significant.

15 ***c) Does the project have environmental effects that would cause substantial***
16 ***adverse effects on human beings, either directly or indirectly?***

17 **Less than Significant Impact with Mitigation.** The Project's potential to impact human
18 beings is addressed in various sections of this document, including those that affect
19 resources used or enjoyed by the public, residents, and others in the Project area (e.g.,
20 aesthetics, public services, and recreation); those protective of public safety and well-
21 being (e.g., air quality, geology and soils, GHG emissions, hydrology and water quality,
22 and noise); and those that address community character and essential infrastructure
23 (e.g., land use and planning, population and housing, transportation, and utilities). None
24 of these analyses identified a potential adverse effect on human beings that could not be
25 avoided or minimized through the mitigation measures described in this document or
26 compliance with standard regulatory requirements. As such, with mitigation in place,
27 project impacts to human beings would be less than significant.

1 **4.0 OTHER MAJOR AREAS OF CONCERN**

2 **4.1 CSLC ENVIRONMENTAL JUSTICE POLICY**

3 Environmental justice is defined by California law as “the fair treatment of people of all
4 races, cultures, and incomes with respect to the development, adoption, implementation,
5 and enforcement of environmental laws, regulations, and policies” (Stats. 1999, ch. 690).
6 This definition is consistent with the Public Trust Doctrine principle that the management
7 of trust lands is for the benefit of all of the people. The CSLC adopted an environmental
8 justice policy in October 2002 to ensure that environmental justice is an essential
9 consideration in the agency’s processes, decisions, and programs. Through its policy,
10 CSLC reaffirms its commitment to an informed and open process in which all people are
11 treated equitably and with dignity, and in which its decisions are tempered by
12 environmental justice considerations. Notably, CEQA does not require a discussion of
13 environmental justice, as CEQA only addresses a project’s physical environmental
14 impacts, not social or economic impacts. (See, e.g., Pub. Resources Code, § 21065 [a
15 project’s “direct physical change in the environment”]; State CEQA Guidelines, § 15131.)

16 As part of the CSLC environmental justice policy, the CSLC pledges to continue and
17 enhance its processes, decisions, and programs with environmental justice as an
18 essential consideration by:

- 19 1) Identifying relevant populations that might be adversely affected by CSLC
20 programs or by projects submitted by outside parties for its consideration.
- 21 2) Seeking out community groups and leaders to encourage communication and
22 collaboration with the CSLC and its staff.
- 23 3) Distributing public information as broadly as possible and in multiple languages,
24 as needed, to encourage participation in the CSLC’s public processes.
- 25 4) Incorporating consultations with affected community groups and leaders while
26 preparing environmental analyses of projects submitted to the CSLC for its
27 consideration.
- 28 5) Ensuring that public documents and notices relating to human health or
29 environmental issues are concise, understandable, and readily accessible to the
30 public, in multiple languages, as needed.
- 31 6) Holding public meetings, public hearings, and public workshops at times and in
32 locations that encourage meaningful public involvement by members of the
33 affected communities.
- 34 7) Educating present and future generations in all walks of life about public access
35 to lands and resources managed by the CSLC.

- 1 8) Ensuring that a range of reasonable alternatives is identified when siting facilities
2 that may adversely affect relevant populations and identifying, for the CSLC’s
3 consideration, those that would minimize or eliminate environmental impacts
4 affecting such populations.
- 5 9) Working in conjunction with federal, state, regional, and local agencies to ensure
6 consideration of disproportionate impacts on relevant populations, by instant or
7 cumulative environmental pollution or degradation.
- 8 10)Fostering research and data collection to better define cumulative sources of
9 pollution, exposures, risks, and impacts.
- 10 11)Providing appropriate training on environmental justice issues to staff and the
11 CSLC so that recognition and consideration of such issues are incorporated into
12 its daily activities.
- 13 12)Reporting periodically to the CSLC on how environmental justice is a part of the
14 programs, processes, and activities conducted by the CSLC and by proposing
15 modifications as necessary.

16 **4.1.1 Methodology**

17 The CSLC environmental justice policy does not specify a methodology for conducting
18 programmatic-level analysis of environmental justice issues.

19 This analysis focuses primarily on whether the Project’s impacts have the potential to
20 affect areas of high-minority populations and/or low-income communities
21 disproportionately and thus would create an adverse environmental justice effect. For the
22 purpose of the environmental analysis, the Project’s inconsistency with the CSLC’s
23 Environmental Justice Policy would occur if the Project would:

- 24 • Have the potential to disproportionately affect minority and/or low-income
25 populations adversely; or
- 26 • Result in a substantial, disproportionate decrease in employment and economic
27 base of minority and/or low-income populations residing in immediately adjacent
28 communities.

29 The Project area includes one Census Tract (No. 3780) in Contra Costa County.
30 Therefore the study area for the environmental justice analysis is Tract 3780 which is the
31 Project area and Contra Costa County which serves as a reference population.

32 The Project area is comprised primarily of people who identify as White (73.9%) but also
33 contains people who identify as Black (7.7%), American Indian and Alaska Native (0.6%),
34 Asian (7.5%), and Native Hawaiian and Other Pacific Islander (0.2%). The county as a
35 whole is more diverse, with people who identify as White comprising 58.6 percent. It also

1 contains people who identify as Black (9.3%), American Indian and Alaska Native (0.6%),
2 Asian (14.4%), and Native Hawaiian and Other Pacific Islander (0.5%) (U.S. Census
3 Bureau 2010). In the Project area, 15.8 percent of all people and families had income in
4 the past 12 months below the poverty level, and in the county as a whole, 11.7 percent
5 of all people and families had income in the past 12 months below the poverty level
6 (\$33,465 for a family of four in 2015) (U.S. Census Bureau 2014).

7 **4.1.2 Project Analysis**

8 No Impact. The project area does not contain a community that would be identified as an
9 environmental justice community. However, there are minority and low-income persons
10 that live in the Project area. Project construction would result in temporary noise and a
11 slight increase in traffic in and around the Project area, but these impacts were
12 determined to be less than significant. None of these impacts would disproportionately
13 impact minority or low-income populations. The project would temporarily increase
14 construction jobs in the Project area and would not decrease employment or the
15 economic base.

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5.0 MITIGATION MONITORING PROGRAM

The California State Lands Commission (CSLC) is the lead agency under the California Environmental Quality Act (CEQA) for the Chevron Long Wharf Maintenance and Efficiency Project (Project). In conjunction with approval of this Project, the CSLC adopts this Mitigation Monitoring Program (MMP) for implementation of mitigation measures (MMs) for the Project to comply with Public Resources Code section 21081.6, subdivision (a) and State CEQA Guidelines sections 15091, subdivision (d), and 15097.

The Project authorizes Chevron Products Company (Chevron or Applicant) to implement maintenance and efficiency improvements to enhance long term reliability of its Chevron Long Wharf (Long Wharf).

5.1 PURPOSE

It is important that significant impacts from the Project are mitigated to the maximum extent feasible. The purpose of a MMP is to ensure compliance and implementation of MMs; this MMP shall be used as a working guide for implementation, monitoring, and reporting for the Project's MMs.

5.2 ENFORCEMENT AND COMPLIANCE

The CSLC is responsible for enforcing this MMP. The Project Applicant is responsible for the successful implementation of and compliance with the MMs identified in this MMP. This includes all field personnel and contractors working for the Applicant.

5.3 MONITORING

The CSLC staff may delegate duties and responsibilities for monitoring to other environmental monitors or consultants as necessary. Some monitoring responsibilities may be assumed by other agencies, such as affected jurisdictions, cities, and/or the California Department of Fish and Wildlife (CDFW). The CSLC and/or its designee shall ensure that qualified environmental monitors are assigned to the Project.

Environmental Monitors. To ensure implementation and success of the MMs, an environmental monitor must be on site during all Project activities that have the potential to create significant environmental impacts or impacts for which mitigation is required. Along with the CSLC staff, the environmental monitor(s) are responsible for:

- ensuring the Applicant has obtained all applicable agency reviews and approvals;
- coordinating with the Applicant to integrate the mitigation monitoring procedures during Project implementation (for this Project, many of the monitoring procedures shall be conducted during the deconstruction phase); and

- 1 • ensuring the MMP is followed.

2 The environmental monitor shall immediately report any deviation from the procedures
3 identified in this MMP to the CSLC staff or its designee. The CSLC staff or its designee
4 shall approve any deviation and its correction.

5 **Workforce Personnel.** Implementation of the MMP requires the full cooperation of Project
6 personnel and supervisors. Many of the MMs require action from site supervisors and their
7 crews. The following actions shall be taken to ensure successful implementation.

- 8 • Relevant mitigation procedures shall be written into contracts between the
9 Applicant and any contractors.

10 **General Reporting Procedures.** A monitoring record form shall be submitted to the
11 Applicant, and once the Project is complete, a compilation of all the logs shall be
12 submitted to the CSLC staff. The CSLC staff or its designated environmental monitor shall
13 develop a checklist to track all procedures required for each MM and shall ensure that the
14 timing specified for the procedures is followed. The environmental monitor shall note any
15 issues that may occur and take appropriate action to resolve them.

16 **Public Access to Records.** Records and reports are open to the public and would be
17 provided upon request and in accordance with the Public Records Act.

18 **5.4 MITIGATION MONITORING TABLE**

19 This section presents the mitigation monitoring table (Table 5-1) for the following
20 environmental disciplines: biological resources, hazards and hazardous materials,
21 hydrology and water quality. All other environmental disciplines were found to have less
22 than significant or no impacts and are therefore not included below. Additionally, Applicant
23 Proposed Measures (APMs) would be implemented, as feasible, to further minimize less
24 than significant impacts for the following environmental discipline: Noise. These APMs
25 are included here for the purpose of tracking. The table lists the following information, by
26 column:

- 27 • Impact (impact number, title, and impact class);
28 • Mitigation measure (full text of the measure);
29 • Monitoring/reporting action (action to be taken by monitor or Lead Agency);
30 • Timing (before, during, or after construction; during operation, etc.);
31 • Responsible agency; and
32 • Effectiveness criteria (how the agency can know if the measure is effective).

Table 5-1 Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Monitoring / Reporting Action	Timing	Responsible Party	Effectiveness Criteria
Biological Resources					
Sensitive species and their habitats	BIO-1 Work Windows: Chevron shall conduct pile driving activities in accordance with the NMFS Long Term Management Strategy (LTMS) work window of June 1- November 30 to avoid sensitive life stage periods of special status species.	Monitoring reports	During construction	Contractor/ Chevron, NMFS	Sensitive species avoided or protected throughout construction.
	BIO-2 Soft Start: Chevron shall use "soft starts" during impact pile driving (gradually increasing the force during the first few blows) to give fish (as well as marine mammals) an opportunity to move out of the area away from the sound source. Soft starts would be implemented at the start of each day's pile driving and at any time following the cessation of pile driving for a period of 30 minutes or longer. Examples of typical soft starts are identified below. <ul style="list-style-type: none"> • Vibratory pile drivers. Sound is initiated for 15 seconds at reduced energy followed by a 30-second waiting period. Repeat two additional times. • Impact drivers. An initial set of strikes at reduced energy is followed by a 30-second waiting period, then two subsequent reduced energy strike sets. 	Monitoring reports	During construction	Contractor/ Chevron	Sensitive species able to move out of the area during construction.
	BIO-3 Underwater Sound Reduction: Chevron shall deploy bubble curtains during driving of the 60-inch diameter steel piles to reduce underwater noise. In addition, wood cushion blocks shall be used during impact driving of concrete piles to reduce sound levels and reduce the area of Bay affected by underwater noise.	Monitoring reports	During construction	Contractor/ Chevron	Sensitive species protected throughout construction.
	BIO-4 Hydroacoustic and Marine Mammal Monitoring: To ensure that no Level A (injurious) harassment occurs during pile-driving activities, Chevron shall conduct site-specific hydroacoustic and marine mammal monitoring using Marine Mammal Observers approved by California State Lands Commission (CSLC) staff, in consultation with National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW) staffs.	Monitoring reports	During construction	Contractor/ Chevron	Sensitive species avoided or protected throughout construction.

Table 5-1 Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Monitoring / Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	<p>Such monitoring shall include at least the following elements.</p> <ul style="list-style-type: none"> • Underwater noise levels shall be measured and visual marine mammal monitoring conducted during all construction activities that involve pile driving. • Monitoring shall include hydroacoustic measurements during driving of each type of pile. • The approved Marine Mammal Observers shall monitor the calculated Level A zone for the presence of marine mammal species. If no marine mammals are sighted within the Level A zone (exclusion zone) for 20 minutes, pile driving may begin. • If a marine mammal is sighted in the exclusion zone, or approaching the exclusion zone during this time, pile driving activities shall be delayed until the animal has left and no marine mammals have been sighted within the zone for another 20 minutes. • The approved Marine Mammal Observers shall record sightings and animal behavior within the Level B zone during pile driving activities. • Results shall be reported to CSLC staff annually. 				
	<p>BIO-5 Off-Site Mitigation: To reduce temporary and permanent benthic habitat loss and increased cantilever fill as a result of the Project, prior to commencing construction Chevron shall purchase credits at a ratio of 1:1 (0.11 acre) at the Liberty Island Conservation Bank (or an equivalent location, subject to agency concurrence). In addition, prior to commencing construction, Chevron will fund a pile removal and habitat enhancement project to fulfill mitigation obligations with the Bay Conservation & Development Commission (BCDC), NMFS, United States Army Corps of Engineers (USACE), and California Department of Fish and Wildlife (CDFW), subject to agency concurrence.</p>	<p>Post- construction report</p>	<p>Pre- construction</p>	<p>Chevron, BCDC, CCC, NMFS, USACE</p>	<p>Compensatory mitigation for temporary and permanent benthic habitat loss and increased cantilever fill as a result of the Project.</p>

Table 5-1 Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Monitoring / Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	BIO-6 Pre-Construction Surveys: Chevron shall conduct pre-construction surveys for nesting birds if construction is to take place during the nesting season (April 1 through August 31). A qualified wildlife biologist shall conduct a pre-construction nest survey no more than 5 days prior to initiation of construction activities to search for active migratory bird or raptor nests. If active nests are encountered, species-specific avoidance buffers to prevent abandonment of the nest until the young have fledged and/or measures such as nest relocation or removal and incubation of eggs shall be implemented by a qualified biologist in consultation with state and/or federal resource agencies.	Monitoring reports	Pre-construction	Qualified Biologist/ Chevron	Sensitive species avoided or protected throughout construction.
Hazards and Hazardous Materials					
Significant hazard to the public through the routine transport, use, disposal, or accidental release of hazardous materials	Spill Preparedness and Emergency Response Plan (SPERP). Chevron will review and, as needed, revise the existing Refinery SPERP to address the emergency cleanup of any hazardous material that would be stored or used on site.	SPERP	Pre-Construction	Chevron	An accidental release of hazardous material is avoided or responded to appropriately.
	Employee Training. Chevron will train workers, contractor crews, and supervisors regarding the health and safety of the Project and hazardous materials used on site to ensure they understand how to safely use and dispose of all hazardous materials.	Monitoring reports	Pre-Construction	Chevron	Educate workers to safely use and dispose of all hazardous materials.
Hydrology and Water Quality					
Violation of water quality standards or the degradation of water quality	HYD-1 Spill Prevention: The following practices would be followed to prevent spills from entering the waterway: <ul style="list-style-type: none"> Equipment shall be inspected daily by the operator for leaks or spills. If leaks or spills are encountered, the source of the leak will be identified, leaked material would be cleaned up, and the cleaning materials would be collected and properly disposed. Equipment leaks shall be repaired. All fuel, waste, oils, and solvents shall be stored away from the construction site. Fueling of land and marine- 	Monitoring reports	During construction	Contractor/ Chevron	Avoid or reduce potential spills from entering the waterway.

Table 5-1 Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Monitoring / Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	<p>based equipment shall be conducted in accordance with Best Management Practices described in the SWPPP. Any spills would be contained and properly disposed. Chevron will be notified by the contractor of all spills, regardless of size.</p> <ul style="list-style-type: none"> • Containment booms and sorbent materials will be available during all work activities and will be deployed immediately in the event of a spill to limit its spread. • When cutting and boring any debris generated will be contained and prevented from entering the Bay by using platforms below the piers to catch debris. • Equipment and utility barges will be equipped with precautionary safety and spill containment equipment. • If any materials or wastes are inadvertently released to the Bay, the contractor will immediately stop all work and use all available resources to assure containment and removal. 				
	<p>HYD-2 Construction Waste: Fresh cement or asphalt concrete would not be allowed to enter the Bay. Construction waste shall be collected and transported to an authorized upland disposal area or recycle site by a properly licensed transporter (in accordance with Cal. Code Regs., tit. 22, div. 4.5). During pile extraction, removed piles will be lifted and placed directly on a barge for transport to an approved offsite facility for disposal. Excess mud that may cling to the extracted piles will not be washed into the Bay.</p>	Monitoring reports	During construction	Contractor/ Chevron	Avoid fresh cement or asphalt concrete entering the waterway.
	<p>HYD-3 Minimize Cutting Over Water: Chevron shall minimize cutting and boring that occurs over the water. Any debris generated will be contained and prevented from entering the Bay through the use of protective devices such as tarps and plywood sheets to catch falling debris before it enters the Bay.</p>	Monitoring reports	During construction	Contractor/ Chevron	Avoid debris entering the waterway.
	<p>HYD-4 Demobilize Equipment: Upon Project completion, Chevron shall ensure that all equipment and</p>	Monitoring reports	During construction	Contractor/ Chevron	Avoid or reduce potential spills from

Table 5-1 Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Monitoring / Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	<p>materials are safely demobilized from the Project site(s) and that (in accordance with Cal. Code Regs., tit. 22, div. 4.5):</p> <ul style="list-style-type: none"> all debris is unloaded from barges and placed into trucks for proper disposal; and all construction materials, wastes, debris, sediment, rubbish, trash, fencing, etc., is removed from the site and transported to an authorized disposal or recycle site by a properly licensed transporter. 				entering the waterway.
Noise					
Noise from construction activities	<p>APM NOI-1 Chevron will provide written notification to potentially affected residents before construction, identifying the type, duration, and frequency of construction activities to residences directly exposed to the Project construction noise. Notification materials shall identify a mechanism for residents to register complaints with the appropriate jurisdiction if construction noise levels are overly intrusive or construction occurs outside the permitted hours. Recommendations to assist noise-sensitive land uses in reducing interior noise levels (e.g., closing windows and doors) shall be included in the notification.</p>	Monitoring reports	Pre-Construction	Chevron	Minimize noise disturbance
	<p>APM NOI-2 Chevron will designate a disturbance coordinator and conspicuously post this person's number around the Project site, in adjacent public spaces, and in construction notifications. The disturbance coordinator shall be responsible for responding to any complaints about construction activities. The disturbance coordinator shall receive all public complaints about construction disturbances and be responsible for determining the cause of the complaint and implementation of feasible measures to be taken to alleviate the problem.</p>	Chevron disturbance coordinator reports	During construction	Chevron	Minimize noise disturbance
	<p>APM NOI-3 Prohibit the start-up of machines or equipment before 7 a.m. and after 7 p.m. Monday through Friday.</p>	Monitoring reports	During construction	Contractor/ Chevron	Minimize noise disturbance

Table 5-1 Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Monitoring / Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	APM NOI-4 Use electrically powered equipment instead of internal combustion equipment where practicable and feasible.	Monitoring reports	During construction	Contractor/ Chevron	Minimize noise disturbance
	APM NOI-5 Restrict the use of bells, whistles, alarms, and horns to safety-warning purposes.	Monitoring reports	During construction	Contractor/ Chevron	Minimize noise disturbance
	APM NOI-6 Equip all construction equipment with noise-reduction devices such as mufflers to minimize construction noise and operate all internal combustion engines with exhaust and intake silencers.	Monitoring reports	During construction	Contractor/ Chevron	Minimize noise disturbance
	APM NOI-7 Locate fixed construction equipment (e.g., compressors and generators), construction staging and stockpiling areas, and construction vehicle routes as far as feasible from noise-sensitive receptors.	Monitoring reports	During construction	Contractor/ Chevron	Minimize noise disturbance
	APM NOI-8 Use noise-attenuating buffers such as structures or truck trailers between noise generation sources and sensitive receptors, where feasible and particularly in locations subject to prolonged construction	Monitoring reports	During construction	Contractor/ Chevron	Minimize noise disturbance

6.0 MND PREPARATION SOURCES AND REFERENCES

This Mitigated Negative Declaration (MND) was prepared by the staff of the California State Lands Commission's (CSLC) Division of Environmental Planning and Management (DEPM) and Marine Environmental Protection Division (MEPD). The analysis in the MND is based on information identified, acquired, reviewed, and synthesized based on DEPM guidance and recommendations.

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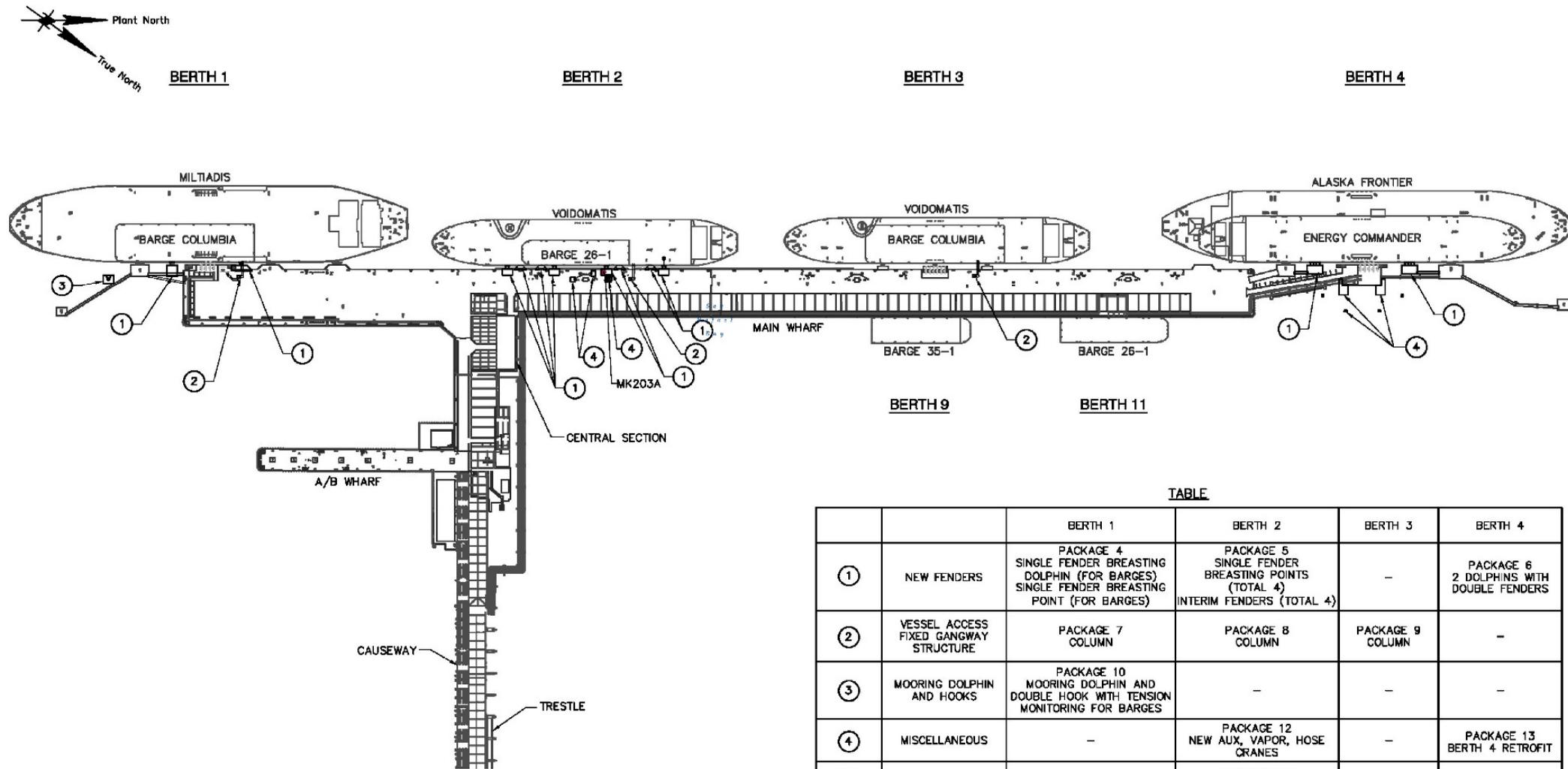
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APPENDIX A

Oversized Figures (8½ x 14)

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Figure A-1. Overview of WMEP Project Features

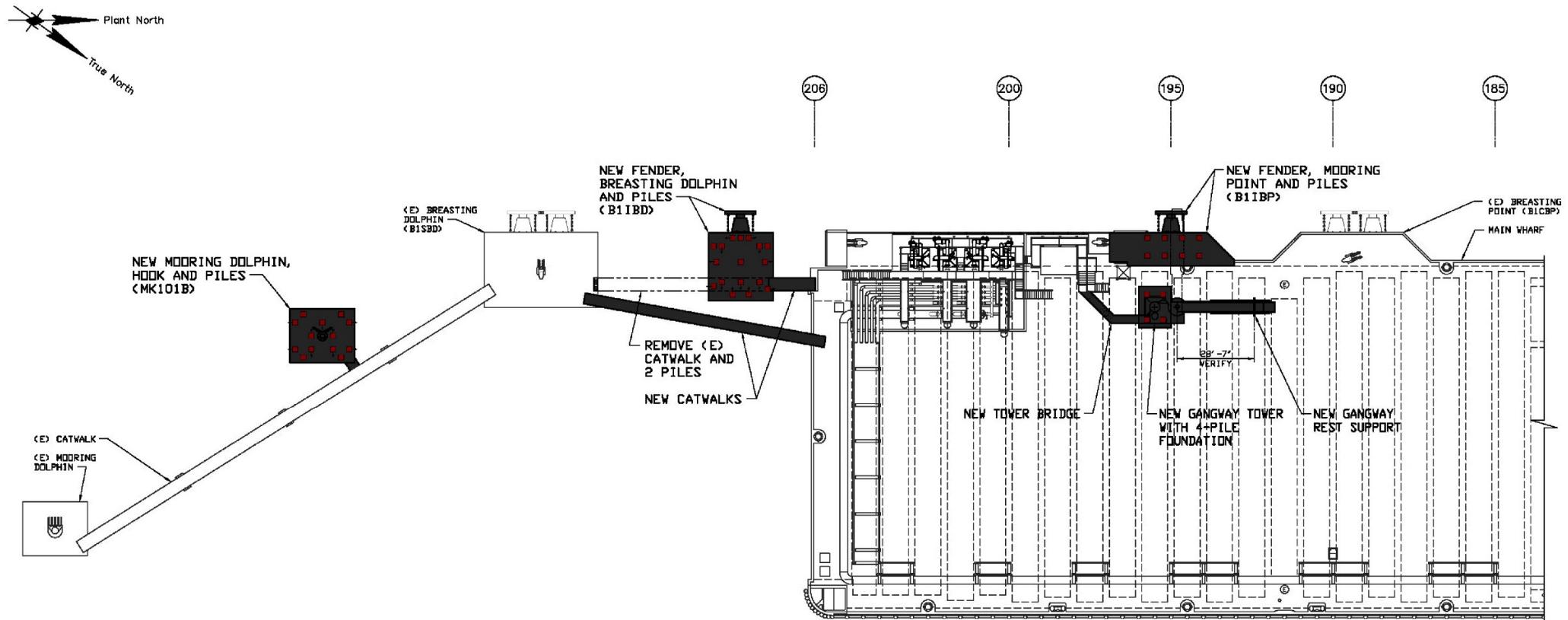


TABLE

		BERTH 1	BERTH 2	BERTH 3	BERTH 4
①	NEW FENDERS	PACKAGE 4 SINGLE FENDER BREASTING DOLPHIN (FOR BARGES) SINGLE FENDER BREASTING POINT (FOR BARGES)	PACKAGE 5 SINGLE FENDER BREASTING POINTS (TOTAL 4) INTERIM FENDERS (TOTAL 4)	-	PACKAGE 6 2 DOLPHINS WITH DOUBLE FENDERS
②	VESSEL ACCESS FIXED GANGWAY STRUCTURE	PACKAGE 7 COLUMN	PACKAGE 8 COLUMN	PACKAGE 9 COLUMN	-
③	MOORING DOLPHIN AND HOOKS	PACKAGE 10 MOORING DOLPHIN AND DOUBLE HOOK WITH TENSION MONITORING FOR BARGES	-	-	-
④	MISCELLANEOUS	-	PACKAGE 12 NEW AUX, VAPOR, HOSE CRANES	-	PACKAGE 13 BERTH 4 RETROFIT
⑤	ELECTRICAL		PACKAGE 14 ELECTRICAL		
⑥	PIPING/FIREWATER	PACKAGE 15			

NOTE: PACKAGES 1, 2, 3, AND 11 DELETED FROM PROJECT SCOPE

Figure A-2. Berth 1 Features



BERTH 1 GENERAL ARRANGEMENT PLAN
SCALE 1" = 20'

LEGEND:
 - NEW WORK
 - NEW PILE LOCATIONS

Figure A-3. Berth 2 Features

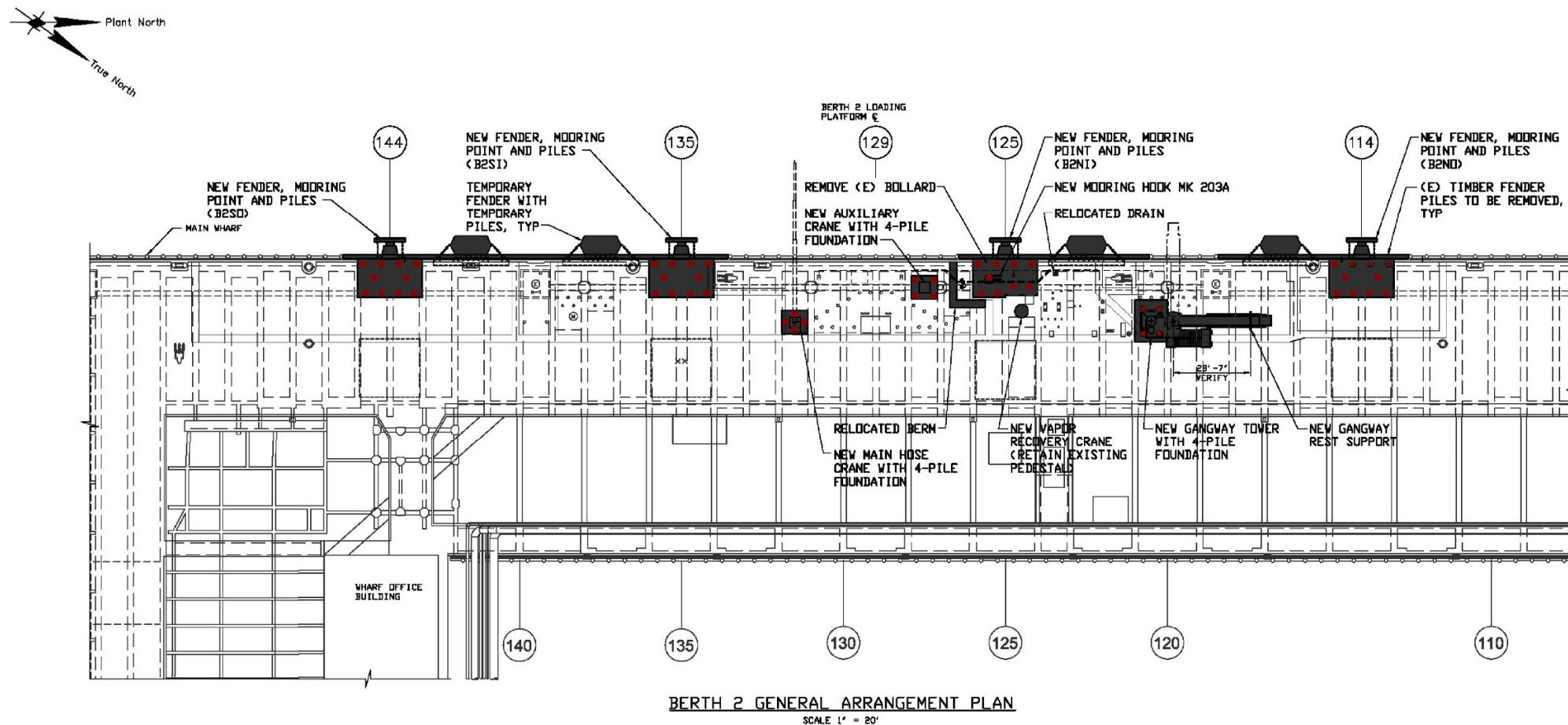
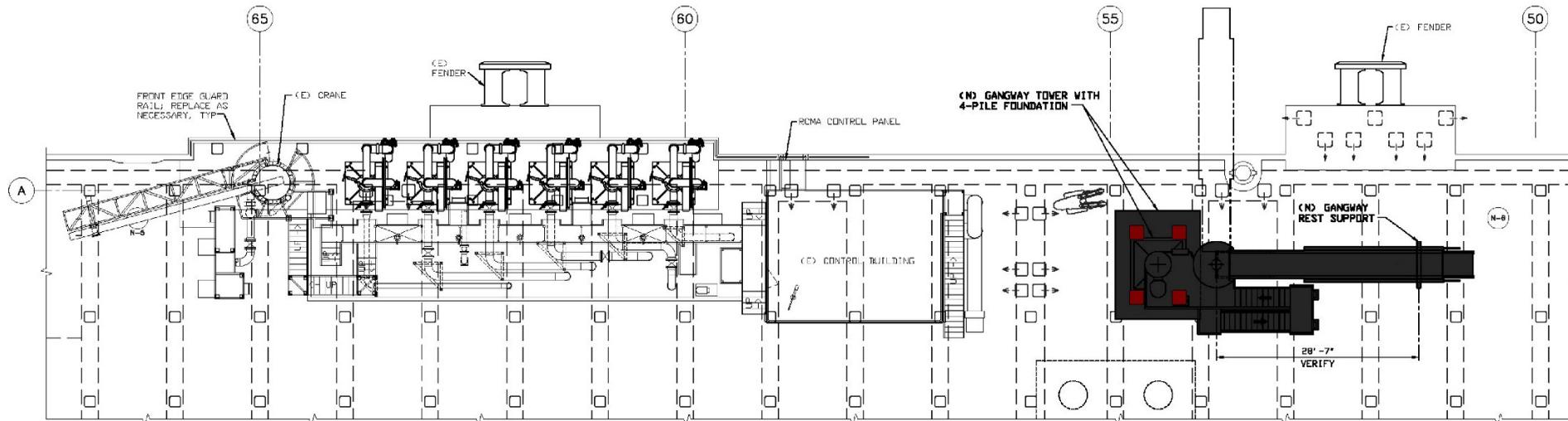
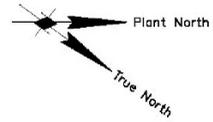


Figure A-4. Berth 3 Features



BERTH 3 LOADING PLATFORM PLAN

SCALE: 1/8" = 1'-0"

LEGEND:

- NEW WORK
- NEW PILE LOCATIONS

Figure A-5. Berth 4 Features

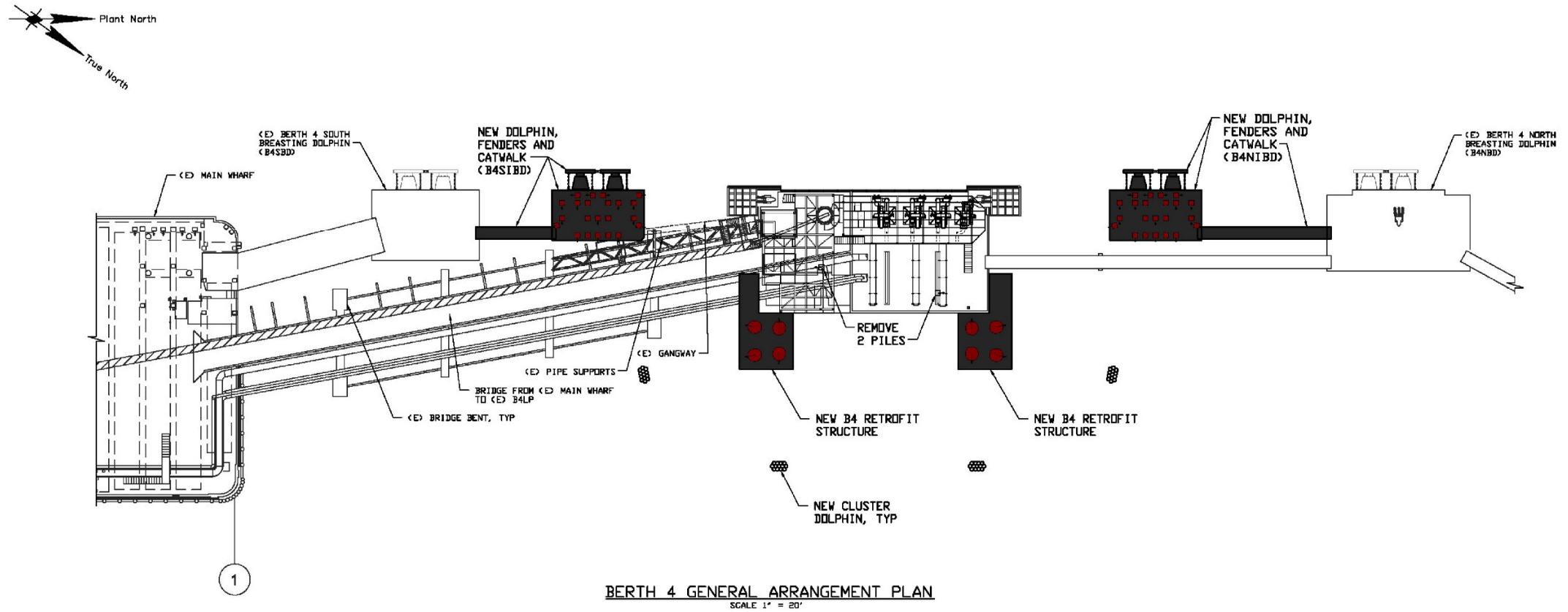
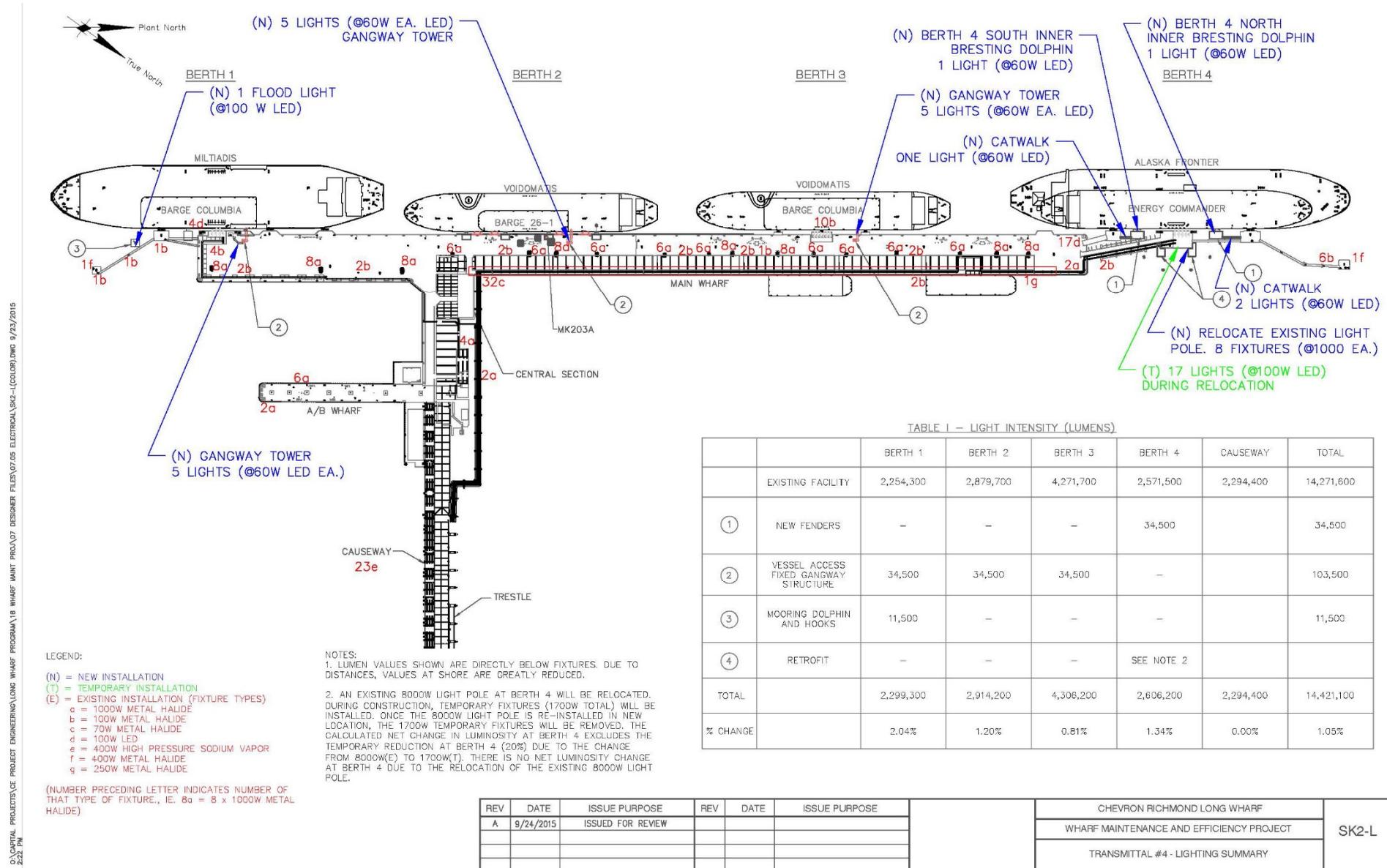


Figure A-6. Additional Lighting



APPENDIX B

Abridged List of Major Federal and State Laws, Regulations,
and Policies Potentially Applicable to the Project

APPENDIX C

Visual Impact Assessment

- 1 Vallier Design Associates, Inc.

APPENDIX D

Lighting Visual Impact Assessment
Vallier Design Associates, Inc.