Section 3.4
Hazards

SECTION SUMMARY

This section evaluates whether the proposed Project would cause a significant risk of upset impact due to the transport of hazardous materials, increased frequency and severity of hazardous spills, or an increased potential for acts of terrorism. The analysis of potential impacts on hazards associated with the alternatives is detailed in Chapter 6, Analysis of Alternatives.

Section 3.4, Hazards, provides the following:

- a description of the existing environmental setting in the Port area;
- a description of the existing hazards/hazardous substances handled at the Project site;
- a description of applicable program and regulations regarding Port security and terrorism;
- a discussion on the methodology used to determine whether the proposed Project would adversely change the existing physical conditions or increase the risks of terrorism;
- an impact analysis of the proposed Project; and
- a description of any mitigation measures proposed to reduce any potential impacts and residual impacts, as applicable.

Key Points of Section 3.4:

The proposed Project is required in order to bring the existing Shell Marine Oil Terminal into compliance with California's MOTEMS, thereby improving the safety of tanker and barge loading and unloading at the terminal. Wooden, flammable wharfs would be replaced with concrete, more seismically sound structures. The proposed Project would also include a new 30-year lease (to 2048). Based on an assumption of a two (2) percent annual growth in vessel calls and petroleum product throughput due to potential market conditions, baseline vessel calls of 86 per year would increase by 80 calls per year, to an annual total of 166 vessel (tankers and barges) calls by the end of the proposed lease term (2048).

The proposed Project would not substantially increase the probable frequency or severity of consequences to people or property as a result of a potential accidental release or explosion of a hazardous substance, nor would it increase the probability of a terrorist attack. Additionally, impacts during construction of the proposed Project would be less than significant. The potential for the operation of the proposed Project to substantially increase hazards to people or property through the routine transport of hazardous materials from reasonably foreseeable upset and accident conditions involving the release of hazardous materials is low due to compliance with the numerous existing regulations, requirements, plans, programs, initiatives and safety measures including the MOTEMS safety requirements. In addition to these regulations, other important regulations include, but are not limited to, the requirement for double-hulled tankers and barges beginning in 2015. These regulations are described in more detail below. Accordingly, with the existing navigational safety requirements and practices, MOTEMS related terminal improvements and recent vessel related safety requirements (notably double-hulled tanker and barge requirements). Double-hulled vessels help reduce the risk of a spill to the marine environment in the event of ship hull damage. The Project is not expected to substantially increase the likelihood or consequences of hazards to people or

property due to an accidental release of hazardous substance and impacts are considered less than significant.

Additionally, because construction of the proposed Project would not measurably increase the probability of a terrorist attack, impacts of construction would be less than significant. Operation of the proposed Project would increase vessel traffic, but would not change the types or volumes of cargo handled at the terminal. Because the probability of a terrorist attack would depend on the motivations of any particular terrorist rather than being a function of throughput or vessel calls, the probability of terrorist attack would not be measurably increased, and impacts of operation would be less than significant.

3.4.1 Introduction

One of the main purposes of the MOTEMS upgrades that would be implemented through the proposed Project is to increase the operational safety of the terminal. The modern mooring systems would reduce the possibility of vessel movements causing damage to unloading systems and releases of product, and the replacement of an aging timber wharf with a modern concrete structure would substantially reduce the likelihood and severity of fire and explosion should a release occur. The requirements of MOTEMS are considered to be state-of-the-art and should mitigate the potential for accidents at the facility to the maximum extent feasible.

However, the NOP indicated that the proposed Project has the potential to result in increases in hazards to the public associated with the routine transport, handling, loading and unloading of bulk petroleum products at the Shell Marine Oil Terminal. That finding was based on the assumed increase of vessel calls over baseline conditions (see Appendix A of this Draft EIR). This section evaluates the significance of these potential impacts, as well as risks due to potential acts of terrorism.

3.4.2 Environmental Setting

3.4.2.1 Hazardous Materials

Hazardous materials are the raw materials for a product or process that may be classified as explosive, toxic, flammable, corrosive, or reactive. Classes of hazardous materials that may be used or transported at the Shell Marine Oil Terminal include:

- Explosive materials;
- Flammable materials;
- Toxic materials.

These are primarily refined petroleum products transported as cargo, but small amounts of these materials are used in facility maintenance activities.

Possible types of marine oil terminal accidents include spills, fires, and explosions involving the terminal equipment or vessels at the wharf. Accidents may be due to natural factors (severe environmental conditions, earthquake, tsunami, etc.), human error (collision, improper hose connection, ineffective mooring line tending, etc.), or equipment failure.

Advances in vessel design (e.g., double hulls), safety systems (e.g., quick-release couplings at loading docks), and product handling procedures (e.g., use of inert gas systems for tankers and vapor control systems) mean that the more likely scenarios involve spills from pipes and valves during product transfer. Accordingly, response planning by the USCG and the state's Office of Spill Prevention and Response (OSPR) is based on Worst Case Discharge, which is defined as the contents of pipes, manifolds, and break-out tanks between the vessel and the shoreside storage tanks (33 CFR 154.1029).

Releases from ruptured cargo tanks as a result of collisions or groundings, while rare, do occasionally happen and typically involve much larger volumes (e.g., the *American Trader* accident off Huntington Beach in 1990). Those large spills have been rendered much less likely by the 2015 replacement of single-hulled tanker vessels by double-hulled vessels, as required by the Oil Pollution Act of 1990 and regulations 19 and 20 of

MARPOL Annex I (see Section 3.4.3). Double-hulled vessels help reduce the risk of a spill to the marine environment in the event of ship hull damage (ClearSeas, 2018)

Spills of non-product materials, (e.g., cleaning agents, lubricants, and other maintenance-associated materials) can occur. However, quantities kept on site are small (a few gallons) limiting the extent of a spill. Existing storage and clean-up procedures, as established in the BMPs in Shell's Stormwater Pollution Prevention Plan, mean that such spills are infrequent and any consequences are minor.

3.4.2.2 Emergency Services

Emergency response/fire protection for the Port is provided by the Los Angeles City Fire Department (LAFD). Landside and waterside security is provided primarily by the Los Angeles Port Police (Port Police), in addition to the USCG and Los Angeles Police Department (LAPD). Fireboat companies and land-based fire stations are located in the proposed project vicinity, and fire stations equipped with fire trucks are also located in the Port and nearby in the communities of Wilmington and San Pedro.

Ports of Los Angeles and Long Beach Oil Spill Response Capability

The responsibility for onshore and offshore spill containment and cleanup lies with the owner/operator of the facility or vessel involved in the spill (40 CFR Part 112). All LAHD marine oil terminals, including Shell, and all vessels calling at the terminals are required to have oil spill response plans and a certain level of initial response capability. The vessel and terminal owners, including Shell, use various companies and organizations to provide their oil spill response capability. The USCG has created the Oil Spill Removal Organization (OSRO) classification program so that facility and tank vessel operators can contract with and list OSRO in their response plans in lieu of providing extensive lists of response resources to show that the listed organization can meet the response requirements. Organizations looking to receive a USCG OSRO classification submit a comprehensive list of their resources and capabilities to the USCG for evaluation. The State of California has a similar OSRO classification program to allow facility and tank vessel operators to list OSROs in meeting State oil spill response requirements. Shell Oil Company has a contract with MSRC and thus meets oil spill response requirements (MSRC has the largest, dedicated, standby oil spill response program in the U.S.).

3.4.2.3 Homeland Security

Terrorism Risk

Prior to the events of September 11, 2001, the prospect of a terrorist attack on a U.S. port facility or a commercial vessel in a U.S. port would have been considered highly speculative under CEQA and NEPA and not analyzed. The climate of the world today has added a potential terrorist incident for consideration. A terrorist action could be the cause of events, such as hazardous materials release and/or explosion. There is limited data available to indicate the likelihood of a terrorist attack aimed at the Port or the Project site; therefore, the probability component of this analysis contains a considerable amount of uncertainty.

Application of Risk Principles

Terrorism risk can be generally defined by the combined factors of threat, vulnerability, and consequence. In this context, terrorism risk represents the expected consequences of

terrorist actions taking into account its likelihood. Of the three factors of risk, the threat of a terrorist action cannot be directly affected by activities in the Port. The vulnerability of the Port and of individual cargo terminals can be reduced by implementing security measures. The consequences of a terrorist action can, to some extent, also be affected by certain measures, such as emergency response preparations.

Terrorism Risk Associated with Port Cargo Facilities

Port facilities could be subject to terrorist actions from the land, air, water or cargo disruptions. Because port functions are critical to the international supply chain and to the U.S. economy, it is possible that these facilities could be targeted for terrorist actions. During operational periods, people on these terminals are generally limited to terminal staff members, longshore workers, and where applicable, truck drivers. There is no public access to these terminals.

Terrorism Risk Associated with Commercial Vessels

Commercial vessels within the Port could be subject to terrorist action while at berth or during transit within the Port, the larger vessels are highly restricted in their maneuverability. A catastrophic attack on a vessel in Port waters could block key channels and disrupt commerce, thus resulting in potential economic losses. Attacks on large cargo vessels have been rare (discounting outright piracy) and none, thus far, has had catastrophic results. Nonetheless, the threat of such an action is taken seriously by the maritime and security communities.

Security Measures Applicable to the Shell Marine Oil Terminal

Numerous security measures have been implemented in the Port in the wake of the terrorist attacks of September 11, 2001. Federal, state, and local agencies, as well as private industry, have implemented and coordinated many security operations and physical security enhancements. The result is a layered approach to Port security that includes the security program of the LAHD and the Shell Marine Oil Terminal. Briefly summarized, the layered approach to Port security is guided by the following regulations and programs (see Section 3.4.3 for more detail on laws and regulations):

- Implementing the measures in the Marine Transportation Security Act of 2003 (Title 33 CFR Parts 101-106);
- Implementing the measures in the International Ship and Port Facility Security (ISPS) Code adopted by the International Maritime Organization (IMO) in 2003;
- Implementing the Transportation Security Administration's (TSA) Transportation Worker Identification Credential (TWIC) Program; and
- Implementing Port security initiatives, such as expanding the Port Police, and establishing a vehicle and cargo inspection team, among others.

Security Credentialing: The TWIC program that was established by Congress through the Maritime Transportation Security Act is enforced at the Port. This program is part of an effort to ensure that the nation's ports are secure against people who could pose a security threat. To obtain a credential, an individual must provide a digital photograph, along with biometric information such as fingerprints, and pass a security threat assessment, which includes a criminal background check, conducted by the TSA.

Terminal Security Measures: The Shell marine oil terminal site is defined by a fence line and a dock face. Shell has developed a Site Security Plan that meets both the

requirements of the USCG (33 CFR Part 105, Maritime Security: Facilities) and California State Lands Commission (CSLC) (2 CCR paragraph 2433 Requirements for Marine Terminal Security Program). These regulations require that each marine terminal operator must implement a marine terminal security program that, at a minimum:

- Provides for the safety and security of persons, property and equipment on the terminal and along the dockside of vessels moored at the terminal;
- Prevents or deters the carrying of any unauthorized weapon, incendiary, or explosive on or about any person inside the terminal, including within his or her personal articles;
- Prevents or deters the introduction of any weapon, incendiary, or explosive in stores or carried by persons onto the terminal or onto the dockside of vessels moored at the terminal; and
- Prevents or deters unauthorized access onto the terminal and onto the dockside of vessels moored at the terminal.

Shell's Site Security Plan has been submitted to and accepted by both the USCG and CSLC.

As required by the USCG regulation, Shell uses the Maritime Security (MARSEC) Access Control Measures. MARSEC Levels are designed to easily communicate to the USCG and maritime industry partners any pre-planned scalable responses for credible threats. If the Secretary of Homeland Security issues a National Terrorism Advisory System Alert, the Commandant of the USCG would adjust the MARSEC Level, if appropriate, based on the commensurate risk, any maritime nexus, and/or Commandant consultation with the Secretary of Homeland Security.

Vessel Security: All cargo vessels 300 gross tons or larger that are flagged by IMO signatory nations adhere to the International Ship and Port Facility Security (ISPS) Code standards discussed in Section 3.4.3.1. Each vessel must maintain an international ship security certificate that certifies compliance with ISPS code. Flag States must ensure that each vessel to which the ISPS Code applies is in compliance by conducting an onboard verification inspection. The inspection entails reviewing the vessel and crew's compliance with an approved Ship Security Plan. A security certificate is issued if the vessel is found to have no deficiencies. The USCG is responsible for issuing the certificates for vessels with U.S. Ports of Registry.

In addition, the Port has instituted Controlled Navigation Areas, which restrict entry into certain areas of the Port by recreational boats without a Port Police-issued permit. These help to ensure navigational safety for large commercial vessels and commercial terminals by reducing non-essential boating traffic, while also increasing waterside security by limiting access to commercial or permitted vessels and facilities. Although Slip 1 is not closed to non-commercial small craft, a 100-foot non-commercial exclusion zone is in effect along the existing terminal in order to control water-side access (POLA, 2016).

3.4.3 Applicable Regulations

3.4.3.1 International Regulations

International Maritime Organization

The IMO is the major authority with jurisdiction over the movement of goods at sea. This is accomplished through a series of international protocols. Individual countries

must approve and adopt these protocols before they become effective. The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78 and amendments) governs the movement of oil and specifies tanker construction standards and equipment requirements. Regulations 19 and 20 of Annex I of MARPOL 73/78 require tank vessels to be double-hulled, and set out a timetable for phasing out single-hulled vessels requiring all tank vessels to be double-hulled as of 2015 (IMO, 2017). If the hull of a single hull vessel were punctured from a collision or grounding, an oil spill is pretty much guaranteed to follow. A ship with a double-hull has two plates of steel with empty space in between them. The second hull creates a buffer between the ocean and the cargo. (NOAA, 2014). Regulation 26 requires that every tanker of 150 tons gross tonnage and above have on board a shipboard oil pollution emergency plan approved by IMO. The U.S. implemented MARPOL 73/78 with passage of the Act of 1980 to Prevent Pollution from Ships. The IMO has also issued Guidelines for the Development of Shipboard Oil Pollution Emergency Plans to assist tanker owners in preparing plans that comply with the cited regulations and to assist governments in developing and enacting domestic laws, which give force to and implement the cited regulations. Plans that meet the 1990 Oil Pollution Act (OPA 90, see below) and the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act (California Senate Bill 2040) requirements also meet IMO requirements.

The IMO adopted an amendment to the International Convention for Safety of Life at Sea with provisions entitled Special Measures to Enhance Maritime Safety, which became effective in 1996. These provisions allow for operational testing during the Port state examinations to ensure that masters and crews for both U.S. and international vessels are familiar with essential shipboard procedures relating to ship safety. The USCG Marine Safety Office conducts the Port state examinations as part of their vessel inspection program.

The ISPS Code was adopted by the IMO in 2003. This code requires both ships and ports to conduct vulnerability assessments and to develop security plans with the purpose of: preventing and suppressing terrorism against ships; improving security aboard ships and ashore; and reducing risk to passengers, crew, and port personnel on board ships and in port areas. The ISPS Code applies to all cargo vessels 300 gross tons or larger and ports servicing those regulated vessels and is very similar to the MTSA regulations.

3.4.3.2 Federal Regulations

Oil Pollution Act (OPA) (33 USC 2712)

The OPA requires oil storage facilities and vessels to submit to the Federal government plans detailing how they will respond to large discharges. The OPA also requires the development of Area Contingency Plans to prepare and plan for oil spill response on a regional scale.

The OPA also requires (33 CFR 157.10d) that tank vessels be double-hulled as of specified January 1, 2015. Tank vessel means a vessel that is constructed or adapted primarily to carry, or that carries, oil or hazardous material in bulk as cargo or cargo residue, and that:

- Is a vessel of the United States;
- Operates on the navigable waters of the United States; or
- Transfers oil or hazardous material in a port or place subject to the jurisdiction of the United States. This does not include an offshore supply vessel, or a fishing

vessel or fish tender vessel of not more than 750 gross tons when engaged only in the fishing industry.

These requirements complement and implement the requirements of the MARPOL regulations described above. One report estimated between a 14 and 30 percent reduction in oil spills due to double-hulled vessels (Brown and Savage, 1996).

United States Coast Guard, Titles 33 and 46

The USCG, through Title 33 (Navigation and Navigable Waters) and Title 46 (Shipping) of the CFR, is the federal agency responsible for vessel inspection, marine terminal operations safety, coordination of federal responses to marine emergencies, enforcement of marine pollution statutes, marine safety (such as navigation aids), and operation of the National Response Center for spill response, and is the lead agency for offshore spill response. The USCG implemented a revised vessel-boarding program in 1994 designed to identify and eliminate sub-standard ships from U.S. waters. The program pursues this goal by systematically targeting the relative risk of vessels and increasing the boarding frequency on high-risk (potentially substandard) vessels. The relative risk of each vessel is determined through the use of a matrix that factors the flag of the vessel, owner, operator, classification society, vessel particulars, and violation history. Vessels are assigned a boarding priority from I to IV, with priority I vessels being the potentially highest risk and priority IV having relatively low risk. The USCG is also responsible for reviewing marine terminal Operations Manuals and issuing Letters of Adequacy upon approval. The USCG issued regulations under OPA 90 addressing requirements for response plans for tanker vessels, offshore facilities, and onshore facilities that could reasonably expect to spill oil into navigable waterways. Subpart 32.53 requires that all product carriers greater than 20,000 DWT be equipped with functioning inert gas systems that meet the requirements of the Safety of Life at Sea regulation 62.

Maritime Transportation Security Act

The MTSA of 2003 resulted in maritime security regulations in Title 33 CFR Parts 101-106. These regulations apply to all cargo terminals in the Port, and went into effective in 2004. Title 33 Part 105 requires that cargo terminals meet minimum-security standards for physical security, access control, cargo handling security, and interaction with berthed vessels. These regulations require that terminal operators submit a security plan to the U.S. Coast Guard Captain of the Port for review and approval prior to conducting cargo operations.

The USCG is responsible for enforcement of the MTSA and ISPS Code regulations discussed above. Due to the parallel nature of the MTSA and ISPS requirements, compliance with the MTSA is tantamount to compliance with the ISPS. If either a terminal or a vessel berthed at a terminal is found to be in non-compliance with these security regulations, the USCG may not permit cargo operations, and the terminal and/or vessel operators may be subject to fines. In accordance with its responsibilities for land-based security under Title 33 CFR Part 105, the USCG may impose additional control measures related to security.

3.4.3.3 State Regulations

Lempert-Keene-Seastrand Oil Spill Prevention and Response Act

Chapter 1248 of the Statutes of 1990 (SB 2040), the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act, established a comprehensive approach to prevention of and

response to oil spills. The CSLC Marine Facilities Division is responsible for governing marine terminals. The Marine Facilities Division established a comprehensive program to minimize and prevent spills from occurring at marine terminals, and to minimize spill impact should one occur. These regulations established a comprehensive inspection-monitoring plan whereby CSLC inspectors monitor transfer operations on a continuing basis.

CSLC's marine terminal regulations are similar to, but more comprehensive than, federal regulations in terms of establishing an exchange of information between the terminal and vessels, information that must be contained in the Declaration of Inspection, requirements for transfer operations, and information that must be contained in the Operations Manual. All marine terminals are required to submit updated Operations Manuals to CSLC for review and approval. CSLC regulations also require that, prior to the commencement of oil or petroleum product transfer, a boom shall be deployed to contain any oil or product that might be released. Marine terminals subject to high velocity currents, where it may be difficult or ineffective to pre-deploy a boom, are required to provide sufficient boom, trained personnel, and equipment so that at least 600 feet (183 meters) of boom can be deployed for containment within 30 minutes.

A requirement that each marine oil terminal operator must implement a marine oil terminal security program is contained in Section 2430 of CCR Title 2, Division 3, Chapter 1, Article 5.1.

The OSPR was created within the California Department of Fish and Wildlife (CDFW) to adopt and implement regulations and guidelines for spill prevention, response planning, and response capability. The regulations require that all tank vessels, barges, and marine facilities develop and submit their comprehensive oil spill response plans to OSPR for review and approval.

OSPR's regulations require that marine facilities and vessels be able to demonstrate that they have the necessary response capability on hand or under contract to respond to specified spill sizes, including a worst-case spill. The regulations also require that a risk and hazard analysis be conducted on each facility. This analysis must be conducted in accordance with procedures identified by the American Institute of Chemical Engineers.

California Coastal Act of 1976

Section 30232 of the California Coastal Act addresses hazardous material spills and states that "Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur." In addition, the California Coastal Commission (CCC) reviews and acts on port master plans and their amendments. CCC approval is necessary to allow port expansions to meet future growth needs.

Tank Vessel Escort Program

The Los Angeles/Long Beach Harbor Safety Committee (HSC) is responsible for planning for the safe navigation and operation of tankers, barges, and other vessels within San Pedro Bay and the approaches thereto. This Committee was created under the authority of Government Code Section 8670.23(a), which requires OSPR to create a Harbor Safety Committee for the Los Angeles/Long Beach Harbor. The HSC developed tug escort requirements for tank vessels while transiting Port waters. These requirements specify that tank vessels carrying 5,000 or more metric tons of oil in bulk as cargo shall be escorted to and from their berths by a suitable escort tug or tugs, thereby reducing the

possibility of groundings or collisions and the risk of an oil spill (CCR Chapter 4. Vessel Requirements, Subchapter 2. Tank Vessel Escort Program for the Los Angeles/Long Beach Harbor, Sections 851.20 -851.32).

Within the Port Complex, three Tank Vessel Escort Zones have been established for tank vessels, as follows (POLA, 2018):

> Zone 1: Upon all waters within 2.0 nautical miles to seaward of the Federal Breakwater, escort tugs required for all laden tank vessels.
>
> Zone 2: Upon all waters in the approaches to the Port of Long Beach within 3.5 nautical miles to seaward of the Federal Breakwater, escort tugs required for all laden tank vessels with static deep draft greater than 16.5 meters.
>
> Zone 3: Upon all waters in the approaches to the Port of Los Angeles within 4.0 nautical miles to seaward of the Federal Breakwater, escort tugs required for all laden tank vessels with static deep draft greater than 14.0 meters.

Except for tank barge/primary towing units that have total displacements of 20,000 metric tons or less, escort tugs must be tethered. In addition, all tank vessels shifting within the Port Complex (including dock to anchor, anchor to anchor and dock to dock) must comply with the escort requirements. Assist tugs, in addition to the prescribed escort tugs, may be required during port transits.

3.4.3.4 Local Regulations

Los Angeles Municipal Code (Fire Protection and Public Property)

Los Angeles Municipal Code (Fire Protection – Chapter 5, Section 57, Divisions 4 and 5) regulate the construction of buildings and other structures used to store flammable hazardous materials, and the storage of these same materials. These sections are intended to ensure that the business is properly equipped and operates in a safe manner and in accordance with all applicable laws and regulations. These permits are issued by the LAFD.

Port of Los Angeles Risk Management Plan (RMP)

Chapter 8 of the Port Master Plan serves as the Port's RMP. The RMP contains policies to prevent or minimize risks associated with hazardous cargo transportation, storage, and handling in the Port. Siting is the main method of controlling risks, and the RMP is used in siting new hazardous cargo facilities or relocating existing facilities. The RMP also defines vulnerable resources that could be exposed to hazardous risks. Specific policies of the RMP are intended to minimize overlap between hazardous footprints (of facilities that store or handle hazardous cargo) and vulnerable resources.

Vulnerable resources include substantial residential, recreational, or visitor populations, as well as high-density working populations. Vulnerable resources also include critical impact facilities or facilities that are considered of major economic importance. Hazardous footprints define the zone or zones around a hazardous cargo facility for which radiant heat, hazardous gas or vapor, blast overpressure, or flying debris could result in injury or property damage.

For siting or relocating existing hazards cargo facilities, the RMP requires the following:

- Identification of existing hazardous cargo facilities
- Review of hazards individually based on the types of cargo

- Development of hazard footprints for each hazard
- Identification of vulnerable resources

The RMP also includes measures related to vessel traffic and piloting, LAFD requirements, Spill Pollution Prevention and Countermeasure Plans, and the Port and Tanker Safety Act.

Area Contingency Plan (ACP)

An ACP is a reference document prepared for the use of all agencies engaged in responding to environmental emergencies within a defined geographic area. The LA/LB South Area Committee developed a site-specific oil spill response plan called the Area Contingency Plan. The plan provides clear directives on oil spill response, including the organization of incident command, planning and response roles and responsibilities, response strategies, and logistics. In addition, site-specific response plans are described for various coastal segments where there are species and other resources of concern. Each of the seven Area Contingency Plans is updated as needed, so that the plans are current and accurate (USCG and CDFW, 2013).

Vessel Traffic Service (VTS)

The VTS is a public/private partnership service for the Ports of Los Angeles and Long Beach. VTS is jointly operated and managed by the Marine Exchange of Southern California (a nonprofit corporation) and the USCG Captain of the Port. VTS is a cooperative effort of the State of California, USCG, Marine Exchange of Southern California, and the Ports of Los Angeles and Long Beach, and is under the authority of California Government Code, Section 8670.21, Harbors and Navigation Code, Sections 445–449.5 and the port tariffs of Los Angeles and Long Beach.

A VTS is in operation on the approaches to Los Angeles and Long Beach harbors. The VTS provides information about commercial and other vessel traffic and navigation safety. Covered vessels are required to participate in the VTS, and include every power-driven vessel of 40 meters (131 feet) or more in length, while navigating (which includes tank vessels). Upon reaching within 25 nautical miles (nm) from Point Fermin, approaching vessels must coordinate with VTS. When a vessel reaches the Precautionary Area, the following information must be conveyed to VTS:

1. Confirm vessel speed complies with the applicable vessel speed limit,
2. Confirm master is on the bridge,
3. Confirm vessel is in hand steering,
4. Confirm main propulsion has been successfully tested ahead and astern,
5. Maintain a minimum vessel separation of 1/4 nm,

For tank vessels, the speed limit in the Precautionary Area is 12 knots (kts). Between the seaward limits of the tank vessel escort zones and anywhere inside the Federal Breakwater (POLA, 2018):

- Less than 60,000 metric tonne displacement - 8.0 kts.
- 60,000 metric tonne displacement, or more - 6.0 kts.

Traffic Separation Schemes

A Traffic Separation Scheme (TSS) is an internationally recognized vessel routing designation, which separates opposing flows of vessel traffic into lanes, including a zone between lanes where transit is to be avoided. TSSs have been designated to help direct offshore vessel traffic along portions of the California coastline, such as the Santa Barbara Channel. Vessels are not required to use a TSS, but failure to do so if one is available would be a major factor for determining liability in the event of a collision. TSS designations are proposed by USCG, but they must be approved by the International Maritime Organization (IMO), which is part of the United Nations.

Pilot Requirements

Local port tariffs require vessels of greater than 300 GT to use a federally-licensed pilot whenever navigating inside the Federal Breakwater. In most circumstances, vessels employ the services of a federally-licensed local pilot from the Los Angeles Pilot Service (for the Port of Los Angeles) or Jacobsen Pilot Service (for the Port of Long Beach). In instances where a local pilot is not used, Masters must have a local federal pilot license and receive approval from the U.S. Coast Guard Captain of the Port prior to entering or departing port. Outbound vessels are required 15 minutes prior to getting underway and inbound vessels are required 15 minutes prior to entering the Federal Breakwater to establish communications and coordinate movements with the appropriate local pilot organization and Vessel Traffic Service (VTS) (POLA, 2018).

Additional Safety Measures

The Port of Los Angeles/Port of Long Beach Harbor Safety Plan (HSP) issued by the Los Angeles/Long Beach Harbor Safety Committee, contains additional procedures for vessels operating in the Port vicinity (Los Angeles/Long Beach Harbor Safety Committee, 2014). The vessel operating procedures stipulated in the HSP are considered Good Marine Practice. Some of the procedures are federal, state, or local regulations, while other guidelines are non-regulatory “Standards of Care.” Another important safety measure is the issuance of the weekly Local Notice to Mariners by the USCG. These notices list various activities that could pose a hazard to mariners in the Port.

Port of Los Angeles Source Control Program

To minimize the Port's liability exposure, the LAHD has implemented a Port-wide "source control" and periodic inspection program for tenant facilities with a higher likelihood for soil and groundwater contamination, including marine oil terminals. In addition to reducing liability, a key objective of the source control program is to prevent off-site migration of contamination, including oil spills. The program requires tenants to create a plan for installation of immediate, continuous detection systems into above ground tanks in accordance with API regulations, inspection of tanks in accordance with all applicable laws, internal piping relocated above ground (where feasible), and specific procedures for dealing with contamination.

Port of Los Angeles Security Initiatives

In 2014 the Board of Harbor Commissioners updated its five-year Strategic Plan for the Port, (POLA, 2014), which includes an objective to facilitate an efficient, secure, and environmentally sustainable supply chain. To this effect, the Strategic Plan update includes the following initiative to strengthen Port security:

Initiative 2

Implement security and public safety strategies that support goods movement and mitigate risk.

Metrics:

a. Number of vessel and terminal safety inspections.

b. Number and effectiveness of joint preparedness exercises.

The modern goods movement environment requires that ports be prepared for a variety of incidents, from natural disasters to potential acts of terror. The LAHD has committed to the following:

- Reduce risks of interruptions to goods movement through regular inspections of facilities.
- Prevent incidents and improve responses to incidents by holding joint preparedness exercises with supply chain partners for a variety of potential incidents (e.g., active shooter, hazmat release, seismic events, etc.).
- Track the effectiveness of these joint exercises in order to measure the success of the strategies – to be better prepared for an actual incident.

3.4.4 Impacts and Mitigation Measures

3.4.4.1 Methodology

Environmental and Public Safety Analysis

The impact analysis evaluates the potential for increasing risks from an accident scenario due to the proposed Project from the construction activities associated with the MOTEMS upgrades and the continued operations of the improved terminal under the new lease. This analysis includes both the vessel-shoreside cargo transfer operations at the terminal and the operation of the terminal's vessel traffic in Los Angeles Harbor. The potential health and safety impact of the proposed Project are then determined by comparing the frequency and severity consequences of the event scenarios under the proposed Project with those of the baseline.

Risk of Upset Due to Terrorism

There are limited data available to indicate the likelihood of a terrorist attack aimed at the Port or the proposed Project or alternatives. Accordingly, the probability component of a risk analysis contains a considerable amount of uncertainty, which, however, does not invalidate the analysis in this Draft EIR. Terrorism can be viewed as a potential trigger that could initiate events such as hazardous materials release and/or explosion, the effects of which would be as described herein. The uncertainty in calculating probabilities associated with terrorism mandate qualitative evaluation in this Draft EIR.

3.4.4.2 Thresholds of Significance

Criteria for determining the significance of impacts related to hazards are based on the *L.A. CEQA Thresholds Guide* (City of Los Angeles, 2006) and take into consideration compliance with federal and state standards, regulations, and guidelines. The proposed Project would have a significant impact related to hazards, including release of hazardous substances, if either of the following were true:

RISK-1: Would the proposed Project substantially increase the probable frequency or severity of consequences to people or property as a result of a potential accidental release or explosion of a hazardous substance?

RISK-2: Would the proposed Project result in a meaningful increase in the probability of a terrorist attack, which would result in adverse consequences to the proposed Project site and nearby areas?

3.4.4.3 Impact Determination

Impact RISK-1: The proposed Project would not substantially increase the probable frequency or severity of consequences to people or property as a result of a potential accidental release or explosion of a hazardous substance.

Construction

The proposed Project elements that would be constructed at the Shell Marine Oil Terminal are described in Section 2.5.1 of Chapter 2, Project Description, and include wharf demolition, new loading platforms, new mooring and berthing dolphins, and supporting catwalks and trestles. The proposed Project also includes improvements to the piping and related foundation support on the terminal, as well as replacement of topside equipment. Some waterborne equipment (a derrick barge, tugboats, and workboats) will be used to install mooring dolphins and support pilings.

During construction, enhanced booming would be installed in adjacent harbor waters prior to the commencement of replacement piping and related foundation support construction. If any product would be accidentally released during the pile installation, it would remain within the boomed area. The boomed area would be monitored daily, and as needed, absorbents would be deployed, maintained, and changed out. The boom would be maintained until two weeks after pile support construction work has been completed.

Although increased congestion could result in increases of the potential for collisions or other accidents that could lead to the release of fuel or other hazardous materials, in-water construction activities are conducted routinely in the Port; and contractors performing such activities are subject to applicable rules and regulations stipulated in all LAHD contracts (LAHD, 2016), including navigation hazard markings. The Project site is in Slip 1, which is away from the main flow of vessel traffic in the Port. Existing vessel control procedures in the Port of Los Angeles, as well as permit conditions placed on in-water work, would reduce the potential for collisions, allisions, and accidents during the construction process. Controls include requirements for coordination with terminal operators, other vessel operators, and the Coast Guard Captain of the Port, and adherence to the LAHD safe navigation rules (POLA, 2016, 2016b).

The potential for accidental spills of fuels, lubricants, and solvents from vessels and landside equipment would be reduced by the application of best management practices (BMPs) during construction. This would minimize runoff of contaminants and ensure prompt clean-up of any spills, in compliance with the State General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order 2012-0006-DWQ) and Project-specific Storm Water Pollution Prevention Plan (SWPPP). BMPs are scheduling of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the U.S. BMPs also include treatment requirements, operating procedures, and practice to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage (SWRCB, 2009). In addition, all pipelines would be emptied of residual contents prior to being demolished, further reducing the potential for spills, and no spill would be substantial in size because construction equipment, other than tugboats, carry small amounts (less than 100 gallons) of fuels, lubricants, and solvents. Further, as described above, enhanced booming would be installed in adjacent harbor waters prior to the commencement of replacement piping and related foundation support construction, which would retain any incidental hydrocarbon product that could potentially be released during construction within the boomed area.

While construction activities would slightly increase the probability for spills and releases at the facility, this increase would not be substantial due to the controls described above. Furthermore, the remote location of the Project site relative to the public and the small size of potential spills would limit the consequences of a spill to people or property.

Operations

Operation of the proposed Project would consist of the loading or unloading of up to 166 tank vessels (double hulled barges and tankers) annually by 2048 at the Shell Marine Oil Terminal. That level of vessel activity represents a 92 percent increase over the CEQA baseline level (86 vessels per year).

During operation of the proposed Project, accidental releases of hazardous materials could occur from vessels in transit to and from the terminal as a result of collisions with other vessels or fixed structures, or while at berth at the terminal as a result of an accidental release or explosion during vessel loading and unloading. All tank vessels are required to have double hulls, which lowers the potential for a spill in the event of an accident. In addition, the existing regulatory framework and navigational procedures would continue to minimize the potential for accidents that could result in a release of product during transport under the proposed Project. For example, the vessel traffic lanes that have been established off the coast of California are separated by a zone where vessel transit is to be avoided, thereby minimizing the potential for collisions between vessels traveling in opposite directions. As tank vessels approach the Port Complex, they leave the established traffic lanes and enter the Precautionary Area, where speed limits are in effect, and as the vessels approach within 2 nm of Point Fermin lower speed limits apply. In addition, Port Pilots would navigate the vessels within the breakwater, and the vessels would be tug assisted. These navigational safety requirements and practices would minimize the potential for collisions, allisions or groundings that could result in a product spill. Accordingly, although the proposed Project would increase vessel traffic, with the existing navigational safety requirements and practices, the Project is not expected to substantially increase the likelihood or consequences of a release during navigation.

The purpose of the proposed Project is to increase the safety of product transfer operations at marine oil terminals. There is not enough data to quantify the extent to which MOTEMS improvements would be expected to increase the safety of the facility and could reduce the probability of spills at marine terminals (especially associated with vessels and/or vessel collisions). Also, the new loading platforms, mooring dolphins, and berthing dolphins would be more capable of withstanding vessel movements and seismic events than the existing wharf and dolphins. The proposed Project would replace existing loading hoses, pipelines with modern articulated arms that would reduce the potential for rupture or leakage during product transfer. In addition, when tankers are being unloaded at the terminal, inert gas systems are used to prevent explosive conditions from forming in the vessel tanks. During loading, the vapor control system (i.e., VDU) would destroy any vapors that are displaced from the vessel tanks, thereby preventing explosive conditions. Furthermore, compliance with the Port's Source Control Program and the requirements of the regulations described in Section 3.4.3 would continue to minimize the likelihood and consequences of any releases that do happen.

Accordingly, operation of the proposed Project, including any additional double hulled vessels above the baseline, are not expected to substantially increase the frequency or severity of releases of hazardous materials during transfer operations under the proposed Project. Given the overall purpose of the proposed Project (Section 2.3.1 of Chapter 2, Project Description), implementation of the proposed Project would likely decrease the probability of releases at the terminal, and therefore reduce adverse consequences to people or property.

Impact Determination

Because controls on construction activities would minimize the probability of accidental spills, construction-related releases and explosions are unlikely, and their consequences would be minor. Accordingly, construction-related impacts would be less than significant.

Spills of petroleum products from tank vessels and marine oil terminals in the Los Angeles Harbor are infrequent and their consequences have been minor, and the continued use of double hulled tank vessels is expected to help limit the potential spills sizes and consequences. Existing navigational safety requirements and practices would minimize the potential for vessel collisions at sea, within the Precautionary Area, and within the Port Complex. The improvements under the proposed Project are expected to increase the safety of marine terminal operations, including vessel loading and unloading, and therefore would reduce the probability of accidental releases of hazardous materials. Therefore, the potential for the operation of the proposed Project to increase the potential risk to people or property through as a result of a potential accidental release or explosion of hazardous materials is low due to compliance with the numerous existing regulations, requirements, plans, programs, initiatives and safety measures. Although the proposed Project would result in increased vessel calls, the probability of an incidental accidental release would be low, and the existing navigational safety requirements and practices, MOTEMS related terminal improvements and vessel related safety protocols (notably double-hulled tanker and barge requirements) are expected to keep potential risks to people or property as a result of a potential accidental release of a hazardous substance to a less than significant level. Accordingly, the impacts of operation of the proposed Project with respect to consequences to people or property is considered to be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact RISK-2: The proposed Project would not result in a measurable increase in the probability of a terrorist attack, which would result in adverse consequences to the Project site and nearby areas.

Construction

The Project site is an existing marine oil terminal, and would therefore not constitute a new target for terrorist action. There would be no additional vessel traffic to the terminal during construction other than relatively small craft that would not offer a greater opportunity for a successful terrorist attack. In addition, existing Port security measures (Section 3.4.2.3) would continue to counter the potential for unauthorized access to the terminal. Accordingly, the probability of a terrorist attack on the proposed Project facility is not likely to change appreciably during construction compared to baseline conditions.

Operations

During operation of the proposed Project, vessel traffic to and from the Shell Marine Oil Terminal could increase by up to 80 vessels annually from 86 per year under baseline conditions to a maximum of 166 annual vessel calls by 2048. Although the vessel calls would increase under the proposed Project, the probability of a terrorist attack on vessels calling at the proposed Project is not likely to change measurably over baseline conditions because the Project site is an existing marine oil terminal that would not constitute a new potential target for terrorists, and there is no established link between vessel calls and terrorist activities. Operation of the proposed Project would result in higher throughput, and the MOTEMS improvements would increase the safety of the terminal. However, existing Port security measures (Section 3.4.2.3) would counter the potential for unauthorized access to the terminal. Furthermore, as discussed in Section 3.4.2.3, the probability of a terrorist attack would depend on the motivations of any particular terrorist rather than being a function of throughput or vessel calls. Accordingly, the proposed Project is not likely to increase the probability of a terrorist attack measurably. If a terrorist attack did occur, its consequences would not be substantially greater than under baseline conditions because the size, number, type, and cargo of tank vessels calling at the terminal would not be substantially different than under baseline conditions.

Impact Determination

Because construction of the proposed Project would not measurably increase the probability of a terrorist attack, impacts of construction would be less than significant.

Operation of the proposed Project would increase vessel traffic, but would not change the types or volumes of cargo handled at the terminal. Because the probability of a terrorist attack would depend on the motivations of any particular terrorist rather than being a function of throughput or vessel calls, the probability of terrorist attack would not be measurably increased, and impacts of operation would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

3.4.4.4 Summary of Impact Determinations

As presented in Table 3.4-1, the proposed Project's impacts with respect to safety and risk of upset would be less than significant.

Table 3.4-1: Summary Matrix of Potential Impacts and Mitigation Measures for Hazards Associated with the Proposed Project

Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
Impact RISK-1: The proposed Project would not substantially increase the probable frequency or severity of consequences to people or property as a result of a potential accidental release or explosion of a hazardous substance.	Construction: Less than significant	No mitigation is required	Less than significant
Impact RISK-2: The proposed Project would not result in a measurable increase in the probability of a terrorist attack, which would result in adverse consequences to the Project site and nearby areas.	Less than significant	No mitigation is required	Less than significant

3.4.4.5 Mitigation Monitoring

The proposed Project is not expected to substantially increase the frequency or severity of hazards to people or property, or result in a significant impact. Therefore, no mitigation is required.

3.4.5 Significant Unavoidable Impacts

The proposed Project is not expected to substantially increase the frequency or severity of hazards to people or property; accordingly, significant impacts are not anticipated.