4.9 Hazards and Hazardous Materials

4.9.1 Introduction

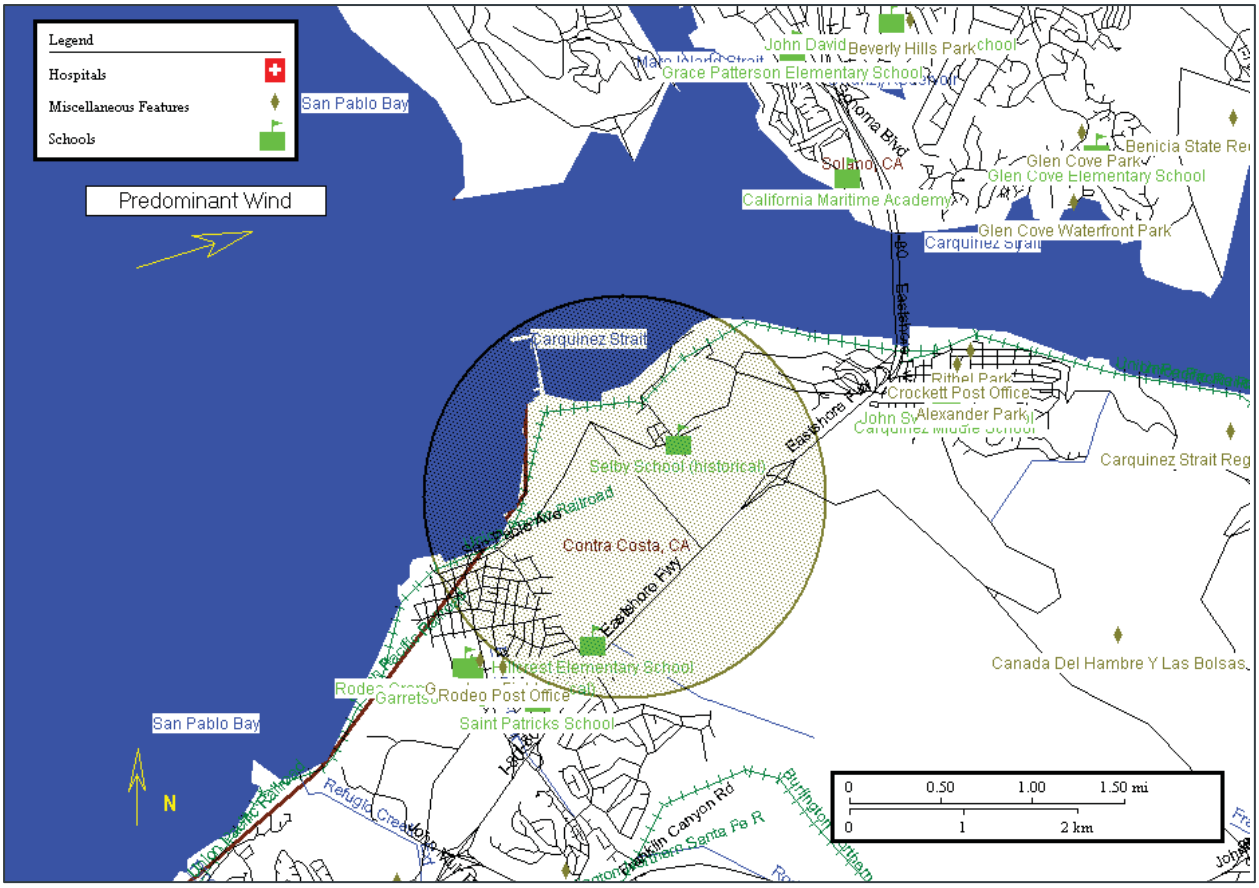
The section includes discussion of the physical and regulatory setting, the baseline for determining environmental impacts, the significance criteria used for determining environmental impacts, and potential hazards and hazardous materials impacts associated with construction/demolition, transitional and the operation and maintenance phases of the Project. The analysis addresses potential impacts resulting from physical changes and process changes in hazardous materials use, storage, disposal and transport, including operational and feedstock changes, at the Rodeo Refinery, the Marine Terminal, the Santa Maria Site, and Pipeline Sites and along transportation route locations. The Santa Maria Site and the Pipeline Sites are addressed to the extent information is available and at a qualitative level of discussion.

4.9.2 Environmental Setting

The environmental setting is the conditions during the baseline period. This includes the storage and use of hazardous materials at the refinery site, including the Marine Terminal as well as the transportation of material into and out of the refinery, and the Santa Maria Site and the Pipeline Sites. These are discussed below.

4.9.2.1 Rodeo Refinery and Transportation Methods

The Rodeo Refinery is located in unincorporated northwestern Contra Costa County, adjacent to the community of Rodeo. The site's current primary land use is heavy industrial, specifically, bulk petroleum processing and storage. Buffer zones have been established around the Rodeo Site, which is the active refinery where hazardous substances or processes such as storage tanks and hydrogen generators are located. The Rodeo Site is bounded on the northeast and southeast by undeveloped open space and industrial uses. The southwest edge of the Rodeo Site is a 300- to 600-foot undeveloped area that is maintained as a buffer between the Rodeo Refinery and the Bayo Vista residential area of Rodeo. The Bayo Vista area contains the sensitive receptor nearest to the Rodeo Site—a day care center. The Bayo Vista Head Start Center is approximately 1,110 feet from the closest Refinery tank, 0.75 mile from the railcar loading facility, 0.85 miles from the Marine Terminal and no schools are within 0.5 mile of the Rodeo Refinery. The Rodeo Refinery is located approximately 11 miles from Buchanan Field Airport, which is east–southeast in the city of Concord and 12 miles from the Napa County Airport, which is the north in Napa County. Figure 4.9-1 presents the sensitive receptors identified within a 1-mile radius of the Rodeo Refinery (CalARP 2019).



Source: *CalARP 2019, Appendix F*

Notes: Hillcrest Elementary School was closed in 2004, and the students were relocated to Rodeo Hills Elementary. Phillips 66 purchased the abandoned school property and demolished the buildings to create a larger buffer zone. Phillips 66 purchased the site of the Selby School in 2005 and relocated the occupant John Swett Unified School Administrative Offices to downtown Rodeo.

Figure 4.9-1. Sensitive Receptor Maps – Rodeo Refinery

Rodeo Refinery Hazards

Hazardous materials currently used at the Rodeo Refinery consist of those common to petrochemical operations, such as petroleum hydrocarbons, sulfur and sulfur compounds, hydrogen, aqueous ammonia, and organic gases. These substances can cause fires, explosions, and toxic exposure. Explosions at refineries can occur if flammable vapors and gases are ignited or when a flammable substance is released at high temperatures, usually under elevated pressure. Refinery explosions can include a vapor cloud explosion and a boiling liquid–expanding vapor explosion, both of which are very rare events. Impacts of an explosion are expressed in terms of a sudden increase in pressure above ambient pressure, resulting from a blast or shock wave, and explosions at refineries have caused damage, primarily broken windows, in nearby neighborhoods. A more common event would be a flash fire in which ignition occurs before mixing with atmospheric air. This type of fire does not result in explosions that could cause damaging overpressure. Refinery fires generally pose little risk to the public when buffer zones are incorporated in to the design, mainly because they are typically confined to the vicinity of the equipment from which the flammable release occurs.

Hazardous materials used or previously used in the design, construction, and operation of facilities at the Rodeo Refinery may include asbestos and lead-based paint. These materials could be encountered during demolition activities associated with the Project.

Many of the substances used or produced during the refining process, including ammonia and various sulfur compounds (including hydrogen sulfide), have some degree of toxicity to humans. Others, notably hydrogen and the various petroleum-based liquids and gases used and produced by the refinery, are flammable or explosive. The facility also produces hazardous wastes in the form of spent catalysts and sludges.

The Rodeo Refinery has been operating at its current location since 1896. Historical leaks and spills have contributed to subsurface soil and groundwater contamination that can negatively affect soil and groundwater quality. As a result, the Rodeo Refinery is on the Government Code Section 65962.5 of the Resource Conservation and Recovery Information System list of hazardous waste generators (also known as the Cortese List).

Wastes generated at the Rodeo Refinery are handled, stored, and disposed of in accordance with applicable regulations. Hazardous wastes are manifested and shipped to approved permitted facilities. The Rodeo Refinery generates approximately 30 tons of non-Resource Conservation and Recovery Act (RCRA) hazardous waste (e.g., oily trash, sand blast grit), over the period between turnarounds (approximately 2 to 3 years). The Rodeo Refinery also generates approximately 800,000 pounds of spent nickel/molybdenum catalyst and 30,000 pounds of spent cobalt/molybdenum catalyst every 30 to 36 months (the useful life of the material). These materials are considered hazardous under RCRA. However, the spent catalyst is sent offsite where it is processed to reclaim and regenerate the material, so it is not considered a waste.

All storm-water falling within Refinery tank, process, or piping containment areas, or spills in these areas, is collected for treatment in the process sewer, and is fully treated before discharge to San Pablo Bay. All oils are separated and skimmed during the process. The Refinery has three points of water effluent discharge into San Pablo Bay. The outfalls are observed both by the operators several times during every eight-hour shift, and by oil-on-water monitoring devices that alarm to the operator whenever an oil sheen is present. The water is also tested daily, weekly, and monthly as prescribed by the NPDES permit.

Transportation Hazards

In addition to hazards from onsite refinery incidents involving hazardous materials or processes, operations at the Rodeo Refinery creates potential hazards from the transportation of hazardous substances, including feedstocks, process chemicals, and products. Feedstocks are transported to the refinery by tankers and barges (crude oil, feedstocks, and gasoline blendstocks), pipelines (crude oil and petroleum feedstocks), and trucks (process chemicals, small quantities of transmix[47]). Products, byproducts, and wastes leave the Rodeo Refinery by tankers and barges (refined products), pipelines (fuels), rail (butane and petroleum coke), and trucks (spent catalyst and various wastes, some of which are hazardous). Each of these are discussed below.

Marine Terminal Tanker and Barge Transport

A variety of commercial, military and public vessels enter and operate within the Bay. Many vessels such as ferries and tugs remain entirely within the Bay. Container ships, oil tankers and bulk carriers account for the greatest percentage of ship arrivals; however, a broad range of cargo transits the region every year. Other categories of ships include vehicle carriers, break bulk, chemical tankers and passenger ships. Occasionally, surface combatants, submarines and naval auxiliaries such as oil tankers and supply

[47] Transmix is the portion of the pipeline flow that is diverted to a separate tank to avoid contamination between two dissimilar product batches.

ships transit the Bay. Public vessels often encountered on the Bay include those of the USCG, USACE, NOAA, and Military Sealift Command (Harbor Safety Committee 2019).

The Bay Area has five refineries, eight ports, 14 marine oil terminals, and other terminal facilities. It is noted that the Marathon Refinery in the Martinez/Concord area of Contra Costa County is currently not refining, pending review of a proposed renewable fuels land use project. Table 4.9-1 presents USACE data on inbound vessel visits to the Bay Area over the last 5 years.

Table 4.9-1 Vessel Trips Inbound San Francisco Bay

Year	Self-Propelled			Non-Self Propelled		Totals
	Dry Cargo	Tanker	Tow Tug	Dry Cargo	Tanker	
2015	2,073	756	249	7	299	3,384
2016	2,339	758	185	12	251	3,545
2017	2,308	881	150	6	217	3,562
2018	2,298	831	168	7	235	3,539
2019	2,150	873	177	5	239	3,444

Source: USACE 2021, San Francisco Bay Entrance, Upbound traffic, trips and drafts of vessels, foreign and domestic combined.

Total petroleum cargo transfer operations in the Bay area are tabulated by the Harbor Safety Committee reports (Harbor Safety Committee 2019) and total 92 million barrels of materials loaded and 250 million barrels discharged in 2019, with the largest amounts for loading being attributable to gasoline and diesel (56 percent) and for discharge being crude oil (60 percent).

Ferry service and recreational and fishing boat traffic also occur in the San Francisco Bay. The Bay Area ferry system makes over 85,000 trips annually (Harbor Safety Committee 2019). High-speed commuter ferries frequently operate in the Central Bay, South Bay, and San Pablo Bay, with high concentrations around the San Francisco Ferry Building on San Francisco's north shore, where most Central Bay routes terminate. Many ferries also operate between San Francisco's north shore, Alcatraz, and Sausalito/Tiburon. These ferries do not run along charted routes. The San Francisco Harbor Safety Committee, in conjunction with the USCG, has established a recommended Ferry Traffic Routing Protocol for: (1) the area surrounding the Ferry Building terminal along the waterfront of San Francisco, (2) the waters of Central Bay, and (3) the waters of San Pablo Bay. The protocol is intended to increase safety in the area by reducing traffic conflicts.

In 2010, San Francisco Environment (2012) identified 71 marinas in seven Bay Area counties, including Alameda (23), Contra Costa (9), Marin (17), San Francisco (8), San Mateo (8), Solano (4), and Sonoma (2). In 2012, there were approximately 20,000 boat berths around the Bay Area (Harbor Safety Committee 2019), with two-thirds of these located in the Central Bay. In addition, numerous boat ramps and launches encourage use of the bay by both smaller motorized vessels and non-motorized vessels (e.g., canoes, kayaks, windsurfers, and paddleboards). While only a small percentage of boat owners and renters are on the bay at any given time, sunny weekends may bring thousands of pleasure boat users on the bay's waterways.

Risks associated with vessel transportation of liquid bulk fall into two classes: in-transit risks from accidents such as collisions, allisions, and groundings while on the way to or from marine oil terminals, and at-berth risks from spills during cargo transfer operations. An analysis of historical in-transit accident rates, adjusted for double-hull and double-bottom technology, found an accident rate for in-transit within San Francisco Bay that would release a spill of more than 100 gallons to be approximately 0.8 per million tanker vessel calls and 5 per million barge calls (Acutech 2021; USDOT 1991). The USDOT analysis was prepared to evaluate the then-proposed Vessel Traffic Services that is now, albeit with substantial

improvements from the original plan (Acutech 2021), a fixture of all major US port complexes, including San Francisco Bay. Examples of large vessel spills include the following:

- In 1971, a collision of the *Oregon Standard* and the *Arizona Standard* under the Golden Gate Bridge occurred in heavy fog and resulted in a spill of approximately 27,600 barrels of bunker heavy fuel oil. Spilled oil impacted the outer coast to the north as far as Double Point (north of Point Reyes Bird Observatory) in Marin County, and to the south near San Gregorio Beach in San Mateo County, as well as San Francisco Bay. This incident prompted the legislation that established the modern Vessel Traffic Service (VTS); see Section 4.9.2.9, *Marine Vessel Traffic Control System*, for more detail on the VTS).
- In 1984, the chemical tanker Puerto Rican experienced an explosion in a void space surrounding a cargo tank while the vessel was in open waters about 8 miles west of the Golden Gate Bridge. The accident resulted in injury to crew members and the release of over 30,000 barrels of lubricating oil and fuel oil, impacting the Farallon Islands, Point Reyes, and Bodega Bay.
- In 2007, a container ship, the Cosco Busan, struck the San Francisco-Oakland Bay Bridge and released almost 1,400 barrels of fuel oil into the water. Oil contamination occurred on the waterfront in the San Francisco Bay, and several beaches in San Francisco and in Marin County were closed due to the oil.
- In 2009, the Dubai Star, spilled 10 bbls of fuel oil off Alameda during refueling.

Container ships are not subject to the requirement for double-hulled construction that govern tank vessels. In the case of the Rodeo Refinery, no in-transit accidents resulting in spills occurred in the baseline period (2017–2019).

The Harbor Safety Committee compiles statistics related to oil spills in the Bay Area. Based on Harbor Safety Committee statistics, in 2019 there were an average of 122 oil spills per year attributable to US commercial vessels and 62 per year attributable to foreign freight vessels. At the Marine Terminal, most of the tankers and barges transporting crude oil, feedstocks, and products to and from the Rodeo Refinery originate outside the Bay area. Tankers are generally self-propelled marine vessels and barges are propelled by tugs (towing or pulling). To access the Rodeo Refinery, tankers and barges come into the approaches to the Golden Gate, pick up a pilot and tug escort approximately 9 miles west of the Golden Gate, transit through the Golden Gate, proceed north via marked navigational channels to San Pablo Bay, and proceed northeast through San Pablo Bay to the Marine Terminal. Vessels larger than barges must have a pilot and from one to three escort tugboats, depending on vessel size, all the way through the transit. Barges have their own tugboats providing propulsion, but the larger ATBs are required by the Rodeo Refinery's operating procedures to also have an escort tug.

To maximize navigational safety, vessels are required to use specific travel lanes both inside and outside the bay. Outside the Golden Gate, vessels are not required to travel at low speeds, but there is a voluntary seasonal VSR request for vessels 3,000 gross registered tons or larger to reduce speed limit of 10 knots as requested by the USCG (a branch of the Department of Homeland Security) with support from the NOAA and Marine Exchange that went into effect May 1, 2021, for areas off of San Francisco. All transits by vessels 300 gross registered tons or larger are analyzed by NOAA via ATS data provided by the USCG to assess the industry's cooperation. Phillips 66's records indicate that tankers and barges calling the Rodeo Refinery are requested to observe this limit up until they near the Marine Terminal and slow to maneuver into the berth.

Under baseline conditions (2017–2019), an average of 80 tankers and 90 barges per year called at the Marine Terminal, or approximately 3 vessels per week. The tankers ranged in size from vessels of less than 10,000 deadweight tons (approximately 50,000 barrels of crude oil) to Suezmax vessels (120,000 to 200,000 deadweight tons, or approximately 600,000 to 1,000,000 barrels of crude oil). Over half of the tankers calling at the Marine Terminal are "Handymax" size (20,000 to 60,000 deadweight tons). Many of

the barges are ATGs or integrated tug-barges, a configuration in which the tugboat fits into an indentation in the barge's stern in a semi-permanent association and pushes it from behind. This configuration is substantially safer than towing from in front at the end of a cable. Most other barges are pushed from behind but are not actually integrated into a fixed association. Barges vary widely in capacity; the most common size calling at the Rodeo Refinery has a capacity of approximately 30,000 barrels, but barges up to a 150,000-barrel capacity have called at the Marine Terminal. Barges are typically used for coastwise service, for example from the Bay Area to Puget Sound or Southern California rather than transoceanic voyages (for example, in 2019, approximately two-thirds of cargo vessel arrivals at the Golden Gate were from other US West Coast ports [Marine Exchange 2020]).

Only two documented at-berth releases have happened at the Marine Terminal over the last 10 years: in September 2017, a cargo transfer line leaked less than 1 barrel (25 gallons) of light gas oil into the bay and in January 2018, a small sheen on the water next to the Marine Terminal was cleaned up with sorbent pads and a sorbent boom. Neither incident resulted in reported adverse effects on human health or the environment. Another spill may have occurred in September 2016; in that incident, an oil sheen on San Pablo Bay, observed approximately 2 miles downriver from the Marine Terminal where the tanker Yamuna Spirit was unloading, prompted a response by the appropriate agencies. An investigation ruled out the Marine Terminal and the Rodeo Refinery as the source, but a laboratory analysis indicated that the spilled material was chemically identical to the Yamuna Spirit's crude oil cargo.

Acutech (2021) calculated that the probability of an accident that would cause a spill of more than 100 gallons involving in-transit vessels at baseline activity levels is approximately once every 1,927 years.

For spills that could occur at the Marine Terminal, the California State Land Commission (CSLC) EIRs for the Amorco Marine Terminal (CLSC 2014) and the Avon Marine Terminal (CSLC 2015) used historical releases in the CSLC database of marine terminals and estimated the release frequency for a marine terminal release of 3.0 spills every 1,000 vessel calls. The largest recorded spill from a tank vessel or marine oil terminal since 1992, the year the CSLC began collecting these data, was 26 barrels (1,092 gallons). The CSLC additionally utilized worldwide data to estimate the rate of larger spills as very few larger spills have occurred at marine terminals in the San Francisco Bay. Using the calculations presented in the CSLC EIRs, the rate for any sized spill at the Marine Terminal during the baseline period would be about once every 1.96 years, and the rate for spills greater than 100 gallons during the baseline period would be once every 14 years and the rate for spills greater than 1,000 gallons would be once every 39 years. The frequencies for larger spills, as applied to the Marine Terminal, are very conservative because the spill data used for larger spills are for all marine oil terminals, many of which are not, or were not, designed and operated in accordance with the safeguards that the Marine Terminal would have in compliance with MOTEMS. However, as noted above, there have been possibly three oil spills at the Marine Terminal over the last 10 years, or a rate of once every 3.3 years, which is similar to the rate calculated by using the CSLC approach.

Truck Transport

The transportation of hazardous substances poses a potential for hazardous materials releases and subsequent fires or explosions. In general, the greater the vehicle miles traveled, the greater the potential for an accident. Statistical accident frequency varies depending relative accident potential for the travel route. The size of a potential release is related to the maximum volume of a hazardous substance that can be released in a single accident, should an accident occur, and the type of failure of the containment structure, e.g., rupture or leak. The potential consequences of the accident are related to the size of the release, the population density at the location of the accident, the physical and chemical properties of the hazardous material, and the local meteorological conditions at the time of the accident.

Factors affecting truck transportation accidents include the type of roadway; presence of road hazards; vehicle type; maintenance and physical condition; and driver training. Accident rates are defined in terms of accidents per million miles traveled.

Every time hazardous materials are moved from the site of generation, there are opportunities for accidental releases. The US DOT) conducted a study on hazardous materials and non-hazardous materials truck shipment accidents and incidents. The Federal Motor Carrier Safety Administration compared hazardous materials truck shipment accidents and incidents to non-hazardous materials truck shipment accidents and incidents (Federal Motor Carrier Safety Administration 2001). The estimated accident rate for trucks (shipping non-hazardous materials) was 0.73 accident per million miles traveled. The average accident rate for trucks transporting hazardous materials (all hazard classes) was estimated to be 0.32 accident per million miles traveled (Federal Motor Carrier Safety Administration 2001).

Truck transportation hazards arise principally from the risk of accidents, such as collisions and overturning, that release cargo and fuel into the environment. As described in Section 3.7, *Project Operation*, in baseline year 2019, truck traffic associated with the Rodeo Refinery totaled 40,213 round trips. Over 80 percent of that traffic consisted of trailer trucks moving petroleum coke to the Carbon Plant and outside the Rodeo Refinery, specifically with 36 percent conveying raw petroleum coke from the Rodeo Refinery to the Carbon Plant and 44 percent consisting of petroleum coke deliveries outside the Rodeo Refinery. To some extent, that traffic is internal to the Rodeo Refinery, but coke trucks do use Cummings Skyway and State Route 4 to access the Carbon Plant. Other truck traffic in 2019 consisted of approximately 7,500 trucks bringing various materials, some of them hazardous, into the refinery and transporting wastes, some hazardous, out of the refinery. These trucks used local roadways, including San Pablo Avenue, the Cummings Skyway, State Route 4, and Willow Avenue, and I-80.

Rail Transport

Train accident reports reported to the Federal Railroad Administration identify the causes and contributing factors causing the accident. Rail accidents can stem from human errors (e.g., switching, coupling, transloading, speeding); equipment failures (e.g., crossing guard failures, leaking valve, coupling failure, broken rails, brake failure, corrosion, etc.); system or procedural failures (e.g., interim storage on holding track, routing, emergency response, maintenance, circuitous routing); and external events (vandalism, at-grade crossing, flood, earthquake, fire, bridge failure).

Federal Railroad Administration regulations on reporting railroad accidents/incidents are found primarily in 49 CFR Part 225. The purpose of the regulations is to provide the Federal Railroad Administration with accurate information concerning the hazards that exist on the nation's railroads. The Federal Railroad Administration uses this information for regulatory and enforcement purposes, and for determining comparative trends of railroad safety. These regulations preempt states from prescribing accident/incident reporting requirements. The Federal Railroad Administration compiles data on railroad-related accidents, injuries and fatalities to depict the nature and cause of rail-related accidents and improve safety.

Based on the train accident train accident data reported in the United States, and California between 2011 and 2020, the train accident rate was 2.9 accidents per million miles traveled over the 10-year period from January 2011 to December 2020. Of the hazmat releases in California, only three accidents involving releases of hazardous materials occurred between 2011 and 2020.

Rail transport under baseline conditions consists of daily arrivals and departures of tank cars for the refinery's butane product. As described in Section 3.7, *Project Operation*, rail traffic at the Rodeo Refinery during the baseline year 2019 consisted of one linehaul locomotive visit per day moving 4.7 cars, on average, at the butane facility and approximately three linehaul visits per week, on average, to the Carbon Plant moving an average of 2.3 cars, on average, for each visit.

The hazards of rail transport arise primarily from derailments of railcars. These derailments can cause the railcars to rupture and release their contents. Compared to trucks, railcars carry larger quantities of material (30,000 gallons is a typical tank car size), and derailments of railcars carrying hazardous materials can cause incidents with significant local consequences, such as the derailment and explosion of a train of tank cars carrying petroleum crude oil in Lac Mégantic, Canada, in 2013. Rail transportation of hazardous

materials is heavily regulated by a number of federal and state agencies, which specify cargo packaging and manifesting requirements, railcar construction standards, and railroad operating procedures.

Pipeline Transport

The USDOT Pipeline and Hazardous Material Safety Administration (PHMSA), keeps detailed pipeline incident and mileage reports to chart fatalities, injuries, property damage, and loss of product resulting from pipeline incidents. Pipeline accident events, referred to as "significant incidents" by the PHMSA, include all incidents reported by a pipeline operator when any of the following conditions are met: (1) fatality or injury requiring in-patient hospitalization (also referred to as a "serious incident"); (2) $50,000 or more in total costs; (3) highly volatile liquid releases of five barrels or more or other liquid releases of 50 barrels or more; and/or (4) liquid releases resulting in an unintentional fire or explosion.

The 10 year (2010 to 2019) listing of hazardous liquid pipeline accidents in California averaged 21 accidents per year for onshore hazardous liquid pipelines, including crude oil and petroleum products, in California. The PHMSA data show that over a 10-year period (2010–2019), none of the incidents resulted in fatalities or serious injuries. Approximately 80 percent of the hazardous materials that were spilled was crude oil, with 83 percent of the barrels lost being crude oil. According to the USDOT Incident and Mileage Reports, California contains 6,525 miles of hazardous liquid pipelines, transporting primarily crude oil and petroleum products.

Four regional pipelines serving the Santa Maria Site and the Rodeo Refinery. The Santa Maria Site is connected to the Rodeo Refinery by approximately 200 miles of subterranean pipeline (Figure 3-5), designated Line 400 and Line 200. Line 400 runs north and east from the Santa Maria Site through the Coastal Range of central California in San Luis Obispo and Kern Counties to connect with Line 200 north of McKittrick. Line 200 runs northwest up the west side of the San Joaquin Valley. Over the past 10 years, Phillips 66 has had no occurrence of "significant incidents" (CalARP 2019).

Pipeline transport of petroleum products has a strong safety record: in the period from 2001 to 2020, nearly 5 billion barrels of crude oil were transported through the 4,000 miles of crude oil pipelines in California, with an average of fewer than five significant pipeline incidents per year (PHMSA 2021). No one was fatally injured and only one injury required hospitalization in those incidents. Baseline transportation of fuels are tabulated in Table 3-2 and described in Section 3.4.2, *Existing Rodeo Refinery*.

4.9.2.2 Santa Maria Site

The Santa Maria Site is located in southern San Luis Obispo County near the community of Nipomo and the city of Arroyo Grande. The vicinity consists largely of open space and agricultural lands; the closest residences to the site are approximately 0.25 mile to the northeast, and no other sensitive receptors (schools, etc.) are located within 0.5 mile of the facility. The Santa Maria Site processes petroleum crude oil, and the hazards and hazardous substances associated with its operation are similar to those of the Rodeo Refinery, without the processing of lighter end materials (butane) or products (gasoline, diesel). The facility receives crude oil by pipeline and truck and ships partially refined feedstock by pipeline and petroleum coke byproduct by rail. Crude oil and products are stored in tanks onsite. The Santa Maria Site is in the SWRCB's GeoTracker database because of an ongoing site cleanup assessment and interim remedial action involving subsurface hydrocarbon contamination.

The nearest public airfield is the Oceano County Airport, located approximately 3 miles from the Santa Maria Site. The San Luis Obispo County Regional Airport is located approximately 10 miles north of the site, and the Santa Maria Public Airport is located approximately 9 miles southeast of the site.

4.9.2.3 Pipeline Sites

The Pipeline Sites are located in a variety of land uses in a number of counties (i.e., San Luis Obispo, Santa Barbara, Kern, Kings, Madera, Merced, Stanislaus, San Joaquin and Contra Costa). Pipeline access points are generally in sparsely populated areas. The pipelines themselves are underground; they cross numerous streams, small rivers, and transportation infrastructure but do not traverse dense population centers. None of the Pipeline Sites are within 0.25 mile of a school. Three of the Pipeline Sites are located within 2 miles of airports—Orcutt Pump Station (Santa Maria Public Airport), Midway Pump Station (Taft Airport), and Patterson Pump Station (NASA Crows Landing Airport and Test Facility).

As described above, pipeline transport has a strong safety record. Over the past 10 years, Phillips 66 has not experienced any significant incidents associated with the transport of crude oil and refined petroleum products.

4.9.2.4 Existing Phillips 66 Safety Management Systems

The Rodeo Refinery and the Santa Maria Site store and process, and the Pipeline Sites transport materials that are classified as acutely toxic and flammable and could pose hazards during process upset conditions. Historically, the petroleum industry has addressed concerns about potential catastrophic accidents by developing design standards intended to minimize both the likelihood of these events and their consequences. In recent years, federal and state regulations have taken an increasingly active role in requiring facilities to assess and document these risks and to take further action to reduce them.

Emergency Response Plan

Phillips 66 has emergency response plans to ensure that in the event of a fire, hazardous material release, medical emergency, or rescue situation, refinery and pipeline personnel would be able to respond to the emergency quickly and effectively to minimize personal injuries, environmental damage, and/or property damage. The emergency response plan describes the responsibilities of all facility personnel and defines the types of actions that personnel with different levels of training may take in response to an emergency. Furthermore, the emergency response plan describes and defines the chain of command to be followed by personnel in an emergency. The primary responsibility for implementing the emergency response plan rests with Phillips 66, not with an outside agency.

Emergency Response Capabilities

Emergency response teams at each refinery are trained and equipped to respond to fires, rescues, hazardous material releases, and other emergencies. To maintain readiness, emergency response teams participate in monthly meetings and regular response drills. These teams are managed to ensure that the emergency response plan is implemented and followed in the preparation for, and response to, plant emergencies.

In the event of a release of hazardous materials, the nature, source, amount, and affected area of the release are identified and the potential impacts to human health and the environment are assessed. It is the responsibility of Phillips 66 to notify local authorities, as needed, and regulatory agencies, as required by law and the Contra Costa County General Plan. The General Plan requires that all facilities adopt an emergency response plan that includes immediate notification of the public.

Numerous Phillips 66 facilities, including the Rodeo Refinery, are members of mutual aid organizations under which facilities with emergency response capabilities agree to assist each other.

Design

As industrial facilities that handle hazardous chemicals, the Rodeo and Santa Maria Refineries must be constructed and operated in accordance with certain codes and standards that are enforced via administrative mechanisms such as internal audits, design reviews, and building inspections. Some of the main design standards include the American Petroleum Institute's (API's) Recommended Practice 750, Codes of Management Practices of the Chemical Manufacturers, the American National Standards Institute's B31.1: Power Piping and B13.3: Petroleum Refinery Piping, National Fire Prevention Association 30, and the Uniform Building Codes.

Inspections

To ensure integrity, safety and regulatory compliance, the Rodeo and Santa Maria Refineries have various inspection programs, implemented by the Engineering Inspection Department using techniques recognized and accepted by the petroleum industry. In addition, the operations, maintenance, and staff departments conduct various safety and regulatory compliance inspections and audits.

The engineering inspection program uses visual and non-destructive testing methods to inspect affected equipment for damage and deterioration. The program requires written records for all inspections of affected equipment. It covers a variety of plant equipment including tanks, pressure vessels, piping, relief valves, and other related components. The program provides for a planned inspection of new equipment prior to acceptance by Phillips 66 and of existing onsite equipment.

Training

Phillips 66 conducts a safety-training program for employees working at the Rodeo and Santa Maria Refineries and the Pipeline Sites. New employees are given safety training, and employees receive annual refresher training, as required, in the following areas:

- Injury reporting procedures;
- Emergency reporting and notification procedures;
- Safety hazard reporting procedures;
- Use of personal protective equipment;
- Location and use of respiratory equipment;
- Location and use of fire hoses and hand-held fire extinguishers;
- Safety procedures to be used in the event of a release or potential release of a hazardous material;
- Chemicals and wastes present at the facility and their associated hazards;
- Information labels, forms, and Safety Data Sheets;
- Proper methods of handling hazardous materials;
- Reporting of adverse health and environmental effects;
- Use, capabilities, and locations of emergency response equipment and supplies;
- The facility's emergency response plan;
- Procedures for the control of a toxic and hazardous materials release;
- Procedures for coordinating with emergency response organizations; and
- Federal OSHA HAZWOPER training.

In addition to safety training, operator-training programs are conducted at the Rodeo Refinery, Santa Maria Site, and Pipeline Sites to ensure operator competence. The program provides training in policies and procedures, safety and health hazards, and task specific procedures and practices. All operator trainees must successfully complete a basic training program prior to working as an operator. The program includes basic training in the areas of distillation, refining, chemistry, physics, environmental screening, maintenance, instrumentation, and specific safety hazards. After completing the basic training program, a trainee is assigned to an operating area, and the process foreman continues the instruction of the trainee. When new equipment or processes are installed, the process foreman conducts training sessions similar to those given to operator trainees to familiarize trainees with new equipment and/or processes. Training records are maintained for all operators.

4.9.2.5 Process Safety Management and Management of Change

To comply with the Process Safety Management requirements, Phillips 66 has established procedures for the MOC. The purpose of these procedures is to ensure that changes to process chemicals, technology, equipment, facilities, or critical procedures do not cause plant facilities to be operated outside their design limits or introduce new hazards to plant operations. Applicable requirements of the MOC may include an environmental review, health and safety/loss control review, process hazards analysis, project field safety check, HAZCOM Review/Safety Data Sheet[48] update, new or revised procedures, operator training, operating manual update, maintenance records update, equipment inspection update, process flow diagram update, piping and instrumentation diagram update, electrical drawing update, instrument loop sheet update, or other requirements deemed necessary by the reviewing engineers.

4.9.2.6 Risk Management Plan

Phillips 66 operates under the USEPA RMP rule, CalARP Program, and the Contra Costa County ISO. The Rodeo and Santa Maria Refineries maintain RMPs that includes three main components: (1) hazard assessment; (2) release prevention planning; and (3) emergency response planning. The RMPs are updated when there are changes that would affect the use or storage of acutely hazardous substances. A detailed hazards and operability study of the changed components is carried out prior to startup of new equipment or processes such as would be part of the Project. Upon completion of the Project, the HMBP, which provides input to the RMP, would be updated and the RMP scenarios would be reviewed for potential change as a result of Project implementation and transition from conventional refining operations to an operation using non-hazardous feedstocks and producing non-toxic renewable fuels.

4.9.2.7 Marine Oil Terminal Engineering and Maintenance Standards

The Marine Terminal operates as a MOTEMS-compliant facility, meaning that its construction, materials, equipment, and operating procedures meet the standards for marine terminals established by CSLC. The operating procedures are set forth in the *Phillips 66 Rodeo Marine Terminal Handbook*, which was revised and updated in 2016. This document is intended to ensure that vessels using the Marine Terminal to load or offload liquid bulk cargos (e.g., crude oil, gasoline, blendstocks) are aware of and comply with the appropriate safety procedures and with the federal, state, and local rules and regulations governing the handling of such cargos. The handbook describes the marine terminal facilities and then specifies the operating procedures that vessels must follow as they approach, dock at, load/unload at, and depart from the Marine Terminal.

[48] The Federal Emergency Planning & Community Right-To-Know Act 312 requires businesses have available Safety Data Sheet and must submit hazardous chemical inventory forms to the State Emergency Response Commission, Local Emergency Preparedness Committee, and local fire department annually.

The handbook also describes tidal current conditions in the vicinity of the Marine Terminal and recommends traffic patterns, berthing maneuvers and approach speeds, and vessel draft guidelines to provide guidance on approaching and berthing. This guidance supplements the knowledge that the port pilot, which every ship calling the Rodeo Refinery is required to have, brings to the operation. The handbook requires all vessels to use tug escorts to comply with Office of Spill Prevention and Response (OSPR) regulations and specifies the minimum power and class requirements of the tugboats used for different sizes of vessels. For example, the largest class of tanker vessel (143,000 to 200,000 deadweight tons) must use three Class A+ tractor tugboats, the smallest (30,000 deadweight tons or less) must use two Class B twin-screw tugboats.

The handbook sets out the requirements for safe mooring of different sizes of vessels, specifying the number, placement, and strength of mooring lines, and provides example schematic drawings of safe mooring configurations. The fire extinguisher and monitoring systems at the Marine Terminal are detailed and emergency evacuation routes described. The handbook also specifies the requirements for cargo and ballast tank testing, venting, and inert gassing, and for the various regulatory reports. The handbook prohibits cleaning non-crude tanks when at dock. Cargo loading/unloading procedures in terms of personnel requirements, system pressures, ship-to-dock communications, and vapor recovery, and the specific wind conditions that require shutdown of transfer operations, are also specified.

Finally, the handbook describes the pollution control equipment available at the Marine Terminal, including the 2,800-foot-long containment boom, boom boat, and associated response gear, and outlines its capabilities. The handbook also assigns roles in the event of a spill (the terminal would be responsible for initial response and mobilizing outside resources, the vessel for a series of notifications) and specifies the various agencies that would be notified and could become involved in the response.

The MOTEMS apply to all existing and new marine oil terminals in California, and include criteria for audit, maintenance, inspection, structural and seismic analysis and design; mooring and berthing; geotechnical considerations (including site-specific assessment); and analysis and review of the fire, piping, mechanical, and electrical systems. The Marine Terminal is required to comply with the MOTEMS, which became effective on February 6, 2006.

4.9.2.8 Marine Response Capabilities

All marine terminals and all vessels calling at the Marine Terminal are required to have oil spill response plans and a prescribed level of initial response capability. The USCG and the CDFW's Office of Spill Prevention and Response (OSPR) have created the OSRO classification program so that facility and tank vessel operators can contract with and list an 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. Phillips 66 contracts with MSRC to serve as the primary OSRO in its Oil Spill Response Plan for offshore, onshore, and shallow-water response services. MSRC has an extensive inventory of response equipment located throughout the Bay Area, with the closest locations to the Marine Terminal being at Benicia (6.2 miles), Vallejo (4.4 miles) and Martinez (7.2 miles). Equipment located at these three locations is listed in Table 4.9-2.

Table 4.9-2 Marine Spill Response Corporation Response Equipment

Location	Equipment
Benicia	• Warehouse with equipment • Main Equipment: • Mini Spoiler I Support Vessel • Mini Spoiler II Support Vessel • Munson I Support Vessel • Munson II Support Vessel • 2 Shallow Water Push Boats (28' Munson) • 2 x 1,800 Feet 10" Curtain Internal Foam Boom • 2 x Marco I Skimmer 3,588 bbl/day
Martinez	• Sentinel Response Vessel • Raider II Support Vessel • Raider IV Support Vessel • 1 Marco III Skimmer 6,150 bbl/day • 2 x 1,500 Feet 18" Curtain Internal Foam Boom
Vallejo	• Spill Chaser Fast Response Vessel (FRV) • Work Boat Global Boom Barge • Raider I workboat • Raider III workboat • Shallow Water Barge, 400 bbl storage • 6,400 Feet 18" Curtain Internal Foam Boom • 2,000 Feet 18" Curtain Internal Foam Boom • 2 x 1,000 Feet 18" Curtain Internal Foam Boom • 40 Feet Tapered Fence Boom • 2 LORI Brush Pack Skimmers 5,000 bbl/day • 1 GT-185 Skimmer (with Adapter) 1,371 bbl/day • 60 Feet 20" Curtain Internal Foam Boom

Source: MSRC 2021

Methods used for detection of submerged oil include vessel-mounted bottom or side scan sonar, divers with cameras, remotely operated vehicles with cameras, aircraft, and photo bathymetry (photographic mapping of subsurface details). Other methods include diaper drops, where sorbents (often disposable diapers) wrapped around a lead ball are bounced on the bottom and then checked for the presence of oil; dragnet, where a seine net or chain-link fence is fitted with sorbent materials and towed through the water; and snare drops, where sorbents are attached to a line or chain, submerged, anchored, and later raised to surface. The purpose of these drops is to locate and track oil movement on the bottom.

Containment methods for submerged oil include a bottom boom (a-weighted boom placed on the bottom); bubble curtains (massive amounts of bubbles released from a perforated manifold on the bottom that contain oil through turbulence caused by their rising action); water jets (nozzles placed above the surface of the water impinging on the water's surface, thus containing the oil); and a Jackson net (a boom-type device consisting of a double layer of knotless net, with an impermeable plastic membrane between layers fastened at the top and bottom that supports tension lines). The OSROs have access to the specialized equipment needed for a submerged oil spill.

The USCG requires that marine terminals must be able to respond to a small (50 barrels) spill with the following equipment:

- 1,000 feet of containment boom and a means of deploying it within 1 hour;
- oil recovery devices within 2 hours; and
- oil storage capacity for recovered oily material.

Phillips Oil Spill Response Plan has been certified by the USCG and OSPR as meeting these requirements. The OSRP contains estimates of the worst-case discharge, the average most probable discharge and the maximum most probable discharge. The worst-case discharge from the Marine Terminal is based on 33 CFR Part 154 definition, which is defined as releases from Marine Terminal piping only (not the tanker or barge). The worst-case discharge is defined as 3,976 barrels, with an average and maximum most probable discharges of 40 and 397 barrels, respectively. For response planning purposes, the worst-case discharge that Phillips 66 is required to plan for is a release from the refinery tanks potentially releasing 297,000 barrels to the marine environment.

Because the refinery has a worst-case discharge volume of 297,000 barrels of oil, Phillips 66 response capabilities under the plan are for spills up to 297,000 barrels, which is a much larger spill than has occurred within the Bay since at least 1971. The Oil Pollution Act of 1990 was enacted, in part, to ensure that shippers and oil companies pay the costs of spills that occur. It also established a $1 billion Oil Spill Liability Trust Fund, funded by a tax on crude oil received at refineries. The State of California also requires businesses that handle a petroleum product to file for a Certificate of Financial Responsibility, in which they must demonstrate to the state in some manner (e.g. insurance, letter of credit) that they have the financial wherewithal to respond to and cleanup a worst-case spill.

4.9.2.9 Marine Vessel Traffic Control System

The USCG has established a TSS off the entrance to San Francisco Bay. It includes three directed-traffic areas, each with one-way inbound and outbound traffic lanes separated by defined separation zones, and a Precautionary Area. The TSS is recommended for use by vessels approaching or departing the San Francisco Bay, but is not necessarily intended for tugs, tows, or other small vessels that traditionally operate outside the usual steamer lanes or close to shore. The TSS has been adopted by the International Maritime Organization.

The USCG established the VTS in San Francisco Bay in 1972, under legislation prompted by the *Oregon Standard*/*Arizona Standard* collision at the Golden Gate (USCG 2021). Prior to that incident, the San Francisco VTS (the first in the United States) was a voluntary program based on a Coast Guard radar system. Among other provisions, the legislation authorized the Coast Guard to establish a formal VTS system, which was also done at other ports. The system was reduced in the late 1980s in response to budget cuts, but re-activated in the early 1990s in response to the 1989 *Exxon Valdez* incident. Additional legislation in response to that incident authorized the Coast Guard to make participation in the VTS mandatory for specific classes of commercial vessels, especially tankers. The VTS has been continually updated over the years with new technology and improved operating procedures, and now incorporates, among other features, satellite navigation, real-time meteorological and oceanographic sensing systems, and vessel location transponders, as described in subsequent subsections.

The USCG operates the San Francisco VTS and monitors nearly 400 vessel movements per day. The region is considered a difficult navigation area because of its high-traffic density, frequent episodes of fog, and challenging navigational hazards. The VTS for the San Francisco Bay region has six components: (1) automatic identification system, (2) radar and visual surveillance, (3) VHF communications network, (4) a position reporting system, (5) traffic schemes within the San Francisco Bay, and (6) a 24-hour center that is staffed with specially trained vessel traffic-control specialists.

The VTS area is divided into two sectors—offshore and inshore. The offshore sector consists of the ocean waters within a 38-nautical-mile radius of Mount Tamalpais, excluding the offshore Precautionary Area. The inshore sector consists of the waters of the offshore Precautionary Area eastward to San Francisco Bay and its tributaries extending inland to the ports of Stockton, Sacramento, and Redwood City. In sum, the geographic area served by the VTS includes San Francisco Bay, its seaward approaches, and its tributaries as far as Stockton and Sacramento.

There are seven Regulated Navigation Areas (RNAs) in the San Francisco Bay. These RNAs were established in 1993 by the USCG with input from the Harbor Safety Committee, and are based on the voluntary traffic-routing measures that were previously in existence. The RNAs are codified in 46 CFR Section 165.1116. RNAs organize traffic-flow patterns to reduce vessel congestion where maneuvering room is limited; reduce meeting, crossing, and overtaking situations between large vessels in constricted channels; and limit vessel speed. All vessels weighing 1,600 gross tons or more, and tugs with a tow of 1,600 gross tons or more (referred to herein as large vessels) navigating in the RNAs are required by the regulations to (1) not exceed a speed of 15 knots through the water; and (2) have engine(s) ready for immediate maneuver, and operate engine(s) in a control mode and on fuel that will allow for an immediate response to any engine order by the Captain.

Position Reporting, Communication, and Surveillance

The USCG VTS at Yerba Buena Island is the communications center for the TSS. The TSS was extensively upgraded in 1997. The upgraded system includes state-of-the-art computer-digitized radar displays shown on electronic charts. The new system automated many of the controller's duties, allowing more time for monitoring traffic. There are three classes of VTS user—passenger vessels, power-driven vessels, and towing vessels. There are four report types that may be required of each. In general, communications with VTS are brief, succinct, and to the point. Power-driven vessels over 40 meters in length are required to call VTS 15 minutes prior to entering a VTS area, when getting underway, at certain specified points, when there are changes to the sailing plan, and when leaving the VTS area.

Pilotage

Pilotage in and out of the San Francisco Bay and adjacent to the waterways is compulsory for all vessels of foreign registry and United States vessels under enrollment not having a federally licensed pilot on board. The San Francisco Bar Pilots provide pilotage to ports in San Francisco Bay and to ports on all tributaries to the bay. Pilots board the vessels in the Pilot Boarding Area outside the Golden Gate entrance, and then pilot the vessels to their destinations. Pilots normally leave the vessels after docking, and reboard the vessels when they are ready to leave and pilot them to sea or other destinations within the Bay Area.

Physical Oceanographic Real Time System

The Physical Oceanographic Real Time System (PORTS) is designed to provide real-time information to mariners, oil spill response teams, coastal resource managers, and others about San Francisco Bay's water levels, currents, salinity, and winds. NOAA's National Ocean Service, OSPR, US Geological Survey, local community, and Marine Exchange of the San Francisco Bay operate PORTS as a partnership to provide service to those who must make operational decisions based on oceanographic and meteorological conditions in the bay. Instruments are deployed at strategic locations in the San Francisco Bay to collect and provide data at critical locations and to allow nowcasting and forecasting using a mathematical model of the bay's oceanographic processes. Data from these sensors are fed to a central data-collection point; raw data from the sensors are integrated and synthesized into information and analysis products, including graphical displays of PORTS data. These displays are available over the Internet and through a voice response system. Station 9415141 at Davis Point (at the Marine Terminal) is the nearest PORTS to the Marine Terminal (NOAA 2021a).

4.9.2.10 Factors Affecting Vessel Traffic Safety

This section summarizes environmental conditions described in the USCG Pilot, Volume 7, 53th Edition, 2021 (NOAA 2021b); the San Francisco, San Pablo, and Suisun Bays Harbor Safety Plan Year 2019 (Harbor Safety Committee 2019); and San Francisco Bay Pilots (2021) Operations Guidelines for the Movement of Vessels on San Francisco Bay and Tributaries (SFBP 2021) that could have an impact on vessel safety in the Bay Area.

Winds

San Francisco Bay Area weather is seasonably variable. Winter is the season with the most significant seas, both in terms of locally driven wind waves and open-ocean swells that are generated by long fetches of strong winds over the eastern Pacific. Winter winds from November to February shift frequently and have a wide range of speeds depending on the procession of offshore high- and low-pressure systems. Spring tends to be the windiest season, with average speeds in the San Francisco Bay of 6 to 12 nautical miles per hour (knots), with wind speeds of 17 to 28 knots up to 40 percent of the time. Summer winds are the most constant and predictable. Wind speed can affect track keeping and mooring operations and can cause strain on mooring lines during transfer operations.

Fog

Fog is a well-known problem in the Bay Area, particularly around the entrance to the San Francisco Bay (known as the Golden Gate). It is most common during the summer, occasional during fall and winter, and infrequent during spring. The long-term fluctuations are not predictable, but daily and seasonal cycles generally come at expected intervals. The foggiest months are usually July and August, while June is the least foggy. Under normal summer conditions, a sheet of fog appears in the early forenoon and becomes more formidable as the day wears on. This type of fog is normally referred to as sea fog. Fog signals in the Golden Gate operate 15 to 25 percent of the time during August. Another type of fog, referred to as Tule fog, forms in low, damp places such as the Sacramento-San Joaquin River Delta, and is most prevalent in late December and January. This type of fog tends to drift seaward through the Carquinez Strait and other gaps in the Berkeley Hills. Fog signals tend to operate 10 to 20 percent of the time during these months. The reduced visibility caused by fog can increase the potential for collisions and allisions.

Currents

The currents at the entrance to the San Francisco Bay are variable and uncertain, and at times attain considerable velocity. The ebb current has been observed to reach a velocity of over 6.5 knots. Immediately outside the San Francisco Bar, a horseshoe shaped area of shallow water that begins north of the Golden Gate in Marin County, runs out approximately 5 miles, and curves back to shore just south of the Golden Gate; this area of water has a slight current to the north and west known as the Coast Eddy Current. The currents that have the greatest effect on navigation in the bay and out through the Golden Gate are tidal in nature (i.e., due to the tide rushing in and out of the San Francisco Bay). Currents can affect track keeping, mooring operations, and oil spill response operations.

Tides

Tides in the San Francisco Bay Area are mixed. Usually, two cycles of high and low tides occur daily, but with inequality of the heights of the two. Occasionally, the tidal cycle will become diurnal (only one cycle of tide in a day). Depths in the San Francisco Bay are based on the MLLW level, which is the average height of the lower of the two daily low tides. The mean range of the tide at the Golden Gate is 4.1 feet, with a diurnal range of 5.8 feet. During the periodic maximum tidal variations, the range may reach as much as 9 feet and have lowest low waters 2.4 feet below MLLW datum. Tides affect water depth, which in turn can have potential impacts by groundings. In addition, tidal action has an impact on currents in the San Francisco Bay.

Water Depths

Water depths in the San Francisco Bay are generally shallow and subject to silting from river runoff and dredge spoil recirculation. Therefore, channel depths must be regularly maintained, and shoaling—the deposition of silt and sand that decreases water depth—must be prevented to accommodate deeper-draft vessels. The USACE attempts to maintain the depth of the main ship channel from the Pacific Ocean into the San Francisco Bay at 55 feet; however, the continual siltation results in actual main-channel depths ranging between 49 and 55 feet. Deep-draft vessels in the San Francisco Bay must carefully navigate many of the main shipping channels because channel depths in some areas are barely sufficient for navigation by some modern larger vessels, depending upon how deeply laden the vessel is. While the USACE surveys specific areas of concern on a frequent basis, recent survey charts may not show all seabed obstructions or shallow areas due to highly mobile bottoms (due to localized shoaling). In addition, recent observations indicate that manmade channels may influence tidal currents to a greater degree than earlier anticipated. Water depth impacts under keel clearance, and groundings are a potential impact.

4.9.2.11 Regulatory Setting

The existing regulatory setting reflects the governing of hazardous materials transport, storage, and use at the Rodeo Refinery, Santa Maria Site, and Pipeline Sites, as well as federal, state, and local regulations governing process safety.

Conventional refinery operations involve the processing and handling of substances that are classified as combustible and/or flammable, with the potential for fires and explosions, and also involve the processing and handling of substances that are acutely toxic with the potential of releasing toxic vapors. Refinery processes are, therefore, subject to regulations and safety management programs to prevent and mitigate potential accidents. In addition, refinery operations generate hazardous wastes that are subject to regulations and programs covering their safe storage and disposal.

Because of the hazards presented by the use, storage, transportation, and disposal of hazardous materials in industrial oil refining operations, including those relating to accidental release or upset conditions, an extensive body of laws and regulations has developed to minimize risk and mitigate harm in the event of incidents. Numerous federal, state, and county laws, regulations, guidelines, and policies focus on reducing the risks from the hazards associated with the transport, storage, and refining of petroleum and petroleum products, some of which include the following:

- USDOT railroad safety regulations, hazardous materials regulations, and pipeline safety regulations;
- OSHA worker safety rules;
- USEPA Accidental Release Prevention/RMP rule, Spill Prevention, Control and Countermeasures rule, and community right-to-know regulations;
- Federal CWA, as enforced by the USEPA;
- California Porter-Cologne Water Quality Control Act and related California Administrative Code sections administered by the California SWRCB and the San Francisco Bay RWQCB;
- CalARP Program;
- California Division of Occupational Safety and Health (Cal/OSHA) Injury and Illness Prevention Program and worker safety and communication regulations;
- CPUC’s railroad safety rules;
- California pipeline safety regulations;
- California EPA, Department of Toxic Substances Control (DTSC) hazardous waste management regulations;

- CSLC's MOTEMS;
- San Luis Obispo County General Plan Safety Element;
- Contra Costa County's ISO; and
- Permitting requirements, which must be fulfilled prior to development, are enforced by Contra Costa County, San Luis Obispo County, and other counties through which the pipelines pass.

These regulations and others and existing compliance programs and plans in place at the Rodeo Refinery and governing the Santa Maria Site and Pipeline Sites are described in more detail below. The Project would transition the Rodeo Refinery from conventional refining operations to an operation using non-hazardous feedstocks and producing non-toxic renewable fuels. Generally, these renewable feedstocks are not identified as marine pollutants by the US Department of Transportation (USDOT, Title 49 Part 171), the United Nations, or the International Maritime Organization, which regulate the movement of materials throughout the world. However, although these feedstocks may not be classified as *pollutants*, the USEPA "*found that a worst-case discharge or substantial threat of discharge of animal fats and vegetable oils to navigable waters, adjoining shorelines, or the exclusive economic zone could reasonably be expected to cause substantial harm to the environment, including wildlife that may be killed by the discharge*" (40 CFR Part 112). See Section 4.4, *Biological Resources*, for additional information. To the extent that Project operation would not involve some of the activities and hazardous materials associated with conventional refinery operations, some of these regulations would likely not apply to the Project.

Federal Authority

USEPA

Accidental Release Prevention

The USEPA's Accidental Release Prevention/RMP rule, CalARP Program, and Cal/OSHA Process Safety Management (PSM) standard require that facilities assess the potential for accidental releases of toxic, reactive, flammable, or explosive chemicals and that programs be established to minimize the frequency and extent of accidental releases. The RMP and CalARP regulations are geared toward offsite consequences to protect the general public. PSM is geared toward workplace and employee safety. Enforcement of CalARP regulations is assigned to the Certified Unified Program Agencies (CUPA).

Crude oil is not a regulated substance under the federal USEPA Accidental Release Prevention/RMP Rule. Crude oil can contain hydrogen sulfide (H_2S), which can be captured by the RMP rule. However, the threshold determination for hydrogen sulfide in 40 CFR Section 68.115(b) is 1 percent by weight. Crude oil containing less than 1 percent hydrogen sulfide is not captured under the RMP Rule. Pursuant to the Cal/OSHA PSM Standard, crude oil is not classified as an acutely hazardous material in the CCR Title 8, Section 5189.

Oil Spill Prevention

The USEPA has established oil pollution prevention regulations (40 CFR Part 112) to implement the Oil Pollution Act of 1990. A central feature of these regulations is the requirement that operators of oil facilities, such as refineries, pipelines, and petroleum storage and distribution facilities, prepare and implement a facility-specific SPCC Plan. The plan must be certified, reviewed at least every 5 years, and revised as needed to reflect facility changes. A large or complex facility such as the Rodeo Refinery is required to have SPCC Plans for each of its operational elements, such as loading racks, storage tanks, marine terminal, and internal pipelines.

10 CFR Parts 51, 52, 70, and 71 – PSD and Title V Permitting Programs

On June 23, 2014, the US Supreme Court issued its decision in *Utility Air Regulatory Group v. EPA* (No. 12-1146). The Court ruled that the USEPA may not treat GHGs as air pollutants for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. The Court also stated that PSD permits that are otherwise required (based on emissions of criteria pollutants, such as nitrogen oxides and sulfur oxides) may continue to require limitations on GHGs emissions based on the application of BACT. USEPA is currently evaluating the implications of the Court's decision and awaiting further action by the US Courts. As the USEPA gains a better understanding of the full impact of the decision on PSD and Title V permitting regulations, it will provide relevant guidance and information on GHG permitting requirements (USEPA 2014).

US Coast Guard

The USCG is the lead federal agency for response to oil spills on navigable waters. Facilities are required to submit plans to the USCG for spill planning and response. The SPCC Plan must be reviewed by facility management at least every 5 years and revised as needed to reflect facility changes. The USEPA retains enforcement responsibility for the SPCC Rule. The SPCC Plan also outlines the monitoring and reporting requirements and actions that must be performed in the event of a spill. The CSLC, through its OSPR, is the state lead agency in cooperation with CDFW. The OSPR has the public trustee and custodial responsibilities of CDFW for protecting, managing and restoring the state's fish, wildlife, and plants. OSPR coordinates federal, state, and local oil spill response organizations. Key activities include coordinating response drills; ensuring the preparation and maintenance of contingency plans for geographic areas, industries, and individual facilities, such as marine oil terminals; coordinating with harbor safety committees; coordinating oil spill response and cleanup; and investigating oil spills.

With respect to marine vessel transport, the USCG enforces federal hazardous materials transportation laws, including the Water Pollution Control Act, the Act to Prevent Pollution from Ships (33 United States Code [USC] 1901 et seq.), and the Oil Pollution Act of 1990 (33 USC 2701 et seq.). These laws require the USCG's involvement in and responsibility for a variety of maritime-related issues, including vessel traffic services at major ports, harbor safety committees, port security, vessel and facility monitoring, and oil spill prevention and cleanup. The USCG requires the submission of vessel response plans for planning and responding to potential spills of fuel and cargo. Vessel response plans are required to plan for a worst-case discharge defined as the discharge in adverse weather conditions of a vessel's entire fuel or cargo oil (33 USC § 1321(j)(5)).

Homeland Security

Under the federal Facility Security Rule (33 CFR Part 105), the USCG oversees the development and implementation of security measures at marine terminals and on vessels. Vessels and facilities must conduct security assessments and must submit a Vessel Security Plan or Facility Security Plan to USCG for approval.

Federal Department of Transportation

The USDOT establishes and enforces standards for transporting hazardous materials. Pertinent provisions governing rail transport are found in 49 CFR Parts 174, 176, and 179. Part 174, *Carriage by Rail*, specifies the handling, loading, and unloading requirements for the safe transport and shipping of hazardous materials and the requirement that qualified personnel must perform these tasks. This part also addresses correctly placarding railcars to indicate the hazard classifications of the materials and the segregation of incompatible materials. Part 176, *Carriage by Vessel*, provides further details on vessel carriage requirements for different classes of hazardous materials, including flammable gases, liquids, and solids, or oxidizing materials, with requirements for the position of those railcars on the train relative to the locomotives and other types of railcars. Part 179, *Specifications for Tank Cars*, provides design

requirements for rail tank cars used to transport hazardous materials, including tank mounting, welding certification, pressure relief devices, protection of fittings, loading/unloading valve requirements, coupler vertical restraints systems, tank-head puncture-resistance systems, and thermal protection systems.

In response to the 2013 Lac-Mégantic derailment and fire involving tank cars carrying crude oil and other incidents, the Federal Railway Administration, PHMSA, and the National Transportation Safety Board have issued a number of emergency orders, new rules, and safety advisories and recommendations (described in detail in USDOT et al. 2015). These safety advisories and recommendations have addressed, among other issues, requirements related to the transport of Bakken crude oil, appropriate shipping classification of hazardous cargo, railcar structural standards, increased support for local first responders and operational procedures for trains hauling flammable liquids (including lower speeds, improved braking techniques, and improved train routing). In 2015, PHMSA issued new rules for high-hazard flammable trains (49 CFR Section 174.310) that incorporated most of these issues; the rules were last amended in 2019.

In addition to hazardous material transport, USDOT has established general railroad safety regulations (49 CFR Parts 200–299) that address safety standards for track (including bridges), train control systems, locomotives and rolling stock, signaling systems, road/railroad crossings, train and track workers, accident reporting, and various other aspects of railroad operation.

The Pipeline Safety Law (49 USC Section 60101 et seq.) establishes oversight over pipeline transportation of hazardous materials. Under 49 CFR Parts 190–199, the Pipeline and Hazardous Materials Safety Administration promulgates and enforces pipeline safety regulations. These govern, among other issues, the pipeline transportation of hazardous liquids, gases, and other flammable, corrosive, and toxic materials. The Liquid Pipeline Integrity Management Program (49 CFR 195.450 et seq.) requires pipeline operators to assess, repair, and maintain hazardous liquid pipelines in high consequence areas such as population centers, drinking water resources, and ecologically sensitive areas.

Resource Conservation and Recovery Act

The RCRA established a “cradle-to-grave” regulatory program governing the generation, transportation, treatment, storage, and disposal of hazardous waste. Under RCRA, individual states may implement their own hazardous waste programs in lieu of RCRA as long as the state program is at least as stringent as federal RCRA requirements.

Emergency Planning and Community Right-to-Know Act

The objective of the Emergency Planning and Community Right-to-Know Act is to (1) allow state and local planning for chemical emergencies, (2) provide for notification of emergency releases of chemicals, and (3) address communities' right-to-know about toxic and hazardous chemicals. Section 302 of the Act requires facilities to notify the State Emergency Response Commission and any Local Emergency Response Committees of the presence of any "extremely hazardous substance" (the list of such substances is in 40 CFR Part 355) if it has such a substance in excess of the substance's threshold planning quantity and directs the facility to appoint an emergency response coordinator. Implementation of the Emergency Planning and Community Right-to-Know Act has been delegated to the State of California. The California Emergency Management Agency requires businesses to develop an HMBP if they handle (including storage) hazardous materials in quantities equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas or extremely hazardous substances above the threshold planning quantity. The Plan includes inventories of hazardous materials, an emergency plan, and implements a training program for employees. This plan is required to be submitted to the CUPA, which oversee multiple regulatory programs, for use by state and local emergency response agencies.

Federal OSHA Regulations

The OSHA regulations, intended to create a safe workplace, are found at 29 CFR Part 1910, Subpart H, and include procedures and standards for safe handling, storage, operation, remediation, and emergency response activities involving hazardous materials and waste. Pertinent sections of Subpart H include § 1910.106 (Flammable and Combustible Liquids) and § 1910.120 (Hazardous Waste Operations and Emergency Response).

The Hazardous Waste Operations and Emergency Response regulations contain requirements for worker training programs, medical surveillance for workers engaging in the handling of hazardous materials or wastes, and waste site emergency and remediation planning for those who are engaged in specific clean-up, corrective action, hazardous material handling, and emergency response activities as specified by §§ 1910.120(a)(1)(i-v) and 1926.65(a)(1)(i-v).

29 CFR Part 1910.119 Process Safety Management (PSM), addresses requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals that may result in toxic, fire or explosion hazards. The PSM applies to all industries except retail facilities, oil or gas well drilling or servicing operations, and normally unoccupied remote facilities. In each industry, PSM applies to any of more than 130 specific toxic and reactive chemicals onsite in one location; it also includes flammable liquids and gases in quantities of 10,000 pounds or more. PSM clarifies the responsibilities of employers and contractors involved in work that affects or takes place near covered processes to ensure that the safety of both plant and contractor employees is considered. The standard also mandates written operating procedures; employee training; pre-startup safety reviews; evaluation of mechanical integrity of critical equipment; written procedures for managing change; incident investigation; emergency planning and response; and compliance audits.

Emergency Action Plans (29 CFR Section 1910.38) require that facilities have an emergency action plan to ensure the safe response to emergencies. The purpose of an emergency action plan is to facilitate and organize employer and employee actions during workplace emergencies.

State Authority

California Accidental Release Prevention Program

California replaced the Risk Management and Prevention Program with the CalARP Program on January 1, 1997. The CalARP Program is very similar to the USEPA's Risk Management Program with the following differences:

- The list of toxic chemicals is larger—276 vs. 77
- The threshold quantities of the chemicals is smaller (e.g., chlorine federal threshold quantity is 2,500 pounds vs. California's threshold quantity of 100 pounds); the lower threshold quantities result in hydrogen sulfide and ammonia being listed as regulated substances at the Rodeo Refinery
- Requires an external events analysis be performed, including a seismic analysis
- More interaction with the public and agencies, including an RMP.

Contra Costa Health Services Hazardous Materials Programs administers the CalARP Program and ISO by Contra Costa County and the City of Richmond. Six full-time engineers are required by the CalARP Program and the county’s ISO to perform the following:

- Review the Risk Management and Safety Plans, document the review, and determine when the plans are complete

- Audit the facilities that are subject to the CalARP Program as well as the ISO at least once every 3 years and document the results of each audit
- Follow-up with recommended action items associated with RMP and Safety Plan reviews and audits to verify that potential problems are adequately addressed
- Review Major Chemical Accidents or Releases Root Cause Analyses and incident investigation reports that are submitted to Contra Costa Health Services
- Assist with incident investigations including a root cause analysis for Major Chemical Accidents or Releases
- Perform incident investigations including root cause analysis for selected Major Chemical Accidents or Releases
- Perform hazard scoring for development projects associated with land use applications
- Participate in unannounced inspections of industrial facilities.

California Hazardous Materials Business Plan

The purpose of the HMBP program is to prevent or minimize harm to public health and the environment from a release or threatened release of a hazardous material. By submitting an HMBP, emergency responders can effectively protect the public. The HMBP also satisfies the federal Emergency Planning and Community Right-to-Know Act, which was created in 1986 to help communities plan for chemical-related emergencies.

Meeting this federal requirement is achieved through compliance with the HMBP program (California Health and Safety Code sec 25504 (a–c)). HMBPs describe hazardous materials inventory, storage container types and locations, emergency response and evacuation procedures, and employee hazardous materials training program. Enforcement of hazardous materials management rules and the HMBP program is assigned to the CUPA, the agency certified by the California Secretary of Environmental Protection to implement the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program specified in Health and Safety Code Chapter 6.11, *California Department of Toxic Substances Control*.

In California, the DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; dictate the management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills. These regulations also require hazardous waste generators to prepare a Hazardous Waste Contingency Plan that describe hazardous waste storage and secondary containment facilities, emergency response and evacuation procedures, and employee hazardous waste training program. While DTSC generally retains authority, day-to-day enforcement of hazardous waste management rules is delegated to the CUPA.

The DTSC is responsible for regulating management of hazardous waste and correction of releases of hazardous constituents to the environment. DTSC promulgates rules and regulations, but enforcement of compliance with California hazardous waste management regulations is delegated to local agencies. The CUPA is the local agency having jurisdiction over compliance with California hazardous waste management regulations. DTSC retains the authority to intercede in hazardous waste management issues, permitting for hazardous waste treatment, storage and disposal, and review and approval of corrective action planning activity at hazardous waste contaminated sites.

California Fire Code and National Fire Protection Association

The Rodeo Refinery and the Santa Maria Site are required to comply with the California Fire Code and National Fire Protection Association (NFPA) codes that address requirements for flammable and combustible liquid and compressed gas storage, including pressure vessel installation, water mains, foam fire protection systems, and water supply reliability requirements. The Contra Costa County Fire Protection District has local jurisdiction over proper implementation of fire code requirements at the Rodeo Refinery; CAL FIRE/San Luis Obispo County Fire Department has jurisdiction at the Santa Maria Site.

California Division of Occupational Safety and Health

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the work place. Cal/OSHA and the federal OSHA are the agencies responsible for ensuring worker safety in the workplace.

Cal/OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices within the state. Cal/OSHA's PSM standard is discussed above in the Accidental Release Prevention subsection. Storage tank dikes and bulk storage tanks are examples of confined spaces. Worker entry into confined spaces must be performed in accordance with OSHA confined space procedures, including training for participants, planning, provisions for access/egress, monitoring, and supervision. Storage tank demolition, repair, and installation require hot work (e.g., cutting torches, welding, and grinding). Hot work within the refinery environment must be performed under the facility hot work program that is designed in accordance with OSHA requirements and industry guidelines. At sites known to have hazardous materials present (e.g., hydrocarbons, lead-based paint, asbestos, and contaminated soil), a site safety plan must be prepared to protect workers. The site safety plan establishes policies and procedures to protect workers and the public from exposure to known and potential hazards.

The Rodeo Refinery is subject to CCR Title 8, Section 5189.1, Process Safety Management for Petroleum Refineries, of Cal/OSHA's General Industry Safety Orders, which is more stringent than and supersedes federal OSHA's Process Safety Management of Highly Hazardous Chemicals standard (29 CFR Section 1910.119).

California State Lands Commission

The CSLC developed Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) to establish standards for the design, construction, and maintenance of marine oil terminal berthing and cargo loading/unloading facilities. MOTEMS is intended to minimize the possibility of accidents at marine oil terminals during extreme weather events and seismic activity that would lead to releases of petroleum substances to the environment. Existing facilities are required to retrofit or rebuild as necessary to meet MOTEMS, which the Marine Terminal has completed, and the terminal will continue to comply with MOTEMS requirements.

California Emergency Management Agency

California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local government and private agencies. Emergency response plans include responding to hazardous materials incidents, responding to intentional acts of destruction, and developing a downstream evacuation plan for areas within the potential inundation area. The plan is administered by the California Emergency Management Agency, which coordinates the responses of other agencies, including the CalEPA, California Highway Patrol, CDFW, RWQCB, and local fire departments.

California Aboveground Petroleum Storage Act

The California Aboveground Petroleum Storage Act (Health and Safety Code Chapter 6.67, Section 25270) establishes standards for aboveground petroleum storage tanks. The local CUPA is responsible for administering the program. The CUPA is required to conduct tank facility inspections at least every 3 years. The California Fish and Game Code Sections 5650 et seq. provide general law regarding water pollution prohibitions and both criminal and civil penalties on discharges of petroleum and other deleterious materials entering California waters. The CDFW's wardens enforce these sections. Further, California Water Code Section 13272 requires that any entity responsible for discharging any oil or petroleum product into California waters must notify the Office of Emergency Services, and stipulates that failure to comply is a misdemeanor. All OSPR regulations are found in CCR Title 14. Regulations promulgated by the CSLC are found in CCR Title 2 and Title 24.

Local Authority

In the case of the proposed Project, the relevant CUPA for the Rodeo Refinery is Contra Costa County Health Services, and for the Santa Maria Refinery, the CUPAs are San Luis Obispo County Environmental Health Services and the City of San Luis Obispo Fire Department. The relevant CUPAs for the Pipeline Sites are Santa Barbara County Environmental Health, Kern County Environmental Health Services Department, Fresno County Environmental Health Services Department and the Stanislaus County Department of Environmental Resources.

Airports and Air Hazards

Airport Influence Areas are used in land use planning to identify areas commonly overflown by aircraft as they approach and depart an airport, or as they fly within established airport traffic patterns. The Rodeo Refinery is located approximately 11 miles to the east–southeast of Buchanan Field Airport in the city of Concord and 12 miles to the north of Napa County Airport in Napa County. The nearest public airfield is the Oceano County Airport, located approximately 3 miles from the Santa Maria Refinery. The San Luis Obispo County Regional Airport is located approximately 10 miles north of the Santa Maria and the Santa Maria Public Airport is located approximately 9 miles southeast. Three of the Pipeline Sites are within 2 miles of airports: Orcutt Pump Station (Santa Maria Public Airport), Midway Pump Station (Taft Airport), and Patterson Pump Station (NASA Crows Landing Airport and Test Facility).

Bay Conservation and Development Commission Policies Applicable to Navigational Safety and Oil Spill Prevention

The BCDC comprises 27 appointees from local governments and state/federal agencies and administers the California Coastal Act (which implements the federal Coastal Zone Management Act) in the San Francisco Bay Area. The following BCDC findings and policies are applicable to navigational safety and spill prevention.

Findings:

1. San Francisco Bay's location and unique geographical features create an attractive and important area for water-related industries. These industries rely on shipping for import, export, and domestic distribution of petroleum products and other goods. Providing for safe navigation greatly enhances the region's water-related industries.
2. Mariners operating in the San Francisco Bay face difficult challenges such as increasing vessel traffic, physically restricted shipping lanes, frequent shoaling, rapid weather changes, fog, strong currents, and physical obstructions.
3. Marine accidents that result in spills of hazardous materials, such as oil, can adversely affect a variety of San Francisco Bay resources, including wildlife habitats, water quality, commercial and

recreational fishing, recreation areas, businesses, and personal property. Strong currents and tides can cause spills to reach sensitive resources in a very short time. Spills of petroleum products in San Francisco Bay can devastate resident and migratory bird populations.

4. San Francisco Bay has an outstanding navigational safety record because many state, federal and international agencies; organizations; and businesses involved with maritime shipping actively participate in programs to improve safe navigation and prevent marine accidents that could result in spills of hazardous materials, such as oil. The Harbor Safety Committee of the San Francisco Bay Region, composed of representatives from the maritime community, port authorities, pilots, tug operators, OSPR, USCG, petroleum and shipping industries, and others with expertise in shipping and navigation, meets regularly to develop additional strategies to further safe navigation and oil spill prevention.
5. The USCG, which is empowered by federal law to meet its strategic goals of navigational safety and the protection of natural resources, uses its expertise and authority to regulate bridges and aids to navigation.
6. San Francisco Bay is spanned by a number of bridges; some of these are fixed bridges tall enough to safely allow ship traffic under parts of their spans. In addition, drawbridges are located at the Carquinez Strait and Oakland Estuary. Bridges over navigable waterways may be equipped with fenders, navigation lights, clearance gauges, water level gauges, sound devices or radio beacons, all of which improve navigational safety and help prevent spills of hazardous materials, such as oil.
7. No pollution incidents have occurred in the San Francisco Bay area attributable to improper bridge location, pier placement, navigational lighting, clearance gauges, protection systems or drawspan operation. The USCG coordinates navigational and operational requirements on all bridge projects to ensure safety is maintained. Existing and proposed bridges are carefully evaluated for their ability to meet the reasonable needs of navigation prior to receiving a federal permit. Drawbridges operate under carefully tailored regulations to ensure safety and operational transportation needs are met.
8. The waters of San Francisco Bay are marked with a system of markers, such as buoys and beacons, to assist navigation. These navigation aids provide a substantial safety and environmental benefit by helping prevent navigation accidents that could spill hazardous materials, such as oil.
9. Some physical obstructions located near shipping lanes or water transit routes, such as underwater rocks, can be navigation hazards for some types of vessels and can increase risk of spills of hazardous materials, such as oil.
10. Because of the changing marine conditions in San Francisco Bay, safe navigation is highly dependent upon accurate reports on the winds, tides, and currents. The Physical Oceanographic Real Time System efficiently provides information on currents, water level, salinity, and other marine weather conditions to mariners and oil spill response organizations.
11. Communication is essential for safe navigation in heavily used port areas. USCG Vessel Traffic Service, San Francisco, plays a vital role by promoting safe and orderly vessel traffic within San Francisco Bay through radio communications.
12. Oil spill contingency plans and appropriate, easily accessible and strategically located spill response equipment are important parts of effective oil spill response strategies for San Francisco Bay. Marine facilities used for exploring, drilling, producing, storing, handling, transferring, processing, refining or transporting oil and are located in or near marine waters, as defined in the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act, are required to have oil spill contingency plans.

Policies:

1. Physical obstructions to safe navigation, as identified by the USCG and the Harbor Safety Committee of the San Francisco Bay Region, should be removed to the maximum extent feasible when their removal would contribute to navigational safety and would not create significant adverse environmental impacts. Removal of obstructions should ensure that any detriments arising from a significant alteration of San Francisco Bay habitats are clearly outweighed by the public and environmental benefits of reducing the risk to human safety or the risk of spills of hazardous materials, such as oil.
2. The BCDC should ensure that marine facility projects are in compliance with oil spill contingency plan requirements of OSPR, USCG, and other appropriate organizations.
3. To ensure navigational safety and help prevent accidents that could spill hazardous materials, such as oil, the BCDC should encourage major marine facility owners and operators, USACE, and NOAA to conduct frequent, up-to-date surveys of major shipping channels, turning basins and berths used by deep draft vessels and oil barges. Additionally, the frequent, up-to-date surveys should be quickly provided to the masters and pilots of USCG Vessel Traffic Service, San Francisco.

Contra Costa County General Plan

The Safety Element (Section 10) of the Contra Costa County General Plan contains relevant goals and policies regarding hazardous materials and fire protection. The hazardous materials goal is to provide public protection from hazards associated with the use, transport, treatment and disposal of hazardous substances and is supported by policies that require appropriate storage and containment of hazardous substances. Fire protection goals are intended to provide public protection services in a disaster (Contra Costa County 2010).

The Contra Costa County Health Services, as the CUPA, oversees the regulatory programs for HMBPs, aboveground storage tanks, underground storage tanks, hazardous waste generators, as well as facility inspections and permitting related to CalARP Program.

Contra Costa County has adopted the Contra Costa County Hazardous Materials Area Plan, which outlines the procedures that county regulatory and response agencies will use to coordinate management, monitoring, containment, and removal of hazardous materials in the event of an accidental release (Contra Costa County 2016). The purpose of the HMBP Program (Health and Safety Code Sections 25500−25520; CCR Title 19, Sections 2729−2732) is to prevent or minimize the damage to public health and safety and the environment from a release or threatened release of hazardous materials and also to satisfy community right-to-know laws. The program requires facilities that handle hazardous materials in quantities equal to or greater than 55 gallons of a liquid, 500 pounds of a solid, 200 cubic feet of compressed gas, or extremely hazardous substances above the threshold planning quantity (40 CFR Part 355 Appendix A) to prepare and submit to the local CUPA an HMBP that contains:

- A hazardous materials inventory,
- Site maps,
- Emergency Response Contingency Plans, and
- Employee Training Plan.

The CUPA verifies the information included in the HMBP and provides it to agencies responsible for the protection of public health and safety and the environment. These agencies may include fire departments, hazardous materials response teams, and local environmental regulatory groups.

The public also has a right to review most of this information, subject to legal protection of certain confidential and trade secret information. Businesses must amend the HMBP and submit to Contra Costa Health Services, Hazardous Materials Programs, within 30 days if there is:

- A 100 percent or more increase in the quantity of the previously disclosed amount,
- Any handling of a previously undisclosed hazardous material in a reportable quantity,
- A change of business address,
- A change of business ownership,
- A change of business name, or
- A significant change in business operations affecting handling of hazardous materials.

Additionally, the Contra Costa Health Services, Hazardous Materials Programs, is required by statute to establish an area plan for emergency response to a release or threatened release of a hazardous material within its jurisdiction (Health and Safety Code Section 25503(c)). The Contra Costa County Hazardous Materials Area Plan describes the overall hazardous materials emergency response organization within Contra Costa County (Contra Costa Health Services 2009).

Contra Costa County Industrial Safety Ordinance

Because incidents have occurred at industrial facilities in Contra Costa County since the adoption of state and federal safety programs, the Contra Costa County adopted Ordinance No. 98-48 and amendments, the ISO, as Regulation 450-8 of the County Code of Regulations to "supplement the requirements of California Health and Safety Code…concerning hazardous materials management by enacting measures to prevent and reduce the probability of accidental releases of regulated substances that have the potential to cause significant harm to the public health and to increase participation by industry and the public to improve accident prevention" (Contra Costa Health Services 2021) The ordinance expands on the CalARP Program requirements and requires reviews, inspections, and audits that supplement existing federal and state safety programs and the imposition of additional safety measures to protect public health from accidental releases.

The facilities that are subject to the ISO are in the unincorporated areas of Contra Costa County, must be a chemical facility or a petroleum refinery and a Program Level 3 facility under the CalARP Program. The ISO expands on the CalARP Program by requiring the following:

- The whole facility is covered, not just process(es) that have a regulated substance over a threshold quantity
- A Safety Plan, which is a public document, is required to be submitted to Contra Costa Health Services
- A Human Factors Program is required for the following elements: Process Hazard Analysis, Operating Procedures, Incident Investigation, training employees on the basics of the human factors and on the facility's human factors program, and managing change to the emergency response and operations organizations
- The facility is required to perform a root cause analysis as part of their incident investigations for Major Chemical Accidents or Releases and to submit a root cause analysis report to Contra Costa Health Services
- Contra Costa County can do its own incident investigation, including a root cause analysis Inherently Safer Technologies and Systems are to be considered
- Public Meetings are required.

The Rodeo Refinery is one of six facilities are covered by Contra Cost County's ISO**.**

Contra Costa County Fire Prevention District

The local Fire District administers approvals under the California Health and Safety Code and the 2007 California Fire Code (with reference to the Uniform Fire Code) for any development or project that involves flammable liquid storage. Pursuant California Fire Code 3404.2, Phillips 66 must submit final plans and specifications for the storage tanks to the Fire District for review and approval prior to construction. Acceptance testing must be performed on fire protection systems pursuant to NFPA 24 (fire water) and NFPA 11 (foam systems) prior to operation of the tanks pursuant to California Fire Code 508.1.

Contra Costa Health Services Hazardous Materials Incident Notification Policy

This Contra Costa Health Services' Hazardous Materials Incident Notification Policy promotes prompt and accurate reporting in the event of a release of hazardous materials that may impact the environment or community. It also enables Contra Costa County to undertake measures to mitigate any such impact including dispatching emergency response teams, assessing the extent of the risk of a release, determining whether to activate the Community Warning System, and responding to public and media inquiries.

San Luis Obispo County General Plan

The Energy Element and Conservation and Open Space Element of the San Luis Obispo County General Plan contain a goal of protecting public health, safety, and environment and several policies that promote the stated goal. The applicable policies include the following:

- **Policy 56:** Encourage existing and proposed facilities to focus on measures and procedures that prevent oil, gas, and other toxic releases into the environment. This policy is to ensure that facilities: (1) take measures to prevent releases and spills; (2) prepare for responding to a spill or release; and (3) provide for the protection of sensitive resources. A review of a facility's spill response plan, or reports from other agencies, should be completed to monitor compliance.
- **Policy 64, Guideline 64.1**: To reduce the possibility of injury to the public, facility employees, or the environment, the applicant shall submit an emergency response plan which details response procedures for incidents that may affect human health and safety or the environment. The plan shall be based on the results of the comprehensive risk analysis. In the case of a facility modification, the existing response plan shall be evaluated by the safety review committee and revisions made as recommended.

Flammable and Combustible Liquid Storage Coastal Zone Land Use Ordinance Section 23.06.126

This ordinance includes requirements for flammable and combustible liquid storage relating to applicability, permit requirements, limitation on use, limitation on quantity, setbacks, and the inclusion of CAL FIRE recommendations, as applicable. Without approval through a development plan, aboveground storage limits are 20,000 gallons for combustible liquids and 2,000 gallons for flammable liquids.

Industry Standards

In addition to regulatory requirements, equipment and structures used in the oil industry are designed in accordance with industry standards and best engineering practices (e.g., National Fire Prevention Association, American Society of Mechanical Engineers, and API). For example, the American Society of Mechanical Engineers' standards specify design requirements for numerous systems, including pipelines, valves, and tanks. API Standard 650 is the current standard for the design of welded tanks for oil storage, and API Standard 653 sets standards for inspection, repair, alteration, and reconstruction of storage tanks. These standards include measures to prevent accidental releases, incorporate safety and back-up measures or features to reduce risk in the event of an emergency, and set inspection frequencies.

API Standard 2015 sets the industry standards for safe entry and cleaning of petroleum storage tanks, and API Recommended Practice 2016 is a supplemental document with guideline and procedures for safe entry and cleaning of petroleum storage tanks. The NFPA's design requirements address flammable and combustible liquids (NFPA 30), fire extinguishing systems (e.g., NFPA 11, 12, 15), and the National Electrical Code (NFPA 70).

4.9.3 Significance Criteria

Based on CEQA Guidelines Appendix G, a project would cause adverse impacts related to hazards and hazardous materials if it would:

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

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

c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;

d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (Cortese List) and, as a result, would create a significant hazard to the public or the environment;

e. For a project located 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 or excessive noise for people residing or working in the project area;

f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;

g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires;

4.9.4 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above. The CEQA baseline for analysis of marine transportation, the baseline is an average of the years 2017–2019.

Appendix G of the RMP includes the list of Highly Hazardous Materials present in existing process units of the Rodeo Refinery, including the chemical name and chemical location, and is representative of existing baseline conditions for hazardous materials for which proposed Project conditions are compared. Crude oil containing less than 1 percent hydrogen sulfide is not a regulated substance under the federal USEPA Accidental Release Prevention/RMP Rule. Pursuant to the Cal/OSHA PSM Standard, crude oil is not classified as an acutely hazardous material in the CCR Title 8, Section 5189 and is therefore not addressed in the RMP. However, crude oil is included in the HMBP listing of materials at the site and, as crude oil could spill and ignite, producing thermal impacts, it is also included as part of the baseline hazards at the refinery site.

The baseline for the Santa Maria Site and the Pipeline Sites are those activities and hazardous material inventories occurring at those sites in 2019.

4.9.5 Approach to Analysis

Under the proposed Project, the Rodeo Refinery and its associated materials transportation systems would handle, store, and process flammable materials and acutely hazardous materials. Accidents related to these materials can result in public exposure to heat radiation from a fire, blast overpressure from an explosion, or airborne exposure to acutely hazardous materials. Releases at these facilities can also impact environmental receptors such as the marine environment. These hazards can result from accidents at the Rodeo Refinery or during transportation of hazardous materials to and from the refinery.

The assessment of impacts related to operational safety and risk of accidents is different from the analysis of impacts in other resource areas because no impact would occur unless there is an accident. Therefore, the expected probability of accidents is factored into the analysis. Furthermore, even the occurrence of an accident does not necessarily mean significant impacts would result. Whether or not a significant impact may be expected depends on the magnitude of the accident, and as the magnitude of a given potential accident scenario increases, the probability of that accident scenario occurring generally decreases. Thus, the operational safety/risk-of-accidents impact analysis considers both probability and potential consequences of reasonably foreseeable upset scenarios, including (1) spills that can potentially impact the environment and (2) incidents that can potentially impact the safety of the public.

4.9.5.1 Spills

A spill involving renewable feedstocks or fuel, in and of itself, is not an environmental impact. Environmental impacts would occur if a spill or release affects environmental resources or public safety. This operational safety/risk-of-accidents analysis addresses the expected probability of oil spill accidents both in-transit and while at the Marine Terminal, the extent of areas that may be impacted by such spills, and the potential for significant hazards to the public. The extent of areas that may be affected by oil spills into the marine environment is evaluated using results from oil spill trajectory modeling conducted using the TAPII model. How a spill specifically impacts environmental resources is addressed in other resource sections of this EIR, as applicable.

The consequence of a spill depends on the size of the spill; the effectiveness of the response effort; and the biological, commercial fishery, shoreline, and other resources affected by the spill. A spill of 1 gallon or less into the marine environment would result in an adverse impact that most likely can be mitigated and controlled by response efforts, while a large spill of 1,000 barrels (42,000 gallons) into the marine environment, for example, most likely would result in a significant, adverse impact that would have residual effects after mitigation. The impacts of spills between 1 gallon and 42,000 gallons depend on the effectiveness of response efforts and the resources impacted. Impacts could be limited by spill response to a less than significant level for smaller spills, and even some larger spills depending on the location and the response efforts, that can be contained during first-response efforts without lasting impacts to sensitive resources; however, impacts from larger spills or spills affecting sensitive resources could be significant and adverse even considering response capabilities. Spills that occur into the Rodeo Refinery area would generally be contained and processed through the treatment systems and would not affect the marine environment.

For spills, the approach taken to determining significance is the same as the CSLC used in the Amorco and Avon EIRs (CSLC 2014, 2015). The analysis evaluates the probability of Project related accidents and compares the probability of a release under the Project to the baseline operations. Generally, if the Project would introduce marine vessels at a higher frequency than the baseline operations, then the risk of accidents that could result in spills into the marine environment, which could produce significant and adverse impacts, is considered to increase. Any increase in risk is considered to be a significant impact. For impacts to public safety, if the hazards to the public increase, then a significant impact could occur.

Releases of materials to the environment can also cause impacts to biological resources, including smothering and/or toxic effects. See Section 4.4, *Biological Resources*.

4.9.5.2 Public Safety

Fires, which are caused by ignition of flammable materials, can result in public exposure to heat radiation (USEPA 2009) and smoke. Heat decreases rapidly with distance from the flame. In many cases, fires are confined to the vicinity of the equipment from which the flammable release would occur. Explosions can occur if flammable vapors and gases are ignited or when a flammable substance is released at high temperatures, and usually under elevated pressure (Center for Chemical Process Safety 2010). Impacts of an explosion are expressed in terms of a sudden increase in pressure above ambient pressure, resulting from a blast or shock wave. A vapor cloud explosion occurs when a flammable gas is mixed with air and then encounters an ignition source. Vapor cloud explosions are very rare because they require that sufficient air is available and combined with the flammable gas before ignition, thus resulting in an explosive mixture. Instead, a more common event would be a flash fire in which ignition occurs before mixing with atmospheric air. Flash fires do not result in an explosion that could cause damaging overpressure. A boiling liquid-expanding vapor explosion, or BLEVE, would occur when a confined flammable material vessel ruptures from excess pressure because of heating. The result is a rapid expansion of the material as it is exposed to ambient pressure and subsequent ignition of the released liquid aerosol and vapors. Such an event can occur if an external fire engulfs a vessel containing a flammable liquid. Boiling liquid-expanding vapor explosions are also very rare (USEPA 2009).

Airborne exposure can occur with a release of a substance from a facility that is acutely hazardous, such as ammonia (NH_3), hydrogen sulfide (H_2S), sulfur dioxide (SO_2), or any harmful byproducts in smoke that may occur from a fire (USEPA 2009). A release can be a threat if a harmful concentration of the gas reaches offsite receptors.

Hazardous materials used or previously used in the design, construction, and operation of facilities under the existing land use may include asbestos and lead-based paint. A review of the California Department of Conservation, Division of Mines and Geology (2020) guide map shows that the Project area is not near mapped locations of ultramafic rocks.

For impacts to public safety at the Refinery, Marine Terminal, Santa Maria or Pipeline Sites, the approach involves examining the potential hazards produced by the inventory of hazardous materials and comparing the baseline with the Project level of hazardous materials use and storage. Increases in hazardous materials inventories that could affect the public, or a shift in the locations of hazardous material storage closer to public receptors, would constitute an increase in the hazards at Project sites and would be considered a potentially significant impact.

For transportation and associated impacts to public receptors if a release occurs, an increase in the truck, pipeline or rail transportation of similarly hazardous materials to the baseline or an increase in the toxicity or flammability of transported materials over the baseline could generate a significant hazard. The following sections discuss the potential impacts of the Santa Maria and Pipeline Sites, the Refinery, the Marine Terminal and transportation activities (rail, truck and pipeline) for the construction phase, the transitional phase and the operations and maintenance phase.

4.9.6 Discussion of No Hazards and Hazardous Material Emissions Impacts

Comparison of the baseline and the Project's characteristics with the significance criteria stated above show that no impacts would occur associated with the following criteria:

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

Santa Maria Site, Pipeline Sites and Carbon Plant—Transitional, Operation and Maintenance

The Santa Maria Site and Carbon Plant would be demolished so no routine operation and maintenance activities would occur that would involve the transport, use or disposal of hazardous materials during the transitional or operation phases. At the Pipeline Sites, once cleaned and retired-

in-place no routine operation and maintenance would occur, with exception of periodic inspection which would not involve an increase in routine transport, use or disposal of hazardous materials. Therefore, no potential impacts would be associated with the routine use or disposal of hazardous materials at the Santa Maria and Pipeline Sites or the Carbon Plant portion of the Refinery associated with transition, operation and maintenance.

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;

Santa Maria Site, Pipeline Sites and Carbon Plant—Transitional, Operation and Maintenance

For the Santa Maria and Pipeline Sites and the Carbon Plant, no operational activity would occur as these facilities would be removed or non-operational. Existing truck traffic transporting crude oil into and sulfur and petroleum coke out of the Santa Maria Site and existing pipeline transport of crude oil and partially refined product would cease. Therefore, no impacts would be associated with releases of hazardous materials resulting from upset or accident at those sites during the transitional or operation phases.

c. Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

Rodeo Refinery and Marine Terminal – All Phases

The Project would be entirely constructed within the Rodeo Refinery, although demolition activities would take place at the Carbon Plant Site, which is outside the Rodeo Site. The Rodeo Refinery includes buffer zones that have been established around the Rodeo Site, which is the active refinery where hazardous substances or processes such as storage tanks and hydrogen generators are located. The Rodeo Site is bounded on the northeast and southeast by undeveloped open space and industrial uses. The southwest edge of the Rodeo Site is a 300- to 600-foot undeveloped area that is maintained as a buffer between the Rodeo Refinery and the Bayo Vista residential area of Rodeo. The Bayo Vista area contains a day care center, which is the nearest sensitive receptor to the Rodeo Site. The Bayo Vista Child Development Center is approximately 0.75 mile from the railcar loading facility and 0.85 mile from the Marine Terminal. No existing or proposed schools are located within 0.25 mile of the Rodeo Site or the Carbon Plant Site; therefore, no hazardous materials would be handled within 0.25 mile of an existing school. Therefore, no impact would occur.

Santa Maria Site – All Phases

The Santa Maria Site is located in southern San Luis Obispo County near the community of Nipomo and the city of Arroyo Grande. The vicinity consists largely of open space and agricultural lands; the closest residences to the site are approximately 0.25 mile to the northeast, and no sensitive receptors are located within 0.5 mile of the facility. No existing or proposed schools are located within 0.25 mile of the Santa Maria Site; therefore, no hazardous materials would be handled within 0.25 mile of an existing school, and this sensitive receptor would not be impacted during the transitional phase. Therefore, no impact would occur.

Pipeline Sites

The Pipeline Sites are located in a variety of land uses in several counties (San Luis Obispo, Santa Barbara, Kern, Kings, Madera, Merced, Stanislaus, San Joaquin and Contra Costa). Pipeline access points are generally in sparsely populated areas. The pipelines themselves are underground; they cross numerous streams, small rivers, and transportation infrastructure but do not traverse dense population centers. As the Pipeline Sites would be abandoned, no hazardous materials would be handled within the Pipeline Sites and therefore no hazardous materials would be handled within 0.25 mile of an existing school. Therefore, no impact would occur.

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

Pipeline Sites

The Pipeline Sites are located in a variety of land uses in a number of counties (i.e., San Luis Obispo, Santa Barbara, Kern, Kings, Madera, Merced, Stanislaus, San Joaquin and Contra Costa). There could be sites listed on the Cortese List immediately adjacent to various portions of the Pipeline Sites. Pipeline access points are primarily located in sparsely populated areas. The pipelines themselves are underground. Activities associated with the Project at the Pipeline Sites (i.e., cleaning the pipelines and taking them out of service and abandoning in place) would be essentially the same as the existing periodic pipeline maintenance activities. No excavation or modifications would occur. Therefore, no impact would occur during construction, including transitional, as well as operation and maintenance.

Santa Maria Site—Operation and Maintenance

During the transitional and operation and maintenance phases, the Santa Maria Refinery would be non-operational and would therefore not create a significant hazard to the public or the environment due to contamination. Therefore, no impact would occur.

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 or excessive noise for people residing near or working in the Project area?

Rodeo Refinery and Marine Terminal—All Phases

There is no airport land use plan that includes the Rodeo Refinery, and no public airports or public use airports are located within 2 miles of the site. Accordingly, the Project would not affect airports or airport land use plans during construction/demolition, and because of its location, the Project would not expose people residing near or working in the Project area to a safety hazard or excessive noise from air traffic during construction/demolition, transitional or operational phases. No impact would occur.

Santa Maria Site—All Phases

There is no airport land use plan that includes the Santa Maria Site and there are no public airports or public use airports within 2 miles of the site. Accordingly, the Project would pose no effects to airports or airport land use plans during construction/demolition and because of its location, the Project would not expose people residing near or working in the Project area to a safety hazard or excessive noise from air traffic during construction/demolition, and no hazardous materials would be handled because the Santa Maria Site would be removed as part of the construction phase. No impact would occur.

Pipeline Sites

Three of the Pipeline Sites are within 2 miles of public use airports, but the Project activities of cleaning the pipelines and taking them out of service would be essentially the same as periodic pipeline maintenance activities and would not interfere with airport activities. Accordingly, the Project would not affect airports or airport land use plans, and because of its location, the Project would not expose people residing near or working in the Project area to a safety hazard or excessive noise during operation and maintenance. The Pipeline Sites would not handle hazardous materials as part of the operational phase. No impact would occur.

f. Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;

Santa Maria Site

During the operation and maintenance phases, the Santa Maria Refinery would be non-operational and would therefore not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, no impact would occur.

Pipeline Sites

The Pipeline Sites are located in a variety of land uses in a number of counties (i.e., San Luis Obispo, Santa Barbara, Kern, Kings, Madera, Merced, Stanislaus, San Joaquin and Contra Costa). The efforts need to abandon and clean the pipelines would be similar to maintenance operations on the pipeline sites and would therefore not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, no impact would occur.

g. Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildfire?

Santa Maria Site

The San Luis Obispo County Fire Department and CAL FIRE have jurisdiction at the Santa Maria Site. As described in Section 4.15, *Wildfire*, the Santa Maria Site is not located in an area rated by the CAL FIRE as a *very high fire hazard severity zone*. Because the facility would be demolished, the Project would not place any new elements that would expose people or structures to risk of wildfires. Accordingly, there would be no potential to expose people or structures to risk of wildfire at the Santa Maria Site.

Pipeline Sites

Because the Pipelines would be cleaned out and abandoned in place, the Project would not include any new elements that would expose people or structures to risk of wildfires and Project elements would occur in developed areas that do not pose substantial risk of wildfires. Accordingly, there would be no potential to expose people or structures to risk of wildfire at the Pipeline Sites.

4.9.7 Direct and Indirect Impacts of the Proposed Project

Table 4.9-3 presents a summary of the potential hazards and hazardous materials emissions impacts, as well as determination of significance for each impact.

Table 4.9-3. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.9-1: Would the Project create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?			
Rodeo Refinery, Santa Maria Site, Pipeline Sites			
Construction/Demolition	✓		
Rodeo Refinery			
Transitional Phase, Operation and Maintenance			
Rodeo Refinery	✓		
Marine Terminal	✓		
Transportation	✓		

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.9-2: 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			
Rodeo Refinery, Santa Maria Site, Pipeline Sites			
Construction/Demolition	✓		
Rodeo Refinery–Transitional Phase, Operation and Maintenance			
Rodeo Refinery	✓		
Marine Terminal (spills)			✓
Marine Terminal (public safety)	✓		
Transportation	✓		
Impact 4.9-3: Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would it create a significant hazard to the public or the environment?			
Rodeo Refinery and Santa Maria Site			
All Phases[a]	✓		
Impact 4.9-4: Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition	✓		
Rodeo Refinery–Transitional Phase, Operation and Maintenance			
Rodeo Refinery	✓		
Marine Terminal	✓		
Transportation	✓		
Impact 4.9-5: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?			
Rodeo Refinery and Santa Maria Site			
Construction/Demolition	✓		
Rodeo Refinery–Transitional Phase, Operation and Maintenance			
Rodeo Refinery	✓		
Marine Terminal	✓		
Transportation	✓		

Notes: LTS = Less than significant, no mitigation proposed
LTSM = Less-than-significant impact with mitigation
SU = Significant and unavoidable

[a] Transitional phase applies only to Rodeo Refinery

IMPACT 4.9-1

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

Construction: Less Than Significant, No Mitigation Proposed

All Locations

Construction activities would occur at the Rodeo Refinery and at the Santa Maria Site. During normal construction activities, potentially hazardous materials, such as diesel fuel, lubricating oils and other materials associated with construction equipment would be contained within tanks and construction equipment. Normal operations would not include the accidental releases of materials (see Impact 4.9-2 below for accidental releases). Therefore, potential impacts associated with the routine use of hazardous materials at the Project locations would be less than significant.

Mitigation Measure: **None Required**

Transitional Phase, Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery—Marine Terminal, Transportation

The renewable, non-hazardous feedstocks, raw materials, wastes and products that would be used and produced at the Rodeo Refinery, the Marine Terminal and along the transportation routes (truck, rail and pipeline) would be contained within vessels and piping and would not be released to the environmental as part of normal operations (see Impact 4.9-2 below for accidental releases). At the Rodeo Refinery, feedstock would be pumped into existing storage tanks prior to the manufacturing process. The feedstocks would be used in closed processes to produce liquid transportation fuels, and the liquid transportation fuels would be stored in tanks prior to being transported from the Rodeo Refinery. Hazardous chemicals would be handled and stored as they are under baseline conditions, in accordance with applicable regulations and industry BMPs. Accordingly, the renewable feedstocks, blending components, and liquid transportation fuels would not come into contact with the public or the environment during routine use. Therefore, potential impacts associated with the routine use of hazardous materials at the Rodeo Refinery and transportation routes would be less than significant.

Mitigation Measure: **None Required**

IMPACT 4.9-2

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;

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Construction of the PTU and associated infrastructure at the Rodeo Site and demolition of existing equipment and facilities at the Carbon Plant Site would involve the use of hazardous materials and would generate a variety of hazardous wastes that would require disposal. Construction would require decommissioning and removal of existing equipment and associated structures, modifications to existing equipment and piping, and construction and installation of new process equipment and piping systems. It is anticipated that most debris and equipment that is removed during construction and demolition activity would be decontaminated onsite so that it can be disposed of as non-hazardous waste. Any hazardous waste that is generated through the decontamination process would be managed, stored, and disposed of in accordance with applicable laws on hazardous waste and hazardous materials contained in the HMBP program overseen by the CUPA.

Hazardous materials used during construction and demolition would include fuels and lubricants for diesel-powered equipment and flammable gasses for cutting torches. These substances would be managed in accordance with applicable hazardous materials regulations, as implemented by the CUPAs in Contra Costa County (for the Rodeo Refinery) and San Luis Obispo County (for the Santa Maria Site) and specified in construction documents (Construction Safety Plan) and permits issued for the Project. Implementation of the appropriate containment and BMP procedures would minimize the potential for releases involving hazardous materials, and the potential for hazards to the public or the environment.

Demolition of the storage tanks at the Rodeo Site and of the entire Carbon Plant could generate soils contaminated with petroleum-based substances, asbestos-containing materials, lead-based paint, and, potentially, small quantities of other hazardous wastes such as catalysts and heavy metals. If uncontrolled, these substances could be released, posing a hazard to people and the environment. However, hazardous wastes are subject to substantial regulatory controls that specify requirements for the safe handling, transport and disposal of hazardous wastes. These requirements would form part of the construction and demolition contracts. Contaminated soils would be disposed of at licensed landfills, and asbestos-containing materials, lead-based paint, and other hazardous materials would be abated by contractors licensed to handle hazardous waste. These contractors would dispose of them in approved hazardous waste handling facilities. Oil-bearing materials would be processed into refined products and non-hazardous wastewater by the Rodeo Refinery (prior to its demolition).

Excavation would be required to install new foundations for process and other support equipment. Clean excavated soil would be combined with clean onsite stockpiles. Excavated soil would be tested in accordance with state and federal regulations for waste characterization. Excavated soil that exceeds applicable waste characterization thresholds would be disposed offsite at licensed waste disposal facilities based on its characteristics. Non-hazardous soil would be used onsite as fill as appropriate.

Implementing the appropriate disposal procedures would minimize the potential for releases or accidents involving hazardous wastes and thus of hazards to the public or the environment. The impacts of construction and demolition activities at the Rodeo Refinery, including the Carbon Plant would be less than significant.

Santa Maria Site

Demolition of existing equipment and facilities at the Santa Maria Site would involve the use of hazardous materials and would generate a variety of hazardous wastes. Hazardous materials used during demolition would include fuels and lubricants for diesel-powered equipment and flammable gasses for cutting torches. These substances would be managed in accordance with applicable hazardous materials regulations, as implemented by the CUPAs in Contra Costa County and San Luis Obispo County and specified in construction documents (Construction Safety Plan) and permits issued for the Project. Implementation of the appropriate containment and use procedures would minimize the potential for releases or accidents involving hazardous materials and thus of hazards to the public or the environment.

Demolition of the storage tanks at the Santa Maria Site could generate soils contaminated with petroleum-based substances, asbestos-containing materials, lead-based paint, and, potentially, small quantities of other hazardous wastes such as catalysts and heavy metals. If uncontrolled, these substances could be released to pose a hazard to people and the environment. However, hazardous wastes are subject to substantial regulatory controls that specify requirements for the safe transport and disposal of hazardous wastes. These requirements would form part of the construction and demolition contracts.

Contaminated soils would be disposed of at licensed landfills, and asbestos-containing materials, lead-based paint, and other hazardous materials would be abated by contractors licensed to handle hazardous waste, and these contractors would dispose of them in approved hazardous waste handling facilities. Oil-bearing materials would be processed into refined products and non-hazardous wastewater at the Santa Maria Site (prior to its demolition). Implementing the appropriate disposal procedures would minimize the potential for releases or accidents involving hazardous wastes and thus of hazards to the public or the environment.

Therefore, upset and accident conditions involving the release of hazardous materials during construction and demolition activities resulting from the use, transport, and disposal of hazardous materials and wastes would be less than significant and no mitigation is required.

Pipeline Sites

Hazardous materials, including fuels and lubricants for diesel-powered equipment and flammable gasses for cutting torches, would be used to clean the Pipeline Sites. These substances would be managed in accordance with applicable hazardous materials regulations, as implemented by the CUPAs in Contra Costa County, San Luis Obispo County and other jurisdictions, and specified in construction documents and permits issued for the Project. Implementing the appropriate containment and use procedures would minimize the potential for releases or accidents involving hazardous materials and thus of hazards to the public or the environment.

Cleaning the Pipeline Sites would generate oily wastewater, which, if uncontrolled, would be released and would pose a hazard to people and the environment. However, hazardous wastes are subject to substantial regulatory controls that specify requirements for the safe transport and disposal of hazardous wastes. These requirements would form part of the construction and demolition contracts. Implementing the appropriate disposal procedures would minimize potential for releases or accidents involving hazardous materials and thus of hazards to the public or the environment. Therefore, impacts would be less than significant and no mitigation is required.

Transitional Phase—Marine Terminal Spill Impacts: Significant and Unavoidable

Rodeo Refinery—Marine Terminal (spills)

During the 7-month transitional phase, the Project would involve a temporary increase in vessel activity. To procure alternative crude oil feedstock during the transitional phase, the Rodeo Refinery may temporarily increase deliveries of crude oil and gas oil feedstocks by tanker or barge, resulting in an increased rate of vessel calls to the Marine Terminal, compared to baseline conditions. The estimated vessel traffic during this period is shown in Table 4.9-4.

Table 4.9-4 Marine Terminal Traffic and Crude/Gas Oil Deliveries during Transitional Phase

Activity	Baseline Annual Period	Transitional Phase 7-month Period
Crude and Gas Oil Received through Marine Terminal (barrels/day 12-month average)	35,000	85,000
Pipeline Crude Received (barrels/day 12-month average)	70,000	0
Tanker Vessels (calls)	80	96
Barges (calls)	90	92

Source: Acutech 2021

Notes: For baseline, total tanker and barge calls are per year. For the transitional phase, calls are total calls over the 7-month period.

This temporary increase of crude and gas oil feedstocks at the Marine Terminal would not increase the amount of crude and gas oil that can be processed at the Rodeo Refinery, but it would shift the source of these materials from the Pipeline Sites to the Marine Terminal. In 2019, the Rodeo Refinery processed approximately 105,000 bpd of crude oil and gas oil (approximately 70,000 of which arrived via Line 200 and 35,000 of which arrived via the Marine Terminal). Crude oil and gas oil deliveries via the Marine Terminal during the transitional period would peak at up to 85,000 bpd (12-month rolling average), which would temporarily exceed the current BAAQMD Title V permit limit of 51,182 bpd (12-month rolling average), for which a permit will be acquired.[49] Once the Project is completed (estimated to be in early 2024), all transitional deliveries of crude oil and gas oil would cease, and the deliveries of renewable feedstock by vessel would commence.

During the transitional phase, additional vessel traffic arriving at the Marine Terminal would increase from 80 tankers and 90 barges annually as part of the baseline, or about 3.3 vessels calls per week, to an estimated 96 tankers and 92 barges over the 7-month transitional period, or about 6.7 calls per week, with a total number of vessel calls over the transitional period producing an increase of approximately 10 percent over the baseline entire-year vessel calls. This would produce a spill frequency of an in-transit spill of once every 1,076 years and a spill at the Marine Terminal of about once every year (note this is on an annualized basis utilizing the rate of vessel calls over the 7-month period).

As detailed under “Operation and Maintenance” impacts of marine vessel spills below, with increased vessel traffic, the frequency of a potential spill during the transitional period would increase over the baseline, and impacts that could occur during the transitional phase would be significant and unavoidable.

Transitional Phase: Less Than Significant, No Mitigation Proposed

Rodeo Refinery—Marine Terminal (Public Safety)

During the 7-month transitional phase, deliveries and processing of crude oil and gas oil feedstocks by tanker vessel would increase, resulting in increased vessel traffic at the Marine Terminal compared to baseline conditions. Vessel transportation would occur in two phases. During transition, marine vessels could bring more crude oil to the Rodeo Refinery through the Marine Terminal than under baseline conditions. Vessel transportation of refined products (gasoline, diesel, gas oil, and jet fuel) and of gasoline blendstocks would continue, but in different amounts than under baseline conditions (see Table 3-2). Marine vessel traffic would increase from baseline conditions (from 170 per year to 188 vessels over the 7-month transitional period). However, there would not be a discernable increase in stockpiled materials at the refinery or result in increased hazards to the public. The impact would be less than significant and no mitigation is required.

The Marine Terminal would continue to transport feedstock and refinery products. The Rodeo Refinery is required to meet applicable local, state, and federal fire safety standards. Refineries are required to have an emergency response plan to ensure that in the event of a fire, hazardous material release, medical emergency, or rescue situation, refinery personnel would be able to respond to the emergency quickly and effectively to minimize personal injuries, environmental damage, and/or property damage. Phillips 66 departments would continue to conduct various safety and regulatory compliance inspections and audits as part of standard on-going maintenance, and Phillips 66 would continue safety-training program for existing and new employees. In addition, Refinery fires generally pose little risk to the public when buffer zones are incorporated into the design, mainly because they are typically confined to the vicinity of the equipment from which the flammable release occurs.

[49] Title V permit limits also apply to gasoline range material that can be shipped from the Marine Terminal (25,000 bpd on a 12-month rolling average).

A release at the Marine Terminal would not present a significant safety hazard to members of the public due to the separation distance from public receptor locations. Even for low-probability large spills from the Marine Terminal, it is anticipated that separation distance of the Marine Terminal from public areas would provide time to respond with warnings and access controls before the spill could spread to public areas, which would limit the potential for unsafe levels of exposure to hazardous constituents in the spilled product or thermal radiation from a fire. Therefore, impacts from a spill and subsequent fire at the Marine Terminal would be less than significant.

During the transitional phase, refinery operations would be modified compared to the baseline, with crude processing reduced and the production of petroleum-based gasoline and other products also reduced. The reduction in the handling of crude oil may reduce the potential hazards at the refinery and therefore, public safety impacts at the Refinery would be less than significant. For more discussion, see the operations and maintenance impact section below.

Transportation

During the transitional phase, transportation of crude oil would be modified compared to the baseline, with crude transportation reduced and the production of petroleum-based gasoline and other products resulting in product transportation similar to the baseline. The reduction in the handling of crude oil would reduce the potential hazards along transportation routes and therefore, impacts would be less than significant. For more discussion, see the Operations and Maintenance section below.

Operation and Maintenance – Marine Terminal Spill Impacts: Significant and Unavoidable

Rodeo Refinery – Marine Terminal (spills)

Operation of the existing Marine Terminal is subject to numerous regulatory requirements to reduce accidents and spills associated with marine vessel traffic. Should an accident occur that causes a spill, existing infrastructure and procedures are in place to respond to a spill in accordance with OSPR, Phillip 66's CSLC Marine Terminal lease, and BAAQMD Operating Permit. These measures minimize the magnitude and consequences of spills. As described in BAAQMD (2012). Several recent EIRs prepared to support issuance of CSLC marine terminal leases have applied more quantified data regarding the estimated frequency of oil spills in California. These rates suggest a range of spills greater than 1,000 gallons to occur once every 73 years using a rate of 90 vessel calls per year (CSLC 2014) and once every 27 years using a rate of 137 vessel calls per year (CSLC 2012). The increased combined vessel (barges and tankers) traffic for the Project of 362 vessels per year is greater than these estimates.

Potential Spill Consequences and Vulnerable Resources

Contra Costa County's review of the Applicant's maritime risk assessment identified the need for a more methodical approach to calculate the frequency of spills greater than 100 gallons. In the absence of an accident frequency threshold, this review concluded any oil or feedstock product spill (greater than 100-gallons) from a vessel transiting the Marine Terminal above the baseline levels would be considered significant.

A spill from a vessel during transportation or while at the Marine Terminal could impact a range of areas, depending on the tide, the wind and other factors. Modeling was performed (Appendix C-2, *CEQA $PM_{2.5}$ Modeling Analysis*) to estimate the trajectory of potential spill events related to operation of the Marine Terminal and while in-transit. The spill sizes could cover a substantial range, with the worst-case discharge volume at the Marine Terminal estimated to be 3,976 bbls.

Tankers and barges are required to provide vessel response plans to the USCG which defines a worst-case discharge as "*the discharge in adverse weather conditions of a vessel's entire fuel or cargo oil*" (33 USC § 1321(j)(5) and USCG 2020). Therefore, as tanker/barge volumes could range as high as 1 million barrels, a theoretical maximum spill size from a barge or tanker contents that is used

for planning purposes in the USCG-required vessel response plans could range up to 1 million barrels (based on the largest tanker capacity). The Rodeo Refinery Emergency Response Plan also addresses potential spills from vessels as a type of spill that could occur. The CSLC EIRs used a large spill size of 10,000–20,000 barrels for modeling as representative of a potential worst case associated with tanker, barge and Marine Terminal spills. This volume is therefore utilized in this analysis. Note that the worst-case discharge associated with Marine Terminal operations would be less volume than the modeled release (20,000 barrels); less spreading would be expected given that the worst-case discharge release from the Marine Terminal volume could be substantially smaller. A spill from a tanker/barge could range higher than the 20,000 barrels used in the modeling. Based on modeling using TAPSII, larger or smaller spills than 20,000 barrels would be expected to yield similar modeling extents, but with corresponding different levels of oiling at receptors.

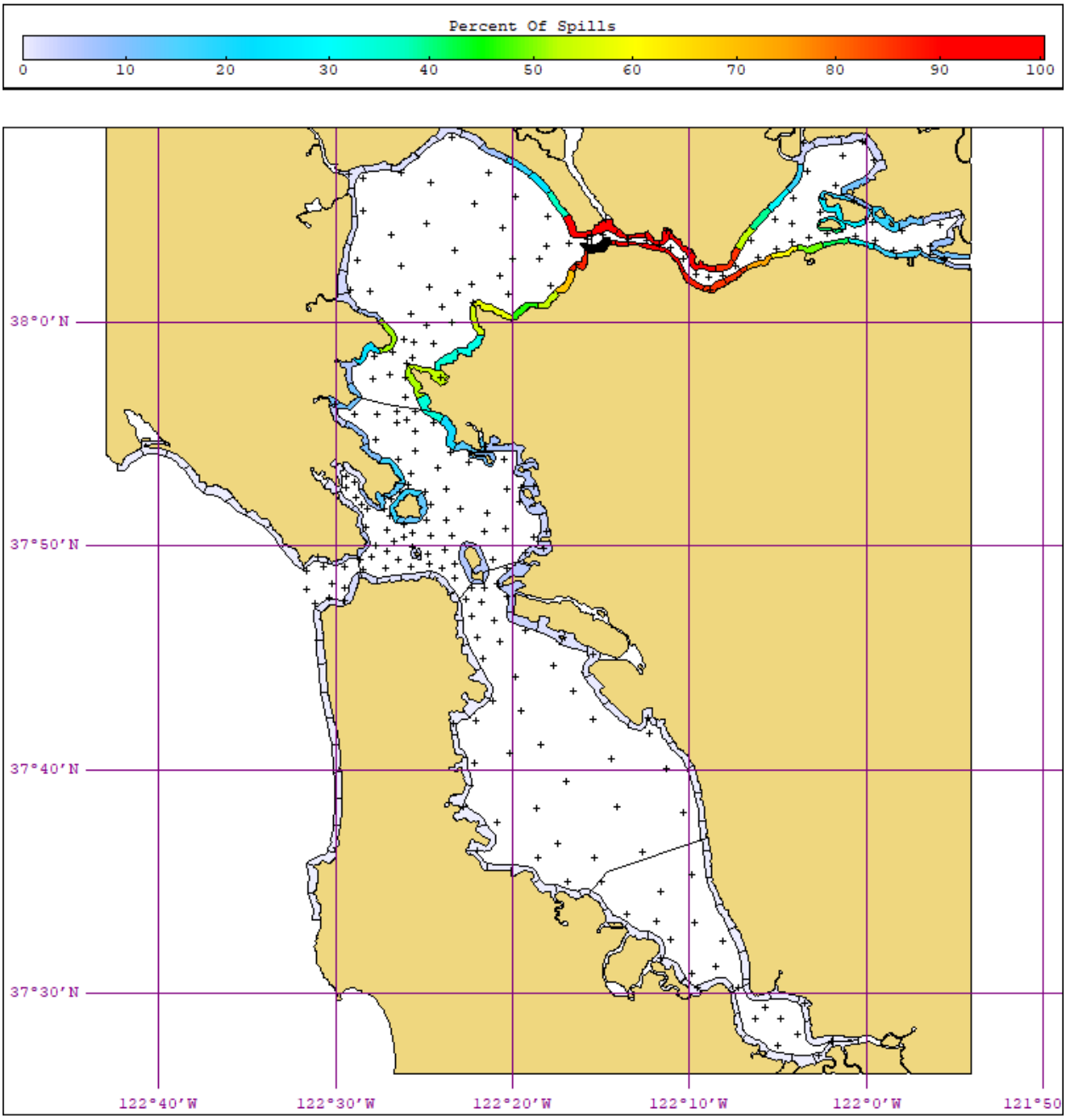
The areas that a spill could impact in the San Francisco Bay were assessed at the Marine Terminal and from a vessel travelling by the Golden Gate Bridge. Probabilistic spill modeling was performed using a tool provided by the NOAA and its Office of Response and Restoration's called the Trajectory Analysis Planner (TAP II). Through TAP II, probabilistic summaries of hundreds of simulated spills are provided. These probabilistic summaries were performed for spills originating at the two locations, during two seasons (summer and winter), for three different types of oils (gasoline, diesel and non-weathering oils).

The modeling analyzed shoreline oiling locations after 24 hours from the start of the spills for various spill scenarios. The worst-case impacts at the Marine Terminal and Golden Gate Bridge are shown in Figures 4.9-2 and 4.9-3. The modeling showed that, in summer, shoreline oiling locations along the East Bay due to spills at Marine Terminal were present from the Port of Richmond through the Carquinez Straights and into Suisun Bay. The highest probability of oiling was on both shorelines in the Carquinez Straights between San Pablo Bay and Suisun Bay.

During the winter conditions, oiling was slightly more widespread, likely driven by wind conditions with diesel and non-weathering oil showing probabilities of extent of oiling including a greater area of the western side of San Pablo Bay.

In general, with a spill release just east of the Golden Gate Bridge, the southern shorelines of the Marin Peninsula (northern side of Golden Gate), and the northern shorelines of the San Francisco Peninsula received the highest probability of oiling. This extended to Angel Island and Treasure Island with high probabilities of oiling with wind and tidal driven currents.

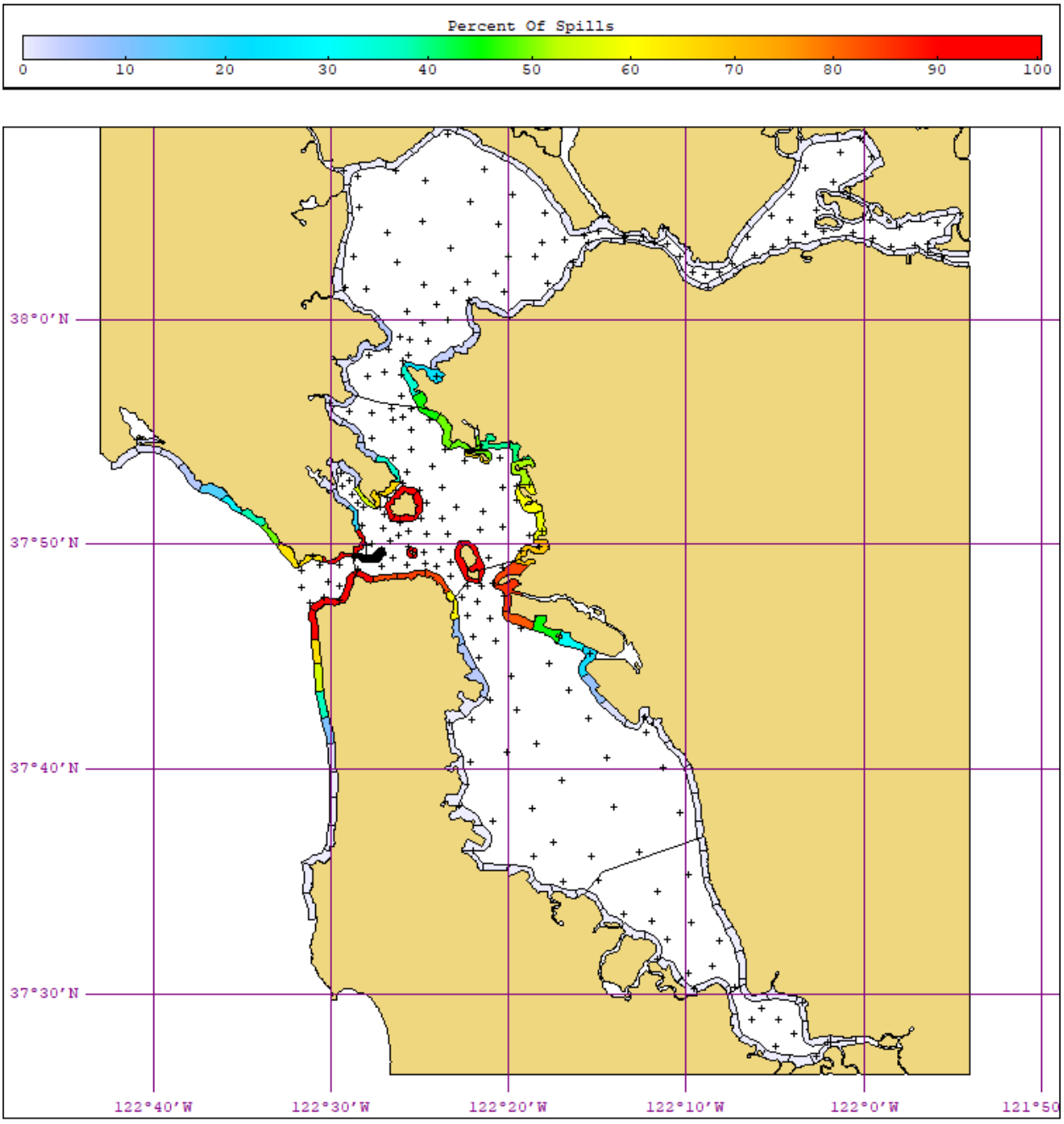
Operation of the Project could result in discharges into waters of the San Pablo and San Francisco Bays from vessels (barges and tankers) transporting feedstocks and blending stocks to, and refined products from, the Marine Terminal. At full operation, 201 tankers and 161 barges would call each year, an increase of approximately 113 percent over baseline. Therefore, potential impacts related to vessel spills would be significant.



Source: Krause 2021

Note: Summer impacts due to non-weathering oil spill at the Marine Terminal, 24 hours after the spill.

Figure 4.9-2. Oiling Extents for a Spill at the Marine Terminal



Source: Krause 2021 (refer to Appendix D-2, Long-Term Flood Protection Report, Phillips 66 San Francisco Refinery)
Note: Summer impacts due to non-weathering oil spill in-transit at the Golden Gate Bridge, 24 hours after the spill

Figure 4.9-3. Oiling Extents for a Spill In-transit at the Golden Gate Bridge

The following measures are consistent with requirements applied to other marine terminals in the San Francisco Bay (CSLC 2014, 2015) subject to discretionary permitting as a result of modified operations.

Mitigation Measure HAZ-1: Implement Release, Monitoring and Avoidance Systems

The following actions shall be completed by Phillips 66 prior to Project operations, including the transitional phase, and shall include routine inspection, testing and maintenance of all equipment and systems conducted in accordance with manufacturers' requirements. Of note, the Marine Terminal has a remote release system that can be activated from a single control panel or at each quick-release mooring hook set. The central control system can be switched on in case of an emergency necessitating a single release of all mooring lines.

Remote Release Systems

- Provide and maintain mooring line quick release devices that shall be able to be activated within 60 seconds.
- These devices shall be capable of being engaged by electric/push button release mechanism and by integrated remotely-operated release system.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).
- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.

This measure would allow a vessel to leave the Marine Terminal as quickly as possible in the event of an emergency (fire, explosion, accident, or tsunami that could lead to a spill). In the event of a fire, tsunami, explosion, or other emergency, quick release of the mooring lines within 60 seconds would allow the vessel to quickly leave the Marine Terminal, which could help prevent damage to the Marine Terminal and vessel and avoid and/or minimize spills. This may also help isolate an emergency situation, such as a fire or explosion, from spreading between the Marine Terminal and vessel, thereby reducing spill potential. The above would only be performed in a situation where transfer connections were already removed and immediate release would not further endanger terminal, vessel and personnel.

Tension Monitoring Systems

- Provide and maintain Tension Monitoring Systems to effectively monitor all mooring line and environmental loads, and avoid excessive tension or slack line conditions that could result in damage to the Marine Terminal structure and/or equipment and/or vessel mooring line failures.
- Line tensions and environmental data shall be integrated into systems that record and relay all critical data in real time to the control room, Marine Terminal operator(s) and vessel operator(s).
- System shall include, but not be limited to, quick release hooks only (with load cells), site-specific current meter(s), site-specific anemometer(s), and visual and audible alarms that can support effective preset limits and shall be able to record and store monitoring data.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).

- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.
- Install alternate technology that provides an equivalent level of protection.

The Marine Terminal is located in a high-velocity current area and currently has only limited devices to monitor mooring line strain and integrated environmental conditions. Updated MOTEMS Terminal Operating Limits (TOLs), including breasting and mooring, provide mooring requirements and operability limits that account for the conditions at the terminal. The upgrade to devices with monitoring capabilities can warn operators of the development of dangerous mooring situations, allowing time to take corrective action and minimize the potential for the parting of mooring lines, which can quickly escalate to the breaking of hose connections, the breakaway of a vessel, and/or other unsafe mooring conditions that could ultimately lead to a petroleum product spill. Backed up by an alarm system, real-time data monitoring and control room information would provide the Terminal Person-In-Charge with immediate knowledge of whether safe operating limits of the moorings are being exceeded. Mooring adjustments can be then made to reduce the risk of damage and accidental conditions.

Allision Avoidance Systems

- Provide and maintain Allision Avoidance Systems (AASs) at the Marine Terminal to prevent damage to the pier/wharf and/or vessel during docking and berthing operations. Integrate AASs with Tension Monitoring Systems such that all data collected are available in the Control Room and to Marine Terminal operator(s) at all times and vessel operator(s) during berthing operations. The AASs shall also be able to record and store monitoring data.
- Document procedures and training for systems use and communications between Marine Terminal and vessel operator(s).
- Routine inspection, testing and maintenance of all equipment and systems in accordance with manufacturers' recommendations and necessity are required to ensure safety and reliability.

The Marine Terminal has a continuously manned marine interface operation monitoring all aspects of the marine interface. The Automatic Identification System is monitored through TerminalSmart and provides a record of vessel movements. The Marine Terminal has a compliant AAS which is not required for MOTEMS compliance so long as MOTEMS TOLs are followed.

Monitoring these factors would ensure that all vessels can safely berth at the Marine Terminal and comply with the minimum standards required in the MOTEMS. Excessive surge or sway of vessels (motion parallel or perpendicular to the wharf, respectively) and/or passing vessel forces may result in sudden shifts/redistribution of mooring forces through the mooring lines, which can quickly escalate to the failure of mooring lines, breaking of loading arm connections, the breakaway of a vessel, and/or other unsafe mooring conditions that could ultimately lead to a spill.

Mitigation Measure HAZ-2: USCG Ports and Waterways Safety Assessment (PAWSA) Workshops, Spill Response and Pilotage Requirements

- Phillips 66 shall participate in the USCG's PAWSA workshops for the San Francisco Bay Area (Bay Area) to support overall safety improvements to the existing Vessel Traffic Service in the Bay Area or approaches to the bay if such workshops are conducted by the USCG during the life of the lease.

- Spill Response to Vessel Spills. Phillips 66 shall respond to any spill near the Marine Terminal from a vessel traveling to or from the Marine Terminal or moored at the Marine Terminal as if it were its own, without assuming liability, until such time as the vessel's response organization can take over management of the response actions in a coordinated manner.
- For all tankers and barges, Phillips 66 shall require that pilotage is utilized while transiting the Bay Vessels 300 GRT or larger and will cooperate in meeting USCG/NOAA VSR program to keep speed limited to 10 knots in the Bay and lower upon approach to the Marine Terminal due to tug escort speed limitations.

Vessel owners/operators are responsible for spills from their tankers. Tanker and barge owners/operators are required by federal and state regulations to demonstrate that they have, or have under contract, sufficient response assets to respond to worst-case releases. Tankers and barges operating in United States and California waters must certify that they have the required capability under contract. All terminals are under contract with one or more OSRO to respond to spills with all the necessary equipment and manpower to meet the response requirements dictated by regulations. This mitigation would further reduce the risk of spills in the San Francisco Bay or near approaches to the bay by requiring participation in USCG Ports and Waterways Safety Assessment workshops for the Bay Area to improve transit issues and response capabilities in general, and to support overall safety improvements to the existing VTS in the future.

While vessel owners/operators are responsible for their spills, if a spill were to occur near the Marine Terminal, Phillips 66 and its contractors may be in a better position to provide immediate response to a spill using their own equipment and resources, rather than waiting for mobilization and arrival of the vessel's response organization. The Phillips 66 staff is fully trained to take immediate action in response to spills. Such action could result in a quicker response and more effective control and recovery of spilled product. This mitigation would also require Phillips 66 to respond to any spill from a vessel traveling in the San Francisco Bay to or from the Marine Terminal or moored at its wharf, without assuming liability, until the vessel's response organization can take over management of the response actions in a coordinated manner. This requirement would further limit the potential for impacts from spills in the San Francisco Bay from vessels calling at the Marine Terminal.

In addition, Phillips indicates that it is their policy to utilize pilots for all tankers and barges while within the bay, even if the tanker or barge is under the required size requirements, and to limit vessels speeds below the required maximum. This mitigation ensures that all tankers and barges utilize pilots and speed limits in order to reduce the probability of groundings, collisions or allisions.

Even with implementation of these measures to reduce the frequency and size of potential feedstock spills from increased vessel traffic, the impacts associated with a large volume or worst-case discharge spill would remain significant and unavoidable.

Operations and Maintenance–All Other Locations: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

The Project would involve the transport of renewable feedstocks, as well as various process chemicals, and hazardous materials in the form of gasoline blendstocks and refined products (gasoline and renewable diesel, gasoline, and jet fuel). Many of the substances handled and transported by the refinery, and associated with the Project, are flammable and combustible liquids that present hazards associated with releases producing flammable vapor clouds, or fires from the burning of a spilled material if ignited. The hazards of a material are related to how readily the material produces a vapor cloud and how readily the material will ignite and burn. The flash point is a characteristic that helps to define how hazardous a material may be. If a material, such as gasoline (a low flash point), will readily produce a flammable vapor cloud that can ignite when spilled, then it is

generally more hazardous than a material which does not produce a flammable vapor cloud and is therefore more difficult to ignite (vegetable oil, for example, with a high flash point). A characteristic called the flash point temperature is the minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. Materials with higher flashpoint temperatures are thus less likely to ignite than materials with lower flash point temperatures. In general, a flammable liquid is defined as a material with a flash point temperature under 100 °F and a combustible liquid has a flash point temperature over 100 °F. Because of their higher flash points, combustible liquids do not pose as great a risk in storage or processing as flammable liquids.

NFPA 30 classification is as follows:

- **Class IA:** Flash Point less than 73°F; Boiling Point less than 100°F
- **Class IB:** Flash Point less than 73°F; Boiling Point equal to or greater than 100°F
- **Class IC:** Flash Point equal to or greater than 73°F, but less than 100°F
- **Class II**: Flash Point equal to or greater than 100°F, but less than 140°F
- **Class IIIA:** Flash Point equal to or greater than 140°F, but less than 200°F
- **Class IIIB:** Flash Point equal to or greater than 200°F

A flammable gas is a material, such as propane, which is a gas at 68°F and readily produces a flammable vapor cloud when released. Flammable gases are substantially more hazardous than liquids due to the rapid rate at which they produce a flammable vapor cloud and can ignite and explode and burn. Table 4.9-5 lists some materials and their respective classifications and flash point temperatures.

Table 4.9-5 Material Characteristics

Material	Materials Classification	Flash Point Temperature, °F
Hydrogen	Flammable Gas	-423**
Methane	Flammable Gas	-306
Propane	Flammable Gas	-155
Gasoline	Class IB Flammable Liquid	70
Jet Fuel	Class IC Flammable Liquid	100
Diesel Fuel	Class II Combustible Liquid	126
Crude Oil Light*	Class IA Flammable Liquid	-30
Crude Oil Medium*	Class IA Flammable Liquid	-10
Crude Oil Heavy*	Class IA Flammable Liquid	-3
Crude Bitumen	Class II Combustible Liquid	>100
Cooking Oil	Class IIIB	>460
Tallow Grade 1	Class IIIB	356–509

Source: Material Safety Data Sheets for Hydrogenated Tallow Fatty Acid and Corn Oil.

* unweathered

** melting point

Under the Project, the processing of crude oil, with a flash point of between -30 to -3°F and, therefore, readily able to produce flammable vapor clouds and cause fires, etc., would be replaced with oils and potentially tallow, which both have very high flash points and therefore present substantially lower hazards in terms of fires and potential hazards to the public. In addition, as the feedstocks are not as volatile, they do not end up producing as much lighter-ends at the refinery for storage and processing. The transportation of butane via railcar, for example, would be eliminated as part of the Project. The elimination of transportation and reduction in recovery and storage of light-ends as part of the Project would also reduce the hazards at the refinery.

The refinery would continue to require various hazardous materials to be used in the processing, and therefore some hazards as part of the baseline would remain as part of the Project, including the production and storage of gasoline and diesel.

However, in general, the Project would present less hazards to the public and the impacts would be less than significant.

Marine Terminal (public safety)

The Marine Terminal would continue to transport feedstock and refinery products, but the hazards to the public of the feedstocks would be reduced over the baseline transportation of crude oil. Generally, these renewable feedstocks are not identified as marine pollutants by the USDOT, the United Nations, or the International Maritime Organization, which regulate the movement of materials throughout the world. Feedstocks of gasoline and diesel would continue to be transported at the Marine Terminal. Impacts from a spill and subsequent fire at the Marine Terminal would be located a substantial distance away from any public receptors and impacts would therefore be less than significant.

Transportation

Rail Transportation

The proposed Project would increase the number of railcars handled at the Rodeo Refinery's railcar unloading facility from an average of 4.7 per day under baseline conditions to 16 per day. However, the number of train trips per day would not change: the railcars would continue to be delivered and removed by no more than one train each day. Because the risk of an accident is based on train miles, rather than the number of cars on each train, the risk of an upset would be similar to the baseline conditions. Furthermore, the railcars would carry less-hazardous or non-hazardous materials (i.e., renewable feedstocks) that do not meet the minimum hazard thresholds for USDOT regulations rather than the USDOT designated hazardous materials (butane) carried under baseline conditions; if an accident were to occur, whether at the Rodeo Refinery or along the rail lines throughout California leading to the Rodeo Refinery, the consequences to the public would be less than under baseline conditions. Therefore, the impacts of rail transportation during the operational period would be less than significant.

Pipeline Transportation

Under the proposed Project, refinery pipelines would continue to be used to transport petroleum-based gasoline out of the refinery and small amounts of pre-treated feedstocks into the refinery. However, the transportation of crude oil would be eliminated. Because of the inherent safety of pipeline transportation and the existing transportation of refinery products by pipeline under the baseline, the minor changes in pipeline quantities and materials would not substantially change the risk of upset or accident. In addition, the elimination of crude oil transportation would also reduce the hazards of pipeline transportation. Accordingly, the impacts of pipeline transport of hazardous materials associated with the Project would be less than significant.

Truck Transportation

The Project would involve the disposal of hazardous wastes produced from the renewable feedstock manufacturing processes. Trucks would be used to transport hazardous materials. New wastes would include spent filter cake and FOG concentrate, neither of which is listed as a regulated waste. Spent sodium hydroxide and vanadium would no longer be disposed of, eliminating approximately eight truck trips per month. The amount of spent catalyst transported would increase from an average of one truck per month to two trucks per month; therefore, the disposal of hazardous wastes would decrease overall from baseline levels.

Truck transport of some feedstock may occur, which would present a lower hazard than deliveries of feedstocks during the baseline. Truck transport of raw materials into the refinery is expected to be similar to the baseline operations.

Because the routine disposal of hazardous materials and waste would decrease compared to baseline conditions, and truck traffic related to feedstock transportation would also have a reduction in hazards, there would be an overall reduction in hazards and potential impacts associated with truck transport and impacts would be less than significant.

IMPACT 4.9-3

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

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery – Marine Terminal

Although the Rodeo Refinery is on the Cortese List, it is an existing industrial facility with various controls to prevent significant hazard to the public or the environment. The Project would be constructed entirely within the Rodeo Refinery, where no public access is allowed. In the refinery's process areas, various levels of hazardous material contaminations may exist, but structural and procedural control measures prevent these hazardous materials from moving offsite. Demolition of the Carbon Plant could encounter contaminated soils. The Project would not involve further investigation or remediation of subsurface contamination that may underlie the Carbon Plant Site. Contaminated soils associated with construction or demolition would be handled in accordance with the existing Soil Management Plan that complies with regulatory requirements. Accordingly, the Project would not increase risk of exposure to people or the environment to hazardous substances as a result of being located on a Cortese List, and the level of impact would be less than significant and no mitigation is required.

Santa Maria Site

The Santa Maria Site is not listed on the Cortese List, but it is listed on the SWRCB's GeoTracker database because of subsurface hydrocarbon contamination. Contaminated soils resulting from demolition activities would be handled in accordance with the existing Soil Management Plan that complies with regulatory requirements. Therefore, it is not anticipated that the Project would increase the risk of hazardous substance exposure to people or the environment. The impact would be less than significant and no mitigation is required.

Transitional Phase, Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery – Marine Terminal

Although the Rodeo Refinery area is on the Cortese List, it is an existing industrial facility with various controls to prevent significant hazard to the public or the environment. The Project would be constructed and operated entirely within the Rodeo Refinery, where no public access is allowed.

Mitigation Measure: **None Required**

IMPACT 4.9-4

f. Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery – Marine Terminal

Project construction/demolition would occur completely within the confines of existing industrial facilities and would not impair the implementation of any public emergency evacuation plan. The Rodeo Refinery maintains an emergency response plan and would update the HMBP, which includes evacuation routes. The Project would have a less-than-significant impact related to the potential to interfere with internal roads and movements at the Rodeo Refinery, including the Carbon Plant, during construction and demolition activities.

For a discussion of how construction and demolition activities could occur related to traffic circulation and impairment of emergency response see Section 4.13, *Transportation and Traffic*. Specifically, Mitigation Measure TRA-1 requires implementation of a Traffic Management Plan, which would include coordination of construction and demolition activities with refinery operations and the refinery's emergency response plan. The mitigation measure would eliminate or minimize interference with an adopted emergency response plan or emergency evacuation plan during construction/demolition.

Santa Maria Site

Project construction/demolition would occur completely within the confines of existing industrial facilities and would not impair the implementation of any public emergency evacuation plan. The Santa Maria Refinery maintains an emergency response plan and would prepare and update an HMBP with the CUPA that include evacuation routes. The Project has the potential to interfere temporarily with internal roads and movements at the Santa Maria Site during construction and demolition activities. However, coordination of those activities with site operations and the refinery's emergency response plan would eliminate or minimize interference with an adopted emergency response plan or emergency evacuation plan to result in a less-than-significant impact to emergency response during construction/demolition.

Transportation

Transportation of construction waste and raw materials via truck would utilize existing transportation networks in a manner similar to the baseline and would therefore not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant.

Transitional Phase, Operations and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery – Marine Terminal

Project operations would occur completely within the confines of the Rodeo Refinery where no public access is allowed. The Rodeo Refinery maintains an emergency response plan and would update the

HMBP, which includes evacuation routes, with the CUPA. Following construction/demolition, the Project would have no internal road closures and would not interfere with movements at the Rodeo Refinery during operations. Coordination of refinery operations and the refinery's emergency response plan would eliminate or minimize interference with the emergency response plan or emergency evacuation plan, so the level of impact to emergency response would be less than significant. No additional mitigation would be required.

During the 7-month transitional phase, deliveries and processing of crude oil and gas oil feedstocks by tanker vessel would result in increased vessel traffic at the Marine Terminal compared to baseline conditions. This temporary increase in vessel traffic would be coordinated with refinery operations and the facility's emergency response plan to eliminate or minimize interference through the implementation of the refinery's emergency response plan or emergency evacuation plan. Therefore, the level of potential impact to emergency response would be less than significant during the transitional phase.

Transportation

Transportation of waste, raw materials, and refinery products via pipeline, rail or truck would utilize existing transportation networks in a manner similar to the baseline and would therefore not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant.

Mitigation Measure: **None Required**

IMPACT 4.9-5

g. Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildfire?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery – Marine Terminal

According to CAL FIRE (2020), the Rodeo Site, where all unit modifications and additions would occur, is in a CAL FIRE Local Responsibility Area. However, the portion of the Rodeo Refinery east of I-80 (including the Carbon Plant) is in a moderate to high Fire Hazard Severity Zone in a CAL FIRE State Responsibility Area.

Since the Carbon Plant would be demolished, no new Project elements with the potential to expose people or structures to wildfires would be introduced. The other Project elements would occur within developed areas and would pose no new risks of wildfires. Accordingly, the potential to expose people or structures to wildfire during construction/demolition would be less than significant at the Rodeo Site and the Carbon Plant Site.

Santa Maria Site

The Santa Maria Site is located in a State Responsibility Area but is not located in or near an area classified as a very high fire hazard severity zone. Therefore, construction and demolition activities at the Santa Maria Site would not produce impacts related to wildfires. The impact would be less than significant.

Transitional Phase, Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

The Rodeo Refinery is located in a CAL FIRE Local Responsibility Area. The portion of the Rodeo Refinery east of I-80 (including the Carbon Plant) is in a moderate to high Fire Hazard Severity Zone in a CAL FIRE State Responsibility Area.

Since the Carbon Plant would be demolished, no new Project elements with the potential to expose people or structures to wildfires would be introduced. Other Project elements would occur in developed areas that would not create increased risk of wildfires. Operations of new Rodeo facilities would comply with NFPA design requirements addressing flammable and combustible liquids (NFPA 30), fire extinguishing systems (e.g., NFPA 11, 12, 15), and the National Electrical Code (NFPA 70) to a avoid and minimize risk of onsite fires to a level of less than significant. Additionally, operations, maintenance and staff departments would continue to conduct various safety and regulatory compliance inspections and audits as part of standard on-going maintenance and Phillips 66 would continue safety-training program for existing and new employees. Therefore, the potential to expose people or structures to wildfire during construction/demolition would be less than significant at the Rodeo Refinery, including the Carbon Plant Site.

Transportation

Transportation of waste, raw materials, and refinery products via pipeline, rail or truck would utilize existing transportation networks in a manner similar to the baseline and would therefore not increase wildfire risks. Impacts would be less than significant.

Mitigation Measure: **None Required**

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