10.0 HAZARDS AND HAZARDOUS MATERIALS

This chapter describes hazards and hazardous materials currently present in the project area and those that could be introduced by the project. This chapter includes a description of the project's potential to result in hazardous materials exposure to persons or the release of hazardous materials to the environment, and safeguards to limit the probability and potential consequences of such events. Additional related discussion is presented in Chapter 4.0: Air Quality; Chapter 6.0: Aquatic Resources; Chapter 7.0: Terrestrial Resources; Chapter 9.0: Geology, Soils, and Seismicity; Chapter 11.0: Public Services and Utilities; Chapter 16.0: Marine Transportation and Marine Terminal Operations; and Chapter 17.0: Water Resources.

Guidelines and key sources of data used in the preparation of this chapter include the following:

- The Cortese List
- Technical reports prepared for the site of the proposed project
- California Department of Education Guidance Protocol for School Site Pipeline Risk Analysis
- California State Fire Marshal Hazardous Liquid Pipeline Risk Assessment
- Published studies and risk statistics for releases and fires at petroleum storage tanks (or resulting from the storage of petroleum) and within or resulting from pipeline and rail transport.

For purposes of this analysis, the terms hazardous material and hazardous substance are used interchangeably and are defined as any material that appears on a list of hazardous materials prepared by a federal, state, or local agency, or any material that has characteristics as defined by such an agency. Hazardous materials are defined in the Health and Safety Code (HSC), Section 25501(o), as:

> "*…any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment*."

A hazardous waste is a hazardous material that no longer has a practical use such as substances that have been discarded or discharged, or that are being stored prior to disposal or recycling, except as exempted from the definition of hazardous waste by federal and State regulations.

Crude oil is a naturally occurring viscous liquid comprised primarily of hydrocarbons and other organic constituents. The composition of crude oil varies depending on the type and how it is extracted. Hydrocarbons generally account for 50 percent to 97 percent of the mixture. Other organic constituents such as nitrogen, oxygen, and sulfur typically make up between 6 percent and 10 percent. Inorganic constituents, including metals such as copper, nickel, vanadium, and iron, account for less than 1 percent of the total composition. Crude oil is a hazardous material pursuant to various federal and state regulations, e.g., the U.S. Department of Transportation (DOT) regulations list crude oil as a Class 3 flammable liquid.

Fuel oil, gas oil and vacuum gas oil would also be handled by the project. These are products that remain from the crude oil after the more volatile and more flammable hydrocarbon products, such as gasoline range hydrocarbons, have been removed. These products also are hazardous materials pursuant to various federal and state regulations. Since the most volatile and flammable hydrocarbon products have been removed, they are less flammable than crude oil. Fuel oil and gas oil are classified as combustible liquids under DOT regulations. Vacuum gas oil is less flammable and does not meet DOT's criteria for either flammable or combustible. Nevertheless, vacuum gas oil can emit vapors that will burn if the oil is heated above the flash point (approximately 270 degrees Fahrenheit).

10.1 ENVIRONMENTAL SETTING

The following sections describe the existing environmental setting relevant to the assessment of potential project hazards and hazardous materials risks. Relevant considerations include existing project area conditions and the laws, regulations and requirements already in place that would limit the potential for the project to have impacts associated with hazards and hazardous materials. The hazards and hazardous materials analysis in this chapter is primarily focused on onshore project facilities. Hazard risks associated with the project's offshore marine terminal activities are discussed in Chapter 16.0: Marine Transportation and Marine Terminal Operations.

10.1.1 Regulatory Context

Laws and regulations are currently in place to govern the safe storage, use, handling, transport, and disposal of hazardous materials and contingency planning to minimize potential impacts of accidental releases of hazardous materials if such releases should occur. Key laws and regulations relevant to the project are discussed below.

10.1.1.1 Federal Regulations

A number of federal laws regulate safety of marine terminals, onshore storage terminals, and pipeline and rail transport operations. These laws address, among other things, design, construction, and operations standards; operations monitoring and inspection requirements; training standards; security standards; spill prevention; and spill response preparedness and preparation.

Oil Pollution Prevention

The National Oil and Hazardous Substances Pollution Contingency Plan, commonly referred to as the National Contingency Plan (NCP), defined in 40 Code of Federal Regulations (CFR) 300, is implemented under the U.S. Environmental Protection Agency (EPA) Emergency Management Program. The NCP outlines federal oil spills and hazardous substance releases response procedures and designates the EPA as the lead agency for onshore releases. The EPA also serves as co-chair of the Regional Response Team, which is a team of agencies established to provide assistance and guidance to the on-scene coordinator during the response to a spill.

Implemented under the EPA Emergency Management Plan, the Oil Pollution Prevention regulation (40 CFR 112) implements federal requirements for regulated facilities to have Spill Prevention, Control, and Countermeasures (SPCC) Plans; and Facility Response Plans (FRPs). SPCC Plans must address requirements for oil spill prevention, preparedness, and response measures to prevent oil discharges from reaching navigable waters and adjoining shorelines. SPCC Plans include information such as site security measures; personnel training, testing, inspection, and record-keeping procedures; secondary containment and oil spill controls; emergency notification procedures; and reporting requirements. In addition to a detailed directive of all information and measures required to be included in an SPCC Plan, the regulations included in 40 CFR 112 include standards for spill prevention adequacy measures that would apply to the project, including, but not limited to:

- Requirements for secondary containment for all oil storage containers or tanks with a capacity of 55 gallons or more
- Requirements for secondary containment at all oil transfer locations
- Specified types of secondary containment structures and equipment acceptable for use to satisfy the regulation
- Capacity requirements for secondary containment

- Requirements for all inspections and tests to be conducted in accordance with written procedures developed for the facility, with records of inspections and tests signed by an appropriate supervisor or inspector and maintained for at least three years

- Requirements for determination of appropriate qualifications for persons conducting inspections and testing

- Requirements for frequency of inspections and testing

- Requirements for the minimum elements of infrastructure, equipment and processes that must be inspected

- Requirements for acceptable container and tank fabrication materials

- Requirements for high liquid level alarms or pump cutoff devices

- Requirements for training topics for all oil-handling personnel

- Requirements for security measures, including controlling of access to oil handling areas, securing flow and drain valves and loading and unloading connections, and security lighting

The SPCC Plan would need to be prepared and implemented prior to operations.

A copy of the SPCC Plan must be maintained at the facility at all times. The SPCC Plan would be reviewed and certified by a qualified licensed Professional Engineer. By Certification, the engineer must attest that: (1) they are familiar with the 40 CFR 112 requirements; (2) they have visited and examined the facility; (3) the plan has been prepared in accordance with good engineering practice, industry standards, and the requirements of 40 CFR 112; (4) procedures for inspections required by the SPCC Plan have been established; and (5) the SPCC Plan is adequate for the facility.

A FRP demonstrates that a facility is capable of responding to a worst-case oil discharge, to the maximum extent practical. A worst-case discharge, pursuant to 40 CFR 112 regulations, would include the volume of the largest tank in any secondary containment area. This means that the project would be required to put in place measures to respond to release scenarios up to 500,000 barrels (BBLs), or 21 million gallons. FRPs include measures such as emergency reporting and notification directives; evacuation routes and signals; headcount protocols; responsibilities of critical operating personnel and emergency coordinators; rescue and medical services and resources; emergency contacts for plant personnel; identified spill response contractors for land and water releases; records of accessible oil spill emergency response equipment; and actions to be performed in the event of a release, fire, or earthquake. The FRP prepared for this project

would be required to be reviewed and approved by the EPA, U.S. Coast Guard and California Department of Fish and Wildlife's (CDFW) Office of Spill Prevention and Response, as well as other federal and state agencies prior to operations.

Emergency Planning and Community Right-to-Know

The federal Emergency Planning and Community Right-To-Know Act (EPCRA) (42 United States Code [USC] 116) requires facilities to prepare and submit Material Safety Data Sheets (MSDS) and hazardous chemical inventory forms to the State Emergency Response Commission, Local Emergency Planning Committee (LEPC), and local fire department. The LEPC, upon request by any person, shall make available a MSDS in accordance with 42 USC 119, Section 11044. Meeting this federal requirement is achieved through compliance with the California Hazardous Materials Business Plan (HMBP) program (HSC Section 25504 (a-c)), discussed in Section 10.1.1.2. The EPCRA also includes key provisions regarding emergency planning, emergency notification, and toxic-release inventories.

Pipeline Safety

Operators of onshore oil pipelines that, because of their location, could reasonably be expected to cause substantial harm, or significant and substantial harm, to the environment by discharging oil into any navigable waters of the United States, or on to adjoining shorelines, are required by 49 CFR 194 to prepare a Response Plan for Onshore Oil Pipelines (Response Plan). Response Plans must be consistent with the NCP and applicable area contingency plans (ACPs) and must include procedures and a list of resources for responding, to the maximum extent practicable, to a worst-case discharge. Response Plans must also identify environmentally and economically sensitive areas and contain spill detection and mitigation procedures. Additionally, Response Plans must detail notification procedures, establish provisions to ensure the protection of safety at the response site, identify training and equipment testing procedures, and contain a drill program in accordance with the national Preparedness for Response Exercise Program (PREP) Guidelines. Response Plans are to be submitted to, and approved by, the Office of Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, DOT (49 CFR 194.119).

Federal pipeline safety regulations at 49 CFR 195.452 include requirements for inspecting and managing the integrity of pipeline segments in areas that have the potential to impact High Consequence Areas (HCAs). HCAs include densely populated areas, ecologically sensitive areas and waterways used for commercial navigation. The project area is within an HCA and, therefore, would be required to operate under an Integrity Management Program pursuant to 49 CFR 195.452 requirements. The Integrity Management Program would include operating procedures for managing the risk of impact to HCAs, including pipeline integrity evaluation and assessment, evaluation and repairs of defects, and integrity

management recordkeeping. Additional requirements mandated for pipelines operating within HCAs provide extra levels of regulatory protection compared to pipelines located outside of HCAs.

Hazardous Waste Management

The federal Resource Conservation and Recovery Act of 1976 (RCRA) established a "cradle-to-grave" regulatory program governing the generation, transportation, treatment, storage, and disposal of hazardous waste. 40 CFR 260 *et seq*. establishes detailed requirements for the management of hazardous waste under RCRA. Additionally, RCRA provides for states to implement their own hazardous waste programs as long as the state program is at least as stringent as federal RCRA requirements.

Worker Safety

The Occupational Safety and Health Administration (OSHA) is responsible for assuring safe and healthful workplaces by setting and enforcing standards and by providing training, outreach, education, and assistance. OSHA implements and enforces regulations pertaining to general industry standards (29 CFR 1910) and construction operations (29 CFR 1926), and both of these sections address the handling of toxic or hazardous material.

OSHA is responsible for overseeing the regulations regarding employee emergency action plans (29 CFR 1910.38 and 1926.35), which identify designated actions which employers and employees must take to ensure employee safety from fire and other emergencies.

10.1.1.2 State and Local Regulations

Area Contingency Plans

The Office of Oil Spill Prevention and Response (OSPR) was created within the CDFW to adopt and implement regulations and guidelines for spill prevention, response planning, and response capabilities. The OSPR has developed ACPs for the marine waters of California, and the proposed project would be located in the geographical area addressed in the San Francisco Oil Spill Contingency Plan. The San Francisco Oil Spill Contingency Plan has been developed by the OSPR to be, when implemented in conjunction with the NCP, adequate to remove a worst-case discharge of oil, and to mitigate or prevent a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operating in or near the geographic area. The San Francisco Oil Spill Contingency Plan provides preparatory measures, procedures and resource allocation to ensure rapid, well-organized, and appropriate response to a potential oil spill. It addresses response agency coordination and response roles and resources, response measures, logistics, human health and safety and resource protection hierarchy, sensitive infrastructure and resource protection, funding, and other planning measures for a wide range of spill scenarios and locations.

The OSPR contracts oil spill response organizations (OSROs) to ensure available resources in accordance with the San Francisco Oil Spill Contingency Plan, and monitors these organizations' response capabilities through unannounced drills and other methods. The OSROs have the ability to rapidly respond to a variety of oil-spill incidents, and play an integral role in OSPR's planned response efforts. Additional information regarding the OSPR is provided in Chapter 16.0: Marine Transportation and Marine Terminal Operations.

Hazardous Materials Management Act

The State of California (HSC Division 20, Chapter 6.95) requires any business that handles more than a specified amount of hazardous or extremely hazardous materials, termed a "reportable quantity," to submit a HMBP to its Certified Unified Program Agency (CUPA). HMBP requirements are specified in Title 19 California Code of Regulations (CCR) Division 2, Chapter 4, Article 4. Business plans must include an inventory of the types, quantities, and locations of hazardous materials at the facility. Businesses are required to update their business plans at least once every three years and the chemical portion of their plans every year. Also, business plans must include emergency response plans and procedures to be used in the event of a significant or threatened significant release of a hazardous material. These plans need to identify the procedures to follow for immediate notification to all appropriate agencies and personnel of a release, identification of local emergency medical assistance appropriate for potential accident scenarios, contact information for all company emergency coordinators, a listing and location of emergency equipment at the business, an evacuation plan, and a training program for business personnel.

Businesses that handle hazardous materials are required by law to provide an immediate verbal report of any release or threatened release of hazardous materials if there is a reasonable belief that the release or threatened release poses a significant present or potential hazard to human health and safety, property, or the environment.

City of Pittsburg Municipal Code (PMC) Section 18.84.270 et seq. are local regulations intended to ensure that the use, handling, storage, and transport of hazardous materials is compliant with requirements of the Hazardous Materials Management Act provisions. PMC Section 18.84.270 et seq. also ensures that the City is notified of HMBPs, unauthorized releases of hazardous materials, and any changes at a facility that could affect the public health, safety or welfare. Under these regulations, the project would require a Use Permit for storage, handling, and transport of bulk hazardous materials.

Pipeline Safety

The California Pipeline Safety Act (California Government Code Title 5, Part 1, Chapter 5.5) provides regulatory jurisdiction and enforcement authority to the California State Fire Marshal (SFM) for the safety of all intrastate hazardous

liquid pipelines. Through reference to 49 CFR 195 in the California Pipeline Safety Act, the SFM is responsible for implementing requirements pertaining to design, construction, testing procedures, corrosion control, maintenance, personnel qualifications, and reporting for hazardous liquid transport via pipeline. Additionally, the SFM oversees the process of transitioning a pipeline from 'out-of-service status' to 'active status' by performing pipeline inspections, reviewing pipeline records to ensure past compliance with state and federal pipeline regulations, reviewing written plans describing the process and testing procedures that would be used to demonstrate pipeline integrity, and granting or denying 'active status' approval.

For each pipeline system, pipeline operators are required to prepare and follow a manual of written procedures to ensure safety during pipeline maintenance and normal operations, abnormal operations, and emergencies (49 CFR Part 195.402). The maintenance and normal operations section of the manual must include current maps and records and procedures for operating, maintaining, repairing, starting up, and shutting down the pipeline system; minimizing the potential for hazards; and implementing applicable control room management procedures. The abnormal operations section addresses scenarios in which the operating design limits have been exceeded and must include procedures for responding to, investigating, and correcting the cause of abnormal operations. The emergencies section of the procedures manual must identify procedures for prompt and effective response, assessing the area impacted by the hazard, and minimizing public exposure to injury. Safety-related condition reports must also be included in the procedures manual and include instructions enabling personnel who perform operation and maintenance activities to recognize potential safety-related conditions subject to the reporting requirements of 49 CFR 195.55.

Hazardous Waste Control

The generation, transportation, treatment, storage, and disposal of hazardous waste in California is regulated by the California Department of Toxic Substances Control (DTSC) under 22 CCR Division 4.5. These hazardous waste management regulations: (1) establish criteria for identifying, packaging, and labeling hazardous wastes; (2) dictate the management of hazardous waste; (3) establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and (4) 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 an employee hazardous waste training program.

California State Lands Commission

As required by Section 2430 of CCR Title 2, Division 3, Chapter 1, Article 5.1, a marine oil terminal operator must implement a Marine Oil Terminal Security Plan, which at a minimum must:

- appoint a Marine Oil Terminal Security Officer to take responsibility for security matters;

- include security practices and procedures, responsibilities of the security officer, and physical security measures (e.g., communications, lighting, fencing, terminal access control, security organization, and training program);

- provide for the safety and security of persons, property, and equipment at the terminal and along the dock side of vessels moored at the terminal;

- prevent and deter the carrying of any weapon, incendiary, or explosive in stores or carried by persons onto the terminal or to the dock side of vessels moored at the terminal; and

- prevent or deter unauthorized access to the terminal and to the dock side of vessels moored at the terminal.

The Marine Facilities Division of the California State Lands Commission reviews and oversees marine oil terminal security plans.

Worker Safety

The California Division of Occupational Safety and Health (Cal OSHA) implements and enforces the Injury and Illness Prevention Program (IIPP) per the regulatory requirements in Title 8, CCR Section 3203. These programs are facility specific and designed to protect workers and the public from health or safety hazards. The Hazard Communications Standard (29 CFR 1910.1200), enforced under Cal OSHA, requires employers to provide employees with effective information and training on hazardous chemicals in their work area to the extent necessary to protect them in the event of a spill or leak of hazardous chemicals.

Certified Unified Program Agency

The Contra Costa County Health Services (CCCHS) would be the CUPA for the proposed project. The CCCHS is certified by the California Secretary of Environmental Protection to implement the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program specified in the HSC, Chapter 6.11. As such, the CCCHS oversees the regulatory programs for aboveground storage tanks (Assembly Bill 1130) and hazardous waste generators, including facility inspections, permitting, and HMBPs.

Water Quality Protection

Under the Porter-Cologne Water Quality Control Act, the State Water Resources Control Board (SWRCB) has jurisdiction for all discharges of hazardous materials that affect surface water or ground water. The SWRCB implements its regulations

locally through nine Regional Boards. The project occurs within the San Francisco Regional Water Quality Control Board's region.

10.1.2 Existing Conditions

10.1.2.1 Existing Facilities

The majority of the infrastructure for the proposed project is already in place, including the storage tanks, marine terminal, onsite storage terminal pipelines, storage terminal secondary containment, and the San Pablo Bay Pipeline and KLM common-carrier pipeline, and would be operated similar to past use. Detailed descriptions of existing facilities are provided in Chapter 2.0: Proposed Project and Alternatives.

Off-site pipelines primarily traverse open space, with some exceptions discussed in Section 10.2.3. The existing East and South Tank Farms are bounded to the north and west by Suisun Bay, the NRG Energy, Inc. (NRG, formerly GenOn Delta LLC) Pittsburg Generating Station, and open space. The NRG facility uses and stores some hazardous materials, including hydrocarbons, various gases (e.g., hydrogen, helium), ammonia, acids, and bases, as part of its existing operations. Residential areas currently exist to the south and east of the Terminal and Rail Transload Facility.

10.1.2.2 Historical Releases and Potential Hazardous Materials Present

The pipes located on the site of the proposed project were historically used for transport of fuel oil, and have not been in use since 1990. There is potential for trace amounts of hazardous material, in the form of fuel oil, to exist in these pipes. The aboveground storage tanks located on the proposed project site have been decommissioned for over 15 years, and there is a potential for hazardous material, in the form of hydrocarbon vapor or residue, to exist in the tanks.

A Phase II Environmental Site Assessment (Fluor Daniel GTI, 1998) identified the following potential for hazardous materials to be present:

- Portions of the storage terminal are underlain with fill from an unknown source. Hazardous constituents have not been identified in this fill, but historical fill from unknown sources can sometimes contain hazardous, naturally occurring or anthropogenic contaminants, so there is a potential for these to exist.

- The project site may contain asbestos-containing materials (ACMs) in building, wiring, insulation, caulking, gaskets and other existing building materials.

- Past releases of No. 6 fuel oil have occurred from previous site operations and residual hydrocarbons, metals and polycyclic aromatic hydrocarbons (PAH) are reported present in subsurface soils and shallow groundwater. Total PAH concentrations measured in soils are typically below 3,000 milligram per kilogram. Except for isolated locations near Tank 1 and Tank 16, PAH measured in soils are below preliminary remediation goals established for residential areas.

The Phase II Environmental Site Assessment identified three locations requiring soil remediation that could be disturbed by the project: (1) an isolated location adjacent to Tank 1; (2) an isolated location near Tank 9; and (3) an area between Tanks 11 and 16. More locations may be identified when excavations occur for project construction; however, as required by OSHA regulations under 8 CCR 1510 and 1511, construction workers would be appropriately trained for the identification of impacted soils, as further described in Section 10.2.3, Impacts and Mitigation Measures.

Additionally, there is a potential for lead to be present at the proposed project site in the form of lead-based paint, piping materials, and other materials.

The San Pablo Bay Pipeline crosses three properties identified on the Cortese List, pursuant to Government Code Section 65962.5:

- Between milepost (MP) 12 and MP 13 (see Figure 10-1: Locations of Cortese List Sites), the pipeline passes along the southern edge of the former Shell Land Disposal site. There are no specified chemicals of concern at this site, and no remedial actions have been taken (SWRCB, 2011).

- Between milepost MP 11 and MP 12 (see Figure 10-1), the pipeline passes along the southern edge of the Pacific Atlantic Terminal site. Potential constituents of concern at this site include arsenic and lead (DTSC, 2011; SWRCB, 2011).

- Between MP4 and MP 9, the pipeline passes through the portion of the Concord Naval Weapons Station (CNWS) known as the "Tidal Area," also known as the Military Ocean Terminal Concord site and the Naval Weapons Station Seal Beach, Detachment Concord. The site is a Department of Defense ammunitions transshipment port under the operation of the Department of Army. Several contaminated soil and groundwater locations exist on the CNWS property. Located in proximity to the pipeline, soil and groundwater contaminated with petroleum hydrocarbons is present near the eastern parcel boundary, and a site with mercury-contaminated soil is positioned near the western parcel boundary. Additionally, soil and groundwater contamination resulting from the historical disposal of wooden materials treated with preservatives (i.e., chromium, arsenic, and copper) may be present along the pipeline (Friedman, 2011; SWRCB, 2011).

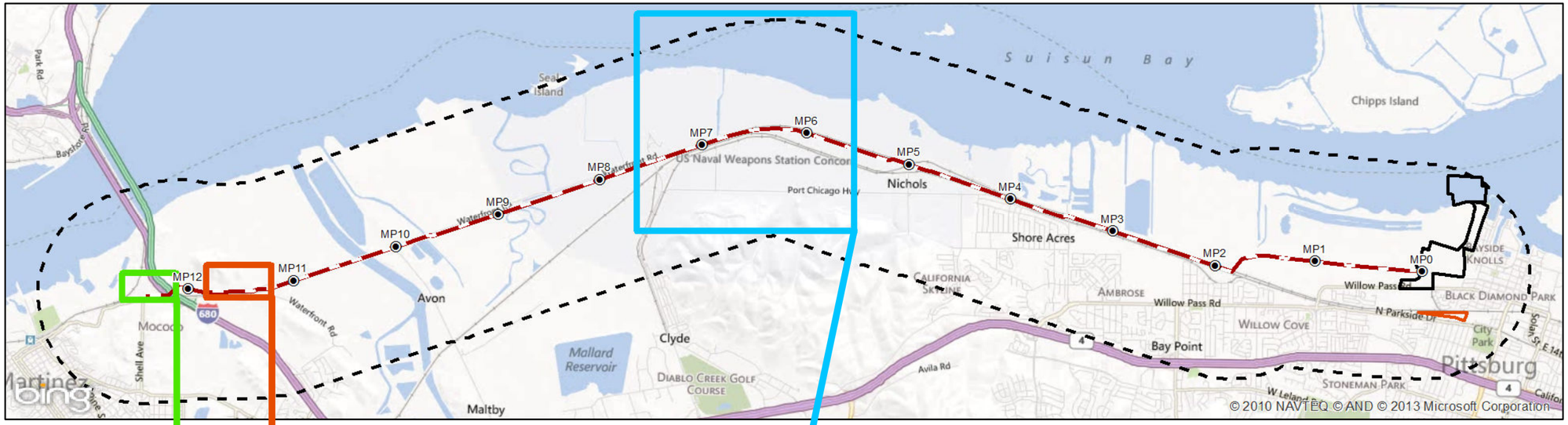
Portions of the former Old Valley Pipeline (OVP) and Tidewater Association Oil Company (TAOC) pipelines, which historically ran along North Parkside Drive, could be encountered during excavation activities for the proposed KLM Pipeline connection. These formerly active crude oil pipelines were constructed at depths of up to 10 feet below ground surface during the early 1900s, where the steel pipelines were typically encased in a protective coating composed of coal tar and ACM. When the OVP and TAOC pipelines ceased operation in the 1940's and 1970's, respectively, the degree and method of decommissioning varied; in some instances the pipelines were removed, where in others, they remained in place. Soil in this area could potentially be impacted by crude oil since numerous historical release points along the former OVP and TAOC pipelines have been identified through risk assessments (Chevron Energy Solutions, 2012).

10.1.2.3 Sensitive and Other nearby Receptors

In this chapter, sensitive receptors are human receptors that may be particularly vulnerable to a hazard compared with the general public, such as persons at schools, hospitals, or convalescent homes. Identified sensitive-receptor locations within a 0.25-mile radius of the proposed storage terminal, include: St. Peter Martyr School and Extended Care Facility located at 425 West Fourth Street, and First Baptist Head Start located at 204 Odessa Avenue (see Figure 10-2: Sensitive Receptor Locations). One additional school, Parkside Elementary School, is located approximately 800 feet south of the proposed KLM Pipeline connection and 1,200 feet south of the pipeline connection between the Terminal and the Rail Transload Facility. City Park is located approximately 900 feet southeast of the Rail Transload Facility. No sensitive receptors were identified within 0.25 mile of the proposed San Pablo Bay Pipeline.

Two churches are located within a 0.25-mile radius of the proposed storage terminal. Specifically, the Stewart Memorial Methodist Church (located at Linda Vista Way and Front Street) and the First Baptist Church (located on Odessa Drive) are positioned within the residential neighborhood east of the East Tank Farm. Riverview Park and Marina Park are located offsite and immediately north and south of the East Tank Farm (respectively). The Pittsburg Marina, along with an existing established residential area, is located to the east of the site. A portion of Marina Park is proposed for planned residential development. Existing residential areas exist to the southeast of Tank 9, and to the southeast of Tank 15, near a portion of the proposed KLM Pipeline connection, Rail Transload Facility and associated Rail Pipeline. Accumulated stormwater and drainage from the East and South Tank Farms would be directed westward, toward Willow Creek (see Chapter 17.0: Water Resources, Section 17.1.2.11), away from these developed areas.

Residential areas also occur near the portion of the existing San Pablo Bay Pipeline that passes north of west Pittsburg.



Former Shell Land Disposal 1:5,000

Pacific Atlantic Terminal 1:6,000

Concord Naval Weapons Station 1:20,000

Figure 10-1
Locations of Cortese List Sites
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project

- Mileposts
- Existing San Pablo Bay Pipeline
- Terminal Boundary
- Rail Transload Facility
- 1 Mile Pipeline Radius
- Parcel Boundary

N

7/18/2013

1 inch = 1 miles

1:70,000

0 0.5 1 mi

TRC

CH X:\WesPac\DEIR Reissue\10 Hazards\mxd\Figure 10-1 Locations of Cortese List Sites.mxd

X:\WesPac\DEIR Reissue\10 Hazards\mxd\Figure 10-2 Sensitive Receptors and Other Nearby Receptors.mxd

Figure 10-2 Sensitive Receptors and Other Nearby Receptors
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project

TRC

7/18/2013

Receptors
Terminal Boundary
Rail Transload Facility

N

1:12,000

1 inch = 1,000 feet

0 380 760 ft

10.1.2.4 Public Emergency Services

California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local government and private agencies. For Contra Costa County, the emergency response plan is administered by the California Emergency Management Agency (Cal EMA), which coordinates responses of other agencies, including the California Environmental Protection Agency, California Highway Patrol, CDFW, Regional Water Quality Control Board (RWQCB), and local fire departments. California law requires that the Cal EMA be notified in the event of an oil or hazardous substance release.

The Contra Costa County Fire Protection District (CCCFPD) provides emergency response and fire protection services to the project area. The Pittsburg Police Department and/or the Contra Costa County Sheriff's Department would provide law enforcement to the project. A detailed discussion of emergency public services, including fire and police protection, is provided in Chapter 11.0: Public Services and Utilities.

10.2 IMPACT ANALYSIS

10.2.1 Methodology for Impact Analysis

The hazards and hazardous materials impacts analysis includes:

- identifying hazards present and foreseeable scenarios that could result in exposure of persons or the environment to a project hazard;
- assessing the probability of foreseeable upset and worst-case upset scenarios, considering project design and operational controls, existing regulatory requirements applicable to the project, and other relevant factors;
- identifying potential consequences of foreseeable and worst-case scenarios considering existing environmental conditions and regulatory requirements for response planning and preparedness;
- identifying significant hazardous materials risks based on probability and potential consequences of foreseeable upset and worst-case upset conditions; and
- evaluating the project for possible effects on adopted emergency response plans.

Multiple sources of information, including government databases, technical reports, regulatory agency websites and online databases, local emergency response plans, and local municipal codes, were reviewed to assess where construction and/or operation of the project could have the potential to create significant adverse impacts relating to hazards, hazardous materials, or adopted

emergency response or evacuation plans. Additionally, locations of sensitive and other nearby receptors were identified for evaluation in the impact analysis.

10.2.1.1 Hazardous Materials and Hazardous Waste Sites

Hazardous materials and hazardous waste sites within or adjacent to the project footprint were identified using site-specific information following review of applicable databases (e.g., Cortese List).

The Cortese List (consisting of databases identified in California Government Code Section 65962.5) was consulted to identify sites with known hazardous materials or waste contamination within or adjacent to the project footprint. As discussed in Section 10.1.2.2, three Cortese List sites proximal to the San Pablo Bay Pipeline are present.

Other sources of information for site-specific information includes a Phase II Environmental Site Assessment, documentation from the Pittsburg Generating Station HMBP (GenOn, 2011) and FRP (Mirant Delta, 2005), and information on other pipeline locations in the area.

10.2.1.2 Hazard Risk Assessment and Modeling

Bulk storage tank accident analysis is a topic that has been widely studied worldwide as a result of the potential for significant impacts to human health and the environment, and the associated economic losses and liability. For the assessment of hazards related to the project's onshore tank farms, published studies of bulk tank failure mechanisms and statistics were evaluated to determine reasonable hypothetical release scenarios and potential impacts thereof, including worst-case scenarios that are not reasonably foreseeable.

To evaluate probabilities of potential hazards relating to the existing San Pablo Bay Pipeline, the proposed KLM Pipeline connection, and the Rail Pipeline, the California Department of Education guidance protocol for siting new schools was used (CDE, 2007). While this protocol does not apply to projects other than siting of school facilities, it provides a useful and conservative metric for assessment of pipeline risks to other types of facilities, in the vicinity.

10.2.1.3 Emergency/Evacuation Plans

The scope of the proposed project was analyzed with respect to existing local emergency response and evacuation plans within the project vicinity to identify any potential conflicts or shortfalls that may result from project construction and/or operation.

10.2.2 Significance Criteria

CEQA Guidelines at 14 CCR 15143 emphasize that an EIR shall focus on the significant effects on the environment. The significant effects should be discussed with emphasis in proportion to their severity and probability of occurrence.

CEQA Guidelines at 14 CCR 15064(d) state that in evaluating the significance of the environmental effect of a project, the Lead Agency shall consider direct physical changes in the environment which may be caused by the project and reasonably foreseeable indirect physical changes in the environment which may be caused by the project. An indirect physical change is to be considered only if that change is a reasonably foreseeable impact which may be caused by the project. A change which is speculative or unlikely to occur is not reasonably foreseeable.

For the purposes of this analysis, an impact related to hazards and hazardous materials would be significant if it would result in any of the following:

- A significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous material
- A significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of a hazardous material to the environment
- A significant risk of a spill or other accident beyond the capabilities of existing and proposed emergency response resources
- A significant risk of fires, explosions, releases of flammable or toxic materials, or other accidents that could cause long-term health impacts to persons, loss of life, or substantial environmental consequences to sensitive resources
- A significant risk of hazardous emissions, or handling of hazardous materials, substances, or wastes within 0.25 mile of an existing or proposed school
- A significant risk to the public or the environment as a result of being located on a site that is included on the Cortese List
- Impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan

The risk or hazard presented by a potential upset or accident conditions such as a fire or product release is dependent on two components: (1) the potential consequence; and (2) the likelihood (i.e., probability) of occurrence. The potential consequence of an accident-induced event is the level of harm that could potentially occur to people, property, or the environment, including special

consideration for sensitive and nearby receptors. The probability is the chance of the potential upset events actually occurring.

Both the potential consequence and the probability are key factors in weighing the hazard and risk. Those events with a severe potential consequence need not have a high probability of occurrence to be considered significant hazard or risk. On the other hand, events that have a low potential consequence level may be a less than significant hazard or risk even if they are likely to occur with frequency. Both consequence and probability of potential upset events are dependent on key regulatory framework; in general, the more robust and reliable the regulatory controls on a project component (such as the project-related pipelines and storage tanks), the less significant the risk of impact.

10.2.3 Impacts and Mitigation Measures

10.2.3.1 Proposed Project

Construction-related Impacts

Impact Hazards and Hazardous Materials (HM)-1: Create a hazard to workers, the public, and/or the environment through the routine transport, use, and/or disposal of hazardous materials. (Less than significant.) Vehicles and equipment used for construction of the project would contain or require the short-term use of hazardous materials, including, but not limited to, fuels, lubricating oils, solvents, antifreeze, hydraulic fluid, and compressed gasses. In addition, construction activities would utilize some hazardous materials such as paints and solvents and would generate hazardous waste streams such as waste oil and empty containers that previously held hazardous materials. The potential exists for an accidental release of these hazardous materials during routine construction activities or routine hazardous materials transport related to construction. Construction activities also have the potential to result in exposure to these hazardous materials by workers, or by the public, if access to the construction site is not adequately controlled or if the materials are not properly handled and contained. Potential hazards to workers, the public, and the environment from routine use, transport, or disposal of hazardous materials handled for routine construction would be limited by existing pollution prevention, waste management, worker health and safety, and transportation safety regulations that would apply to the project, as described in the following paragraphs.

In accordance with applicable NPDES program regulations, the project would be required to obtain coverage under a National Pollutant Discharge Elimination System Permit for stormwater discharges from construction activities. This requirement could be satisfied through NPDES Permit No. CAS000002, State General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (State Water Resources Control Board Order No. 2009-0009-DWQ). To be covered by this permit, a Notice of Intent and Storm Water Pollution Prevention Plan (SWPPP) would need to be filed with the

RWQCB. The SWPPP would need to include best management practices (BMPs) that would prevent or minimize the release of potential pollutants during construction activity. These BMPs would need to encompass measures to effectively prevent or minimize pollutants from being discharged in stormwater, as described in detail in Chapter 17.0: Water Resources. These measures would directly limit the potential for hazardous materials exposure via stormwater for workers, the public, and the environment. In addition, the hazardous materials containment and control measures required to be implemented as part of the BMPs would limit the potential for direct exposure through controlled handling measures for hazardous materials. As described in Section 2.7.7, Environmental Commitment HM-1 commits the project to incorporating BMP's in the construction SWPPP to limit the potential for hazardous materials exposure via stormwater for workers, the public and the environment.

Regulations promulgated under the federal RCRA and California Hazardous Waste Management Act include rigorous requirements that limit the potential for releases of hazardous waste to the environment and the potential for public and worker exposure. The State regulations, codified in CCR Title 22, Division 4.5, are more stringent than the federal regulations. These regulations include specific requirements for identifying, accumulating, and managing hazardous wastes on-site, transport of hazardous wastes off-site, and treatment and disposal of hazardous wastes at properly designed and permitted facilities. Compliance with these requirements would minimize the risk of hazardous wastes being released to the environment or receptors. These regulations would apply to any hazardous waste generated during construction, including soil and construction or demolition wastes that are hazardous pursuant to 22 CCR Division 4.5 regulations. All of these materials would be required to be managed in a manner that prevents release to the environment. As described in Section 2.7.7, Environmental Commitment HM-2 commits the project to complying with 22 CCR Division 4.5 regulations for hazardous waste.

In addition, the project would be required to comply with Cal OSHA standards for worker safety in the handling and use of hazardous materials and hazardous wastes. 8 CCR Sections 337-340 require an employer to monitor work exposure to hazardous substances and notify workers of exposure to hazardous substances. The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substances exposure warnings. Cal OSHA regulations in 8 CCR 3203 and 1509 would further require an IIPP for construction. The IIPP would specify protective clothing and gear to be used during task-specific activities, including work where exposure to hazardous materials could occur. The IIPP must also include, in part: identification of the person or persons with authority and responsibility for implementing the program; a system for ensuring that employees comply with safe and healthy work practices; a system for communicating with employees in a form readily understandable by all affected employees; procedures for identifying and evaluating workplace hazards, including scheduled periodic inspections to

identify unsafe conditions or practices; procedures for correcting unsafe conditions or practices; and training and instruction. 8 CCR 3208 requires recordkeeping of inspections and actions taken to prevent unsafe conditions or practices and of health and of health and safety training for each employee. As described in Section 2.7.7, Environmental Commitment HM-3 commits the project to complying with OSHA standards for worker safety in the handling and use of hazardous materials.

If construction activities include staging of 1,320 gallons or more of fuel or other petroleum products in aboveground tanks or other containers with individual volumes of 55 gallons or more, such petroleum storage would be subject to the SPCC Plan requirements of 40 CFR Part 112. These regulations are designed, in part, to ensure that petroleum products are properly contained to minimize the potential for a release of oil to surface waters, thereby limiting the potential for related exposure to the environment, workers, and the public. As described in Section 2.7.7, Environmental Commitment HM-4 commits the project to complying with SPCC Plan requirements.

CCR Title 19, Division 2, Chapter 4, Article 4 would require that a HMBP be prepared and followed for project construction and submitted to the CUPA. These regulations would require the HMBP to include an inventory of hazardous materials present and their characteristics, and requirements for employee training, inspections, release preparedness, site maps designed for emergency response planning, and other measures. The HMBP would be reviewed by the CUPA and used by emergency responders to facilitate emergency response planning and to ensure that potential response requirements are considered. Environmental Commitment HM-5 in Section 2.7.7 commits the project to complying with these requirements.

The federal Hazardous Materials Transportation Law (49 USC 5101-5127) is the primary foundation for the regulatory control of transportation of hazardous materials. The purpose of the federal Hazardous Materials Transportation Law is to “protect against the risks to life, property, and the environment that are inherent in the transportation of hazardous materials.” In addition, the Hazardous Materials Regulations (49 CFR Parts 171-180) contain requirements for hazardous materials classification, hazard communication, packaging requirements, operational rules, training and security, and registration. All hazardous materials being transported must be handled, packaged, labeled, and transported in a manner that is consistent with Hazardous Materials Regulations set forth for each categorized hazardous material/waste. As described in Section 2.7.7, Environmental Commitment HM-6 adheres the project to complying with these requirements.

The adoption of requirements of existing laws and regulations and NPDES Permit No.CAS000002 (see Chapter 2.0: Proposed Project and Alternatives, Section 2.7), as described in the preceding paragraphs, would provide for hazardous material inventory, proper training, proper handling and disposal, personal protective

equipment, response preparedness, BMPs, and other measures that limit the potential for exposure from routine use of hazardous materials or routine generation of hazardous wastes during construction. With these measures unhealthful levels of exposure by workers or the public would not be expected. Furthermore, adherence to these regulations and requirements would prevent releases to the environment by routine transport use and disposal of hazardous materials during construction. Considering these factors, the hazard presented by routine use of hazardous materials during construction to workers, the public, and the environment would be less than significant.

Mitigation Measure: No mitigation required.

Impact HM-2: Create a hazard to workers, the public, and/or the environment through exposure to existing hazardous materials at the site. (Less than significant.) As described in Section 10.1.2.2, crude oil and other hazardous constituents may be present in the subsurface at the tank farms. Unknown impacted soils and/or hazardous constituents could also be identified along project pipeline routes, during construction excavations for the Rail Transload Facility, and within construction debris. Where project construction involves soil excavation, exposure to hazardous materials could occur if such materials are present in excavation locations. Regulations at 8 CCR 1511 would require that, prior to construction, a thorough survey of site conditions be conducted to determine, to the extent practicable, the predictable hazards to employees and the kind and extent of safeguards necessary to execute the work in a safe manner (8 CCR 1511). The known or suspected existence of petroleum hydrocarbons, metals and asbestos, described in Section 10.1.2.2 would be addressed in this survey and the safeguards necessary to conduct the work in a safe manner for these or any other hazardous materials that may be encountered would be implemented in accordance with 8 CCR 1511. In situations where employees are subject to known job-site hazards (e.g., flammable liquids and gases, toxic materials, confined spaces), they would be instructed in the recognition of the hazard, procedures to protect themselves from injury, and first aid procedures in the event of an injury (8 CCR 1510). As described in Section 2.7.7, Environmental Commitment HM-7 commits the project to complying with 8 CCR 1510 and 1511 regulations. In addition to regulatory requirements, for construction excavations where impacted soils may be encountered, Environmental Commitment HM-8 commits the project to providing a soil management plan for review by the City and the CUPA prior to construction (see Section 2.7.7). The soil management plan would identify procedures for detecting impacted soils in excavations and for handling of such soils, in accordance with applicable laws and regulations, to ensure that releases to the environment, or unacceptable levels of exposure by the public and workers, do not occur.

Additionally, the potential exists for ACMs to exist throughout the proposed project site as building, wiring, and pipe-insulation materials. During upgrades or removal of these features, ACMs would be handled and disposed of in accordance

with Cal OSHA regulations. Regulations under 29 CFR 1926.1101 and 8 CCR 1529 would govern the safe removal of materials containing asbestos for the project. Protective measures required by these regulations include, but are not limited to: training, oversight by competent individuals, personal protective equipment such as respirators and special clothing for workers, and required engineering controls and work practices to limit exposure to a safe level and to prevent release of asbestos to the environment. Engineering controls include enclosure or isolation of work areas resulting in asbestos dust; ventilation equipped with HEPA filters; and negative-pressure enclosure systems such as glove bag systems, wet removal, and use of leak-tight containers. The project would be required to notify the Bay Area Air Quality Management District (Regulation 11-2-401.3) prior to disturbing ACMs. Following removal, ACMs would be managed and disposed of as a hazardous waste in accordance with 22 CCR Division 4.5 regulations. As described in Section 2.7.7, Environmental Commitment HM-9 commits the project to adhering with these requirements when performing upgrades or removal of ACMs. These regulations and requirements provide for containment of ACMs such that unhealthful releases to the environment or levels of exposure by workers or the public would not be expected. Therefore, the hazard presented by asbestos removal during construction would be less than significant.

There is a potential for lead to exist throughout the proposed project site in the form of lead-based paint, piping materials, and other materials. Occupational exposures to lead can occur during construction activities such as plumbing system retrofits; the spraying, removal, or heating of paint that contains lead; and the welding, cutting, and grinding of lead-containing construction materials. Regulations under 8 CCR 1532.1 would govern the safe construction practices in the presence of lead-containing materials. Protective measures required by these regulations include, but are not limited to, training, personal protective equipment such as respirators and special clothing for workers, and required engineering controls and work practices to limit exposure to a safe level. In addition, per 8 CCR 1532.2, the project would be required to submit a Lead-work Pre-job Notification form to the nearest Cal OSHA Division District Office prior to lead-disturbing activities. As described in Section 2.7.7, Environmental Commitment HM-10 commits the project to adhering with these requirements. These regulations and requirements provide for containment of lead during removal work such that unhealthful releases to the environment or levels of exposure by workers or the public would not be expected. Therefore, the hazard presented by lead removal during construction would be less than significant.

The aforementioned 8 CCR 1511 OSHA worker protection regulations would require that the project construction plan incorporate adequate surveys and health and safety programs for workers for all of the hazardous materials that may occur at the site. Additional regulations governing the removal of ACM and lead would also apply where these hazards are encountered in construction. Hazardous wastes resulting from construction would need to be handled in accordance with 22 CCR

Division 4.5 which would prevent their release to the environment. With these measures, unhealthful levels of exposure by workers or the public, or releases to the environment, would not be expected; and therefore, potential for exposure to existing hazardous materials would be less than significant.

Mitigation Measure: No mitigation required.

Operational Impacts

Impact HM-3: Create a hazard to workers, the public, and/or the environment through the routine transport, use, and/or disposal of hazardous materials. (Less than significant.) Operation of the project would include transfer and storage of large quantities of petroleum products, the presence of which results in the potential for exposure of these hazardous materials to workers, the public, and the environment. Unsafe levels of exposure to workers or the public could cause health effects, and a release into the environment could cause harm to water resources, biological resources, and other ecosystem components. No discharge of hazardous materials to the environment would occur from routine activities, except for permitted emissions to air found to be less than significant with mitigation, as described in Chapter 4.0: Air Quality. Human health hazard information for crude oil and other products is summarized in Table 10-1.

Petroleum products would be contained in tanks or pipelines that would prevent exposure during routine operations but maintenance activities have potential to result in exposure to workers whenever oil is exposed.

Hazard rankings provided by the National Fire Protection Association (NFPA) for each handled product are provided in Table 10-1. NFPA uses a Health Hazard rating system of “0” to “4” as follows:

0 - No hazard beyond that of ordinary combustible material.

1 - May be irritating with only minor residual injury.

2 - Intense or continued, but not chronic, exposure could cause temporary incapacitation, or residual injury could occur if not treated.

3 - Exposure could cause serious injury even if treated.

4 - Exposure may be fatal.

Table 10-1: Product Hazard Summary

Material	Health Hazards	Hazard Rankings*
Crude oil (heavy and light)	• Irritant for skin and eye contact • Respiratory irritant if vapors inhaled • Toxic if ingested • Can be fatal following high-pressure skin injection or if aspirated into lungs • Acute inhalation hazard if hydrogen sulfide vapors occur in a high enough concentration (e.g., confined space) • May be carcinogenic following chronic exposure • Can cause organ damage or central nervous system disorders following chronic exposure	Fire: 4 Health: 2 Reactivity: 0
No. 6 Fuel Oil	• Irritant for skin and eye contact • Respiratory irritant if vapors inhaled • Low acute toxicity for ingestion • Can be fatal following aspirated into lungs • Acute inhalation hazard if hydrogen sulfide vapors occur in a high enough concentration (e.g., confined space) • May be carcinogenic following chronic exposure • Can cause organ damage or central nervous system disorders following chronic exposure	Fire: 2 Health: 2 Reactivity: 0
Gas Oil	• Irritant for skin and eye contact • Respiratory irritant if vapors inhaled • Low acute toxicity for ingestion • Can be fatal following aspirated into lungs • May be carcinogenic following chronic exposure • Can cause organ damage following chronic exposure	Fire: 2 Health: 1 Reactivity: 0

Material	Health Hazards	Hazard Rankings*
Vacuum Gas Oil	• Irritant for skin and eye contact • Respiratory irritant if vapors inhaled • Low acute toxicity for ingestion • Can be fatal following aspirated into lungs • May be carcinogenic following chronic exposure	Fire: 2 Health: 1 Reactivity: 0

*Rankings are from the National Fire Protection Association.

The highest NFPA health risk designation for products to be handled during project operations is 2. As defined above, in order to present a substantive health threat, an NFPA-rating of 2 requires intense or continued exposure to hazardous materials. In addition, as summarized in Table 10-1, acute (short-term) exposure to hazardous materials to be handled during project operations would typically not result in lasting health impacts. As described in Table 10-1, symptoms of acute over-exposure to hazardous products to be handled include irritation to the skin or eyes, or irritation to the respiratory tract if vapors are inhaled. Severe health effects from acute exposure are not typical except for extreme acute exposure, such as ingestion or aspiration into the lungs.

Excluding extreme exposure scenarios, the project's primary acute health hazard is related to the potential for exposure to hydrogen sulfide, which can occur at trace concentrations in some products. Hydrogen sulfide vapors are toxic, explosive, and heavier than air, and can be present in dangerous concentrations in confined spaces or other unventilated areas. While the acute health hazard of the products to be handled is generally low, chronic exposure can cause serious health effects. Chronic exposure to products containing hydrocarbons has been shown to cause serious health impacts, including increased cancer risk. However, Terminal and Rail Transload Facility workers, the public, and the environment would not be chronically exposed during routine operations as crude oil products would be enclosed in tanks, pipelines, and rail cars.

Small containers (i.e., 55 gallons down to one gallon or less) of hazardous materials such as lubricants, paints, adhesives and solvents would be used to maintain equipment during operations. OSHA regulations would prevent the exposure of unsafe levels of these materials to workers.

In addition, site maintenance could generate hazardous waste or recyclable hazardous materials. Management of hazardous waste onsite would be regulated under CCR Title 22. These Title 22 regulations for hazardous waste management would prevent unsafe levels of exposure to workers and the public and would prevent releases to the environment.

Hazards associated with crude oil transfer over water, either offshore or at the marine terminal, are addressed in Chapter 16.0: Marine Transportation and Marine Terminal Operations. This analysis evaluates other hazards presented by routine operations, which would be limited by adherence to the following laws, regulations, and requirements.

Occupational Safety and Health Regulations

As previously described in Impact HM-1, the project would be required to comply with Cal OSHA standards for worker safety in the handling and use of hazardous materials, including crude oil. 8 CCR Sections 337-340 require an employer to monitor work exposure to hazardous substances and notify workers of exposure to hazardous substances. The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substances exposure warnings. Cal OSHA regulations in 8 CCR 3203 would further require an IIPP for operations. The IIPP would specify protective clothing and gear to be used during task-specific activities, including work where exposure to hazardous materials could occur. The IIPP must include, in part: identification of the person or persons with authority and responsibility for implementing the program; a system for ensuring that employees comply with safe and healthy work practices; a system for communicating with employees in a form readily understandable by all affected employees; procedures for identifying and evaluating workplace hazards, including scheduled periodic inspections to identify unsafe conditions or practices; procedures for correcting unsafe conditions or practices; and training and instruction. 8 CCR 3208 requires recordkeeping of inspections and actions taken to prevent unsafe conditions or practices and of health and of health and safety training for each employee.

Pipeline Safety

The California Pipeline Safety Act, with oversight by the Office of the State Fire Marshal, regulates pipelines, including inspecting, testing, and investigating to ensure compliance with all state and federal safety laws and regulations. Per the California Pipeline Safety Act, pipelines would be designed to accommodate the passage of instrumental, internal inspection devices and would have leak mitigation and emergency response plans in place. These and other requirements of the California Pipeline Safety Act limit the potential for exposure to hazardous materials through safety precautions designed to minimize the potential for a release or upset condition.

Prior to operations, the pipeline system operators would be required to prepare and follow a manual of written procedures for providing safety during pipeline maintenance and normal operations, abnormal operations, and emergencies (49 CFR Part 195.402). The maintenance and normal operations section of the manual would include current maps and records and procedures for operating, maintaining, repairing, starting up, and shutting down the pipeline system; minimizing the potential for hazards; and implementing the applicable control room management procedures. The abnormal operations section addresses

scenarios in which the operating design limits have been exceeded and would include procedures for responding to, investigating, and correcting the cause of abnormal operations. The emergencies section of the procedure manual would identify procedures for prompt and effective response, assessing the area impacted by the hazard, and minimizing public exposure to injury. Safety-related condition reports must also be included in the procedures manual and include instructions enabling personnel who perform operation and maintenance activities to recognize potential safety-related conditions subject to the reporting requirements of 49 CFR 195.55.

The operator of the San Pablo Bay Pipeline would be required to prepare, implement, and maintain a Response Plan for an Onshore Oil Pipeline per 49 CFR 194. The Response Plan would include procedures and a list of resources responding, to the maximum extent practicable, to a worst-case discharge and to a substantial threat. The Response Plan would be consistent with the NCP and applicable ACPs. The Response Plan would identify environmentally and economically sensitive areas and address spill detection and mitigation procedures. Additionally, the plan would detail notification procedures, establish provisions to ensure the protection of safety at the response site, identify training and equipment-testing procedures, and contain a drill program in accordance with the PREP guidelines. Prior to operations, the Response Plan would be submitted and approved by the Office of Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, DOT (49 CFR 194.119).

California Aboveground Petroleum Storage Act

The California Aboveground Petroleum Storage Act requires the owner or operator of a petroleum storage facility with an aggregate aboveground storage capacity greater than or equal to 1,320 gallons to prepare and implement a SPCC Plan in accordance with 40 CFR Part 112. It also requires the CUPAs to conduct inspections at tank facilities with an aggregate storage capacity of 10,000 gallons or more of crude oil or refined petroleum products at least every three years. The purpose of the inspection is to determine whether the owner or operator is in compliance with the SPCC Plan requirements of the Aboveground Petroleum Storage Act. The Aboveground Petroleum Storage Act requires the owner or operator of a tank facility to annually file a tank facility statement with the Certified Unified Program Agency. The submittal of a business plan satisfies the requirement to submit the tank facility statement. The Aboveground Petroleum Storage Act also requires each owner or operator of an aboveground storage tank facility to immediately report, upon discovery, to the Governor's Office of Emergency Services and the CUPA, the occurrence of a spill or release of 42 gallons or more of crude oil or refined petroleum products. The project would be required to comply with all requirements of the California Aboveground Petroleum Storage Act for all on-site storage tanks, including preparation of a SPCC Plan and a HMBP prior to operations. These regulations and requirements, coupled with ongoing inspection by the CUPA, would limit the risk of spill or release of that could result in exposure to workers, the public, or the environment.

Hazardous Materials Management Act

Federal and state regulations require any business that handles more than a specified amount of hazardous or extremely hazardous materials, termed a "reportable quantity," to submit a HMBP to its CUPA. HMBPs must include an inventory of the types, quantities, and locations of hazardous materials at the facility. Businesses are required to update their business plans at least once every three years and update the chemical portion of their plans every year and within 30 days of a substantial change in usage of hazardous materials. Also, HMBPs must include an Emergency Response Plan and procedures to be used to prevent, and abate hazards the in the event of a release or threatened release of a hazardous material. The HMBP must identify all appropriate agencies that must be notified immediately of a release, identify local emergency medical assistance, include contact information for all company emergency coordinators, a list of emergency equipment at the business, an evacuation plan, and a training program for business personnel. The training program must incorporate safety and response measures for handling of hazardous materials, including methods for safe handling; responsibilities of facility staff responding to an incident; coordination with local emergency responders; use of emergency response equipment; and mitigation, prevention, and abatement of hazards to persons, property, and the environment. Businesses that handle hazardous materials are required by law to provide an immediate verbal report of any release or threat of release of hazardous materials if there is a reasonable belief that the release or threatened release poses a present or potential hazard to human health and safety, property, or the environment. These regulations and requirements would limit the risk of a spill or release that could result in exposure to workers, the public, or the environment.

Spill Prevention, Control, and Countermeasure Plan

The project oil storage facilities would be required to operate in accordance with the requirements of 40 CFR Part 112 to prevent the release of stored crude oil. As such, the project would operate under a SPCC Plan to implement oil spill prevention and response preparedness measures. The SPCC Plan would include 40 CFR Part 112 requirements for safe oil handling for routine operations designed to prevent releases of liquid substances, and to minimize the effects of releases should a release event occur. These regulations and requirements would limit the risk of a spill or release that could result in exposure to workers, the public, or the environment.

Conclusions

The laws and regulations described above would limit the potential for release and exposure resulting from the routine use, transport, or disposal of these materials during project operations. OSHA regulations would limit the potential for exposure to project workers to safe levels for all hazardous materials present in the workplace. Additionally, hazardous wastes generated would be managed under California Code of Regulations Title 22 requirements designed to protect the public and the environment. Federal and state pipeline safety regulations and aboveground petroleum storage regulations include extensive requirements for

safe operation and spill prevention that would prevent unsafe levels of exposure to the public or the environment for routine operations. With adherence to these existing regulatory requirements, unsafe levels of exposure to workers or the public, or releases that could do substantial harm to the environment would not be expected to result from routine operations. Considering these factors, the hazard presented by routine use, transport and disposal of hazardous materials by the project would be less than significant.

Mitigation Measure: No mitigation required.

Impact HM-4: Create a hazard to the public or environment through reasonably foreseeable upset or accident conditions involving the release of a hazardous material to the environment. (Significant and unavoidable.) The probability and potential consequences of an upset or accident condition resulting from operation of tanks, pipelines, the Rail Transload Facility, or rail transport and the resulting hazard risk are evaluated below. The hazard due to an upset or accident condition from oil transfer over water, either offshore or at the marine terminal, is evaluated in Chapter 16.0: Marine Transportation and Marine Terminal Operations.

Tanks

The tank farms included in the proposed project are described in detail in Chapter 2.0: Proposed Project and Alternatives and include the East Tank Farm (Tanks 1 through 6) and the South Tank Farm (Tanks 8 through 17). Tanks located in the East Tank Farm are individually surrounded by approximately 15-foot-tall secondary containment walls consisting of 8-inch-thick reinforced concrete. Tanks 9, 15, and 16 in the South Tank Farm have individual containment structures consisting of sloped grading and earthen berms. The remainder of the tanks in the South Tank Farm would be secondarily contained within the stormwater retention basin. Each containment feature has a manually operated outfall valve, or sump pump. The secondary containment berms and walls and the stormwater retention basin would be sufficient to provide the secondary containment volume required by 40 CFR 112.7(c) and would be capable of containing a volume equal to the contents of at least an entire tank plus precipitation from the 25-Year, 24-Hour storm event pursuant to 40 CFR 112.8(c)(2). Regulations require that secondary containment area valves remain closed, and pumps removed or turned off with controls secured, except when rainwater is being drained after inspection, to ensure no oil is discharged.

Relevant regulations and standards for petroleum storage safety and published studies on bulk storage accidents were reviewed and considered as part of the preparation of this section (referenced in Section 10.3). In addition to 40 CFR 112 regulations, the following regulations and standards would be required as part of the project design in order to limit the risk of releases from bulk petroleum storage tanks:

- American Petroleum Institute (API) Recommended Practice (RP) 570 Piping Inspection Code for in service inspection, rating, repair and alteration of piping systems
- API Standard Practice (SP) 650 for design of welded steel tanks for petroleum storage
- API RP 651 for cathodic protection of aboveground petroleum storage tanks
- API RP 652 for lining petroleum storage tank bottoms
- API SP 653 for inspection, repair, alteration and reconstruction of petroleum storage tanks
- API RP 1104 for welding of pipelines and related facilities
- API SP 2000 for venting petroleum storage tanks
- API RP 2001 for fire control and extinguishment equipment and systems
- API RP 2003 for protection against ignitions from static electricity, lightning and stray current
- API SP 2210 for design of flame arrestors for petroleum storage tank vents
- API RP 2350 for over-fill protection for petroleum storage tanks
- NFPA 11 for fire control and extinguishment equipment and systems
- NFPA 30 flammable and combustible liquid code
- NFPA 51B fire prevention in the use of cutting and welding processes
- NFPA 69 standards on explosion prevention systems
- NFPA 70 National Electric Code
- NFPA 77 Static Electricity
- NFPA 78 Lighting Protection Code
- 29 CFR 1910.119 Process Safety Management Standards
- 29 CFR 1910.252 OSHA Standards for Welding, Cutting and Brazing
- California Building Code
- California Fire Code
- California Electric Code

With adherence to these requirements, the probability that a tank facility handling crude oil and partially refined crude oils would have a serious incident (i.e., an incident causing lasting health effects or substantial environmental damage) within its lifetime is very low. However, industry-wide experience shows that releases from bulk storage tanks will continue to occur in statistically low frequency events. This section identifies the potential consequences and probabilities of a range of releases from the project bulk storage tanks and evaluates the associated risk. None of the consequences described in this chapter are proposed as part of the project; rather, they are evaluated only for consideration of possible upset or accident scenarios.

Common Causes of Releases from Tanks

Bulk storage tank accident analysis is a topic that has been widely studied as a result of the potential for significant impacts to human health and the environment and economic losses and liability. Fire, explosion, and equipment failure are the dominant causes of major releases from bulk storage tanks and account for the vast majority of major bulk storage tank accidents.

Fire and Explosion

Causes of past releases from bulk storage tanks worldwide have dominantly been related to fire or explosion. A study of 242 bulk storage tank releases occurring between 1960 and 2003, including 105 facilities in the United States, determined that 85 percent of accidents involved one or both of these hazards (Chang and Lin, 2006). Lightning was the most common root cause (33 percent of incidents). Lightning can cause damage or incident to a petroleum storage tank either through a direct strike or a nearby strike that can cause changes in ground potential and arcing at the tank if grounding is inadequate to disperse the charge. The tanks would be designed in accordance with API standards and NFPA requirements and would be expected to withstand a typical direct or nearby lightning strike scenario without incident. However, incidents are possible if arcing occurs in the presence of petroleum vapors in the flammable concentration range (for example, if arcing occurs at a tank with a floating roof seal that has not been properly maintained). Such incidents can range from a relatively small fire (e.g., fire at a floating roof seal) that can typically be controlled without major loss of product or environmental impacts, to a large fire or explosion and tank failure with significant environmental damage, and potentially serious injuries or loss of life. A fire that may result from a lightning strike would most likely be a "rim fire" on the seal of an external floating roof tank. These types of fires can be readily extinguished with standard fire suppression measures and equipment without major incident (Shelley, 2008). The project is designed with internal floating roofs on all bulk storage tanks with grounding of the shell, roof and pan, consistent with API standards and NFPA requirements. The internal floating roof design substantially reduces the likelihood of a lightning strike resulting in a fire, release, or other related tank damage compared to external floating roof tanks. The internal floating roof tank design is a conservative (high safety factor) design for the types of petroleum products to be handled by the project. Internal floating roof tanks are typically used to store much higher flammability refined products such as gasoline.

The project region is not a high lightning risk area. It has among the lowest lightning strike probabilities of any land area in the world except Antarctica (Geological Society of America, 2013). Worldwide, lightning frequency is lowest near the North and South Poles and over the oceans; and highest in warm continental areas at low latitudes. The project area's latitude, proximity to the ocean, and Mediterranean climate make it a low-frequency lighting strike area compared to most lands on earth. Lightning data from the U.S. National Lightning Detection Network (VAISALA, 2012) indicates a lightning flash density between 0 and 0.25 flashes per square kilometer per year on average for the five-year period of 1996 to 2000. For comparison, the highest lightning flash density in the continental United States is recorded in Florida, with a density more than 60 times greater than the project area. Furthermore, the probability of a fire or release incident resulting from a direct or nearby lightning strike is likely to be considerably lower than even what has been indicated by published studies described in this analysis. This is because of the conservative tank design

proposed for the types of products to be handled and updated current design standards. While a fire or release incident during the project life is possible due to a direct or nearby lightning strike, the statistical probability is likely to be very low. The project's storage tank internal floating roof design, grounding design (in accordance with current standards), and relatively low density of lightning strikes in the project area substantially limit the potential for a lightning strike near the project that could then result in a fire or release of product.

Next to lightning, the most common root cause of fire- and explosion-related releases from bulk storage tanks is a result of human error (30 percent of incidents studied by Chang and Lin, 2006). Tank overfilling and maintenance errors involving welding and mechanical friction (e.g., grinding) are dominant causes of those releases. Tank overfilling can cause releases from the affected tank into secondary containment. Overfilling releases can allow flammable vapors to occur where they are not intended, potentially reaching sources of ignition if present. Welding can provide a source of ignition for flammable vapors, if performed in an unsafe atmosphere, as can sparks from grinding, electric tools, or other energy sources. These mechanisms are considered human error because these are preventable hazards, and regulations and standards are in place to ensure that adequate precautions are implemented to safeguard against these hazards. These types of human error result from important safety procedures being overlooked by operators or maintenance workers. Controls in place to ensure that human error risk is minimized for the project include adherence to the following regulations and standards:

- API RP 2350 for over-fill protection for petroleum storage tanks
- NFPA 30 Flammable and Combustible Liquid Code
- NFPA 51B fire prevention in the use of cutting and welding processes
- 29 CFR 1910.119 Process Safety Management Standards
- 29 CFR 1910.252 OSHA Standards for Welding, Cutting and Brazing
- OSHA confined space regulations at 29 CFR 1910.146
- California OSHA confined space regulations at 8 CCR 5157

Equipment Failure

Studies of past bulk storage tank incidents have identified bulk storage tank releases from equipment failures, including sunken floating roofs, tank cracks and ruptures, line leaks and ruptures, valve failures, heater malfunctions, and thermostat failures.

Most sunken roof releases occur from the exposure of an external floating roof to storm elements. The combination of an external fixed roof and an internal floating roof included in the proposed project design protects an internal floating roof from the elements, making it substantially less likely to result in a release of product.

Cracks can occur in tanks from fatigue, seismic motions, or settlement, and occur most often at the bottom or the welding edges. Tank bottoms, shells, and roofs are also subject to corrosion on both internal and external surfaces. Contact with underlying soil can corrode tank bottoms, and contact with the atmosphere can corrode the outer surface of tank shells and roofs. Inner surfaces of tank shells, roofs, and bottoms are subject to corrosion from corrosive components in the stored petroleum product, including water and hydrogen sulfide. Cracks and corrosion can be detected and monitored by focused inspections in accordance with API procedures. Tanks 10, 11, 12 and 14 would be newly constructed using a construction quality assurance/quality control (QA/QC) program to ensure that there are no construction defects that could result in a release. The remaining project tanks that would be retrofitted would be inspected and returned to service following API SP 653 for inspection, repair, alteration and reconstruction of petroleum storage tanks. This SP lays out rigorous inspection and repair requirements designed to ensure that the tanks are in good condition to return to service. The construction QA/QC and API SP 653 inspection and repair items would ensure that the tanks are fit for use before being placed in service. As a final check, tanks would be integrity tested with water before being placed in service. Following placement in service, periodic inspections and maintenance would occur following requirements of API SP 653 to ensure continued tank integrity, including temporarily removing tanks from service, removing contents, cleaning, and degassing the tank to allow completion of an API SP 653 inspection. The API SP 653 inspection includes:

- Checklist review of conformance to API SP 653 and best industry practices
- Checklist review confirming physical condition of the tank and changes from the baseline design, including overall settlement of the tank and physical dimensions
- Visual review of the condition of the tank foundation, coating/paint, bottom, shell, roof, nozzles, connecting piping, sumps and other tank appurtenances
- Test (e.g., magnetic flux or ultrasonic testing) showing the remaining wall loss on the tank bottom and shell and other critical areas
- Development of a detailed report describing methods, results of the inspections and testing and recommendations on repairs or modifications

After inspection, contractors specializing in tank maintenance would complete the repairs recommended by the API SP 653 inspection prior to the tank being returned to service.

40 CFR 112 regulations also require periodic integrity testing of bulk petroleum storage tanks. Inspection, integrity testing and maintenance performed in accordance with 40 CFR 112 requirements and API SP 653 standards would limit the probability of an equipment failure resulting in a release from the project storage tanks.

Natural Disasters

Natural disasters are not a statistically common cause of bulk storage tank releases. Only 3 percent of the bulk storage tank releases studied by Chang and Lin (2006), were attributable to natural disasters. Natural disasters that have resulted in bulk storage tank accidents include earthquakes and hurricanes. The project site is located in a seismically active area. While tank design engineering would include consideration of maximum wind loads, seismic loading is expected to control the structural design of the tanks such that they would exceed the required design for wind resistance for this project location. Whether or not a given bulk storage tank may be damaged by seismic motion is dependent on a number of factors including seismic motions, ground conditions, tank structure, and the amount and type of material in the tank when the motions occur. New project tanks would be constructed to meet current seismic safety standards. Existing tanks to be retrofitted would also be confirmed to meet current seismic design standards. The maximum product volume stored in the tanks would be limited through administrative controls if necessary to ensure conformance with current seismic design standards. A study commissioned by the U.S. National Institute of Standards and Technology concluded that, in general, bulk storage tanks perform reasonably well in earthquakes, particularly tanks with diameter to height ratios (d/H) of greater than 2 (Cooper, 1997). The bulk storage tanks proposed for use by the project have d/H ratios of more than 3, except for the smallest tank (Tank 17, capacity of 54,000 BBLs) with a d/H ratio of 1.8.

Tank Release Impact Scenarios

Releases from bulk storage tanks can result in events ranging from a small spill within secondary containment that is easily controlled without major loss of product or serious environmental impacts, to a major event with explosion or fire with failure of a tank or tank farm with significant environmental damage, loss of product and potentially loss of life. To assess the risk posed by the project, both the consequences and probability of potential events must be considered.

Relatively minor release events could potentially occur with some frequency without posing a significant hazard to human health or the environment because of their minor consequences. Conversely, larger releases may pose a significant hazard even for a one-time event.

Probabilities for a range of release event magnitudes from published bulk storage tanks release studies are provided in Table 10-2, ranging from minor leaks to complete failure and fire.

Table 10-2: Tank Release Scenario Probabilities

Scenario	Probability Tank Year	Source
Minor Release	2.5×10^{-3}	U.K. Health and Safety Executive, 2012
Major Release	1×10^{-4}	Resource Protection International, 1997
Minor Release With Fire	9×10^{-5}	Resource Protection International, 1997
Major Release With Fire	6×10^{-6}	Resource Protection International, 1997
Complete Tank Failure	5×10^{-6}	(Ash, 2012; U.K. Health and Safety Executive, 2012)

Minor Release

Minor releases are estimated to have a probability of occurrence of 2.5×10^{-3} per tank-year. The probability of 2.5×10^{-3} per tank-year means that for any one bulk oil storage tank, a minor release event could be expected to occur 2.5 times for every hypothetical 1,000 years of operation of that individual tank, which is an average of one minor release event every 400 years for any one tank. Expressed another way, it means that the event has a 1 in 400 probability of occurring during any given year at any one tank. Because the proposed project includes a total of 16 bulk oil storage tanks that could potentially spill, the probability of such an event happening at the overall storage terminal is the sum of the probability of each of the 16 tanks, resulting in a probability of approximately 16 in 400 (i.e., 1 in 25) that the event could occur in any given year of the project. This is a high probability and indicates that a minor release is a reasonably foreseeable upset condition for this project.

Project storage tanks would be within secondary containment that would prevent minor releases from leaving the project site or impacting sensitive natural resources. Cleanup work would occur pursuant to requirements of the applicable jurisdictional agencies, including, but not limited to, OSHA regulations that would limit cleanup worker exposure to hazardous constituents to a safe level. Spilled product would be cleaned up and no significant long-term impacts or impacts to sensitive resources would be expected. Therefore, hazard to the public and the environment of minor releases would be less than significant.

Major Release

Major tank failures are estimated to have a probability of occurrence of 1×10^{-4} per tank-year. This means that for any one bulk oil storage tank, a major release event could be expected to occur once for every hypothetical 10,000 years of operation of that individual tank. Expressed another way, it means that the event has a 1 in 10,000 probability of occurring during any given year at any one tank.

Because the proposed project includes a total of 16 bulk oil storage tanks that could potentially spill, the probability of such an event happening at the overall storage terminal is the sum of the probability of each of the 16 tanks, resulting in a probability of approximately 16 in 10,000 (i.e., 1 in 625) that the event could occur in any given year of the project. Because 625 years is a long time compared to the life of project facilities, this event is unlikely to occur. While unlikely to occur, this hypothetical scenario is considered a reasonably foreseeable upset condition for analysis under CEQA.

Project storage tanks would be located within secondary containment areas that would contain a major release without oil impacting offsite locations or sensitive natural resources. However, a major release could result in a large product pool within secondary containment and could take days or weeks to remediate. Cleanup work would occur pursuant to requirements of jurisdictional agencies. OSHA regulations would limit cleanup worker exposure to hazardous constituents to a safe level. The release would be within the secured project site (see Section 2.5.7, Lighting and Security) so there would be no direct exposure to the public or sensitive environmental resources. While spilled product would be cleaned up, if the spilled product pool is large, areas adjacent to the site could potentially be impacted by vapors until the spilled product is recovered or other measures are implemented for vapor control. For the major spill scenario, the spilled product pool could be large and unsafe levels of vapors could potentially occur offsite under some meteorological conditions. In addition, if the pool is large it could present an imminent risk to adjacent areas due to its flammability. Offsite areas adjacent to the project may need to be evacuated until vapors and any imminent threat of ignition are controlled. As described in Section 2.7.7, Environmental Commitment HM-11 commits the project to being part of the Community Warning System (CWS) to alert the public in the event of an imminent hazard to public health. The CWS, operated by the CCCFPD and the Contra Costa County Sheriff's Department (CCCSD), is an early warning system in place to notify the community of an industrial hazardous material release. If a release occurred that was great enough to pose a threat to the community, sirens would alert persons in the area to the emergency so that they could take action to protect themselves such as to leave the area or shelter in place. The CWS also has capabilities to broadcast alerts via television and radio if necessary. Nevertheless, considering that unsafe conditions could occur in adjacent public and residential areas offsite in the short term, if a major release occurred within secondary containment it would present a significant hazard. This risk would be significant and unavoidable. Mitigation Measures HM-1, HM-2 and HM-3 would help to minimize the probability of occurrence of a major release from a project tank, thereby minimizing the hazard.

Various storage tank accident studies have concluded that most accidents can be avoided if applicable requirements and standards are adhered to (Cornell and Baker, 2002, Chang and Lin, 2006). Mitigation Measures HM-1, HM-2, and HM-3 would provide the City direct assurance beyond existing regulations that critical

design and operations standards for prevention of upset conditions are implemented, as required. Furthermore, Mitigation Measure HM-4 would require the applicant to develop a stakeholder communication plan that would, in part, ensure rapid implementation of and appropriate response to the CWS if an upset event were to occur that poses an immediate threat to the public or the environment.

Minor Release and Fire

A minor release with a fire is estimated to have a probability of occurrence of 9×10^{-5} per tank-year. This means that for any one bulk oil storage tank, a major release event could be expected to occur nine times for every hypothetical 100,000 years of operation of that individual tank. Expressed another way, it means that the event has a 1 in 11,000 probability of occurring during any given year at any one tank. For the project as a whole, which includes 16 project bulk storage tanks, the probability of a minor release with a fire is approximately 16 in 11,000 (i.e., 1 in 690) in any given year. Because 690 years is a long time compared to the life of project facilities, this event is unlikely to occur. While unlikely to occur, this hypothetical scenario is considered a reasonably foreseeable upset condition for analysis under CEQA.

A minor release and fire would be within secondary containment that would prevent product released from leaving the project site or impacting sensitive natural resources. Toxic combustion byproducts such as naphthalene, polycyclic aromatic hydrocarbons, sulfur dioxide, carbon dioxide, carbon monoxide, nitrogen oxides, and volatile organic compounds could be formed and released into the air from a fire, along with particulates such as metals and soot. Under most atmospheric conditions, the thermal plume would transport most emissions upward and away from the site where they would be dispersed into the atmosphere to concentrations that would not pose an immediate health hazard. Depending on the location of the hypothetical minor release and fire within the tank farms and meteorological conditions, some offsite locations adjacent to the project may be impacted by combustion emissions at unhealthful concentrations. In addition, a minor release and fire could present a significant hazard if it were to escalate. Offsite areas adjacent to the project may need to be evacuated until any imminent threat is controlled. Considering these factors, the hypothetical minor release with fire would present a significant hazard if it were to occur. This hazard would be significant and unavoidable. Mitigation Measures HM-1 through HM-3 would help to minimize the probability of occurrence of an upset event from a project tank, thereby minimizing the hazard. Mitigation Measures HM-1 through HM-3 were developed given the principle that various storage tank accident studies have concluded that most accidents can be avoided if applicable requirements and standards are adhered to (Cornell and Baker, 2002, Chang and Lin, 2006). Mitigation Measures HM-1, HM-2, and HM-3 would provide the City direct assurance beyond existing regulations that critical design and operations standards are implemented for prevention of upset conditions. Furthermore, Mitigation Measure HM-4 would require the applicant to develop a stakeholder

communication plan that would, in part, ensure rapid implementation of an appropriate response to the CWS if an upset event were to occur that poses an immediate threat to the public or the environment.

Major Release with Fire

A major release with fire could involve all or a portion of the respective tank secondary containment area. Even though the project tanks would be within secondary containment designed with capacity to hold more than 100 percent of the tank contents, under worst-case conditions a major release and fire could potentially result in a release of product from secondary containment and associated significant impacts on affected areas. Significant short-term air pollution could also occur from combustion byproducts. Toxic combustion byproducts such as naphthalene, polycyclic aromatic hydrocarbons, sulfur dioxide, carbon dioxide, carbon monoxide, nitrogen oxides, and volatile organic compounds could be formed and released into the air from a fire, along with particulates such as metals and soot. A major release and fire could burn for days. Under most atmospheric conditions, the thermal plume would transport emissions upward and away from the site where they would be dispersed into the atmosphere. Temporary ground-level unhealthful air quality conditions and/or property damage from particulate fallout could occur in localized areas. Thermal radiation from fire would also be a significant hazard. The hypothetical major release and fire scenario, if it were to ever occur, could represent an imminent threat to health, safety and the environment in nearby areas and evacuation would likely be required. Adjacent residential areas and nearby wildlife and water resources could be impacted. Significant harm could occur to persons and property present in harm's way.

An FRP would be prepared and implemented prior to operations in accordance with 40 CFR 112. The FRP is required due to the facilities storage capacity and proximity to waters and would ensure that response resources and preparation for the worst-case spill are in place, including evidence of a contract with an OSRO or other evidence ensuring availability of required response personnel and equipment. As described in Section 2.7.7, Environmental Commitment HM-12 commits the project to complying with FRP requirements. The FRP is designed, in part, to demonstrate a facility's preparedness to respond to an oil release. Planned response measures are required to ensure capabilities of responders such as OSROs and the CCCFPD for control and cleanup of the worst-case release.

A major release with a fire is estimated to have a probability of occurrence of 6×10^{-6} per tank-year. This means that for any one bulk oil storage tank, a major release event could be expected to occur six times for every hypothetical 1,000,000 years of operation of that individual tank. Expressed another way, it means that the event has a 6 in 1,000,000 probability of occurring during any given year at any one tank. Calculating this to account for all 16 project bulk storage tanks, a major release with a fire has the probability of occurring approximately 96 times in 1,000,000 (i.e., 1 in 10,400) in any given year of the

project. Because 10,400 years is orders of magnitude longer in time than the project, this scenario is not a reasonably foreseeable upset condition for CEQA analysis.

Complete Tank Failure

Complete failure of bulk storage tanks with 100 percent of contents released is rare but can occur, for example, as a result of fire, explosion, material failure, or natural disaster. Complete tank failure can result in product surge that can damage or overtop secondary containment and release product to the environment with associated significant impacts on affected areas. If fire is associated with the complete failure, it would result in significant short-term air pollution from combustion byproducts. A complete tank failure with fire could burn for days with impacts similar to those previously described for a major release with fire. The complete tank failure release scenario could represent an imminent threat to health, safety and the environment in nearby areas. Adjacent residential areas and nearby wildlife and water resources could be significantly impacted. Significant harm could occur if persons are present in harm's way.

An FRP would be prepared and implemented prior to operations and would ensure that response resources and preparation for the worst-case spill are in place, including evidence of a contract with an OSRO or other evidence ensuring availability of required response personnel and equipment. The FRP is designed, in part, to demonstrate a facility's preparedness to respond to an oil release. Planned response measures are required to ensure capabilities of responders, such as OSROs and the CCCFPD, for control and cleanup of the worst-case release.

A complete tank failure is estimated to have a probability that is lower but similar order of magnitude to that previously described for the major release with fire (refer to Table 10-2). Considering the extremely low probability, this scenario is not a reasonably foreseeable upset condition for CEQA analysis.

Tank Hazard Summary

A summary of tank release impact scenarios described in the preceding paragraphs is provided in Table 10-3.

Pipelines

Project operations would involve the reactivation of the existing approximately 13-mile long San Pablo Bay Pipeline, construction of a new approximately 0.42-mile long KLM Pipeline connection, and construction of a new approximately 0.56-mile long Rail Pipeline. Reactivation of the San Pablo Bay Pipeline would transition the pipeline from 'out-of-service' to 'active.' To do so, the pipeline owner would be required to submit a written plan describing the process to be used to demonstrate the integrity of the pipeline to the SFM for review and approval prior to operations (Gorham, 2011). An inspection of the pipeline and pipeline records would be conducted by the SFM to determine compliance with

Table 10-3: Tank Release Impact Scenario Summary

Scenario	Consequences	Probability	Likelihood	Significance Level
Minor Release	Less than Significant	1 in 25 chance/project year	Likely during the project	Less than Significant
Major Release	Potentially Significant	1 in 625 chance/project year	Unlikely during the project	Significant
Minor Release With Fire	Potentially Significant	1 in 690 chance/project year	Unlikely during the project	Significant
Major Release With Fire	Potentially Significant	1 in 10,400 chance/project year	Not reasonably foreseeable	Less than Significant
Complete Tank Failure	Potentially Significant	1 in 12,500 chance/project year	Not reasonably foreseeable	Less than Significant

state and federal pipeline regulations (SFM, 2009). As described in Section 2.7.7, Environmental Commitment HM-13 commits the project to demonstrate the integrity of the San Pablo Bay Pipeline prior to its operation.

Project pipeline operations would be required to comply with California Government Code Chapter 5.5 and DOT Title 49 CFR Part 195 regulations, which call for regular integrity testing, training, corrosion control, qualifications of pipeline personnel, and other measures to minimize the potential for a release from pipelines, and recordkeeping and reporting to ensure compliance. Additionally, 49 CFR Part 195.402 would require pipeline operators to prepare a procedure manual for maintenance and normal operations, abnormal operations, emergencies, and safety-related condition reports, as discussed in Impact HM-3. As described in Section 2.7.7, Environmental Commitments HM-14 and HM-15 commit the project to complying with these requirements.

Regardless of the laws and regulations in place that would limit the potential for a release of crude oil from project pipelines under routine operations, this analysis considers that an accidental release from a project pipeline is possible. The most likely causes of accidental releases from crude oil pipelines are corrosion, third-party damage, and equipment malfunction (SFM, 1993).

Pipeline Release Volume Scenarios

For purposes of this analysis, potential pipeline releases are classified as either an accidental leak or an accidental rupture. Accidental leaks, defined as a point of corrosion or other failure up to 1 inch in diameter, have low release rates that may even be small enough to escape detection for an extended period, whereas accidental ruptures result in substantial release rates that would be quickly identified by pipeline operations Supervisory Control and Data Acquisition (SCADA) monitoring such as severing of a pipe by third-party activities or seismic events (CDE, 2007).

Project pipelines are in segments, with each segment separated by a break valve that can be used to isolate any given segment from adjacent segments. Project pipeline segments are identified and detailed in Table 10-4 and illustrated on Figure 10-3: Shell Pipeline Segments, Figure 10-4: Proposed Pipeline Connections, and Figure 10-5: On-site Header Pipeline Segments. In the event of an accidental rupture, the pipeline leak-detection system would detect the rupture and activate an alarm to notify the operator of the condition. The operator would immediately halt pumping operations, and activate automated closure of the break valves. Rupture response times listed in Table 10-4 reflect the estimated total time for the SCADA system to detect the rupture, the operator to activate the break valves, and the valves to fully close. Through this process, a pipeline segment, bounded by two break valves, would be isolated from the rest of the pipeline. As a result, the volume of the potential release would be limited to that in the ruptured pipeline segment while contents in the remainder of the pipeline segments would be contained.

Because leak-detection response times, maximum flow rates, pipe diameters, and the distance between break valves (lengths of segments) vary, each segment has a different reasonable rupture spill volume (see Table 10-5). For a pipeline rupture, the scenario involves a release of the oil pumped plus the total contents of a single segment, where the release volume is calculated as follows:

Volume = (pipe cross-sectional area) x *(segment length)*
+ (maximum operating flow rate) x *(leak-detection response time)*

For leak events, a leak volume of 100 BBLs (4,200 gallons) of crude oil is used for this analysis, based on data derived from California Department of Education (CDE) and SFM publications. The CDE Guidance Protocol for School Site Pipeline Risk Analysis (CDE Protocol) estimates that 20 percent of all releases are classified as “ruptures” (CDE, 2007), and the SFM Hazardous Liquid Pipeline Risk Assessment (SFM, 1993) concludes that 18 percent of releases have a volume of 100 BBLs (4,200 gallons) or more. Therefore, in this analysis 100 BBLs was used as the dividing point between “leak” and “rupture” release categories in this analysis based on the close correlation of these percentages.

Pipeline Release Probability

The CDE approximates that the overall probability of a release occurring along any crude oil pipeline in California is 0.0023 release incidents per mile-year. This value was developed from historical release data for crude oil pipelines in the state of California (CDE, 2007). Based on this probability for total releases, a probability of leak and release incidents per year was approximated for each pipeline segment (see Table 10-5). Releases of oil from project pipelines classified as ruptures (estimated 20 percent of total releases) have a higher associated release volume and a significantly lower frequency compared to pipeline leaks (estimated 80 percent of total releases). As shown in Table 10-5, the probability of a rupture event for each pipeline segment expressed as a return period ranges from once every 290 years to once every 33,000 years. The probability of a leak event for each pipeline segment expressed as a return period ranges from once every 73 years to once every 9,090 years.

Crude oil pipelines constructed after 1960 have a substantially lower incident rate than pipelines constructed prior to 1960 (CSFM, 1993). Newer pipelines tend to have substantially lower incident rates, which may be attributable to generally lower operating temperatures and modern coatings that provide superior external corrosion protection, compared to older pipelines. The KLM Pipeline connection and the Rail Pipeline would be newly constructed, while the San Pablo Bay Pipeline was built in 1975. However, the San Pablo Bay Pipeline is coated with a two-inch thick polyurethane foam layer and polyethylene jacket and would typically be operated at ambient temperature for project operations. Utilizing modern designs and operating procedures and current regulatory requirements, the project pipelines are likely to have a substantially lower probability of incident than indicated by the CDE pipeline incident database used in this analysis. For this reason, the statistical probabilities of incident scenarios described for pipelines in this section are likely to be conservative (i.e., overestimated).

Potential Hazards

In the event of an oil release from a project pipeline, released material would impact soil, and could impact shallow groundwater or surface water. Crude oil and partially refined crude oil products to be handled by the project contain relatively low concentrations of volatile constituents compared to gasoline and most other refined fuels and natural gas. Therefore, a spill is much less likely to produce vapors in the explosive range at a potential source of ignition compared to most refined fuel products and natural gas. Also, as described in Impact HM-3, the petroleum products to be handled generally are only acutely toxic to humans under extreme exposure scenarios (e.g., injection, ingestion, or aspiration) or if hydrogen sulfide is present in a confined space or other non-ventilated atmosphere. If an oil release from a pipeline were to be discovered, it is expected that the area could be secured to prevent contact with released oil by the public. Regulations and infrastructure would be in place to ensure rapid response, containment and cleanup of a release, including requirements for an FRP for

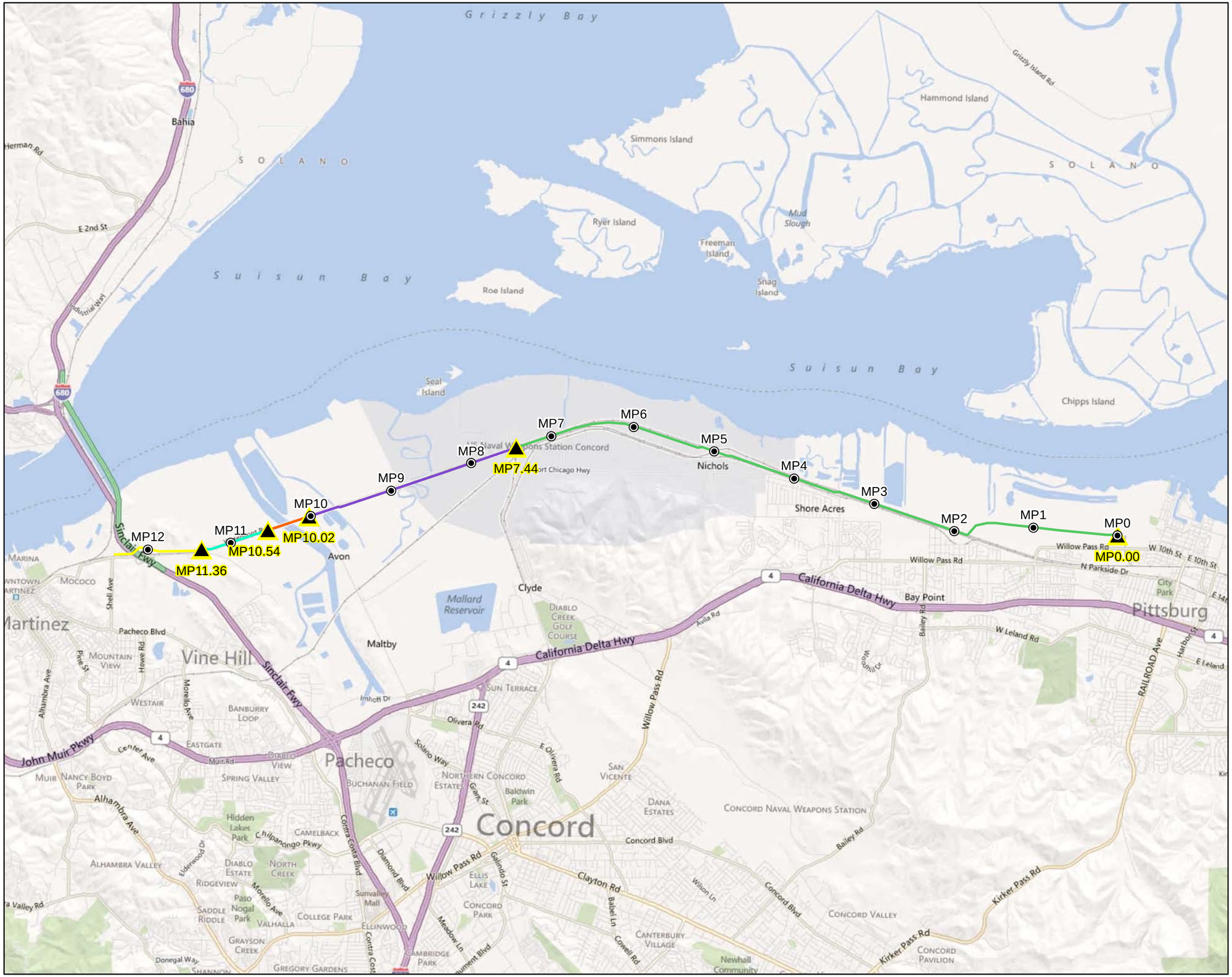


Figure 10-3
Shell Pipeline Segments
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project

Mileposts
Break Valves
Shell 1
Shell 2
Shell 3
Shell 4
Shell 5
Terminal Boundary

N

6/7/2012

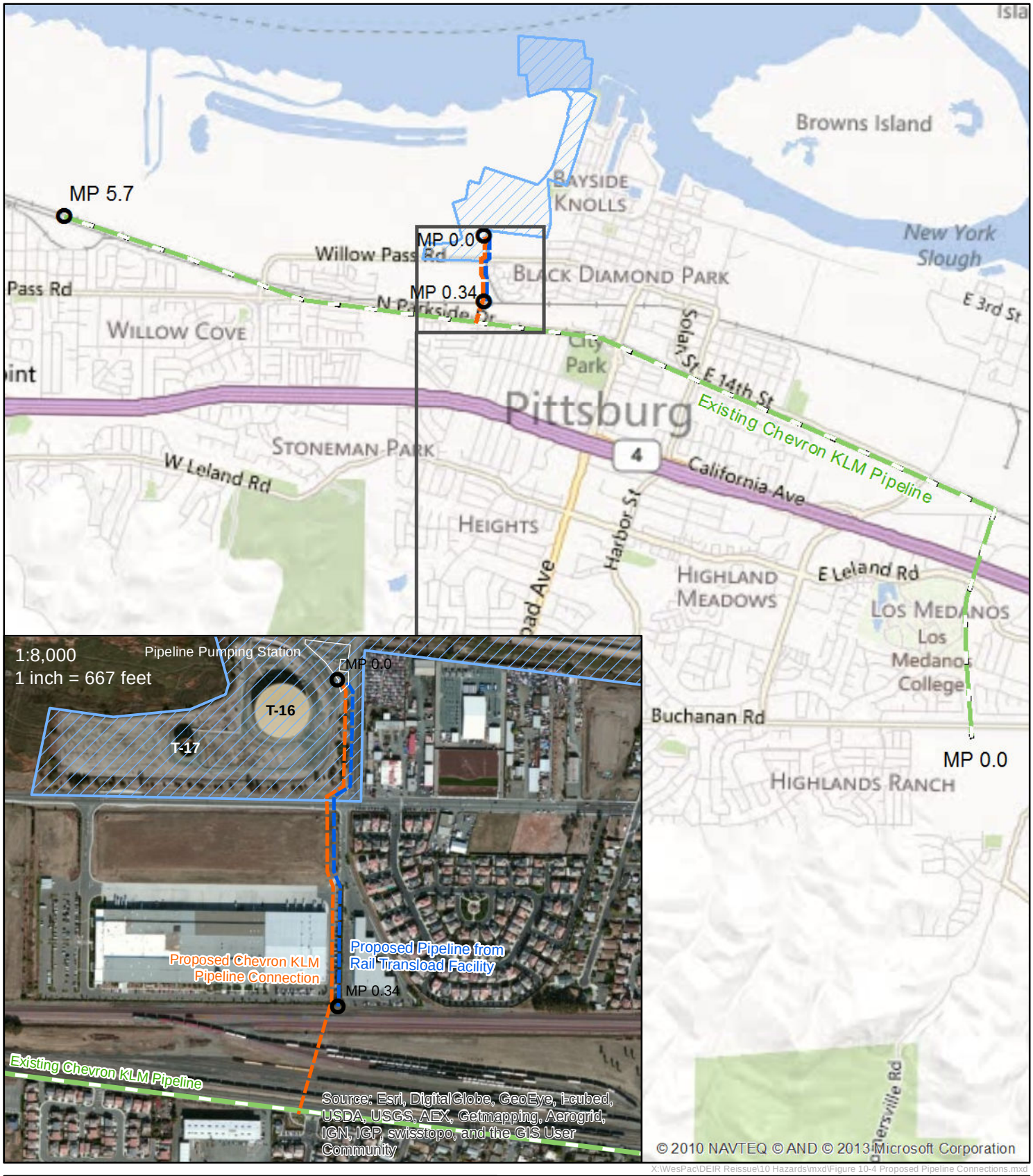
1 inch = 1 mile

1:70,000

0 1 2 mi

TRC

CH X:\WesPac\10 Hazards\mxd\Figure 10-3 Shell Pipeline Segments.mxd



X:\WesPac\DEIR Reissue\10 Hazards\mxd\Figure 10-4 Proposed Pipeline Connections.mxd

Figure 10-4
Proposed Pipeline Connections
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project

TRC

5/8/2013

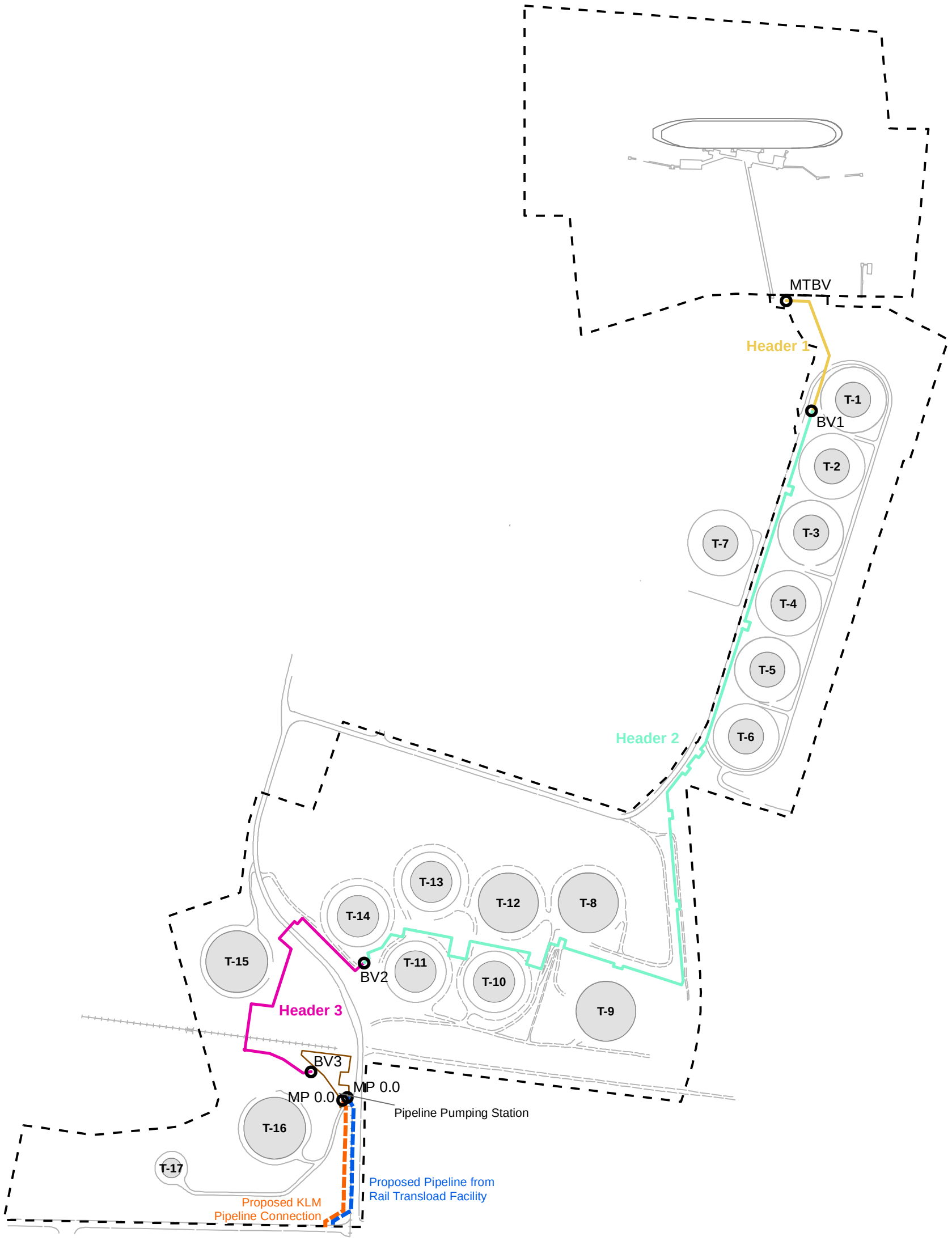
- Break Valve
- Existing KLM Pipeline
- Proposed Pipeline from Rail Transload Facility
- Proposed KLM Pipeline Connection
- Terminal Boundary

N

1:40,000

1 inch = 3,333 feet

0 1,200 2,400 ft



X:\WesPac\DEIR Reissue\10 Hazards\mxd\Figure 10-5 Onsite Header Pipeline Segments.mxd

Figure 10-5
Onsite Header Pipeline Segments
City of Pittsburg
WesPac Pittsburg Energy Infrastructure Project

TRC

5/8/2013

- Break Valve
- Terminal Boundary
- Header 1
- Header 2
- Header 3
- Proposed Pipeline from Rail Transload Facility
- Proposed KLM Pipeline Connection

1:6,000

N

1 inch = 500 feet

0 245 490 ft

Table 10-4: Pipeline Segment Characteristics

Pipeline	Segment Name	Location[1]	Figure Reference	Year Installed	Pipe Diameter (inches)	Approximate Segment Length (feet)	Response Time[2] (minutes)	Maximum Flow Rate (cubic feet/minute)
San Pablo Bay	Shell 1	MP 0 to 7.44	Figure 10-3	1975	16	39,283	2.33	1,075
San Pablo Bay	Shell 2	MP 7.44 to 10.02	Figure 10-3	1975	16	13,622	2.33	1,075
San Pablo Bay	Shell 3	MP 10.02 to 10.54	Figure 10-3	1975	16	2,746	2.33	1,075
San Pablo Bay	Shell 4	MP 10.54 to 11.36	Figure 10-3	1975	16	4,330	2.33	1,075
San Pablo Bay	Shell 5	MP 11.3 to 13	Figure 10-3	1975	16	8,659	2.33	1,075
KLM Pipeline Connection	KLM Pipeline Connection	MP 0 to 0.72	Figure 10-4	New	12.75	32,300[3]	2.00	530
Rail Pipeline	Rail Pipeline	BV to Rail Transload Facility	Figure 10-4	New	20	2950	2.66	1,030
On-site Network	Header 1	MTBV to BV1	Figure 10-5	New	30	322	1.08	3,743
On-site Network	Header 2	BV1 to BV2	Figure 10-5	New	30	2,400	1.08	3,743
On-site Network	Header 3	BV2 to BV3	Figure 10-5	1973	20	760	1.08	1,076

[1]MP = Mile Post; MTBV = Marine Terminal Break Valve; BV = Break Valve

[2]Approximated based on manufacture specifications and engineering estimates. Estimated rupture detection time includes 45 seconds for the SCADA to detect the rupture, plus 15 seconds for the operator to respond, plus five seconds per inch of pipeline diameter for break valve closure.

[3]Includes the 0.42-mile long KLM Pipeline connection plus 5.7 miles of the existing KLM common-carrier pipeline that occurs between break valves and which could drain to the KLM Pipeline connection in the event of a rupture.

Table 10-5: Pipeline Release Volumes and Probabilities

Pipeline	Segment Name	Rupture Event			Leak Event		
		Worst-case Rupture Spill Volume (gallons)	Probability of Rupture (event/year)	Return Period* (year)	Worst-case Leak Spill Volume (gallons)	Probability of Leak (event/year)	Return Period* (year)
San Pablo Bay	Shell 1	429,100	0.00342	290	4,200	0.01369	73
San Pablo Bay	Shell 2	161,000	0.00118	850	4,200	0.00475	210
San Pablo Bay	Shell 3	47,400	0.00024	4,170	4,200	0.00096	1,040
San Pablo Bay	Shell 4	64,000	0.00038	2,630	4,200	0.00151	660
San Pablo Bay	Shell 5	109,200	0.00075	1,330	4,200	0.00302	330
KLM Pipeline Connection	KLM Pipeline Connection	232,800	0.00019	5,260	4,200	0.00077	1,300
Rail Pipeline	Rail Pipeline	49,850	0.00026	3,850	4200	0.00103	970
On-site Network	Header 1	42,200	0.00003	33,330	4,200	0.00011	9,090
On-site Network	Header 2	118,500	0.00021	4,760	4,200	0.00084	1,190
On-site Network	Header 3	21,100	0.00007	14,290	4,200	0.00027	3,700

*Return Period: Estimate of the interval of time between event occurrences.

on-site header pipelines pursuant to 40 CFR 112.20 and requirements for a Response Plan for offsite pipelines pursuant to 49 CFR 194. As described in Section 2.7.7, Environmental Commitments HM-12, HM-16 and HM-17 commit the project to complying with requirements for an FRP and Response Plan for Onshore Oil Pipelines, as well as California Pipeline Safety Act requirements for coordinating with emergency response entities. Environmental Commitment HM-18 further commits the project to participating in the Community Awareness and Emergency Response organization to facilitate emergency planning coordination. These response plans, in conjunction with the NCP and San Francisco Oil Spill Contingency Plan would ensure cleanup, making chronic exposure improbable. Since acute and chronic exposure by the public could likely be prevented in the event of a release, the primary risk of a release would be to sensitive natural environments that could be damaged by the release. Project pipeline runs in proximity to sensitive natural environments along the shoreline of Suisun Bay, and a leak or rupture could impact this area. Potential impacts to the sensitive environments are detailed in Chapter 6.0: Aquatic Resources, Chapter 7.0: Terrestrial Resources, and Chapter 17.0: Water Resources.

Pipeline Hazard Summary

As shown in Table 10-3, a leak of 4,200 gallons of oil would have a probability of occurrence ranging from once every 73 years to once every 9,090 years, depending on pipeline segment. The onsite header pipelines are inside secondary containment making a substantial offsite release from the headers improbable. The primary risk would be to sensitive natural environments that could be affected by a release from an offsite pipeline segment. Pipeline segments run in proximity to sensitive natural environments along the shoreline of Suisun Bay and a leak of this magnitude could impact sensitive environments; however, the extent of impacted area would be limited due to the relatively small size and rate of the release, the Response Plan pursuant to 49 CFR 194, as well as regional contingency planning which would ensure rapid response.. While the most probable recurrence interval of once in 73 years for a pipeline leak reflects a moderately high probability of occurrence at some point over the life of the project, no unhealthful exposure to persons or significant long-term impacts to the environment would be expected. If a leak was discovered it is expected that the area could be secured until it is cleaned up to prevent acute exposure by the public, and the Response Plan would ensure prompt response and cleanup to prevent long-term impacts or exposure. Because of the probable limited severity of impacts from a pipeline leak and the low frequency of likely occurrence, the potential public hazard associated with a potential pipeline leak would be less than significant. Potential impacts to water and ground water and biological resources are detailed in Chapter 6.0: Aquatic Resources, Chapter 7.0: Terrestrial Resources, and Chapter 17.0: Water Resources. As identified in those chapters, a pipeline leak could have significant and unavoidable adverse impacts on sensitive natural resources. Mitigation Measures HM-3, HM-4 and HM-5 would provide the City assurance beyond existing regulations that applicable operations,

monitoring, and maintenance standards are implemented as required for project pipelines to minimize the risk of a leak occurring.

As shown in Table 10-5, a pipeline rupture could discharge large quantities of oil, ranging from 21,000 gallons to more than 400,000 gallons, depending on the pipeline segment. The expected recurrence intervals for such events range from once in 290 years to once in more than 33,000 years. The longest segment has the highest statistical probability of a worst-case release: The San Pablo Bay Pipeline Segment No. 1 with a 290-year recurrence interval for a worst-case release of 429,100 gallons. The primary risk would be to sensitive natural environments that could be affected by the release. The onsite header pipelines are inside secondary containment making a substantial offsite release to sensitive resources from the headers improbable. The San Pablo Bay Pipeline runs in proximity to sensitive natural environments along the shoreline of Suisun Bay, and if a rupture of this magnitude were to occur, it could reasonably be expected to potentially reach and impact sensitive natural environments. Serious short-term environmental impacts to sensitive natural environments could be expected in the event of a pipeline rupture at a location outside of secondary containment. Potential impacts to water, ground water and biological resources are detailed in Chapter 6.0: Aquatic Resources, Chapter 7.0: Terrestrial Resources, and Chapter 17.0: Water Resources.

The Response Plan required pursuant to 49 CFR 194, in conjunction with the NCP and San Francisco Oil Spill Contingency Plan, would ensure rapid response to contain the spill with ready resources for cleanup. The highest pipeline segment release probability is 1 in 290 years, which is considered unlikely to occur during the life of the project; therefore, the risk of a major release from a pipeline rupture is very low. While a major release could have serious short-term impacts to nearby sensitive environmental resources, the readily available response resources for a worst-case discharge pursuant to FRP requirements, Response Plan requirements, the NCP, and the San Francisco Oil Spill Contingency Plan is adequate to minimize short term impacts and to minimize or eliminate long-term impacts. A release from a project pipeline would not pose a significant threat to human health since it is expected that public exposure to unsafe levels of hazardous constituents could be prevented by temporarily controlling access to the spill area until cleanup is complete. Considering the low probability of occurrence, limits to consequences, commitment for the implementation of a project specific FRP, implementation of Response Plan preparedness measures, and low likelihood of unsafe exposure levels to human receptors, the hazard to the public presented by a potential major pipeline release is less than significant. Potential impacts to water, ground water and biological resources are detailed in Chapter 6.0: Aquatic Resources, Chapter 7.0: Terrestrial Resources, and Chapter 17.0: Water Resources. As identified in those sections, a pipeline rupture could have significant adverse impacts to sensitive resources. This would be an unavoidable hazard of the project. Mitigation Measures HM-3, HM-4 and HM-5 would provide the City assurance beyond existing regulations that applicable

operations, monitoring and maintenance standards are implemented as required for project pipelines to minimize the risk of a rupture occurring.

Rail Transload Facility

The Rail Transload Facility would be designed for the arrival, transloading, and departure of up to one 104-car crude oil unit train per day, although operational plans anticipate no more than five unit trains per week. Oil collection pipes with terminal connections to receive the oil would be provided along the rails. Once the cars are in place, a flexible hose from each terminal connection would be connected to the bottom of each tank car. Oil collection pipes would be connected to a suction pipe that would vacuum the oil out of the tank cars to a crude oil transfer pump vault, from which it would be pumped to the South Tank Farm via the Rail Pipeline. Collection and suction pipes would be located within trenches that would provide secondary containment in the event of a release from the pipes.

Oil transloading at the Rail Transload Facility has the potential to result in accidental oil releases. The probability of an oil release at the Rail Transload Facility is higher than at the bulk storage facilities and pipelines due to the reliance on a high number of temporary connections (up to 104 hose connections per trainload) that would occur over the life of the facility. Due to the high number of temporary connections, the probability of a release due to human error or equipment failure (e.g., failed hose or coupling) incidents during the life of the facility is considered to be high. While the probability of an oil release occurring at the Rail Transload Facility is high, the potential magnitude of a release is much lower than for the project bulk storage facilities, due to the limited capacity of a rail car (approximately 30,000 gallons). The analysis is based on the release of the full contents of a rail car. The Rail Transload Facility is surrounded by development so there are no sensitive natural resources in adjacent areas. The residences closest to the Rail Transload Facility are located more than 150 feet from the closest Rail Transload Facility track.

The conservative upset scenario adopted as part of this evaluation involves a release of the entire contents of a single rail car. Since rail cars are independent, decoupled, and situated within a common drainage containment, the release of a single car represents a reasonable maximum upset scenario, and corresponds to the analysis required for aboveground storage tanks by Oil Pollution Prevention regulations contained in 40 CFR Part 112. The most likely type of release for the Rail Transload Facility would be located at one of the flexible hose couplings or within one of the flexible hoses that would be used to connect each tank car to the Rail Transload Facility header pipe terminal connections. The Rail Transload Facility would be constructed with a concrete base to provide drainage containment for the full crude oil unit train without movement during unloading. The concrete base would be sloped to contain potential leakage or a potential release from the rail cars, hoses and terminal connections. The spill containment system is designed to be capable of holding up to 100,000 gallons which

substantially exceeds the 30,000 gallon volume of a rail tank car. With the project secondary containment design, a release from secondary containment is unlikely. The secondary containment system is designed so that released oil would be captured in a tank from which the oil would be recovered. The surface area of the spill would be relatively small due to the ultimate capture of the spill within a tank, so volatilization would be limited. In addition, a spill would be approximately 150 feet or more from the closest residences. Considering this distance and the limited surface area for volatilization, it is not expected that vapors would reach unsafe levels at an adjacent residential area outside of the railroad rights-of-way. With the release contained onsite and vapors remaining below levels that would be unsafe offsite, there would not be unsafe levels of exposure to the public or the environment. Handling of the released oil onsite by workers would occur in compliance with OSHA regulations for worker safety. No lasting health or environmental impacts are anticipated; therefore, the hazard of a release during rail car unloading would be less than significant.

Rail Haul

Crude oil would arrive at the Rail Transload Facility via the existing BNSF Railway Company (BNSF) mainline tracks arriving through Stockton. The Rail Transload Facility is anticipated to receive up to one train per day, five days per week (260 trains per year). Crude oil transport to the Rail Transload Facility has the potential to result in accidental oil releases. The most common type of rail transport accident resulting in releases of hazardous materials is derailment. In a derailment, one or more rail cars can leave the tracks and sustain damage resulting in a release.

The Federal Railroad Administration (FRA) maintains records of rail accidents that provide data to evaluate the probability of a release of crude oil during rail transport. Train accidents are required to be reported to the FRA pursuant to regulations at 49 CFR Part 225, so that FRA has accurate information for enforcement and to improve safety. To evaluate the risk of a release of crude oil during transit, the FRA database was reviewed and the safety statistics for BNSF were evaluated for the ten year period ending December 31, 2012 (DOT, 2013). Table 10-6 provides key data from the FRA database summarizing BNSF railway safety statistics and shows that BNSF had a train accident rate ranging between 2 and 3.6 accidents per million train miles, with a consistent trend of accident reduction over this period. The average accident rate for the 10-year period evaluated is three accidents per million miles. Considering the proposed maximum number of trains per year (260 trains), the project would result in 3,640 train miles in Contra Costa County (260 shipments multiplied by 15 miles per shipment equals 3,900 miles). The probability of a train slated to transport crude oil to the project site having an accident in Contra Costa County during any given year of project operations would be 1.0×10^{-2} (3,900 miles multiplied by three accidents per 1,000,000 miles equals 0.01). This means that a train accident of some type could be expected to occur approximately once for every hypothetical 100 years of operation. Reportable accidents include: any derailment; any

Table 10-6: 10-Year Safety Record for BNSF Trains

Description	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
BNSF total train miles (x 1000)	173,448	186,459	193,487	200,210	189,953	186,016	156,729	168,930	175,577	189,847
BNSF train accidents per million miles	3.4	3.6	3.5	3.3	3.3	3.2	2.6	2.6	2.7	2
BNSF accidents	583	672	677	658	629	602	411	444	472	379
BNSF hazmat releases	4	10	10	7	10	6	7	7	5	5
Percent of BNSF accidents with hazmat releases	0.69	1.49	1.48	1.06	1.59	1.00	1.70	1.58	1.06	1.32
Cars carrying hazmat	2,599	2,958	2,762	3,565	2,927	3,238	2,880	2,513	2,502	1,888
Cars releasing	6	17	17	10	11	15	10	8	7	16
Percent of hazmat cars releases	0.23	0.57	0.62	0.28	0.38	0.46	0.35	0.32	0.28	0.85

Source: Federal Railroad Administration, 2013

collision, obstruction accident, or other impact; fire or violent rupture; act of God; any accident requiring evacuation; or other accident with material damage to railroad equipment.

Federal guidance for reporting train accidents do not specify a minimum quantity threshold for reporting a hazardous materials release. Hence, even very small releases must be reported (DOT, 2011); and are, therefore, included in the FRA database. Because the FRA statistics include all types of reportable accidents and not just those with substantial releases of hazardous materials, the probability of a substantial release of hazardous materials from a train bound for the Rail Transload Facility is much lower than the 1.0×10^{-2} overall train accident probability. Table 10-6 shows that of the average of 552 total BNSF train accidents per year over the 10-year period, approximately 1.3 percent resulted in hazardous material releases of some unknown quantity. The probability of an accident resulting in a substantial release of hazardous materials is much lower than the 1×10^{-2} probability of a train accident for a given year of the project. While the low probability suggests a train accident resulting in a release of crude oil would have a low likelihood of occurring, a train accident and resulting hazardous materials release is considered a reasonably foreseeable upset condition for analysis under CEQA. To provide a conservative evaluation, it is assumed herein that up to the entire 30,000-gallon contents of a tank car could release under an accident scenario.

A release of crude oil from a train accident could occur where the tracks are proximal to residences, other developed areas, agricultural lands, sensitive resources such as water or sensitive wildlife, or sensitive land uses such as schools. In the event of a train accident resulting in a crude oil release, released material would impact soil, and could impact shallow groundwater or surface water. As described in Impact HM-3, crude oil generally is only acutely toxic to humans under extreme exposure scenarios (e.g., injection, ingestion, or aspiration) or if hydrogen sulfide is present in a confined space or other non-ventilated atmosphere. If a crude oil release from a train accident were to occur, it is expected that emergency responders would establish exclusion areas to prevent substantial public exposure to released oil or resulting volatile emissions. However, significant impacts could occur to sensitive natural resources if such resources occur in proximity to the accident or if surface drainages are present that allow the released crude oil to migrate away from the accident location. Emergency response measures would include containment and cleanup of the spilled crude oil and would be expected to eliminate the potential for long-term impacts. The hazard of a crude oil release from a train accident with the potential for significant impacts to sensitive resources would be a significant and unavoidable impact of the project. Potential impacts to the sensitive environments are detailed in Chapter 6.0: Aquatic Resources, Chapter 7.0: Terrestrial Resources, and Chapter 17.0: Water Resources.

Mitigation Measure HM-1: Operations bulk storage tank regulations and standards auditing plan. The applicant shall not receive petroleum products in project bulk storage tanks prior to acceptance of the bulk storage tank auditing plan by the City Engineering Department. The auditing plan shall include: (1) a tabulation of the safety-related regulations and standards applicable to ongoing operation and maintenance of the project facilities; (2) procedures and schedule for periodic update of the list of applicable safety-related regulations and standards for the life of the project; (3) a self-auditing plan to be implemented by the applicant to self-monitor compliance with regulations and standards, including performance of required tasks, recordkeeping and training; and (4) a schedule for periodic independent audits by a qualified independent party acceptable to the City Engineering Department to be commissioned by the applicant. Third party audits shall occur at least biennially and a written report of findings shall be provided to the City Engineering Department.

Mitigation Measure HM-2: API Standard 653 inspection report documenting inspection and recommendations for repair, alteration and reconstruction of petroleum storage tanks. The applicant shall not receive petroleum products in project bulk storage tanks prior to acceptance of the API 653 inspection report and tank retrofitting as-built report by the City Engineering Department. The City Engineer may require reconstruction or removal from the project scope of any tank proposed for retrofitting if applicable engineering and safety standards cannot otherwise be met.

Mitigation Measure HM-3: Construction QA/QC plans. The applicant shall not construct, repair or retrofit project bulk storage tanks or pipelines prior to acceptance of QA/QC plans by the City Engineering Department. Following construction and prior to placing the facilities in operation, the applicant shall not receive petroleum products in bulk storage tanks or pipeline until as-built reports and QA/QC records have been accepted by the City Engineering Department.

Mitigation Measure HM-4: Stakeholder communication plan. The applicant shall not receive petroleum products in project pipelines or storage tanks prior to acceptance of the stakeholder communication plan by the City Engineering Department. The stakeholder communication plan shall be designed to communicate petroleum storage, pipeline and Rail Transload Facility risks and the operator’s management of such risks, including planning for rapid implementation of the CWS and dissemination of information to facilitate appropriate response to the CWS in the event of any incident that poses an immediate threat to the public or the environment, including emergency warning system operation and appropriate public response.

Mitigation Measure HM-5: Operations pipeline regulations and standards auditing plan. The applicant shall not receive petroleum products in project pipelines prior to acceptance of the pipeline auditing plan by the City Engineering Department. The auditing plans shall include: (1) identification of the safety-related regulations and standards applicable to ongoing operation and maintenance of the project pipelines; (2) procedures and schedule for periodic update of the list of regulations and standards for the life of the project; (3) a self-auditing plan to be implemented by the Applicant to self- monitor compliance with regulations and standards, including performance of required tasks, recordkeeping and training; and (4) a schedule for periodic independent audits by a qualified independent party acceptable to the City Engineering Department to be commissioned by the Applicant. Third party audits shall occur at least biennially and a written report of findings shall be provided to the City Engineering Department.

Impact HM-5: Create a hazard to the public or environment through reasonably foreseeable upset or accident conditions involving the release of crude oil creating an indirect hazard due to crude oil flammability. (Significant and unavoidable.) Indirect hazards are those hazards that result from interaction of the released substance and another outside environmental factor such as a second chemical compound (reactivity) or an ignition source (flammability). While no reasonably foreseeable scenario has been identified that would result in a release from the project contacting incompatible materials, the products that would be handled by the project are flammable and can cause fires if associated vapors are within the flammable concentration range and exposed to a sufficient ignition source. Indirect hazards, by their nature have a lower probability of occurrence than direct hazards because they require at least two low probability conditions to occur simultaneously and combine in order for the secondary hazard to be created.

In the event of a release and formation of an oil pool, the more volatile components would evaporate from the pool's surface, forming denser-than-air vapors that could remain close to the ground or mix in the air and disperse at a rate dependent on the liquid pool area, temperature, and meteorological conditions. Ignition of such vapors would only occur if the concentration in the air exceeded the lower flammability limit and an adequate ignition source was present. If the vapors were to ignite, a pool fire could occur, defined as "a buoyant diffusion flame established over a horizontal fuel surface that results from the ignition of the flammable vapors evaporated from a flammable liquid pool" (CDE, 2007; NIST *et al*., 1995). Oil products that would be handled by the project contain relatively low concentrations of volatile constituents compared to gasoline and most other refined fuels or natural gas. Therefore, it is much less likely to produce vapors in the explosive range at a potential source of ignition. Nevertheless, the result of ignition of vapors in a pool is assumed to be a pool fire. A pool fire would continue until all the liquid in the pool was consumed, or the

fire was extinguished by intervention (CDE, 2007). Of the products that would be handled by the project, crude oil is the most flammable.

A pool fire would emit thermal radiation (heat) in all directions. The average thermal radiation that would be emitted from an oil pool fire is dependent on size of the pool fire. Exposure to high levels of thermal radiation can cause serious injury or loss of life. In the event of a substantial fire at one of the project tank farms or pipelines, significant harm could occur if persons are present in harm's way and cannot withdraw from the hazard area in a timely manner. The following paragraphs describe the probability of a substantial fire event at the project tanks, pipelines, and Rail Transload Facility and the potential for significant public exposure.

Tanks

As described in Impact HM-4, a major release with fire at a project tank farm is not considered a reasonably foreseeable upset condition for CEQA analysis because the anticipated probability is so low. The worst-case reasonably foreseeable fire scenario for a release from a project crude oil storage tank would be a minor release with fire. As described in Impact HM-4, this upset scenario has an estimated probability of occurrence of 1 in 690 for any given year of the project life. Because 690 years is a very long time compared to the life of project facilities, this event is unlikely during the life of the project. Nevertheless, in an effort to minimize fire risks, the project includes provision of a new fire-protection system, and all tanks would be equipped with fixed foam systems used to extinguish oil fires, as discussed in Chapter 2.0: Proposed Project and Alternatives. A minor release and fire would be well within the capabilities of secondary containment and fire protection systems, so it would be unlikely to burn for an extended period of time.

For a pool fire, the outward heat flow near the ground level would spread over time as the size of the fire increases. Heat from a fire would not become a substantial hazard to offsite areas unless, and not until sometime after, the flames were to begin substantially exceeding the height of the secondary containment features that would otherwise obstruct the heat radiation. The closest residential area structures occur approximately 150 feet from closest storage tank secondary containment areas (refer to Figure 10-2). As a comparison, the Department of Housing and Urban Development (HUD) Acceptable Separation Distance (ASD) for the minor release and fire scenario would be approximately 40 feet for structures. The ASD for structures is the minimum separation distance HUD-funded structures must have from bulk flammable liquid storage facilities (see Appendix K: Separation Distances for Minor Release with Fire Scenarios). With the closest secondary containment area being separated by a distance of 150 feet, which is nearly four times the HUD ASD, even the worst-case minor release with fire scenario would not be an imminent threat to structures. Structures could be used to shelter from thermal radiation from the fire if needed even for worst case minor release with fire scenarios.

The closest portions of Marina Park and Pittsburg Marina occur approximately 150 and 170 feet from the closest secondary containment areas, respectively. Riverview Park is approximately 300 feet from the closet secondary containment area, and two schools and an extended care facility occur approximately 380 feet from the closest secondary containment areas. For a minor release with fire scenario, each of these separation distances, except that for Marina Park, exceed the HUD ASD for people. The ASD for people is the minimum distance that HUD-funded public gathering open-air spaces (e.g., parks, playgrounds) must have from bulk flammable liquid storage facilities. For a worst-case minor release with fire scenario, with fire occurring at the closest part of secondary containment, separation distances between fire and the closest portions of Marina Park, Pittsburg Marina, Riverview Park, or residential area could be less than the HUD ASD for people. The two nearby schools and the extended care facility are located far enough away that their separation equals or exceeds HUD ASD for people. The HUD ASD for people is based on a thermal radiation flux of 1.4 kilowatts per square meter (KW/m^2) at the receptor location, which is about 40 percent stronger than directly overhead sunshine on a cloudless day. This level of thermal flux can cause discomforting heat and redness of the skin similar to a sunburn but low enough such that people can readily shelter or egress to safety if uncomfortable levels of heat are experienced. If the minor spill with fire scenario were ever to burn without being promptly extinguished, the thermal radiation flux near the ground level would spread over time as the size of the fire increases. The distance from the fire at which the 1.4 KW/m^2 HUD thermal radiation flux standard for people would be reached would spread outward until reaching the ASD. Closer than the ASD, thermal radiation flux could reach levels that could cause serious injury or loss of life if the area is not evacuated nor shelter taken.

The storage terminal facility would be equipped with automated process and alarm systems monitored by the control room operator. Anomalous operating pressures, flows or tank levels would alarm at the control room. The control room operator is the initial responder that would assess the incident and make appropriate notifications. Any incident that posed a potential for a substantial release of crude oil or a crude oil fire would be immediately reported to 911 pursuant to CCR Title 19 Section 2703 requirements. The CCCFPD and CCCSD would be notified immediately via the call to 911 and CCCSD would be responsible for implementing the Contra Costa County's CWS if needed to alert the public or to evacuate adjacent areas in the event of an incident that is an imminent threat. Flame detectors, as described in Chapter 2.0: Proposed Project and Alternatives, Section 2.5.2.1, would be installed in strategic locations within secondary containment areas for early detection in the event of a fire. The flame detectors would be monitored at a control panel capable of automatically annunciating the fire alarm signal for operators to notify the CCCFPD via 911 and begin fire suppression activities. Storage tank fire protection systems would be designed consistent with the latest edition of NFPA and CCCFPD regulations. The CCCFPD's hazardous materials response program has a strong response presence among industries in the area. Project operations involving the handling

of bulk crude oil and partially refined products would not introduce the need for response capabilities outside of those currently in place since similar hazards are posed by a number of facilities (e.g., refineries, pipelines, chemical plants) in Contra Costa County. The CCCFPD's existing emergency-response capabilities are adequate to effectively mitigate a worst-case fire scenario at the project's tank farms (Andrews, 2011). Existing regulations for response preparedness ensure that necessary project staff are trained in their emergency response roles, and that lines of communication are in place for emergency use if needed. Emergency procedures, including contact information, response preparedness measures and responsibilities for responding to spills or fires are required be included in the Hazardous Materials Business Plan (19 CCR 2731), SPCC Plan (49 CFR 112.7) and Facility Response Plan (40 CFR 112.20). With project incident response preparedness and fire protection systems, it is expected that under reasonably foreseeable conditions a minor release with fire would be fully within the secondary containment and even for a worst case scenario would be accompanied by reasonable warning of imminent danger to persons in offsite proximal areas such that evacuation or sheltering could occur without serious injury. Nevertheless, because harmful levels of thermal radiation flux could occur outdoors at closest residential areas and public gathering locations, the hypothetical minor release with fire would present a significant thermal exposure hazard if it were to occur. This risk would be significant and unavoidable. Mitigation Measures HM-1, HM-2 and HM-3 would help to minimize the risk of such occurrence since storage tank accident studies have concluded that most accidents can be avoided if applicable requirements and standards are adhered to (Cornell and Baker, 2002, Chang and Lin, 2006). These mitigation measures would provide the City direct assurance beyond existing regulations that critical design and operations standards for prevention of upset conditions are implemented as required.

Pipelines

To assess the potential impact of a fire resulting from a pipeline release, the reasonably foreseeable worst-case scenario assumes that a release occurs, creating a pool of oil at the surface, and that an ignition source and flammable vapors in an adequate concentration to catch fire are present. The CDE Protocol approximates the probability of a crude oil pipeline rupture and pool fire to be 0.0000125 events per mile-year and a crude oil pipeline leak and pool fire to be 0.000149 events per mile-year. Due to the larger magnitude of release, a crude oil pipeline rupture and pool fire in a developed area could be a significant threat to human health and property, or in an undeveloped area, to the natural environment.

If a crude oil release from a project pipeline were to catch fire, it could present a serious hazard to public safety and the environment through thermal radiation. Specific impacts would be dependent on the location and size of the pool fire, and significant harm to persons and sensitive environments could occur. In addition, toxic combustion byproducts such as naphthalene, polycyclic aromatic hydrocarbons, sulfur dioxide, carbon dioxide, carbon monoxide, nitrogen oxides,

and volatile organic compounds could be formed and released into the air from a fire, along with particulates such as metals and soot. Under most atmospheric conditions, most emissions would be carried upward with the thermal plume resulting in low concentrations at ground level. The project pipeline routes are primarily through open space areas, limiting the potential for significant thermal exposure to persons.

Pursuant to the California Pipeline Safety Act, prior to operations, the project would be required to provide each fire department with fire suppression responsibilities, a map showing the locations of each pipeline, a description of all products being transported within the pipeline, and a contingency plan for pipeline emergencies for use by the SFM in the event of an emergency. As previously described, the project is committed to the installation of a CWS to alert the public in the event of an imminent hazard to public health (as described above under Impact HM-3 and in Environmental Commitment HM-11, see Chapter 2.0: Proposed Project and Alternatives, Section 2.7.7.)

Approximately 6,000 total feet of the San Pablo Bay Pipeline is located in proximity to commercial or residential development, with the closest commercial or residential development located approximately 200 feet away. The proposed KLM Pipeline connection and the Rail Pipeline would be located in developed areas approximately 100 feet from residential developments. With a 100-foot minimum distance between a hypothetical fire and residential structures, the fire would not be an imminent threat to the structural integrity of residences (NIST, 2000). Structures could be used to shelter from thermal radiation from the fire if needed.

For a pool fire, the heat would spread outward and increase in intensity as the size of the fire increases. In the unlikely event of a large pool fire, the heat radiation could build up to a level that would be hazardous to people in areas proximal to the fire. With project incident response preparedness and fire protection systems, it is expected any spread of fire would be accompanied by reasonable warning of imminent danger such that evacuation could occur if needed without serious injury. Considering the approximately 11,000 total feet (2.1 miles) of project pipeline that would occur in proximity to commercial or residential development, the probability of a crude oil rupture and fire would be 2.6×10^{-5} per project-year (1.25×10^{-5} events per mile-year multiplied by 2.1 miles). This is equal to a probability of occurrence of 1 in 38,000 for any given year of the project life. Because 38,000 years is orders of magnitude longer in time than the project, the pipeline release with pool fire in proximity to commercial or residential areas where it could present an imminent heat radiation threat to the public is very unlikely to occur and not a reasonably foreseeable upset condition for CEQA analysis. The probability of a fire associated with a pipeline leak in proximity to commercial or residential areas would be an order of magnitude higher at approximately 1 in 3,200 for any given year of the project life (1.49×10^{-4} events

per mile-year multiplied by 2.1 miles), which also is not a reasonably foreseeable upset condition.

A pipeline release or leak and pool fire at any project pipeline location outside of secondary containment could impact sensitive environmental resources, including nearby water resources and sensitive ecological environments. Therefore, in the event of a pool fire from a pipeline release or leak, serious impacts to sensitive environments are possible. Approximately 14.4 miles of project pipeline occur outside of secondary containment areas, including the existing KLM common-carrier pipeline, an approximately 0.42 mile segment of the proposed KLM Pipeline connection (two pipes) and an approximately 0.56 mile portion of the proposed Rail Pipeline. Considering the pipeline rupture and pool fire probability of 1.25×10^{-5} events per mile-year and the pipeline leak and pool fire probability of 1.49×10^{-4} events per mile-year, the probabilities of these two scenarios occurring outside of secondary containment are 0.00018 and 0.00214, respectively. These values indicate that the expected frequency of these events would be approximately 1 in 5,000 for a rupture and pool fire outside of secondary containment for any given year of the project and 1 in 500 for a leak and pool fire for any given year of the project. Because 5,000 years is orders of magnitude longer in time than the project, the pipeline rupture and fire outside of secondary containment scenario is not a reasonably foreseeable upset condition for CEQA analysis. The probability of pipeline leak and fire outside of secondary containment is an order of magnitude higher, but still unlikely. Potential risks to sensitive environments are detailed in Chapter 6.0: Aquatic Resources, Chapter 7.0: Terrestrial Resources, and Chapter 17.0: Water Resources.

Rail Transload Facility

As described in Impact HM-4, the maximum reasonably foreseeable release from Rail Transload Facility operations is 30,000 gallons (the volume of one tank car). The spill containment system is designed to be capable of holding up to 100,000 gallons so that both an oil release and firefighting water can be contained if a fire and release occur simultaneously. Because the containment slab encompasses the entire transloading area, a release and fire is anticipated to be contained within the containment slab. The amount of oil that could be involved in a pool fire would be small because the containment slab would be designed to convey a potential release to a tank so the surface area of the oil pool available to burn would be limited.

The Rail Transload Facility is surrounded by development so there are no sensitive natural resources in adjacent areas. The residences closest to the Rail Transload Facility are located more than 150 feet from the closest Rail Transload Facility track. With a 150-foot minimum distance between a hypothetical fire and residential structures, the fire would not be an imminent threat to the structural integrity of residences (NIST, 2000), so structures could be used to shelter from thermal radiation from the fire, if needed.

For a pool fire, the heat would spread outward and increase in intensity as the size of the fire increases. With project incident response preparedness and fire protection systems, it is expected that any spread of fire would be accompanied by reasonable warning of imminent danger such that evacuation could occur if needed without serious injury. Handling of the released oil onsite by workers would occur in compliance with OSHA regulations for worker safety. No lasting health or environmental impacts would be expected. With no lasting health or environmental impacts, the hazard of a release and fire during rail car unloading would be less than significant.

Rail Haul

As described in Impact HM-4, for analysis of reasonably foreseeable upset conditions pursuant to CEQA, a conservative approach has been utilized assuming up to the full 30,000-gallon content of a tank car could be released under a train accident scenario. If an ignition source and flammable vapors, in an adequate concentration to catch fire were present, a pool fire could result. If a crude oil release from a train accident were to catch fire, it could present a serious hazard to public safety and the environment through thermal radiation. Specific impacts would be dependent on the location and size of the pool fire. In addition, toxic combustion byproducts such as naphthalene, polycyclic aromatic hydrocarbons, sulfur dioxide, carbon dioxide, carbon monoxide, nitrogen oxides, and volatile organic compounds could be formed and released into the air from a fire, along with particulates such as metals and soot. Under most atmospheric conditions, most emissions would be carried upward with the thermal plume resulting in low concentrations at ground level.

For a pool fire, the heat would spread outward and increase in intensity as the size of the fire increases. In the unlikely event of a large pool fire, the heat radiation could build up to a level that would be hazardous to people in areas proximal to the fire. Because fire would be a secondary impact of the hypothetical train accident, it is expected any spread of fire would be accompanied by reasonable warning of imminent danger such that evacuation could occur if needed without serious secondary fire related injury.

As described in Impact HM-4, the probability of a release from a train accident is lower than 1 in 100 during any given year of operation at the maximum anticipated crude oil shipping rate. The probability of a related fire would be even less since fire would be a secondary impact. While a release of project crude oil and resulting fire from a rail accident is unlikely to occur from the project, the hazard is considered to be a significant and unavoidable impact of the project.

Mitigation Measure HM-1 through HM-5 would reduce the potential for an upset event that could lead to a release and fire from the project tanks, pipelines and Rail Transload Facility to the maximum extent practical. No further mitigation is required.

Mitigation Measure: No additional mitigation measures available.

Impact HM-6: Emissions of hazardous substances and handling of hazardous materials within 0.25 mile of existing or proposed schools. (Less than significant.) Two schools, St. Peter Martyr School and First Baptist Head Start, are located within 0.25 mile of the proposed storage terminal (refer to Figure 10-2) and one additional school, Parkside Elementary School, is located within 0.25 mile of the proposed KLM Pipeline connection, Rail Pipeline, and Rail Transload Facility. Project-related hazardous emissions are not anticipated to increase health risk levels above the CEQA thresholds at any school. Impact AQ-3, discussed in Chapter 4.0: Air Quality, details the project-related maximum health risk increases for cancer, chronic and acute non-cancer hazard index, and particulate matter.

Crude oil and other petroleum products that would be handled by the project are considered hazardous materials. The project cannot achieve its objectives without the handling of crude oil within 0.25 mile of schools, since the schools currently exist within 0.25 mile of the existing facilities that would be used for the project. No significant impact to schools is anticipated under normal operating conditions. Reasonably foreseeable upset condition scenarios are described and analyzed in Impacts HM-4 and HM-5.

Mitigation Measure: No mitigation required.

Impact HM-7: Risk to the public or the environment as a result of being located on a site that is included on the Cortese List. (Less than significant.) As discussed in Section 10.1.2.1, the San Pablo Bay Pipeline is buried, in part, on three properties listed on the Cortese List (refer to Figure 10-1). To assess the project impact, the characteristics of these three sites were reviewed and the proposed project activities on these sites were considered to determine whether the occurrence of the project facilities on these sites could create a significant hazard to the public or the environment, as further described in the following paragraphs.

Information on soil conditions at the three Cortese List sites was reviewed to determine if corrosive soils exist that could negatively impact the structural integrity of a pipeline. Available data shows that the three sites are impacted by metals, and no corrosive soils, naturally occurring or anthropogenic, are known to exist in these areas. Soil types are described in Chapter 9.0: Geology, Soils, and Seismicity.

The San Pablo Bay Pipeline is an existing facility. Subsurface work along this existing pipeline is not anticipated to be required, except possibly if pipeline reactivation or operations inspections indicate that one or more locations along the pipeline require excavation for inspection or repair. If subsurface work is required at any location within the Cortese List sites, the employer would be required to thoroughly survey site conditions to determine, so far as practicable, the predictable hazards to employees and the kind and extent of safeguards necessary to execute the work in a safe manner (8 CCR 1511). In situations where employees are subjected to a known job-site hazards (e.g., flammable liquids and gases, toxic materials, confined spaces) they would be instructed in the recognition of the hazard, procedures for protecting themselves from injury, and first aid procedures in the event of an injury (8 CCR 1510). The safeguard measures required by these existing regulations and requirements would limit the potential for exposure of persons or the environment to hazardous materials to safe levels such that the risk to the persons and the environment would be less than significant.

Mitigation Measure: No mitigation required.

Impact HM-8: Impair implementation of or physically interfere with an adopted emergency response plan or evacuation plan. (Less than significant.) No potential conflicts were identified through the review of local emergency response and evacuation plans, including the City of Pittsburg Emergency Operation Plan, Contra Costa County Emergency Operations Plan, and Contra Costa County Hazard Mitigation Plan. Project construction or operations would not interfere with emergency routes, evacuation routes, or CCCFPD critical facilities. No shortfalls in any of these emergency plans were identified that would affect or be affected by the project.

Due to shared on-site roads and site access locations, construction activities for the proposed project could potentially impact access to facilities located adjacent to the project site. During construction, emergency access, egress, and evacuation routes outlined in NRG's Emergency Response Plan would be maintained.

Mitigation Measure: No mitigation required.

10.2.3.2 Alternative 1: Reduced Onshore Storage Capacity

Construction-related Impacts

Impact HM-9: Create a hazard to workers, the public, and/or the environment through the routine transport, use, and/or disposal of hazardous materials. (Less than significant.) Potential hazards for workers, the public, and the environment under Alternative 1 are similar to those of the proposed project. Refer to Impact HM-1.

Mitigation Measure: No mitigation required.

Impact HM-10: Create a hazard to workers, the public, and/or the environment through exposure to existing hazardous materials at the site. (Less than significant.) Potential hazards for workers, the public, and the environment under Alternative 1 are similar to those of the proposed project. Refer to Impact HM-2.

Mitigation Measure: No mitigation required.

Operational Impacts

Impact HM-11: Create a hazard to workers, the public, and/or the environment through the routine transport, use, and/or disposal of hazardous materials. (Less than significant.) Potential hazards for workers, the public, and the environment under Alternative 1 are similar to those of the proposed project. Refer to Impact HM-3.

Mitigation Measure: No mitigation required.

Impact HM-12: Create a hazard to the public or environment through reasonably foreseeable upset or accident conditions involving the release of a hazardous material to the environment. (Significant and unavoidable.) Compared to the proposed project, Alternative 1 would not include the East Tank Farm. Therefore, it would have six fewer oil storage tanks and 972,000 BBLs less storage capacity. Reducing the number of tanks, from 16 storage tanks to 10 storage tanks, would result in a proportional reduction in probability of a product release from a storage tank. The probability of a major release within secondary containment would be reduced to 1 in 1,000 per project year compared to 1 in 625 for the proposed project. The probability of a minor release with fire in secondary containment would be reduced to 1 in 1,100 per project year compared to 1 in 690 for the proposed project. However, these events could still be reasonably foreseeable upset scenarios. The tanks in the South Tank Farm are generally located farther away from residential and public areas compared to the tanks in the East Tank Farm. Three of the tanks in the South Tank Farm are located proximal to existing or proposed residential neighborhoods and/or Marina Park. Therefore, Alternative 1 would reduce the number of storage tanks in proximity to residential and park areas to three storage tanks compared to nine for the overall project. This would proportionally reduce the risks posed to the public by foreseeable storage tank upset conditions described for the proposed project in Impact HM-4. However, the same hazards would still occur and would be significant for potential upset conditions so this alternative would not eliminate any significant impact. Alternative 1 also would not substantially reduce any foreseeable upset scenario hazard. The only material benefit would be the reduction in probability of upset scenario, which would not be significantly reduced because it is already very low for the proposed project. There would be no substantial difference in probability of a pipeline release and no difference in operations at the Rail Transload Facility. Because both the East Tank Farm and

the South Tank Farm drain toward the same waters and sensitive environments, there would be no identifiable risk reduction for sensitive environments other than the proportional reduction in release probability.

Mitigation Measure HM-6: Operations bulk storage tank regulations and standards auditing plan. Refer to Mitigation Measure HM-1.

Mitigation Measure HM-7: API Standard 653 inspection report documenting inspection, and recommendations for repair, alteration and reconstruction of petroleum storage tanks. Refer to Mitigation Measure HM-2.

Mitigation Measure HM-8: Construction QA/QC plans. Refer to Mitigation Measure HM-3.

Mitigation Measure HM-9: Stakeholder communication plan. Refer to Mitigation Measure HM-4.

Mitigation Measure HM-10: Operations pipeline regulations and standards auditing plan. Refer to Mitigation Measure HM-5.

Impact HM-13: Create a hazard to the public or environment through reasonably foreseeable upset or accident conditions involving the release of crude oil creating an indirect hazard due to crude oil flammability. (Significant and unavoidable.) Compared to the proposed project, Alternative 1 would have six fewer oil storage tanks and 972,000 BBLs less storage capacity. This would proportionally reduce the probability of a product release from a storage tank and related fire, as fewer tanks would be in operation, but would not reduce the probability of a product release from a pipeline. There would be no material difference in potential impacts from either a tank or a pipeline release and fire, and no identifiable potential impact reduction for sensitive environmental areas. Alternative 1 would reduce the probability of a minor release and fire near residential and public areas and there would be no risk of a pool fire near the Pittsburg Marina or Riverview Park. Furthermore, there would be a reduced probability of a pool fire near residences because only three tanks would be located where offsite residences are nearby compared to nine tanks for the proposed project. Therefore, the probability of a pool fire near residences would be reduced to approximately one-third of that of the proposed project. However, the reduction in probability would not result in a significant risk reduction because the risk is already very low for the proposed project.

Mitigation Measure: No additional mitigation measures available.

Impact HM-14: Emissions of hazardous substances and handling of hazardous materials within 0.25 mile of existing or proposed schools. (Less than significant.) Two schools, St. Peter Martyr School and First Baptist Head Start, are located within 0.25 mile of the South Tank Farm (refer to Figure 10-2) which would remain present for either the proposed project or Alternative 1. Similar to the proposed project, hazardous emissions from Alterative 1 would not be expected to increase health risks levels above the CEQA threshold for any health risk category.

Alterative 1 would require handling of crude oil within 0.25 mile of the same schools that occur within 0.25 mile of the proposed project. No significant impact would be expected to schools under normal operating conditions. Reasonably foreseeable upset condition scenarios for Alternative 1 are described in Impacts HM-12 and HM-13.

Mitigation Measure: No mitigation required.

Impact HM-15: Risk to the public or the environment as a result of being located on a site that is included on the Cortese List. (Less than significant.) Alternative 1 would use the same pipelines as the proposed project, and there would be no difference in the potential for impacts due to the pipelines crossing sites identified on the Cortese List. Refer to Impact HM-7.

Mitigation Measure: No mitigation required.

Impact HM-16: Impair implementation of or physically interfere with an adopted emergency response plan or evacuation plan. (Less than significant.) Similar to the proposed project, Alternative 1 would not impair the implementation of or physically interfere with the local emergency response and evacuation plans. Refer to Impact HM-8. Similar to the proposed project, Alternative 1 would not result in or be affected-by any emergency response plan shortfall.

Mitigation Measure: No mitigation required.

10.2.3.3 Alternative 2: No Project

Impact HM-17: Create a hazard to workers, the public, and/or the environment through the routine transport, use, and/or disposal of hazardous materials or exposure to existing hazardous materials at the site; create reasonably foreseeable upset or accident conditions involving the release of a hazardous material to the environment; or cause emissions of hazardous substances and handling of hazardous materials within 0.25 mile of existing or proposed schools. (No impact.) Under this alternative, no new construction would occur at the project site, and there would be no project operations or related impacts due to the use, handling, or encountering of

hazardous materials. There would be no potential for upset conditions such as a crude oil release or fire associated with the project, and no risk of impacts to schools. Emissions from the existing facilities at the site would remain unchanged. There would be no potential for the project to pose a risk due to being located on a site identified on the Cortese List, or impair or interfere with an adopted emergency plan.

Mitigation Measure: No mitigation required.

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