4.9 HAZARDS

4.9.1 Regional Setting

Hazardous Materials and Waste Regulations

A regulatory framework exists to reduce routine hazards, reduce risks of upset (accidents), and enhance response in the event of an upset or cleanup. The regulatory framework affecting the handling of hazardous materials and hazardous waste includes the Resource Conservation and Recovery Act; the California Hazardous Waste Control Law; the Comprehensive Environmental Response, Compensation and Liability Act; the Superfund Amendments and Reauthorization Act; the California Hazardous Substances Account Act; the Clean Water Act; the Oil Pollution Act; the Hazardous Materials Release Response Plans and Inventory Act; the Occupational Safety and Health Act; the Asbestos Hazard Emergency Response Act; and the Toxic Substances Control Act. These laws are intended to control potential environmental and workplace hazards in industry. They apply, and would continue to apply, to all of the generating facilities.

At the federal level, primary responsibility for enforcing the laws and regulations that govern the use, storage, and disposal of hazardous materials and hazardous waste falls to the Environmental Protection Agency (EPA). The Resource Conservation and Recovery Act of 1976 (RCRA) defines when a hazardous substance is a hazardous waste based on a number of criteria, and regulates hazardous wastes from "cradle to grave," that is, from generation of the waste through disposal. The EPA has authorized California to operate its own hazardous waste management program in lieu of the federal RCRA program. California's Hazardous Waste Control Law, administered by the Department of Toxic Substances Control (DTSC), is consistent with and in some cases more stringent than the federal RCRA requirements.

Under RCRA and the California Hazardous Waste Control Law, a facility that treats, stores or disposes of hazardous waste (TSD facility) is required to obtain a Hazardous Waste Facility Permit. These permits impose extensive requirements relating to operating procedures, record keeping, manifesting, monitoring and reporting, financial assistance for contingencies and closure obligations, and corrective action requirements for releases from waste management units at the facility. Various notifications and reports are required, including notification of changes in hazardous waste-related operations or in ownership. The State Water Resources Control Board has promulgated regulations governing discharge of waste to lands. These regulations are found at 23 California Code of Regulations, §2510 (commonly known as Subchapter 15).

In addition to the Hazardous Waste Facility Permits, a facility discharging hazardous wastes to land (including operating a surface impoundment) must comply with Subchapter 15, and is required to obtain from the applicable Regional Water Quality Control Board a "Waste Discharge Requirements" (WDR) order. The WDRs impose various requirements on the operation of surface impoundments.

In order to use a surface impoundment to receive a restricted waste, the surface impoundment must comply with the Toxic Pits Cleanup Act (TPCA). TPCA imposes design, monitoring, and inspection requirements on the operation of most surface impoundments receiving hazardous waste. TPCA also prohibits the discharge of restricted hazardous waste to surface impoundments unless the discharges fall within certain limited exemptions. Under state law, "restricted hazardous wastes" include wastes with a specified concentration of certain listed metals or hazardous substances. An exemption is currently available for boiler cleaning wastes discharged into surface impoundments owned or operated by public utilities subject to the jurisdiction of the CPUC. Legislation effective January 1, 1998 allows the transfer of the current TPCA authorizations to power plant owners and operators that are not CPUC-regulated

utilities.

California's Aboveground Petroleum Storage Act (APSA) and federal regulations under the Clean Water Act require facilities having aboveground petroleum storage tanks above certain individual tank or aggregate storage capacities to submit biennial statements to the State Water Resources Control Board. In addition, if the tanks could reasonably be expected to discharge oil in harmful quantities into navigable water, a Spill Pollution Control and Countermeasures (SPCC) Plan must be prepared for the facility. State and federal laws impose permitting requirements, monitoring requirements, repair and upgrade requirements, and closure requirements on owners and operators of underground storage tanks.

The federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the subsequent Superfund Amendments and Reauthorization Act of 1986 (SARA) establishes reporting requirements and liability for the release of hazardous substances. One part of SARA, the federal Emergency Planning and Community Right-to-Know Act (EPCRA), sets emergency release reporting requirements and also requires facilities that use and store hazardous materials in amounts above certain thresholds to satisfy certain notification and reporting requirements. If a plant burns residual fuel oil, recent regulations require the filing of toxic release inventory statements specifying toxic emissions to all environmental media during the previous year. The first reports under this new rule must be made by July 1, 1999. Similarly, the state Waters Bill and La Follette Bill (Chapter 6.95 of the California Health & Safety Code) require facilities that use and store hazardous materials in amounts above certain thresholds to prepare and implement an approved business plan that includes a hazardous materials inventory, an employee training program, and an emergency response contingency plan.

The federal Toxic Substances Control Act (TSCA) requires facilities that use or store specified amounts of polychlorinated biphenyls (PCBs) on site to prepare an annual log of the disposition of PCBs and PCB items. In addition, a facility must comply with requirements regarding transportation, labeling, inspection and spill response for PCBs.

At the state level, the Department of Toxic Substances Control (DTSC) has taken the overall lead in hazardous materials permitting and site remediation. DTSC sometimes acts jointly with other agencies such as the Regional Water Quality Control Boards. Senate Bill 1082 requires that a Unified Hazardous Materials Management Regulatory Program (Unified Program) consolidate certain state and local programs dealing with hazardous materials at the county and/or city level under a local Certified Unified Program Agency (CUPA). This includes inspection and enforcement activity related to hazardous material/waste generation, treatment, storage, and release response plans, as well as Uniform Fire Code hazardous materials management plans and inventories, and above ground storage tank spill prevention control plans. This new program will not fully replace existing other federal, state and local oversight, such as regarding site remediation/liability, or CEQA review of higher tier, more hazardous permits.

To protect the public welfare, California law requires that a business plan be prepared for any proposed facility using reportable quantities of hazardous materials. If the quantities of acutely hazardous materials handled exceed EPA-established thresholds, a Risk Management and Prevention Program may be required by the administering agency. Although burning residual fuel oil at PG&E power plants has been essentially eliminated at the sale plants, there is considerable regulatory oversight of oil transport, unloading and storage, both at the state level (e.g., Coastal Commission and Regional Water Quality Control Boards) and federal level (e.g., Department of Transportation and Coast Guard).

The Hazardous Waste Source Reduction and Management Review Act of 1989 (known as SB-14) requires facilities that generate hazardous wastes in amounts above certain quantities to prepare a Source Reduction and Evaluation Plan and Performance Report every four years.

In the event of a hazardous materials release, the state's Site Designation Process (HSC §25260-§25268), under the Unified Agency Review of Hazardous Material Release Sites, allows a responsible party that agrees to carry out a site investigation and remedial action to request the Site Designation Committee within the California Environmental Protection Agency (Cal EPA) to designate a single state or local agency to oversee any cleanup at the site. The lead, or administering, agency is authorized to supervise the cleanup at the plant and is given sole jurisdiction over all activities that may be required to carry out a site investigation and remediation.

4.9.2 Local Setting

A brief summary of conditions at each plant is given below. This information was obtained from PG&E, plant personnel, site visits, and from existing reports and studies.

Potrero Power Plant

General

The Potrero Power Plant is a natural gas-fired plant. An inventory of No. 6 (residual) fuel oil is maintained on site that would suffice for three weeks of boiler operation in the event of a natural gas curtailment. The plant also has combustion turbines that burn distillate fuel oil. (1)

The Potrero Power Plant has a Hazardous Materials Registration Certificate from the San Francisco Department of Public Health, an Aboveground Petroleum Storage Tank Permit from the State Water Resources Control Board, an NPDES permit from the San Francisco Bay RWQCB, and a Class I Industrial Wastewater Discharge Permit from the San Francisco Department of Public Works. Additional information on plant permits can be found in the PEA for the Potrero plant (PG&E, 1998a).

A fuel tank farm is located along the northern boundary of the plant; it consists of three aboveground storage tanks with a total storage capacity of 21.7 million gallons. Two tanks store residual fuel oil; one holds distillate fuel. The tanks are situated within individual secondary containment structures.

Fuel in these tanks was delivered by barge to the Pier 70 marine terminal one-half mile north of the plant, which is connected to the northeast corner of the site by pipelines. The terminal has a 16-inch pipeline for unloading No. 6 fuel oil and a 12-inch pipeline for unloading distillate fuel. Pier 70 is leased from the Port of San Francisco. Historically, distillate was delivered by barge to the dock at Potrero; since May 1997, however, all distillate deliveries to the plant have been made by truck due to the unavailability of suitable barges for transporting distillate to the marine terminal.

The switchyard is located in the southwest portion of the site along the east side of Illinois Street. Non-operational areas include a plot in the central portion of the plant, another area immediately north of 22nd Street that once housed four above-ground storage tanks, and two submerged parcels of land within Warm Water Cove, an arm of San Francisco Bay. The non-operational area located in the central portion of the plant consists of former Station A, a former compressor building, a former meter station building, and a vacant parking lot where a refinery sugar house and a fuel island were formerly located. The building housing old Station A, site of former generating units, has been abandoned and partially demolished. The land north of 22nd Street is used as a laydown area to store back hoes, sand, gravel, asphaltic concrete, two solid waste dumpsters, and some construction debris consisting of concrete, bricks, soil, and asphalt.

San Francisco's southeastern waterfront is an area of light and heavy industry and commercial business. Businesses in the vicinity include shipping piers and dry dock facilities along the waterfront; vehicle

storage and impoundment yards to the north; gas stations, warehouses, factories and various small commercial businesses to the west; and railroad yard and trucking company sites to the south. Many of these businesses have had chemical or fuel storage capability on their properties.

Hazardous Materials and Waste

Typical hazardous materials used at the Potrero Power Plant include sodium hypochlorite for chlorination of the cooling water, sodium bisulfite for dechlorination, solvents, degreasers, and petroleum-based oils. The plant maintains a Hazardous Material Inventory that lists the types, amounts stored, and amounts used annually of hazardous materials used at the plant (Camp, Dresser & McKee, 1997e). No acutely hazardous materials are used or stored at the Potrero Power Plant.

Hazardous wastes generated at the Potrero Power Plant are collected and stored in drums or other suitable containers within the designated Hazardous Waste Building. This building houses hazardous wastes for 90 days or less prior to pick-up and disposal offsite by a licensed waste-disposal firm. Hazardous wastes are segregated by type within the building. The Hazardous Waste Building has a sealed concrete floor, partitioned by concrete berms for secondary containment.

PG&E has a Hazardous Waste Management Plan for employees who manage hazardous waste at the Potrero plant (PG&E, 1996e). The Hazardous Waste Management Plan is designed to ensure that the plant maintains full compliance with all local, state, and federal regulations applicable to hazardous waste generation, accumulation, transportation, and disposal.

Other safety-related plans and procedures that promote employee safety include a Hazards Communications Manual, a Fire and Risk Control Manual, an Emergency Response manual, an Illness and Injury Prevention Plan, a Bloodborne Pathogens Training Manual, an Oil Spill Response Manual, and a Stormwater Pollution and Prevention Plan. Related to the marine terminal, the Potrero plant has a Facility Response Plan that complies with Federal and state regulations.

Potential Site Contamination

Disposal of hazardous waste was not as well regulated in the past, and soils and groundwater at the Potrero plant site have been adversely affected by historic activities in the area. A manufactured gas plant (MGP) once was located north of Humboldt Street and east of Louisiana Street on the site of the current fuel tank farm and on part of the plant's power generation and operations area. According to maps, MGP processes, structures, and buildings included gas holders, a retort (heating process) house, a coal shed, an ash pit, a purifying house, oil tanks, tar pits, and lampblack separators/pits. The MGP began operating in 1872 and continued on a full-time basis until 1930 (Ecology and Environment, 1991a). Ownership of the MGP changed to San Francisco Gas and Electric Company (SFG&E) in 1897, and subsequently to PG&E in 1911.

In 1902, a smaller MGP was built by the Independent Gas and Power Corporation immediately to the south to compete with the larger plant. After about a year, however, the small plant was purchased and incorporated into the SFG&E facility, where it was in use until 1915. In 1930, all MGP facilities were placed on stand-by and remained so until their demolition in the early 1960s.

A Preliminary Endangerment Assessment was conducted by PG&E in 1991 for the former MGP reported soil and groundwater contamination associated with the old plant (Ecology and Environment, 1991b). Contaminants of concern include heavy metals, polynuclear aromatic hydrocarbons (PNAs), total petroleum hydrocarbons (TPH), and nitrogen compounds such as ammonia and cyanides. During the 1991 assessment, TPH as gasoline was detected in the soil in concentrations as high as 8,200

milligrams/kilogram (mg/kg) and TPH as fuel oil was detected in concentrations as high as 71,000 mg/kg. PNAs were detected on the site primarily in subsurface fill in concentrations as high as 33,400 mg/kg. According to information provided in the study, operations during the site's use as an MGP have adversely impacted the groundwater and soil throughout the entire plant area. The areas most impacted appear to lie within the fuel tank farm and in the part of the plant devoted to customer energy service/safety, health, and claims.

Other potential contamination of the plant site was described in the Phase I Environmental Site Assessment (Camp, Dresser & McKee, 1997e). Kerosene, diesel fuel and gasoline were found in the soil in the vicinity of the underground storage tanks. A leaking tank placed the plant on the Cortese list (INV-ID 38-000279) (Cal EPA, 1994b). (2) Contaminated soil also was discovered during removal of an oil sludge sump formerly located near the current oil/water separator. (The oil/water separator system is located in the northeast corner of the site and is used to process oily wastewater streams from the plant. The system consists of a concrete vault that serves as secondary containment for a 40,000-gallon oil/water holding tank, a 3,200-gallon oil/water separator, and a 2,000-gallon oil sludge tank.)

The Phase I Assessment identified 23 "recognized environmental conditions," of which eight are "material recognized environmental conditions." (3) These included the aforementioned MGP, asbestos-containing materials in the decommissioned Station A structure, soil contamination near the underground storage tanks and the oil sludge sump, and several areas of potential petroleum contamination that may have resulted from leaks of fuel oil or distillate fuel from tanks and lines. Substances of concern include PCBs, petroleum products, PNAs, lead, mercury, and hazardous chemicals used in historic operations on the site. PG&E is conducting Phase II testing to determine the nature, extent and potential costs to remediate identified contaminants. A Risk Assessment also is in preparation. PG&E will retain liability for a cleanup of existing contaminants on property that is sold and will work with appropriate environmental agencies to develop and carry out specific remediation plans.

Contra Costa Power Plant

General

PG&E's Contra Costa Power Plant is a fossil-fueled, electric generation facility. The power generation and operations area consists of ten fossil-fueled boilers that supply steam to seven turbines. Boilers 1-8 have been retired. Only generating Units 6 and 7 are currently used to generate electricity. However, the generators at Units 4 and 5 are configured to operate as synchronous condensers to help the electrical grid respond to changing system conditions. The boilers are capable of burning natural gas or fuel oil. However, PG&E has discontinued residual fuel oil burns at the plant and would burn fuel oil in the future only in the event of a curtailment of natural gas. Natural gas is delivered to the plant through PG&E's gas delivery system.

On the northwest shoreline of the plant a 300-foot pier extends into the San Joaquin River. This is an inoperative marine terminal that once transported fuel oil in a 12-inch pipeline from the barge to the fuel storage tanks. The oil pipeline was drained and capped, and a 300-foot section was removed. The marine terminal has been in caretaker status since 1984, and significant dredging of the waterway and repairs or replacements would be required to allow barges to moor again to restore marine deliveries of oil.

The Contra Costa Power Plant has a Conditionally Authorized Hazardous Waste (Tiered) permit from the California DTSC for its boiler wastewater treatment system that would require amending with divestiture (Cal EPA, 1998). Application for modification of the Conditionally Authorized permit must be submitted to DTSC within 30 days of the change of ownership. The Contra Costa plant also has a Hazardous Materials Storage Permit from the Contra Costa Fire Protection District, Aboveground Flammable and

Combustible Liquid Storage Tank permits from the Contra Costa Fire Protection District, an NPDES permit from the Central Valley RWQCB, and a "Waste Discharge Requirements for Clarifier Sludge Disposal" permit, also from the Central Valley RWQCB. Additional information on plant permits can be found in the PEA (PG&E, 1998a)

Nine above ground fuel tanks are located in a tank farm area on the western portion of the property, although not all are in use (see below). No. 6 fuel oil can be stored in two service tanks and six aboveground storage tanks at the plant. The capacities of tanks 1 to 5 are about 120,000 barrels, and tanks 6,7, and 8 each are about 500,000 barrels. A displacement fuel oil tank of low viscosity, low pour point oil used to purge and preheat pipes is located east of tanks 6-8 and has a capacity of 53,000 barrels. Tanks 1-5 are individually surrounded by dikes that could contain the entire contents of a full tank, plus accumulated precipitation. Tanks 6-8 are surrounded by a berm that would divert a leak into an impoundment basin that could contain a full volume spill from one of the tanks. In the past, fuel oil deliveries to the Contra Costa power plant were made by pipeline from the Pittsburg power plant. The last residual fuel oil deliveries were made in 1990.

The switchyard is located in the central portion of the plant, south of the main buildings and north of the impoundment basins. Oil circuit breakers in the switchyard are surrounded by curbed rock-filled pits. The entire switchyard is graded to direct surface runoff to a collection sump that eventually leads to the plant oil/water separator.

Nearby industrial facilities include a paperboard manufacturing facility to the west, Atchison, Topeka and Santa Fe railroad tracks to the south, a chemical manufacturing facility to the east, and a power generating facility to the southeast.

Hazardous Materials and Waste

A variety of hazardous materials are used and stored at the plant, mainly for daily operations of boilers, transformers, circuit breakers, storage batteries, turbine bearings, hydraulic pumps, actuators and hydraulic reservoirs; these are itemized in the Phase I report (Camp, Dresser & McKee, 1997b). The principal hazardous materials handled at the plant are sodium hypochlorite for chlorination of the cooling water, sodium bisulfite for dechlorination, sulfuric acid, sodium hydroxide, ammonium hydroxide, and various solvents, degreasers, and petroleum products. Sulfuric acid is used to regenerate the demineralizer system, to lower the pH of reverse osmosis system feedwater, and to neutralize caustic water from the demineralization system. Sodium hydroxide is used to neutralize acidic water associated with the demineralization system.

The plant maintains a Hazardous Material Inventory that lists the types, amounts stored, and amounts used annually of hazardous materials used at the plant. To minimize the potential for spills of hazardous materials and to provide guidance for emergency response to spills, the plant has developed a Spill Prevention Control and Countermeasures Plan (PG&E, 1994b) and an Emergency Oil Spill Response Plan (Ecology and Environment, 1996).

Other safety-related plans and procedures that promote employee safety include a Hazards Communications Manual, a Fire and Risk Control Manual, an Illness and Injury Prevention Plan, a Bloodborne Pathogens Training Manual, and a Stormwater Pollution and Prevention Plan. Related to the marine terminal and tank farm, the plant has a Facility Response Plan that complies with all Federal and state regulations.

As mentioned previously, fuel oil is no longer burned at the plant. Currently, only Storage Tanks 2 and 6 contain measurable amounts of residual fuel oil. The January 1996 inventories for Tanks 2 and 6 were

approximately 26,000 barrels and 464,000 barrels, respectively. Tanks 1, 3, 4, 5, and 8 are essentially empty, except for remaining tank heels (Camp, Dresser & McKee, 1997b). Tank 7 is empty and, according to the Phase I assessment, was previously used to store a black liquor (a mixture of wood material in a sodium sulfide and hydroxide solution) for the paperboard manufacturing facility located directly west of the plant.

Hazardous wastes generated at the plant are collected and stored in drums or other suitable containers within the designated Hazardous Waste Building. Hazardous wastes are segregated by type within the building. The storage building houses hazardous wastes for 90 days or less prior to pick-up and disposal offsite by a licensed waste-disposal firm. Quantities of hazardous waste generated at the Contra Costa plant are listed in Attachment E.

Since 1986, the plant has used a boiler waste water management system. This aboveground system treats liquid hazardous waste from the acid cleaning of the fireside, air preheater and boiler interiors. This treatment system uses caustic, lime, or magnesium hydroxide to neutralize the cleaning solution, precipitating out the metals, and filter pressing the solution to form a filter cake. The solids are then disposed of off site at a Class I disposal facility, and the treated clean water is discharged to the San Joaquin River in compliance with the plant's NPDES permit.

Hazardous waste elements required by the California Code of Regulations and the Code of Federal Regulations are contained in the plant's Business Plan (PG&E, 1996a). This document describes the plant's hazardous waste accumulation areas. The plant's EPA ID number is CAT080011489 (PG&E, 1995). Currently, there are no hazardous waste treatment, storage or disposal units at the plant that require a hazardous waste facility permit. However, the boiler waste water treatment system is regulated by a conditionally-authorized hazardous waste treatment permit.

Potential Site Contamination

Because of the site's history and uses of adjacent facilities, the potential exists that some portion of the surface and subsurface soils and/or groundwater at the plant may have been contaminated with various wastes or otherwise adversely impacted by past structures and operations. PG&E conducted a Phase I Environmental Site Assessment at the plant (Camp, Dresser and McKee, 1997b). The assessment identified 22 items as "recognized environmental conditions." These represent past or present incidents of potential contamination or the release of hazardous substances or petroleum products to the soil, groundwater or surface water of the property. No "material recognized environmental conditions" were identified at the Contra Costa Power Plant. PG&E is conducting Phase II testing to determine the nature, extent, and potential costs to remediate identified contaminants. A Risk Assessment is also in preparation. PG&E will retain liability for cleanup of existing contaminants on property that is sold and will work with appropriate environmental agencies to develop specific remediation plans.

A permitted area located in the southwest corner of the property receives clarifier sludge from the Pittsburg and Contra Costa plants. This material is classified as an unregulated solid waste (i.e. nonhazardous). A second area north of the clarifier sludge disposal area contains soil and sand excavated during plant construction activities. In 1995, some of this stored sand, excavated during the construction of the plant and stored in a mound, was donated to the Fish and Wildlife Service to rebuild a large dune area at the Antioch Dunes National Wildlife Refuge. No elevated levels of chemical constituents were detected in this landfill (PG&E, 1991).

Pittsburg Power Plant

General

The Pittsburg Power Plant is a fossil-fueled generating facility having fuel oil tanks, an offsite pipeline terminus, and a marine terminal. The total plant site covers about 2,140 acres, but only about one-quarter of the site is dedicated to utility facilities.

The Pittsburg Power Plant has a full Hazardous Waste Facilities Permit (RCRA Part B Permit) from the California DTSC, that will require amending with divestiture. Application for the proposed permit modification must be submitted at least 90 days prior to the scheduled change of ownership (Cal EPA, 1998).

The plant also has a Hazardous Materials Storage Permit from the Contra Costa Fire Protection District, an NPDES permit from the San Francisco Bay RWQCB, and a "Waste Discharge Requirements for Class I/II Surface Impoundments" permit, also from the RWQCB. Additional information on plant permits can be found in the PEA (PG&E, 1998a).

Natural gas is the predominant fuel at the plant. All of the boilers burn natural gas, and two boilers are capable of burning fuel oil. Fuel oil is stored in four service tanks and twelve aboveground storage tanks. Displacement oil is stored in Tank 17. Two tank farm areas are in the northeast and southeast portions of the property. Tanks 1 through 7 (167,000 barrels each) are located along the eastern boundary of the site, and Tanks 8 through 16 (500,000 barrels each) and the displacement oil tank (51,200 barrels) are located at the southeastern corner of the site. The total fuel storage capacity for the plant is approximately 5.5 million barrels.

The marine terminal dock, which extends about 650 feet into Suisun Bay to the edge of the ship channel, is located at the northeast corner of the site and can be used for offloading fuel from tanker vessels. The dock supports a 12-inch and a 20-inch pipeline for unloading oil to the storage tanks. The terminal was modified in 1974 to accommodate tankers up to 70,000 tons, and is considered to be in "active" status, although it has not been used in about six years.

A 42-mile-long underground pipeline was constructed between Richmond and Antioch in 1976 to transport fuel oil from Chevron's Richmond refinery to PG&E's Pittsburg and Contra Costa Power Plants. The Richmond-to-Pittsburg portion of this pipeline, which has not been used for continuous deliveries of oil for power generation since 1982, may become part of the proposed Richmond Marine-Link Pipeline System. (4)

Suisun Bay borders the site to the north, and Southern Pacific Railroad borders the site to the south. The plant is also neighbored by several manufacturing and storage facilities, auto repair shops and dismantling yards, and sewage treatment plants. The manufacturing and storage facilities are located primarily near the southern border of the property.

Hazardous Materials and Waste

Various chemicals are stored at the plant and are used mainly in daily operations of boilers, transformers circuit breakers, turbine bearings, hydraulic pumps, actuators and hydraulic reservoirs (Camp, Dresser & McKee, 1997c). Hazardous materials used within the power generation and operations area include sulfuric acid and sodium hydroxide for regenerating demineralizer ion exchange beds, ethylenediamine-tetra acetic acid (EDTA) for boiler cleaning, (5) sodium hypochlorite for controlling condenser biofouling at Unit 7, sodium bisulfite to dechlorinate water prior to processing in the reverse osmosis system, and various paints, epoxy coatings, paint thinners, laboratory reagents, and distillate fuel (Camp, Dresser & McKee, 1997c).

As discussed above, fuel oil is no longer burned at the plant. Although the plant uses natural gas as its

primary fuel source, No. 6 oil is stored at the site in the event that natural gas supplies are curtailed.

To minimize the potential for spills of hazardous materials and to provide guidance for emergency response to spills, the plant has developed a Spill Prevention Control and Countermeasures Plan (PG&E, 1994a) and an Emergency Oil Spill Response Plan (PG&E, 1996c). Related to the marine terminal and tank farm, the plant has a Facility Response Plan that complies with all Federal and state regulations.

Other safety-related plans and procedures that promote employee safety include a Hazards Communications Manual, a Fire and Risk Control Manual, an Illness and Injury Prevention Plan, a Bloodborne Pathogens Training Manual, and a Stormwater Pollution and Prevention Plan.

Potential Site Contamination

Because of the site's history and uses of adjacent facilities, the potential exists that portions of the soils and/or groundwater at the plant may have been contaminated with various wastes or otherwise adversely impacted by past structures and operations. A 6,000-gallon gasoline leaking underground storage tank (LUST) placed the plant on the Cortese list (INV-ID 07-000315). The leaking tank was removed in 1986 and the April 1998 Cortese list does not identify any leaking tanks at this site.

PG&E conducted a Phase I Environmental Site Assessment (ESA) at the plant. The Phase I assessment performed by Camp, Dresser and McKee identified 34 items as "recognized environmental conditions" and 3 items as "material recognized environmental conditions." These include potential soil contamination at the plant to spills and leaks of petroleum products, the Shell Pond and Carbon Pile outside of the property to be sold (discussed below), and potential contamination from a ruptured boiler chemical cleaning wastewater pipeline. PG&E is following up with Phase II testing to determine the nature, extent and potential costs to remediate identified contaminants (Camp, Dresser & McKee, 1997c). A Risk Assessment is also in preparation. PG&E will retain liability for cleanup of existing contaminants on property that is sold and will work with appropriate environmental agencies to develop specific remediation plans.

A former ammonia plant, owned and operated by the Shell Oil Company, was located in the western portion of the property (outside the divestiture area) and reportedly operated from 1930 to 1967. The ammonia manufacturing process produced carbon black as a byproduct, which was stockpiled on the property. Adjacent to the 11-acre carbon black stockpile ("the Carbon Pile") is a 72-acre pond ("the Shell Pond"), which received discharge water from the ammonia plant. The Shell Pond and the Carbon Pile have hydrocarbon, metals, pesticides, and solvent contamination (PG&E, 1996b; Pacific Environmental Group, 1997). The Shell Pond and the Carbon Pile have been recognized by both the State and Federal EPA as contaminated sites. Although the extent of contamination and the environmental risk have been documented, remedial measures will need to be established and implemented. Neither the Carbon Pile nor the Shell Pond are in the area being sold by PG&E.

Geysers Power Plant

General

The PG&E Geysers Geothermal Power Plant is located in the relatively remote Geysers area of Sonoma and Lake counties. The plant is a steam electric generating facility that uses natural geothermal steam to run its power generating units. Geothermal steam is obtained from underground reservoirs at depths ranging from a few hundred feet to over 11,000 feet. Wells tap these natural steam reservoirs, and a system of pipes routes the steam from the wells to the power generation units, where the steam is used to drive turbines. Condensers and a cooling tower cool the steam.

The plant has 14 active power generating units and 5 inactive units (inactive units are not part of the divestiture). Each power generation unit has a lubricating and hydraulic oil system comprised of a lube oil reservoir, storage tanks, centrifuge, filters, and connecting piping. Petroleum products in drums and smaller containers are also used at each power generation unit and in shops as part of routine operation and maintenance activities (Camp, Dresser & McKee, 1997d).

Hazardous Materials and Waste

Hazardous materials are used during routine operations at the Geysers plant. They include chemicals for hydrogen sulfide abatement (e.g., sodium hydroxide and sodium vanadate), gases used for welding (e.g., acetylene), hydraulic and lubricating oils, dielectric fluids, and solvents (Camp, Dresser & McKee, 1997d). Many transformers and circuit breakers at the power generation units are filled with oil for insulating and cooling purposes. The two headquarters complexes have underground tanks and associated equipment for dispensing automotive fuel.

In addition, naturally occurring geothermal steam contains small amounts of chemical constituents, most notably hydrogen sulfide. Other constituents include ammonia, hydrogen, methane, nitrogen, carbon dioxide, and trace amounts of other gases, as well as trace amounts of various metals.

All of the generating units at the plant have hydrogen sulfide abatement systems. Sodium hydroxide, liquid iron compounds, and chemicals associated with the Stretford hydrogen sulfide abatement process are used to remove the hydrogen sulfide that is naturally present in the geothermal steam. Each system includes storage tanks, pumps, and piping.

A list of hazardous materials-related permits for the various Geysers units is presented in Attachment E. In addition, the California Energy Commission has established a lengthy series of ongoing Conditions of Certification that allow the Geysers plant to operate. A list of these CEC Conditions of Certification related to hazardous materials and safety is also included in Attachment E. Additional information on permits and Conditions of Certification can be found in the PEA for the Geysers facility (PG&E, 1998b)

The majority of hazardous waste at the Geysers is sludge generated in the hydrogen sulfide abatement systems. Hazardous wastes also are generated from hydraulic and lubricating oils, dielectric fluids, and solvents used during normal Geysers plant operation and maintenance activities and during scheduled overhaul activities. The quantities of many hazardous wastes generated from individual units are approximately proportional to the level of power generation. Information on waste streams and amounts of waste generated at the plant annually are listed in Attachment E. As can be seen in Attachment E, the five largest hazardous waste streams comprised over 99 percent of the hazardous wastes generated at the Geysers plant in 1994.

Sulfur-containing sludge (71 percent of the total) is by far the largest amount of waste generated at the Geysers. Elemental sulfur (a nonhazardous waste) also is produced from hydrogen sulfide in the geothermal steam. The geothermal steam is also the source of some hazardous trace metals (e.g., arsenic and mercury). Recently, PG&E installed activated-carbon scrubbers to remove and collect the trace amounts of mercury. The carbon scrubbing system minimizes mercury contamination in the sulfur waste, and lowers overall operational costs by reducing the overall amount of hazardous waste generated. It is anticipated that when the spent carbon absorbent needs to be replaced, it will have to be disposed of as a hazardous waste. With this mercury scrubbing apparatus in place, it is assumed that the new operators would continue to use the equipment.

Safety-related plans and procedures that promote employee safety include the Hazardous Waste Manual, a Hazards Communications Manual, a Fire and Risk Control Manual, an Illness and Injury Prevention

Plan, a Bloodborne Pathogens Training Manual, and a Storm Water Runoff Monitoring Program.

The Geysers Geothermal Plant has a "zero water discharge" program, due to the fact that condensate produced at the Geysers plant is returned to steam suppliers for re-injection into the steam field.

Potential Site Contamination

Camp Dresser & McKee (1997d) prepared a Phase I Environmental Site Assessment for the Geysers plant. The Phase I Assessment identified 157 "recognized environmental conditions," of which 38 were deemed "material recognized environmental conditions." These represented past or present incidents of potential contamination or the release of hazardous substances or petroleum products to the soil, groundwater or surface water of the property. The Geysers plant, therefore, has the largest number of material recognized environmental conditions among the four plants to be divested. Most of the conditions listed involved soil contamination associated with lube oil dump vaults at many of the generation units, distressed vegetation associated with cooling water drift, and petroleum contamination in soil associated with past and present transformer leaks.

Given the reported Phase I findings, PG&E is following up with Phase II testing and a Risk Assessment to determine the nature and extent of contamination and to estimate costs to remediate the identified contaminated sites. PG&E will work with appropriate environmental agencies to develop and carry out specific remediation plans.

The Geysers plant has one site in Sonoma County on the Cortese list (INV-ID 49-000154). This spot formerly had a petroleum product storage tank on it. The site has been remediated (Camp, Dresser & McKee, 1997d).

4.9.3 Significance Criteria

Appendix G of the CEQA Guidelines states that a project could have a significant impact if it would create a potential health hazard or involve use, production, or disposal of materials that pose a hazard to people or animal or plant populations in the area affected. Specific to the potential impacts discussed herein, the impact would be significant if the project would:

- Involve the use, production, or disposal of materials in a manner that poses a hazard to people, or to animal or plant populations;

- Expose employees to working situations that fail to comply with accepted state or federal guidelines for chemical exposure or hazardous waste disposal; or

- Violate applicable occupational health and safety laws.

4.9.4 Impacts and Mitigation Measures

Impact 4.9-1: Divestiture could advance the time at which existing hazards are remediated and therefore could advance a potential threat to worker safety or to public health should existing environmental contamination at the power plants be handled improperly. (Less than Significant)

For a variety of reasons related to change of ownership, divestiture will promote or accelerate environmental cleanup at the four plants. The fuels, water treatment chemicals, and other hazardous materials used at the plants historically have led to areas of contaminated soils, structures, or equipment.

Environmental studies have identified known or potential areas of contamination at each of the plant sites. Known conditions were summarized in the Setting section. Additional studies are in progress.

Contributors to surface or subsurface contamination at the plants include petroleum hydrocarbons (primarily in the vicinity of oil storage tanks), other solvents, heavy metals, original landfill contaminants, PCBs (primarily in transformer areas), and water treatment chemicals (primarily in chemical storage and mixing areas).

Worker safety and public health are potentially at risk whenever hazardous contaminants are encountered. In a hypothetical situation where contamination at a project site were to remain undetected, risks to workers and the public would be greater because risk-reducing precautions might not be taken. Exposure to hazardous contaminants could cause various short-term or long-term health effects. Possible health effects may be acute (immediate, or of short-term severity), chronic (long-term, recurring, or resulting from repeated exposure), or both.

Health effects of exposure to hazardous materials would be specific to each chemical. Some contaminants, such as volatile organic compounds, are toxic. Others, such as polyaromatic hydrocarbons and airborne asbestos, are carcinogens (Cal EPA, 1994a). Heavy metals, such as chromium and copper, are bioaccumulative toxins. Soils or groundwater contaminated with petroleum hydrocarbons pose threats to water quality and the environment, especially if removed and disposed of improperly. Soil contaminants have been identified as recognized environmental conditions at the plants, and the contaminants could present a risk to human health.

However, potential health effects of known contaminants can be avoided with proper site remediation. Hazards can be reduced by remediation under the oversight of regulatory authorities, such as the California Department of Toxic Substances Control or by local County health departments. Worker safety related to remedial activities is promoted by Federal and State OSHA regulations.

Soil contamination or other hazards are commonly detected by inspecting the sites and by searching public records for signs of environmental impairment at a subject property. This type of investigation is called a Phase I Environmental Site Assessment, and it is performed independently by a California Registered Environmental Assessor or registered engineer. When evidence of site contamination is found, additional data can be gathered by Phase II sampling and testing for the suspected contaminants. Risk assessments can then be done to assess and quantify potential health risks from contaminants.

Phase I Environmental Site Assessments have been conducted for each of the four plant sites. Phase II Environmental Assessments and Risk Assessments are also being conducted at the four plants. These reports document known site conditions, and would be provided to bidders as part of the due diligence process and to appropriate regulatory agencies as part of the remedial process. Therefore, all likely areas of known and potential contamination either have been or will be identified and will be known to prospective buyers. Once the site studies are done, site activities could be planned in a manner to coordinate the appropriate remediation measures.

Underground storage tanks are commonly used to store fuels and other hazardous materials, and a relatively high percentage of older underground storage tanks have leaked at some point in their lifetime. Because the contents of underground storage tanks may be hazardous, materials stored in an underground storage tank that is unexpectedly uncovered, disturbed, or damaged during excavation could threaten the health and safety of site workers. As with a fuel spill from above-ground activities, a leaking underground storage tank could pose threats to groundwater resources and the environment, and could also pose a possible explosion hazard.

Remediation of underground storage tanks could pose temporary health and safety risks, such as the exposure of workers, tank handling personnel, and the public to tank contents or vapors. Risks posed by underground storage tanks would be minimized by closing the subject tank according to the guidelines of the appropriate Regional Water Quality Control Board (e.g. San Francisco Bay, Central Valley, or North Coast) and the local County health departments. Such requirements include removing and properly disposing of any remaining hazardous materials in the tank, having the tank removal supervised by regulatory agencies, testing the soil under the tank for contamination, recycling or disposing of the discarded tank, and filing a tank removal closure report with the agencies.

While site remediation has an overall beneficial result (see Impact 4.9-2), remedial measures, in themselves, could have adverse impacts. During site remediation, workers, and possibly the public, could be exposed to chemical compounds in soils, soil gases, (6) or groundwater. The public and the environment could be exposed to airborne chemical compounds migrating from a site under remediation. Accidents during transport of contaminated soils or groundwater could have the potential to expose the public and the environment to the chemical compounds. Workers directly engaged in the remedial activities would face the greatest potential for exposure. The public could be exposed to contaminants if an accident were to occur during sample transport, or if access to the project site were insufficiently controlled.

Worker and public health and safety requirements would apply during remediation activities. Potential adverse impacts of remediation would be prevented by legally required safety and hazardous waste handling and transportation precautions. For hazardous waste workers, federal Occupational Safety and Health Administration (OSHA) regulations mandate an initial 40-hour training course and subsequent annual training review. Additionally, site-specific training would be required for some workers. Procedures for protecting the public during remediation would be evaluated in mitigation plans reviewed by responsible agencies. These measures, along with application of clean-up standards, would serve to protect human health and the environment during site remediation, thus minimizing remediation impacts.

Permits may need to be obtained prior to any remediation work, and a remediation plan must be prepared before such work begins. Remediation plans, at minimum, include proposed methods of treating hazardous soils in a manner that would render them nonhazardous or otherwise protect public health and safety; plans for final disposal of soils, treated or otherwise; and plans for handling, testing, treating, and disposing of contaminated groundwater. Remediation plans, and sometimes permits themselves, require that specified precautions be taken during remediation in order to protect human health and the environment.

Examples of such procedural and operational controls that typically are implemented during remediation activities include covering soil stockpiles to prevent erosion and reduce infiltration, installation of a leachate control system to capture any leachate generated, construction of a containment cell to prevent runoff, installing treatment systems for treating groundwater, surface water, or air containing hazardous substances, collecting and analyzing test samples, watering disturbed areas to reduce dust generation, and requiring workers to wear proper personal protective equipment to prevent worker contact with contaminated soil or groundwater. Many of these controls are contained in permits requirements that are issued by the regulatory agencies overseeing remediation activities.

Whatever entity owns each of these plants, whether it be PG&E or any future purchaser, would be subject to the same environmental and worker safety laws, rules, and regulations. PG&E is assuming responsibility for legally required remediation of all existing areas of contamination at the plants. Required remediation necessary to protect human health and the environment would be conducted in accordance with all applicable laws and regulations under the oversight of the appropriate lead agency. The appropriate lead agency at each plant will be selected by means of the Site Designation Process

Under the Unified Agency Review of Hazardous Material Release Sites (California Environmental Protection Agency, 1997). This process provides for the designation of a single state or local agency to oversee private sector cleanup at a remedial site, thereby eliminating duplication of effort among concerned agencies. Depending on the circumstances that apply, which are specified in the California Health and Safety Code, the lead agency may be the Department of Toxic Substance Control, the California Regional Water Quality Control Board for the region in which the site is located, the Department of Fish and Game, or a local agency. The lead agency is authorized to supervise the cleanup at the plant and is given sole jurisdiction over all activities that may be required to carry out a site investigation and remedial action.

For each location to be remediated, PG&E intends to prepare a Site Remediation Plan that will specify measures to be taken to protect workers and the public from exposure to potential site hazards and certify that the proposed remediation measures would clean up the contaminants, dispose of wastes generated, and protect public health in accordance with federal, state, and local requirements. PG&E will obtain regulatory guidance from the appropriate lead agency in preparing the remediation plans.

In accordance with OSHA requirements, PG&E would prepare a Site Safety Plan prior to commencing work on any contaminated site. The Site Safety Plan would be prepared in conformance with guidelines of the *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (National Institute for Occupational Safety and Health and Occupational Safety and Health Administration, 1985). The legally mandated safety regulations required by this measure would protect project construction workers from exposure to soil and groundwater contaminants.

The plant owners would be expected in the future to conform to all pertinent environmental and safety requirements.

Mitigation Measure Proposed as Part of Project

Mitigation Measure 4.9-1: For each plant to be divested, PG&E will prepare a Risk Assessment that conforms with guidelines of the California Department of Toxic Substances Control and the local County Health Department. Each Risk Assessment shall address all areas identified as being subject to remediation in the Phase I or Phase II Environmental Site Assessments, and will describe the contaminants, estimate their potential risks to public health or to the environment, determine any need for additional data collection, and present appropriate health risk-based and/or environmental risk-based cleanup goals. Each Risk Assessment will assess potential human health risks identified at each of the contaminated areas, based in part upon realistic future use.

Monitoring Action: For each plant to be sold, PG&E will provide the Risk Assessment to the CPUC mitigation monitor, and will provide the CPUC mitigation monitor with written evidence that the Risk Assessment has been provided to the buyer of the plant and to the Department of Toxic Substances Control, the local County Health Department and the relevant Regional Water Quality Control Board.

Responsibility: CPUC

Timing: Within ten business days prior to transfer of title.

Mitigation Measures Identified in This Report

None required.

Level of Significance After Mitigation: Less than Significant

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Impact 4.9-2: Remediation of contaminated soils, groundwater, or building materials at the plant sites would likely occur sooner as a result of transfers of title than would be the case if the power plants were not sold. Remediation would eliminate potential future threats to public health or to the environment. (Beneficial)

Environmental cleanup associated with the project would be beneficial over the long term. Remediating the project sites would eliminate health threats posed by hazardous wastes and prevent workers and the public from encountering such materials in the event of any future excavation at the site. Removing or encapsulating any toxic materials also would eliminate a potential local source of groundwater contamination and significantly decrease the potential for future environmental damage, which would also be beneficial in the long run. Properly handling and disposing of excavated materials would protect the environment and preempt potential health, safety, and environmental effects related to the contamination.

Mitigation Measures Proposed as Part of Project

None.

Mitigation Measures Identified in This Report

None required.

Impact 4.9-3: Divestiture could promote increased use of hazardous materials at the power plants. (Less than Significant)

Operation and maintenance of the generating units require using various hazardous materials. Factors that influence the health effects of exposure to a hazardous substance include the dose to which the person is exposed, the frequency and duration of exposure, the exposure pathway, and individual susceptibility. Pathways of exposure to hazardous materials depend on the chemical and physical properties of the substance. The four common exposure pathways are inhalation, ingestion, absorption (direct contact with skin or eyes), and injection (skin puncture or cut).

The health effects of exposure to hazardous chemicals vary greatly and are specific to each chemical. Possible health effects may be acute (immediate, or of temporary severity) or chronic (long-term, recurring, or resulting from repeated exposure). Acute effects can include burns or injuries to body organs or systems, such as from exposure to corrosive, reactive, or ignitable materials. Chronic effects can include systemic or organ damage, birth defects, and cancer.

The following paragraphs summarize properties (Sax, 1989; Sittig, 1985) of common hazardous materials that are representative of those found at the power plants to be divested.

- Petroleum Products. Power plants typically store petroleum products for fuel, lubricants, and other uses. The refined petroleum products used at the generating facilities are made up

of complex mixtures of compounds derived from crude oil. Potential health hazards from short-term exposure to these petroleum products can include respiratory tract irritation, and skin and eye irritation. Long-term exposure to high concentrations of some petroleum hydrocarbons (such as benzene or polyaromatic hydrocarbons) has shown the potential to cause more serious systemic effects in humans, including cancer. Potential routes of exposure to petroleum hydrocarbons include inhalation of volatile compounds, and incidental ingestion or direct contact with the oils.

• Ammonia (NH_3). Ammonia (typically dissolved in water as NH_4OH)) is used in emissions abatement equipment. Ammonium hydroxide (ammonia mixed with water) is a pungent liquid that can pose potential health hazards. It requires precautions during handling to protect skin and eyes from exposure, to prevent inhalation, and to prevent contact with incompatible chemicals, such as acids or oxidizing agents. Ammonia fumes have a very sharp, pungent odor characteristic of smelling salts. Potential health hazards include difficulty breathing or irritation of tissue or exposed membranes. Vapors of ammonia could irritate the nose and eyes, cause skin irritation, or damage clothing. Potential exposure to ammonia may occur through direct contact or through inhalation of fumes.

• Sodium hydroxide (NaOH). Sodium hydroxide is used for pH control at the Pittsburg and Contra Costa plants, and in sulfur-abatement systems at the Geysers plant. Sodium hydroxide is a caustic and corrosive inorganic base (i.e. an alkaline compound that neutralizes acids). Its chemical properties are typical of strong alkalies; it is extremely corrosive to organic matter. It is soluble in water, but nonflammable and nonvolatile. Chemically, sodium hydroxide reacts readily with many materials, most notable acids, which it neutralizes. It can form noxious fumes when exposed to fire. Pathways of exposure to sodium hydroxide would be direct contact with the chemical or its solutions -- including contact with mists or dusts. Ingestion is extremely unlikely because of the intensely sour taste. Contact with concentrated sodium hydroxide could cause tissue damage to skin or eyes. Repeated exposure to dilute solutions or dust could cause dermatitis or lung damage.

• Sulfuric acid (H_2SO_4). Sulfuric acid is used for demineralization and pH control at the Pittsburg and Contra Costa plants. Sulfuric acid is a colorless, odorless liquid with many industrial applications. Its properties are typical of strong inorganic acids -- reactive and highly corrosive to many materials. Sulfuric acid is completely soluble in water. Concentrated acid mixes violently with water, producing large amounts of heat. It is neutralized by alkaline compounds (bases) -- also with the release of heat. Concentrated sulfuric acid is a powerful oxidizing agent that attacks and destroys organic matter. The acid is nonflammable and nonvolatile. Dilute sulfuric acid can attack metals, corroding them. The primary path of exposure to sulfuric acid would be direct contact with acid from a spilled or leaking container. Direct contact with sulfuric acid would damage skin or eyes. When strongly heated, sulfuric acid can give off highly toxic fumes. Inhalation of acid fumes or mists would cause lung damage.

• Polychlorinated Biphenyls are a potentially hazardous class of compounds found in older electrical equipment. Transformers and other ancillary equipment associated with generating stations contain oil, some of which contains PCBs. While the manufacture of PCBs has been banned since 1977, some older pieces of electrical equipment might still contain PCBs. Potential human exposure to PCBs may occur through inhalation of contaminated air or through contact with contaminated soils, resulting in irritation. PCBs are also toxic and are probable human carcinogens.

• Asbestos. Insulation and other building materials may contain asbestos. This is especially true for old, abandoned structures such as former Station A at the Potrero plant, and wherever asbestos was used to insulate hot pipes or equipment. Asbestos causes lung cancer and asbestosis in humans. Inhalation of airborne particulates is the primary mode of asbestos exposure. Asbestos can cause adverse health impacts if human exposure is permitted during demolition or renovation, whereupon asbestos fibers can be released unless proper precautions are taken. Government regulations limit emissions of asbestos from asbestos-related demolition or construction activities, and specify precautions and safe work practices that must be followed to minimize the potential release of asbestos fibers.

Without proper controls, routine exposure to hazardous materials used at the divested plants could pose potential hazards to plant workers, the public, or the environment. Hazards are minimized by handling these materials properly, as promoted by employee training, formal procedures, and reasonable precautions. Operational hazards can be reduced through various controls. Design standards are developed through industry groups, various independent institutes, and government agencies.

Operational controls include automatic devices to control and monitor process variables and documented procedures for manual operations. Routine maintenance and inspections of critical equipment help to minimize routine exposure. Administrative controls include operator training, documentation of equipment inspection and maintenance histories, and procurement controls over contractors and vendors.

New owners of the divested plants would be required by regulations of Federal and State Occupational Safety and Health Administrations (OSHA), County Health Departments, and local Fire Departments to prepare and implement safety procedures similar to those that are currently in place. Among the regulatory requirements intended to minimize occupational exposure are those that require the preparation and implementation of Hazard Communication Plans to ensure that workers understand the hazards they encounter on the job and take appropriate actions.

The project would likely affect operations at the power plants to be divested, as well as the other plants in the Western Region. In the case of the divested plants, while it is not likely that divestiture would result in substantial changes in the type of hazardous materials used at the plants, hazardous materials use and hazardous waste generation could increase. This increase is unlikely to be as great as the proportional increases in plant operations. However, the controls placed on the use of hazardous materials would be identical to those in place now, particularly because new owners would be subject to the same regulatory requirements applicable to hazardous materials handling as are presently enforced. This impact is less than significant.

Mitigation Measures Proposed as Part of Project

Mitigation Measure 4.9-3: PG&E shall provide the new owners with copies of all safety-related documentation.

For the plants subject to this proceeding, PG&E shall provide the new owner, for each respective plant, with all of PG&E's material, non-privileged informational materials and training documents (not including records relating to PG&E personnel) regarding worker health and safety, emergency plans and hazardous materials handling and storage. Although the new owners will be responsible for ensuring that their operations are in compliance with applicable laws, this informational material may assist new owners in understanding worker health and safety issues and procedures and in meeting all safety and legal obligations regarding hazardous materials handling, emergency plans and storage.

Under divestiture, any new owner would be required to comply with all worker and public safety laws

and regulations, just as is the case for PG&E now. Furthermore, PG&E personnel will continue to operate the divested plants (at the direction of the new owner) for two years after the sale under an Operations & Maintenance (O&M) agreement, and PG&E has agreed to provide each new owner with information about PG&E's operating procedures and compliance plans. Because of these laws and circumstances, this potential impact of the project would be less than significant. Nonetheless, this mitigation measure will assist new owners in complying with pertinent laws and regulations.

Monitoring Action: PG&E will provide the CPUC mitigation monitor with a disclosure form signed by the new owner listing documents to accomplish this condition.

Responsibility: PG&E and CPUC

Timing: At least three business days prior to transfer of title.

Mitigation Measures Identified in This Report

None required.

Level of Significance After Mitigation: Less than Significant

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Impact 4.9-4: Divestiture could result in an increased frequency of accidents at the power plant sites. (Less than Significant)

Power plants store and use hazardous materials, as discussed in the preceding section. The three fossil-fueled power generating stations were designed and built to operate using flammable fuel oil or natural gas as primary fuels. Natural gas is supplied on demand by a pipeline network. Adequate fuel oil supplies are maintained at all the plants that burn fuel oil, and some fuel is stored at the plants that burn natural gas. The Geysers plant uses geothermal steam as the primary energy source, but like the other plants, requires use of other hazardous materials for operation and maintenance. The electricity-generating equipment at all four plants requires lubricating oils, and equipment maintenance requires use of other hazardous materials such as various petroleum products, solvents, acids, bases, flammables, and a variety of chemicals, including ammonia, used for water treatment. Compressed gases are also handled at the plants.

Accidents can occur whenever hazardous materials are used. For example, fuel used to power the plants could spill or possibly ignite under upset conditions. Similarly, the acids and caustics handled at the two Delta plants could be spilled. Any stored material poses a risk of upset.

Risks of upset can be reduced through design, operations, maintenance, regulatory, and administrative controls. Design standards are developed through industry groups, various independent institutes, and government agencies. Operational controls include automatic devices to control and monitor process variables, and documented procedures for manual operations. Routine preventive maintenance and inspections of critical equipment help to prevent potential equipment failures. Administrative controls include operator training, documentation of equipment inspection and maintenance history, and procurement controls over contractors and vendors. These types of controls are required by law and regulation. Various requirements address accident risks through additional means. For example, the risk

of accidentally releasing fuels and other hazardous materials to nearby waters must be addressed by Spill Prevention Control and Countermeasure Plans.

Similarly, accident risks posed to neighboring communities by hazardous materials found at the plants are addressed through Hazardous Materials Business Plans and, if required, Risk Management Plans. Injury and Illness Prevention Plans and, if required, process safety management plans minimize the risks potential accidents pose to workers.

Although new owners of divested plants might tend to operate the plants at higher levels than if they were retained by PG&E, the same laws and regulations would apply to accident risks as they apply now. Increases in generation would not increase accident risk to any considerable degree due to all of the rules and precautions in place.

Mitigation Measures Proposed as Part of Project

See Mitigation Measure 4.9-3 in the previous section, which will also act to mitigate this impact.

Mitigation Measures Identified in This Report

None required.

Level of Significance After Mitigation: Less than Significant

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Impact 4.9-5: Divestiture could result in increased generation of hazardous waste at the power plants. (Less than Significant)

All of the plants to be divested generate some hazardous waste; the hazardous waste generated in greatest quantity by the three fossil-fueled plants is waste oil, while the hazardous wastes generated in largest quantity at the Geysers Geothermal Power Plant is contaminated sulfur sludge and contaminated filter press sludge.

The California Department of Toxic Substances Control regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under the Resource Conservation and Recovery Act and the California Hazardous Waste Control Law. Both laws impose "cradle to grave" regulatory systems for handling hazardous waste in a manner that protects human health and the environment. Hazardous waste generators are held liable for harm to individuals or the environment caused by their hazardous wastes, regardless of the disposal method selected. This liability provides an incentive to dispose of hazardous wastes in a manner that is as safe as possible.

As was described in the Setting, two of the four plants– Contra Costa and Pittsburg – hold hazardous waste permits from the California DTSC. Those permits would have to be amended appropriately upon divestiture.

Hazardous wastes generated at the plants do not now pose a health hazard. Although rates of hazardous waste generation could change (increase or decrease) as a result of the project, site-specific waste handling procedures are in place and would continue after divestiture. Therefore, as with increased hazardous material use, there would be no substantial change in the on-site hazards posed by any increased hazardous waste generated at the plants. Further, any increase in hazardous waste generation would not be expected to be substantial because much of the hazardous material used on site is consumed

through use.

Because hazardous waste does not pose a health risk at present, because any increase in hazardous waste generation would not be substantial, and because it would be handled in a manner similar to how it is handled now, this impact would be less than significant.

Mitigation Measures Proposed as Part of Project

None.

Mitigation Measures Identified in This Report

None required.

Impact 4.9-6: Divestiture could affect electromagnetic field strength at the power plants (Less than Significant)

Electric power lines, generators, transformers, and other devices that handle electric currents produce electric and magnetic fields (electromagnetic fields or EMFs, as termed in the popular press). EMFs oscillate at a frequency of 60 hertz (i.e., 60 cycles per second). The strength of the EMF generated by an alternating current varies with voltage, wire type, spacing, and location, and other factors. Field strength decreases rapidly with distance from the source. EMFs are produced by power lines, house wiring, all electrical appliances, and wherever electrical currents are flowing.

A controversy exists whether there are any health effects from exposure to EMFs. Experiments have shown that magnetic fields can cause biological effects in living cells, but it is not known whether these biological effects have any relevance to human health. To address these questions, the Commission undertook an investigation in 1991, working with the California Department of Health Services (DHS), electric utilities and a "consensus group" made up of experts and consumers vitally interested in this subject. Due to the lack of scientific or medical conclusions about potential health effects from utility electric facilities and power lines, the Commission adopted, in 1993, interim measures that help to address public concern on this subject, including the deployment of no/low-cost steps to reduce EMF levels in new or upgraded facilities, residential and workplace EMF measurement programs available to utility customers, and an education and research program managed by DHS.

Pending conclusive scientific evidence of possible harm from utility facilities, the Commission has pursued a policy of avoiding any unnecessary new exposure if it can be avoided at a cost that is reasonable. The Commission is awaiting the results of the DHS-managed research program and, in the meantime, relies upon DHS to provide guidance about any future identified public health risk.

Given the Commission’s pending conclusion about the health risks posed by EMF, this project has no impact associated with EMFs that could be considered significant.

Mitigation Measures Proposed as Part of Project

None.

Mitigation Measures Identified in This Report

None required.

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Footnotes:

1. No. 6 fuel oil is a heavy, viscous material (similar to tar) that does not flow at temperatures below 60^{o}F. Distillate fuel refers to a class of fuels that is thinner than No. 6 and includes, for example, diesel fuel. (back)

2. The Hazardous Waste and Substance Sites List, also known as the "Cortese" list, is maintained by the Office of Hazardous Materials Data Management within the California Environmental Protection Agency under Government Code §65962.5. (back)

3. As used in ASTM E1527-94, "recognized environmental conditions" means the following: "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies." [ASTM, E1527-94, Section 1.1.1 (1994)]. Any recognized environmental condition may require investigation or remediation, but a "material recognized environmental condition" may require extensive investigation and/or extensive remedial efforts to address. (back)

4. The Richmond Marine-Link Pipeline System is included in the cumulative impacts analysis in Chapter 5 of this EIR. (back)

5. EDTA is not stored on site routinely. It is handled only during boiler chemical cleaning. (back)

6. Soil gases are gases, including air, trapped within soil. (back)

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