IV. ENVIRONMENTAL IMPACT ANALYSIS
G. HAZARDS AND HAZARDOUS MATERIALS

The proposed Sepulveda/Rosecrans Rezoning Site, which includes the proposed Plaza El Segundo Development site, was previously occupied by a variety of chemical manufacturing and industrial uses. The entire Sepulveda/Rosecrans Rezoning Site is comprised of parcels that are or have previously been owned by a variety of companies (Honeywell International Inc., General Chemical, H. Kramer & Company, Air Products, and MTA/BNSF), which have operated facilities on the properties that involved a range of chemical and industrial processes and activities. These past uses have led to existing conditions of soil and groundwater contamination on the proposed Sepulveda/Rosecrans Rezoning Site (including the proposed Plaza El Segundo Development site). In addition to the chemical and industrial uses, two railroad spurs run through the approximate center of the proposed Sepulveda/Rosecrans Rezoning Site: the Union Pacific Railroad (UPRR) and the Burlington Northern Santa Fe Railroad (BNSF). An active lumber distribution facility is also located on a portion of the proposed Sepulveda/Rosecrans Rezoning Site and will remain in its present location.

The following section documents the past uses on the proposed Sepulveda/Rosecrans Rezoning Site, sources and types of contamination, past and present remedial activities, and planned future remediation. The discussion provided below is based upon the following studies that have been prepared to address the environmental investigation and remediation of the proposed Sepulveda/Rosecrans Rezoning and Plaza El Segundo Development sites, which are incorporated herein by reference. These studies were peer reviewed by EMG, Inc. and the results of the peer review are provided in Appendix H. The referenced documents are briefly summarized in the appropriate part of the discussions provided in this section.

- Soil Remedial Investigation Report, Honeywell El Segundo Site, 850 South Sepulveda Boulevard, El Segundo, California (Parsons, February 25, 2004).

- Risk-Based Cleanup Goals for Interim Remedial Measures, Honeywell El Segundo Site, 850 South Sepulveda Boulevard, El Segundo, California (Parsons, March 1, 2004).

- Revised Phase I Site Redevelopment Shallow Soil Interim Remedial Measure Work Plan, Honeywell El Segundo Site, 850 South Sepulveda Boulevard, El Segundo, California (Parsons, March 8, 2004).

- Quarterly Groundwater Monitoring for Honeywell El Segundo Site, 850 S. Sepulveda Blvd., El Segundo, California 4th Quarter 2001 through 1st Quarter 2004 (Parsons, various)[1]

- Facility Audit Report General Chemical Corporation Former El Segundo Facility, 850 South Sepulveda Boulevard, El Segundo, California (Fluor Daniel GTI, August 19, 1996).

All of these documents are available for review at the City of El Segundo Department of Community, Economic and Development Services, 350 Main Street, El Segundo, CA 90245 and the City of El Segundo Library, 111 W. Mariposa Avenue, El Segundo, CA 90245.

ENVIRONMENTAL SETTING

The discussion of existing conditions on the proposed Sepulveda/Rosecrans Rezoning Site related to hazards and hazardous materials is organized according to the current ownership of the respective parcels, and their relative locations on the proposed Sepulveda/Rosecrans Rezoning Site. Figure IV.G-1 depicts the locations of each of the individual parcels and ownerships.

Honeywell International, Inc.

The Honeywell International, Inc. portion of the proposed Sepulveda/Rosecrans Rezoning Site (Honeywell property) consists of Parcels 1a, 1b, and 1c, as depicted on Figure IV.G-1. Parcels 1a and 1c are within the proposed Plaza El Segundo Development site. Parcel 1b is within the remainder of the proposed Sepulveda/Rosecrans Rezoning Site. This portion of the proposed Sepulveda/Rosecrans Rezoning Site has been owned and operated by Honeywell International, Inc. since the early 1960s. Operations on the Honeywell property ceased after the first quarter of 2003 and the closed facilities have been subsequently dismantled.

Primary operations conducted on the Honeywell property in the past included the production of chemicals used to manufacture plastic and polyester resin products between 1963 and 1982; a Refrigerant Plant which produced products for cooling and air conditioning systems between 1964 and 2003; a wastewater treatment plant between 1974 and 2003; and other miscellaneous and support facilities. All past operations and facilities are discussed in further detail below.

Past operations have resulted in the release of various chemicals, primarily refrigerants and solvents, to the environment. Honeywell has been studying the environmental conditions on site since 1995, under the oversight of the cognizant state regulatory agency, Regional Water Quality Control Board-Los Angeles Region (LARWQCB). The activities undertaken by Honeywell under the LARWQCB's supervision have encompassed a thorough site investigation and development of LARWQCB-approved

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[1] *Quarterly groundwater monitoring results were reported semi-annually from the 4th Quarter 2001 and 2nd Quarter 2003 and were reported quarterly thereafter.*

remedial measures. Development of phased soil and groundwater remedial action plans is still ongoing and will likely continue beyond the time frame for implementation of the proposed Sepulveda/Rosecrans Site Rezoning and Plaza El Segundo Development[2].

Honeywell's level of efforts in these investigations and cleanup have included the following:

A. Soil
   Brown & Caldwell (1995 to 1998) - 57 borings, 282 samples
   Parsons (2003 to 2004) - 263 borings, 887 tests
B. Soil Vapor
   Brown & Caldwell (1995 to 1998) - 101 probe locations
   Parsons (2003 to 2004) - 63 probe locations
C. Groundwater
   Brown & Caldwell (1995 to 1998) - 13 monitoring wells
   Parsons (1998 to 2004) - 9 monitoring wells
D. Remediation
   Since 2001, over 10,000 pounds of Volatile Organic Compounds (VOC's) have been extracted from soil using 13 vapor extraction wells.

Honeywell is also performing a health risk assessment under the oversight of the Office of Environmental Health Hazard Assessment ("OEHHA") and the LARWQCB. OEHHA is the State agency charged with the scientific evaluation of risks posed by hazardous substances. The information contained in the health risk assessment will be used to define soil target clean up goals that will be fully protective of human health and the environment, based on the planned development of the Honeywell property. Honeywell will then develop and implement remedial measures, as necessary, in order to meet the LARWQCB approved soil target clean up goals. The conceptual soil cleanup activities that would be undertaken to reduce health risks below the cleanup goals could include, but not be limited to the following:

- Removal and offsite disposal of impacted shallow soil;
- Removal of volatile organic compounds (VOCs) in soil via soil vapor extraction (SVE);
- In situ treatment of impacted soil;

[2] *Remediation activities conducted under the oversight of regulatory agencies are exempt from CEQA under Section 15308 of the State CEQA Guidelines. As such, these activities are not part of the project that is the subject of this EIR. However, as discussed in detail in this section, development activities would be undertaken in a manner that is fully protective of human health, including visitors, employees and construction workers, even though remediation activities would continue over the long term.*

- Installation of engineered cap to physically cut off the exposure pathway for contaminants in impacted soil; and

Figure IV.G-1, Parcel Ownership Map

- Installation of vapor barriers to physically cut off the soil vapor exposure pathway.

Definition of Common Terms

The following terms are used throughout the discussions below[3]:

Cancer Risk: A number, generally expressed in exponential form (e.g., 1 x 10^{-6}, which means one in one million) that describes the increased possibility of an individual developing cancer from exposure to toxic material.

Chemicals of Potential Concern (COPC): Chemicals that have the potential to cause human health effects and are therefore the focus of remedial investigations and health risk assessments.

Health based remediation targets: Levels to which hazardous substances on the site will be cleaned up. These target levels are health-based, meaning that exposure to the hazardous substances at or below the target is not expected to present a health risk.

Health risk assessment: A study prepared to assess potential health and environmental risks due to exposure to hazardous substances.

Pesticide: A general term for insecticides, herbicides and fungicides. Insecticides kill or prevent the growth of insects. Herbicides destroy or control plants. Fungicides control or destroy fungi. Some pesticides can accumulate in the food chain and contaminate the environment.

Remedial Action Plan (RAP): A plan that outlines a specific program leading to the remediation of a contaminated site.

Remedial Investigation (RI): A series of investigations and studies to identify the types and extent of chemicals of concern at the site in order to determine cleanup criteria.

Regional Water Quality Control Board (RWQCB): Agencies that maintain water quality standards for areas within their jurisdiction and enforce state water quality laws. The RWQCB-Los Angeles Region (LARWQCB) is responsible for the area that contains the proposed Sepulveda/Rosecrans Rezoning Site.

Semivolatile Organic Compounds (SVOCs): Compounds that evaporate slowly at normal temperatures.

Soil Gas/Soil Vapor: Soil gas or soil vapor is air existing in void spaces in the soil between the groundwater and the ground surface. These gases may include vapor of hazardous chemicals as well as air and water vapor. A soil gas survey involves collecting and analyzing soil gas samples to determine the presence of chemicals and to help map the spread of contaminants within soil.

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[3] *Source: Department of Toxic Substances Control, Glossary of Environmental Terms, www.dtsc.ca.gov/ToxicQuestions/glossary.html.*

Vadose Zone: The unsaturated zone which occurs above the water table where the soil pores are only partially filled (the moisture content is less than the porosity). This zone is limited above by the land surface and below by the surface of the saturated zone (i.e., the water table).

Volatile Organic Compounds (VOCs): Organic liquids, including many common solvents, that readily evaporate in temperatures normally found at ground surface and at shallow depths.

Facilities and History

The Honeywell (formerly AlliedSignal) facility was initially constructed in the early 1920s to produce sulfuric acid and to process spent sulfuric acid generated at the Standard Oil Company (now ChevronTexaco) petroleum refinery located to the west of the project site. Underground pipelines were used to transport the acid solutions. The sulfuric acid production was performed from 1920 to 1972. Site operations were expanded to include: 1) production of phthalic anhydride between 1963 and 1982; 2) solvents packaging and distribution at the Old Solvents Warehouse from 1964 to 1978; 3) solvents distribution at the Baron Blakeslee Inc. Terminal from 1985 to 1992; 4) production of refrigerants from 1964 to February 2003; and 5) distribution of refrigerants at the Genesolv Terminal from the 1980s to February 2003. All site operations ceased in February 2003.[4]

In 1964, refrigerant manufacturing was initiated under the tradename Genetron™ and included the production of both chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). Primary raw materials for CFC/HCFC production included hydrofluoric acid, carbon tetrachloride, chloroform, 1,1,1-trichloroethane (1,1,1-TCA), and antimony pentachloride catalyst. Thirty to fifty blends (with organics) of refrigerant were packaged at the facility starting in the early 1980s. Organics used in the different blends included methyl alcohol, ethyl alcohol, cyclopentane, hexane, methyl chloride, isopropanol, and acetone. Products were sold under the tradename Genesolv™[5].

The Baron Blakeslee Industries (BBI) solvent distribution terminal began operations on the property in 1985. Tetrachloroethene (PCE) and 1,1,1-TCA were stored in above grade tanks and distributed by tank trucks to small quantity (20 to 30 gallon) end users. The above grade tanks were refilled by large tank trucks. The BBI terminal was purchased by Allied Signal in 1985 and operated through early 1992.

The facility was thought of as 18 different units based upon specific purposes. These former units are identified in Figure IV.G-2 and summarized below.

Refrigerant Plant

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[4] *Parsons, Preliminary Soil Data Gap Investigation Step 1 Report and Step 3 Work Plan, Honeywell El Segundo Site, 850 South Sepulveda Boulevard, El Segundo, California, October 15, 2003.*

[5] *Genesolv is the trade name for AlliedSignal's refrigerant blends.*

The refrigerant plant was constructed and began operations in 1964, producing both CFCs and HCFCs under the AlliedSignal trade name Genetron™. Muriatic acid, a by-product of the CFC/HCFC production process, was also packaged and sold. Prior to 1992, the refrigerant plant produced CFCs (G11, G12) and HCFC (G22). In 1992 and 1993, only HCFCs (G22 and G141b) were produced.

After 1993, the refrigerant plant produced only G141B and muriatic acid. Genetron production in 1975 was estimated at 12,800 tons.[6]

Primary waste streams included low-pH silica gel and solid alumina or molecular sieves. Caustic soda was used in scrubbing operations. High boiler wastes were generated in the G141b production process. The high boiler wastes were stored in a dedicated less-than-90-day storage tank and then trucked off-site by tank trucks and incinerated at a licensed facility. The process waste effluent was stored in a 25,000-gallon tank prior to entering the sewage treatment system and was subsequently discharged to a publicly owned treatment works (POTW)[7]. Prior to 1974, most of the waste streams were discharged to the Refrigerant Plant discharge area designated as Unlined Natural Depression (UND)-1. Silica gel was also disposed of in a portion of the area designated as UND-4 and UND-5. Figure IV.G-3 depicts the location of these unlined natural depressions, which are discussed in detail below.

Cylinders and jugs used to store HCFC product were cleaned (steel shot blasted) and painted prior to use. Prior to January 1987, painting equipment was cleaned with methylethylketone (MEK). Subsequently, 1,1,1-TCA was used for cleaning painting equipment. Wastes generated from steel shot blasting and painting operations consisted of paint and iron pellets. Laboratory waste was also generated. Wastes were stored in 55-gallon drums and disposed of off-site at the Class I UPSCI landfill in Utah, or were incinerated at a permitted off-site facility. Table IV.G-1 provides information regarding the materials used and products manufactured at the Refrigerant Plant.

Empty Jug Warehouse

The Empty Jug Warehouse was previously known as the fibers warehouse. It was constructed in 1963 to store spooled synthetic fibers, and from 1963 to 1982 it served as the West Coast distribution terminal for the synthetic fibers. This building was used for storage of empty Genetron™ cylinders and other non-product type storage. It was also reportedly used on occasion for storage of filled Genetron™ cylinders. Wastes were not generated at this facility.

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[6] *Brown and Caldwell, Facility Audit Report, El Segundo Plant, January 1996.*

[7] *The POTW (i.e., sewage treatment plant) that serves the proposed Sepulveda/Rosecrans Rezoning Site is the Carson Treatment Plant operated by the Sanitation Districts of Los Angeles County (see Section IV.O of this EIR).*

Figure IV.G-2, Site Plan of Former Honeywell Facility

Figure IV.G-3, Unlined Natural Depression Locations

Table IV.G-1
Chemicals Used or Produced at the Refrigerant Plant

Chemicals Used or Produced	Purpose	Years Used/Produced	Annual Quantity*
Trichlorofluoromethane (G11)	Product	1963 – 1992	2,138 tons - 1976 1,300 tons - 1980
Dichlorodifluoromethane (G12)	Product	1963 – 1992	3,733 tons - 1976 1,400 tons - 1980
Chlorodifluoromethane (G22)	Product	1963 – 1993	3,000 tons - 1980
1,1-Dichloro-1-fluoroethane (G141b)	Product	1992 – 2003	30,000 tons
Muriatic acid (HCl)	By-product	1963 – 2003	9,126 tons - 1976 9,500 tons since 1993
Carbon tetrachloride (CCl_4)	Raw Material	1963 – 1992	7,143 tons - 1976 2,937 tons - 1980
Chloroform ($CHCl_3$)	Raw Material	1963 – 1993	4,142 tons -1980
Hydrofluoric acid (HF)	Raw Material	1992 – 2003	5,500 tons since 1993
1,1,1-Trichloroethane (CH_3-CCl_3)	Raw Material	1992 – 2003	26,000 tons
Antimony pentachloride ($SbCl_5$)	Catalyst	1963 – 2003	15 tons (exchanged once every 10 years)
Sulfuric acid	Scrubbing Chemical	1963 – 1993	2,115 net tons - 1991
Molecular sieves (activated alumina)	Desiccant	1963 – 2003	12 to 15 tons
Silica gel	Fluoride Filter	1963 – 2003	16 tons
Caustic soda (NaOH)	Scrubbing Chemical	1963 – 2003	2,447 net tons - 1995
Methylethylketone (MEK)	Paint Equip. Cleaner	1963 -1987	No Records Available
1,1,1-Trichloroethane (1,1,1-TCA)	Paint Equip. Cleaner	1987 – 2003	approx. 600 gals of paint waste containing approx. 40% 1,1,1-TCA
Propane	CFC Blends	1975	30,000 gals - 1975
N-Butane	CFC Blends	1963 – 2003	28,000 gals - 1975
Iso-Butane	CFC Blends	1963 – 2003	75,000 gals - 1975

** Quantities shown are from readily available files and are generally representative of annual use/production.*
Source: Brown and Caldwell, Facility Audit Report, El Segundo Plant, January 1996.

Baron Blakeslee Inc. (BBI) Terminal

The BBI Terminal was a solvent packaging operation that Allied Signal purchased from Purex Industries in 1985 that was used for storage and distribution of 1,1,1-TCA and PCE until 1992. The solvents were offloaded from tank trucks into four 5,000-gallon tanks and were transported by tank trucks to small quantity (20 to 30 gallon) end users. Production processes did not occur at the BBI Terminal. Occasionally, portable tanks were used to blend 1,1,2-trichlorotrifluorethane (G113) and ethanol to augment the operations performed at the Genesolv Terminal. Any buildup in the contaminant area from drippings was collected and reused.

Genesolv Terminal

The Genesolv Terminal was constructed in the mid-1980s and was used to create refrigerant blends. Blending was performed by adding other components to refrigerants according to customer specifications. Blends that did not meet customer specifications were reused by compensating mixture proportions in later batches; waste streams were not generated. The refrigerant used in the blending process was G113 and was not manufactured at the facility. Common additives in the blending process included iso-butane, acetone, methanol, ethanol, cyclopentane, methylene chloride, isopropanol, hexane, and vinyl chloride. G141b was also blended with methanol and packaged at the Genesolv Terminal.

Genesolv Warehouse

The Genesolv Warehouse was used as a part of the phthalic anhydride[8] operations from 1963 until approximately 1982. This warehouse was used for packaging flaked phthalic anhydride which was packaged into 50- and 100-pound sacks. Waste generated at this facility mainly consisted of phthalic anhydride floor sweepings, which were consolidated with distillation still bottoms and deposited in the area designated as UND-3. Waste was not generated at the Genesolv Warehouse after the phthalic anhydride operations were discontinued in 1982.

After 1982, the Genesolv Warehouse was used to package Genesolv in 55-gallon drums and 5-gallon buckets. Genesolv products include Genetron blended with a variety of organic solvents. Genetron 113 was blended with ethanol, isopropanol, nitromethane, methylene chloride, surfactant, water, isohexane, and/or acetone. Genetron 141b was also blended with methanol.

Phthalic Anhydride Plant

The Phthalic Anhydride Plant was constructed in 1963 and operated until 1982. It was demolished in 1997. The wastes generated by the process were still bottoms[9], light-ends[10], and process effluent wastewater. Effluent wastewater that was used in scrubbing the stack gases contained phthalates, maleic anhydride, benzoic acid, and other organics.

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[8] *A crystalline cyclic acid anhydride ($C_8H_4O_3$) used especially in making alkyd resins.*

[9] *Still bottoms are heavy end hydrocarbons (C25-C45) that accumulate in the bottom of the distillation tower. These materials typically appear like tar and heavy oil at atmospheric conditions (email from Daniel R. Gillette, Honeywell on January 30, 2004.).*

[10] *Light ends are a term referring to hydrocarbons in the C2-C10 range. These materials are gases like methane (C4) at atmospheric conditions (Email from Daniel R. Gillette, Honeywell on January 30, 2004).*

Prior to 1974, still bottoms and light-end wastes were generated and routed to waste disposal location UND-3. Approximately 2,400 cubic yards of solids containing about 1,600 tons of phthalic anhydride wastes are estimated to be located in the on-site waste disposal location. Still bottoms and light-end wastes produced from 1974 through 1982 were manifested as hazardous waste and were hauled off-site for disposal. About 200 tons of still bottoms and light-ends were generated annually. Beginning in 1974, effluent wastewater was routed to the wastewater treatment systems and was then discharged to the public operated treatment works (POTW). Table IV.G-2 provides information regarding the raw materials used and the products manufactured at the Phthalic Anhydride Plant.

Table IV.G-2
Chemicals Used or Produced at the Phthalic Anhydride Plant

Chemicals Used or Produced	Purpose	Years Used/Produced	Annual Quantity*
Phthalic anhydride	Product	1963 – 1982	17,500 tons - 1975 16,674 tons - 1976 13,900 tons - 1980
Ortho-xylene	Raw Material	1963 – 1982	1,900,000 gals - 1975
Fuel Oil	Fuel	1963 – 1982	27,000 gallons - 1975
Vanadium pentoxide	Catalyst	1963 – 1982	One time event - 3 tons
Source: Brown and Caldwell, Facility Audit Report, El Segundo Plant, January 1996			

Shipping/Purchasing and Training Offices

The shipping/purchasing building and training office trailer have been used since 1989 for office functions. No industrial waste streams were generated from these offices.

Former Ortho-Xylene Storage Tanks

The two storage tanks formerly used for ortho-xylene storage were constructed in 1962 to service the Phthalic Anhydride Plant. Each of these diked, fixed-roof tanks had a capacity of 169,000 gallons. The tanks were used for storing ortho-xylene raw material from late 1963 until phthalic anhydride production ceased in 1982. Ortho-xylene was historically transported to the facility in tank trucks and off-loaded in an area north and adjacent to the storage tanks. No drip pans or secondary containment systems were used in the offloading area.

After 1982, the tanks were used for storing muriatic acid, produced as a by-product in the refrigerant plant. When the muriatic acid tank was filled with a fresh stock, the volume displaced from the tank consisted of hydrochloric acid fumes. The fumes were automatically scrubbed with 10% caustic soda. The spent caustic solution at pH 9 was discharged to the sewage transfer station through the pH adjust tanks prior to discharge to the sanitary sewer. In 1992, one of the tanks was dedicated as an emergency holding tank for industrial sewage during maintenance of the treatment system.

Diesel Building

The Diesel Building was in existence prior to 1963 and housed the diesel pump station. A 250-gallon aboveground storage tank with secondary containment was located adjacent to the Diesel Building. Engineering offices and change rooms were located nearby. This facility did not generate industrial waste streams.

Maintenance Equipment Storage Building

The Maintenance Equipment Storage Building was constructed prior to 1928 and was used for maintenance, storage, and repair of vehicles and equipment. Acid repackaging, including sulfuric, nitric, and hydrochloric acids, was performed outside of this building until the early 1970s. Some spillage of these acids may have occurred outside the building. Prior to 1992, the building accommodated an electrical shop, welding activities, and maintenance area. After 1992, this building was used exclusively for storage of maintenance equipment and office supplies. No chemicals were stored in this building.

Administrative Offices

The building that housed the administrative offices was initially constructed in 1919. An inorganic laboratory was located within the building. Sewage from the Administrative offices and laboratory drains was discharged to a sump/leachpit/septic tank. Some of the chemicals reportedly used in the laboratory included chloroform, lead acetate, formaldehyde, acetone, asbestos, benzene, hydrogen sulfide, potassium cyanide, arsenic trioxide, mercury, methanol, pyridine, and alcohol.

Electrical Substation

The electrical substation has been in existence since 1964. Wastestreams were not produced at the electrical substation.

Meeting Room

Prior to 1972, the meeting room contained the air compressor that serviced the sulfuric acid plant. The meeting room did not generate industrial wastestreams.

Fire Department

The Fire Department housed an electric booster pump and did not generate industrial wastestreams.

Old Solvents Warehouse

The Old Solvents Warehouse was used from approximately 1960 to 1978 to package electronics-grade solvents. Five underground storage tanks (USTs) ranging in size from 6,000 to 20,000 gallons were used to store the solvents, which were pumped to the Old Solvents Warehouse for bottling into small 1

gallon and 5 gallon containers. The solvents included methanol, isopropanol, trichloroethylene (TCE), meta-xylene, and acetone. In the mid-1980s these USTs were closed by removal in accordance with Los Angeles County, Department of Public Works requirements. After 1978, the Old Solvents Warehouse was occasionally used to store outdated equipment and alumina in tote bags.

Sulfuric Acid Plant

Operations at the Sulfuric Acid Plant started in 1920 and were discontinued in 1972. The sulfuric acid plant was razed in the mid-1970s. The plant produced sulfuric acid from spent acid transported by pipeline from the adjacent Standard Oil Petroleum Refinery. The amount produced was restricted to the specific demands of the refinery. During peak operations, the sulfuric acid plant was producing 400 tons of sulfuric acid per day.

The spent acid was decomposed in a furnace chamber, which used hydrogen sulfide as the fuel. The organics contained in the spent sulfuric acid burned away and the acid decomposed to sulfur dioxide. The off-gases from the furnace chamber were scrubbed with a wet spray to remove the impurities from the SO_2 gas. The impurities included particles of carbon from insufficiently burned organics. The SO_2 gas from the scrubber went into the contact process for conversion to SO_3. Sulfuric acid was obtained by hydrolyzing SO_3. The particulate carbon formed a slurry with the spray water at the bottom of the scrubber. The slurry was routed to the carbon slurry evaporation bed, UND-5. The scrubber wash discharge was estimated to be 150,000 gallons per day. It has been estimated that the total quantity of carbon at the disposal location is 26,200 tons.

Sulfur Recovery Unit

Unburned hydrogen sulfide (H_2S) gas from the Sulfuric Acid Plant was routed to the sulfur recovery unit. The sulfur recovery unit operated during the same time period as the sulfuric acid plant. The recovered sulfur was routinely stored on property now owned by General Chemical Corporation. Additional information regarding activities on the General Chemical Property (Parcel 2) is provided below.

Wastewater Treatment System

The Wastewater Treatment System started operation in 1974. The system was substantially upgraded in the early 1990s to comply with organics, chemicals, plastics, and synthetic fibers (OCPSF) pretreatment standards. The wastewater treatment system was comprised of equalization, carbon adsorption, and pH neutralization processes. The most significant sources of industrial wastewater were cooling tower blowdown and caustic scrubber discharge wastes from the refrigerant plant.

Onsite Waste Disposal Locations

Wastes have not been disposed of on the Honeywell (AlliedSignal) property since 1974. The five areas where wastes were disposed of prior to 1974 are designated as UND-1 through UND-5. These areas

are shown on Figure IV.G-3. The phthalic anhydride solid waste disposal location is shown as a shaded portion of UND-3. It is presently capped with approximately 5 feet of compacted base rock and surfaced with asphalt. The carbon evaporation field designated UND-5 is presently surfaced with approximately 1 to 3 feet of soil cover. Table IV.G-3 provides a list of the on-site disposal locations, wastes discharged, known quantities, and discharge dates.

Site Remediation

A number of remediation activities have been completed to date.

Chloroform Spill

On December 31, 1988, approximately 14,000 gallons of liquid chloroform were accidentally released into an open field near the Refrigerant Plant and UND-1. Honeywell excavated approximately 3,000 cubic yards in the spill areas. The excavated soil was stockpiled in a lined treatment cell in the eastern part of UND-1 and was treated subsequently to reduce chloroform to below 110 milligrams per kilogram (mg/kg). In 1989, subsurface soils from the spill area were analyzed for chloroform. The results indicted that chloroform was still present at up to 260 milligrams per kilogram (mg/kg) in samples collected from 20 feet bgs.

Table IV.G-3
On-Site Waste Disposal Locations

On-Site Disposal Locations	Type of Wastes	Dates of Use	Total Quantity*
UND-1 Refrigerant Plant Discharge	• Untreated wastewater including cooling tower blowdown • Caustic scrubber wastes	1964 - 1974	No Records Available
UND-2 No record of waste disposal at this location	Unknown	Unknown	Unknown
UND-3 Phthalic Anhydride Disposal	• Still bottoms and light ends from the distillation process. • Floor sweepings from the packaging area	1964 - 1974	1,600 tons
UND-4 Alum Muds Disposal	• Wastestreams generated at the aluminum sulfate plant. Non-hazardous wastestreams primarily consisted of inerts from bauxite	1955 - 1972	14,000 tons
UND-5 Carbon Evaporation Field	• Carbon slurry and organics generated during the purification of sulfuric acid	1920 - 1972	26,200 tons

** Quantities shown are from readily available files and are generally representative of annual use/production.*
Source: Brown and Caldwell, Facility Audit Report, El Segundo Plant, January 1996.

Tetrachloroethylene (PCE) Spill

On August 4, 1989, approximately 20 to 30 gallons of Tetrachloroethylene (PCE) were spilled while loading a tanker truck at the BBI Loading Terminal. The spill ran down a roadway, entered into an asphalt ditch, and spilled into a field just east of the BBI Terminal. The spill was reported to all of the appropriate agencies and the contaminated soil was dug up and placed in 85-gallon salvage drums, and removed from the site.[11]

Soil Cover in UND-5

Clean fill soil cover was put in place at UND-5 during the late 1970s and early 1980s after wastewater operations creased. Approximately one foot of clean fill was placed and compacted over previously-deposited carbon wastes to prevent potential airborne transport of those materials off-site. A total of approximately 120,000 cubic yards of imported fill was used at UND-5. Imported soils were derived

[11] *Allied Memorandum to Louis H. Ervin from V.J. Haddad on August 8, 1989 regarding the Tetrachloroethylene Spill – BBI, 8/7/89.*

from soil excavation activities related to the construction of a nearby freeway. The imported soils were analyzed and certified as "clean" per the regulations effective at the time. The fill project was permitted and approved by the City of El Segundo.[12]

Soil Vapor Extraction

In 2000, Honeywell installed, and has since operated, a soil vapor extraction (SVE) system to remediate elevated concentrations of volatile organic compounds (VOC) in the vadose zone at the Refrigerant Plant. The SVE system was implemented in accordance with the Interim Corrective Action Plan prepared by Parsons and Brown and Caldwell and approved by the LARWQCB. Since its startup in October 2000, the system has removed approximately 96,000 pounds of VOC and has resulted in a 90-percent reduction of VOC concentrations in nearly all of the extraction wells.[13]

Previous Site Investigations

As identified above, a number of studies have been conducted to determine the type and extent of groundwater and soil contamination on the Honeywell International, Inc portion of the proposed Sepulveda/Rosecrans Rezoning Site. These studies have been designed to progressively expand knowledge of site conditions in order to design and implement an appropriate remediation program. The following sections summarize the pertinent findings of these investigations. Additional technical details are available within the reports, which are available for review at the City of El Segundo Community, Economic and Development Services Department, 350 Main Street, El Segundo, CA 90245 and the City of El Segundo Library, 111 W. Mariposa Avenue, El Segundo, CA 90245.

Based upon previous activities within the Honeywell, Inc. portion of the proposed Sepulveda/Rosecrans Rezoning Site, a total of 11 Areas of Concern (AOC) were identified by the LARWQCB and Honeywell. The AOCs are identified as follows:

1. Refrigerant Plant
2. BBI Terminal
3. GeneSolv Terminal
4. GeneSolv Warehouse
5. Former Phthalic Anhydride
6. Former Ortho-Xylene Tanks

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[12] *Parsons, Soil Remedial Investigation Report, February 25, 2004.*

[13] *Ibid.*

7. Maintenance Equipment Storage Building

8. Old Solvents Warehouse

9. Wastewater Treatment Systems (3 AOCs)_

Since 1996, several phases of remedial investigations and groundwater monitoring have been conducted within the Honeywell property. All remedial investigation activity has been undertaken in consultation and coordination with LARWQCB (see Appendix F).

A Phase I Site Assessment addressed AOCs including groundwater quality in the shallow aquifer, soil conditions at the Refrigerant Plant and soil conditions at UND-1. Field activities conducted to determine the extent of contamination included soil vapor sampling, monitoring well installation, and soil and groundwater sampling.[14] Various organic chemicals and elevated concentrations of metals were detected in the shallow soil samples.

To further delineate the lateral and vertical extent of potentially impacted soil and ground water at the property, Honeywell conducted a Phase II Soil and Groundwater Quality Assessment in 1998. The Phase II investigation included assessment of soil gas and soil matrix at AOCs identified by Honeywell and the LARWQCB, and installation of three additional groundwater monitoring wells. The primary chemicals detected were VOCs similar to those detected in the Phase I investigation. In addition, SVOCs, pesticides and metals were detected in the shallow soils in the UNDs.

The scope of work for Phase III site characterization activities included the installation of five additional groundwater monitoring wells at on-site and off-site locations and sampling of 13 site related groundwater monitoring wells. Baseline groundwater sampling indicated that 11 VOCs were detected in the Old Dune Sand (ODS) Aquifer. Thirteen VOCs were detected in Gage Aquifer monitoring wells. Metals were also detected in groundwater samples during the baseline sampling.

Phase IV remedial investigation (RI) activities included the installation of six on-site and off-site monitoring wells and subsequent groundwater sampling. Phase IV activities also included soil gas sampling and groundwater sampling in the area now known as the Southwest Corner Lot, or Parcel 1c (see Figure IV.G-1). VOC concentrations at the Southwest Corner Lot locations did not indicate a significant potential source of VOCs in the soil. Groundwater samples were collected from two locations downgradient of the Wastewater Storage Tanks/Carbon Polishing Beds and six locations adjacent to the Old Solvents Warehouse. The highest concentrations of VOCs were detected in the vicinity of the Old Solvents Warehouse. Groundwater monitoring from on-site and off-site monitoring wells indicated that all monitoring wells contained detectable concentrations of VOCs.

[14] *Ibid.*

Subsequent RIs focused on areas never sampled or sampled with limited coverage and were implemented in step-wise manner. Initially, sampling was conducted based on a 200-foot grid and was subsequently refined to include samples conducted from a 100-foot grid for the majority of areas where Chemicals of Potential Concern (COPCs) were detected. Additional select "judgmental" sampling locations were positioned where potential source areas were suspected due to operational histories, the locations of historical facilities or other indications of potential COPC sources. Finally, as elevated concentrations of COPCs were identified, additional sampling to determine the lateral and vertical extent of the concentrations was conducted. Sampling included the collection of both shallow and deep soil and soil gas samples.

The Step 1 shallow soil sampling and analysis program focused on regular grid shallow soil sampling. To facilitate a systematic sampling approach for the Step 1 shallow soil matrix investigation, a 100 foot by 100 foot sampling grid was established over the 37.3 acre Refrigerant Plan parcel that included UND-1, UND-2 and UND-3, the 12 acre UND 4 and UND-5 parcels, and the 4.7 acre Southwest Corner Lot parcel. The initial, LARWQCB-approved sampling plan called for shallow samples (0 to 10 feet below ground surface (bgs)) to be collected at every other grid node across the site. Subsequent revisions to the Step 1 Work Plan included sampling at every grid node in all of the UNDs and the north-northwestern portion of the site referred to as the Bone Yard. The Step 1 shallow soil samples were collected from three depth intervals (0 to 0.5 feet bgs, 4 to 6 feet bgs and 8 to 10 feet bgs). Soil samples collected as part of the Step 1 investigation were analyzed for site-related COPCs and general chemistry/geotechnical parameters using U.S. Environmental Protection Agency (USEPA) and American Society for Testing and Materials (ASTM) approved analytical methods.

Step 2 shallow soil and soil gas sampling included judgmental, source area sampling within the Refrigerant Plant parcel at 66 locations selected by Honeywell in consultation with LARWQCB and sampling at 25 locations in the Southwest Corner Lot based on the 100 foot by 100 foot systematic soil matrix sampling grid and select judgmental sampling locations. Step 2 shallow soil sample depths, collection methods and laboratory analysis procedures were consistent with the Step 1 shallow soil sampling program. Step 2 site-wide shallow soil gas sampling was conducted at 25 locations coincident with previously collected shallow soil matrix samples and were analyzed using USEPA approved methods.

Step 3 analysis involved a "step-out" shallow soil sampling program to determine the lateral extent of contaminated areas. The step-out shallow sampling program was conducted around each hot spot area identified from regular grid sampling during Step 1 and Step 2. A "hot spot" area was defined as a sample location where at least one COPC was detected at a concentration that exceeded the USEPA Industrial Preliminary Remedation Goal (PRG). Step-out sampling locations were placed at approximately 50 foot distances in four directions from each of the identified hot spot locations to identify the lateral extent of the hot spot. In some instances, shallow soil matrix sampling locations in the potential source areas did not require step-out sampling in four directions because results from these adjacent locations were adequate for the lateral determination. At select step-out soil boring locations,

soil gas samples were collected at the 5 foot bgs interval. Eleven additional source areas shallow gas sample locations were selected by Honeywell in consultation with LARWQCB. Ten deep soil boring locations were drilled and sampled as part of the Step 3 Work Plan. The deepest soil matrix and soil gas sample was collected at approximately 60 feet bgs.

Step 4 shallow soil matrix sampling was conducted around hot spot areas identified from the regular grid sampling and source area judgmental sampling locations, where at least one COPC was detected at a concentration exceeding the industrial PRG. Honeywell, in consultation with LARWQCB, added ten additional grid point locations in the northwest and UND-1 subareas during the Step 4 investigation. Honeywell proposed seven deep soil boring locations in the Step 4 Work Plan. At the request of the LARWQCB, six additional locations were added to the scope of work. At each of the 13 locations, both soil and soil gas samples were collected at designated sampling intervals. Pre-Interim Remedial Measure (PIRM) hot spot delineation was also conducted as part of the Step 4 sampling program. The total number and location of sample points was based on Step 3 sampling results. PIRM sampling targeted hot spots where individual suites of COPCs exceeded the appropriate industrial PRG. No soil gas samples were collected at these locations. Honeywell conducted deep soil gas comparison sampling at the request of and in direct consultation and oversight by the LARWQCB. Deep soil verification samples were collected from permanent soil gas probe installations designed in consultation with LARWQCB representatives. Permanent deep soil gas probe wells were installed at four locations immediately adjacent to locations of samples. The nested permanent soil gas probe system construction was discussed and approved by the LARWQCB at the Site on December 15, 2003.

During the remedial investigations, soil and soil-gas samples were collected and analyzed for several hundred different chemicals. Many of these chemicals were not detected in the samples, but others were detected, most commonly in only a few (of several hundred) samples, and often at low ("trace") concentrations. A list of all the chemicals detected during the remedial investigation is provided in Table IV.G-4; while these are all chemicals of *potential* concern, concentrations of only a few ultimately warranted interim remedial measures, as discussed under Project Impacts, below.

The basic methodology for determining the need for remedial measures involved identification of screening thresholds for chemical concentrations that require remediation and comparison of measured concentrations of chemicals to the screening thresholds. Soil screening levels (SSLs) were developed for the site COPCs to guide the RI data evaluation and preliminary identification of potential hot spot areas or areas for potential remedial actions. The SSLs were based on standards/thresholds identified by regulatory agencies.

Based on the SSL screening evaluation, chemicals were selected for further evaluation based on their detection frequency and relative concentration with respect to the most stringent SSL for each of the compounds. The chemicals in the shallow soil matrix that were selected for further evaluation included 15 VOCs, six SVOCs, six pesticides, three PCBs, total petroleum hydrocarbons (TPH), gasoline range organics (GRO), and three inorganic chemicals (see Table IV.G-4a). The chemicals in the deep soil

matrix that were identified for further evaluation included three VOCs and TPH (see Table IV.G-4b). Shallow soil gas samples included nine VOCs that exceeded the SSLs (see Table IV.G-4c) and deep soil gas samples included 11 VOCs that exceeded the SSLs (see Table IV.G-4d).

Soil samples with COPC concentrations greater than the SSLs describe potential hot spots that were evaluated for cumulative risk, as discussed below under Project Impacts (Plaza El Segundo Development) and potentially addressed through interim remedial actions or interim remedial measures. A total of twenty potential hot spots were evaluated for human health risk. The risks to human health that could be associated with these hot spots are evaluated under Project Impacts, below.

Groundwater

Twenty two groundwater monitoring wells have been installed in two aquifers (the Old Dune Sand and Gage Aquifers) on-site and off-site. Groundwater monitoring has been conducted on a quarterly basis under LARWQCB oversight since 2001. Two distinct VOC-containing groundwater plumes have been identified, one originating from the Refrigerant Plant and one from the Old Solvents Warehouse at the Southwest Corner lot.

Based upon soil gas sampling conducted during the RI process described above, the VOC vapor plumes have been located within the Honeywell portion of the proposed Sepulveda/Rosecrans Rezoning Site. The source of the VOC vapor plume is historical release/spills on or near land surface and the subsequent migration downward via gravity and leaching by infiltrating rain water. The VOC vapor plume has also spread laterally due to volatilization, dispersion and diffusion. The 14,000 gallon accidental spill of chloroform that occurred in 1988 in the eastern part of the Refrigerant Plant adjacent to UND-1 is probably the main source of the observed VOC vapor plume in the vadose zone soil and the dissolved VOC plume in the groundwater. The spill spread in all directions. Significant lateral spread occurred when the spilled materials moved downward and reached the capillary fringe and/or relatively lower permeability zones. The result is a widespread vapor plume in the deep zone soils. Shallow soil source remedial actions were implemented shortly after the release occurred and effectively removed the majority of the point source.

Table IV.G-4
Detected Chemical Compounds on the Project Site

Volatile Organic Compounds		
• Acetone	• Dichlorodifluoromethane	• 1,1,1,2-Tetrachloroethane
• Benzene	• 1,1-Dichloroethane	• 1,1,2,2-Tetrachloroethane
• Bromodichloromethane	• 1,2-Dichloroethane	• Tetrachloroethene
• Bromoform	• 1,1-Dichloroethene	• Toluene
• Bromomethane	• *cis*-1,2-Dichloroethene	• 1,2,3-Trichlorobenzene
• 2-Butanone	• 1,1-Dichloro-1-fluoroethane	• 1,2,4-Trichlorobenzene
• *n*-Butylbenzene	• Dichlorofluoromethane	• 1,1,1-Trichloroethane
• *sec*-Butylbenzene	• 1,1-Dichloropropene	• 1,1,2-Trichloroethane
• *tert*-Butylbenzene	• Ethylbenzene	• Trichloroethene
• Carbon tetrachloride	• Hexachlorobutadiene	• Trichlorofluoromethane
• Chlorobenzene	• 2-Hexanone	• 1,2,3-Trichloropropane
• Chlorodifluoromethane	• Isopropylbenzene	• 1,1,2-Trichloro-1,2,2-trifluoroethane
• Chloroethane	• *p*-Isopropyltoluene	
• Chloroform	• Methylene chloride	• 1,2,4-Trimethylbenzene
• Chloromethane	• 2-Methylheptane	• 1,3,5-Trimethylbenzene
• 4-Chlorotoluene	• 4-Methyl-2-pentanone	• Vinyl chloride
• Chlorotrifluoroethene	• MTBE	• *o*-Xylene
• Dibromochloromethane	• Naphthalene	• *m*-Xylene
• 1,2-Dichlorobenzene	• Octane	• Xylenes, *m,p*-
• 1,3-Dichlorobenzene	• Propylbenzene	• Xylenes (mixed)
• 1,4-Dichlorobenzene	• Styrene	
Semivolatile Organic Compounds		
• Acenaphthene	• Dibenz(a,h)anthracene	• Indeno(1,2,3-cd)pyrene
• Benzo(a)anthracene	• Dibenzofuran	• Isophorone
• Benzo(b)fluoranthene	• di-*n*-butyl Phthalate	• Nitrobenzene
• Benzo(k)fluoranthene	• diethyl Phthalate	• Pentachlorophenol
• Benzo(b + k)fluroanthene	• dimethyl Phthalate	• Phenanthrene
• Benzoic Acid	• 1,4-Dioxane	• Phenol
• Benzo(a)pyrene	• Fluoranthene	• Pyrene
• bis(2-ethylhexyl) Phthalate	• Fluorene	• 2,4,5-Trichlorophenol
• butylbenzyl Phthalate	• Hexachlorobenzene	• 2,4,6-Trichlorophenol
• Chrysene	• Hexachloroethane	
Pesticides		
• Aldrin	• DDD	• Endrin
• alpha-BHC (alpha-HCH)	• DDE	• Endrin Aldehyde
• beta-BHC (beta-HCH)	• DDT	• Endrin Ketone
• delta-BHC (delta-HCH)	• Dieldrin	• Heptachlor
• gamma-BCH (gamma-HCH; lindane)	• Endosulfan I	• Heptachlor epoxide
	• Endosulfan II	• Methoxyclor
• Chlordane	• Endosulfan sulfate	• Toxaphene
PCBs		
• Aroclor-1248	• Arochlor-1254	• Arochlor-1260

Table IV.G-4 (continued)

PCDDs and PCDFs (Dioxins)		
• 2,3,7,8-TCDD	• OCDD	• 1,2,3,7,8,9-HxCDF
• 1,2,3,7,8-PCDD	• 2,3,7,8-TCDF	• 2.3,4,6,7,8-HxCDF
• 1,2,3,4,7,8-HxCDD	• 1,2,3,7,8-PCDF	• 1,2,3,4,6,7,8-HpCDF
• 1,2,3,6,7,8-HxCDD	• 2,3,4,7,8-PCDF	• 1,2,3,4,7,8,9-HpCDF
• 1,2,3,7,8,9-HxCDD	• 1,2,3,4,7,8-HxCDF	• OCDF
• 1,2,3,4,6,7,8-HpCDD	• 1,2,3,6,7,8-HxCDF	
Inorganic Elements (at concentrations greater than naturally occurring "background")		
• Arsenic	• Chromium	• Lead

Source: Risk-Based Cleanup Goals for Interim Remedial Measures, Honeywell El Segundo Site, 850 South Sepulveda Boulevard, El Segundo, California (Parsons, March 1, 2004).

Table IV.G-4a

Chemical Compounds in Shallow Soil Selected for Further Evaluation

Volatile Organic Compounds		
• Benzene	• Ethylbenzene	• 1,3,5-trimethylbenzene
• Bromodichloromethane	• 4-methyl, 2-pentanone	• TCE
• Carbon tetrachloride	• MTBE	• Tetrachloroethene
• Chloroform	• Napthalene	• Toluene
• 1,1-Dichloroethene	• 1,2,4-trimethylbenzene	• Total Xylenes
Semivolatile Organic Compounds		
• Benzo(k)fluoranthene	• Benzo(a)anthracene	• Hexachlorobenzene
• Benzo(a)pyrene	• Chrysene	• Pentachloropheno
Pesticides		
• alpha-BHC	• DDT	• gamma-BHC
• DDD	• Dieldrin	• Heptachlor
PCBs		
• Aroclor-1248	• Arochlor-1254	• Arochlor-1260
Total Petroleum Hydrocarbons (TPH)		
Gasoline Related Organics (GRO)		
Inorganic Elements (at concentrations greater than naturally occurring "background")		
• Arsenic	• Chromium	• Lead

Source: Risk-Based Cleanup Goals for Interim Remedial Measures, Honeywell El Segundo Site, 850 South Sepulveda Boulevard, El Segundo, California (Parsons, March 1, 2004).

Table IV.G-4b
Chemical Compounds in Deep Soil Selected for Further Evaluation

Volatile Organic Compounds		
• Carbon tetrachloride	• Chloroform	• Ethylbenzene
Source: Risk-Based Cleanup Goals for Interim Remedial Measures, Honeywell El Segundo Site, 850 South Sepulveda Boulevard, El Segundo, California (Parsons, March 1, 2004).		

Table IV.G-4c
Chemical Compounds in Shallow Soil Gas Selected for Further Evaluation

Volatile Organic Compounds		
• Benzene	• Chloroform	• Chloromethane
• Bromomethane	• Ethylbenzene	• TCE
• Carbon tetrachloride	• CFC-11	• Xylenes
Source: Risk-Based Cleanup Goals for Interim Remedial Measures, Honeywell El Segundo Site, 850 South Sepulveda Boulevard, El Segundo, California (Parsons, March 1, 2004).		

Table IV.G-4c
Chemical Compounds in Deep Soil Gas Selected for Further Evaluation

Volatile Organic Compounds		
• 1,1-DCE	• Chloroform	• Chloromethane
• Benzene	• Ethylbenzene	• TCE
• Bromomethane	• CFC-11	• Xylenes
• Carbon tetrachloride	• Bromodichloromethane	
Source: Risk-Based Cleanup Goals for Interim Remedial Measures, Honeywell El Segundo Site, 850 South Sepulveda Boulevard, El Segundo, California (Parsons, March 1, 2004).		

Miscellaneous undocumented leaks and spills may have also occurred in the Refrigerant Plant, BBI Terminal and other areas. These potential undocumented releases could have contributed to some of the detections of VOCs in these areas observed in the vadose zone and in groundwater. Their overall impact is relatively less significant compared with the 1988 chloroform spill.

Although the general extent of the VOC vapor plume today is similar to that which was historically delineated, the center of the plume has changed and the magnitude of VOC vapor concentrations has been significantly reduced. Because of the soil vapor extraction system that has been operating in the Refrigerant Plant area, the highest VOC vapor concentrations have reduced by an order of magnitude (from 250,000 micrograms per liter to 20,000 micrograms per liter). As the center of the original vapor plume located beneath the Refrigerant Plant is remediated, the center of the plume has shifted from the Refrigerant Plant to the Boneyard Area which is just outside the original plume core. Facility operations have ceased as of February 2003. Potential near surface COPC sources in soil will be remediated through planned IRMs and the deep gas vapor plume will continue to be remediated through expansion of the SVE system. As a result, the vapor plume observed today represents the conservative, worst case condition in considering current and future impacts on human health and natural resources.

Asbestos and Lead

An asbestos and lead survey was conducted on the Honeywell properties (Parcels 1a, 1b, and 1c) by H2 Environmental Consulting services on September 5, 2002 through October 2, 2002. At the time of the survey, the Plant consisted of approximately 26 industrial and commercial buildings situated on 59 acres with pipe runs connecting a series of storage tanks. These buildings were finished out with metal siding concrete, drywall, plaster walls, ceilings with drop-in tiles, acoustic spray-on drywall, and plaster and floors with 12" x 12" floor tiles and concrete. A total of 664 asbestos samples and 104 lead samples were collected and submitted for testing by LA Testing. Laboratory analysis was conducted by Polarized Light Microscopy (PLM) and Atomic Absorption Spectrometry (AAS).[15] Asbestos was found in a variety of locations and substances. Material that contained asbestos included window putty, roof mastic, roof shingles, black roof mastic, duct wrap, green speckled linoleum, and gray roof mastic. The amount of asbestos in these samples ranged from less than one percent to 40%.[16]

General Chemical

The parcel owned by General Chemical Corporation is located along the southern boundary of the proposed Sepulveda/Rosecrans Rezoning Site. It is designated as Parcel 2 on Figure IV.G-1.

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[15] *Asbestos & Lead Survey, Volume #1 and #2, H2 Environmental Consulting Services, no date.*

[16] *Asbestos & Lead Survey, Volume #1 and #2, H2 Environmental Consulting Services, no date.*

Facilities and History

This parcel has been used for chemical production since the 1940s and was obtained by General Chemical Corporation in 1986 and includes areas previously used for pesticide blending and storage and inorganic chemicals production. All operations on this parcel were discontinued in late 1989 and the facility has remained idle since then, even though the structures are still present.[17] The following activities are known to have occurred on the site.

- A Pesticide Grinding and Packaging Plant was built in approximately 1940 and operated until 1968. The Plant was used to blend raw materials such as DDT and DDE with inert clay. Records indicate that bulk pesticide wastes were not generated by the Plant. In late 1977 pesticide dusts were removed from the hopper and wall ledges within the warehouse by the Corporate Decontamination Team. Collected pesticide residues were manifested and disposed of at an off-site facility.

- In the mid-1950s, operations were expanded to include production of a variety of chemicals including sodium salts and calcium/ammonium polysulfide. Production of these chemicals was discontinued between 1967 and 1972, except for sodium metabisulfite and ammonium thiosulfate, which was manufactured from 1974 through 1990.

- Production of liquid aluminum chloride and liquid aluminum sulfate was also initiated in the mid-1950s. Aluminum chloride production was discontinued in 1967 but aluminum sulfate production was maintained until 1989.[18]

Onsite waste disposal was performed by AlliedSignal (now Honeywell) from 1920 until the 1980s. However, waste disposal did not reportedly occur on what is now GCC property. GCC has not performed onsite waste disposal since acquiring the property in 1986.[19] The GCC property was divided into 10 areas based upon specific uses. These areas are described below and are depicted on Figure IV.G-4, General Chemical Corporation Former Site Plan.

General Chemical Corporation Warehouse

The GCC warehouse is located in the central portion of the parcel. Activities conducted at this warehouse included bagging and warehousing of insecticides and pesticides (from 1955 to 1968) and warehousing of photochemical processing chemicals and dry aluminum sulfate until 1989.

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[17] *Facility Audit Report GCC – Fluor Daniel GTI, August 19, 1996.*

[18] *Facility Audit Report GCC – Fluor Daniel GTI, August 19, 1996.*

[19] *Facility Audit Report GCC – Fluor Daniel GTI, August 19, 1996*

Figure IV.G-4, General Chemical Corporation Former Site Plan

Nitric Warehouse

The nitric warehouse is an approximately 2,500 square foot, single-story, fiberglass and metal, warehouse type building located on a large raised concrete pad in the easternmost portion of the GCC property. Operations were conducted in this building from 1968 to 1970 and involved blending and packaging of hydrogen fluoride, hydrochloric acid, and nitric acid. Four aboveground storage tanks (ASTs) were located on a concrete pad outside the northern perimeter of the warehouse.

Photochemical and Hypo Plants

Sodium sulfite, sodium bisulfite (sodium metabisulfite), and liquid ammonium thiosulfate were produced in the single story building referred to as the photochemical plant and the two story building referred to as the hypo plant.

Cooling Tower/Substation/UST

A single story substation equipped with a cooling tower on its roof is located north of the hypo plant. An underground storage tank (UST) reportedly permitted for unleaded fuel and a fuel dispensing island was located adjacent (northwest) of the substation building. The UST was removed by AlliedSignal. However, the date on which the UST was removed is unknown.

Liquid Aluminum Sulfate Plant

The liquid aluminum sulfate plant located in the north central portion of the parcel included ASTs, a polymer mixer, a vacuum liquid separator, a filtering system, and a dewatering process that separated High Clay Alumina (HCA) from water. During operation, the process water was recycled, and the HCA was stored in a lined surface impoundment south of the plant, which was closed in 1991 with concurrence from the LARWQCB. Prior to closing in 1991, all material was removed from the surface impoundment and sent to an offsite facility for disposal.

Aluminum Sulfate Warehouse

A single story warehouse facility is located adjacent to the west side of the aluminum sulfate processing plant. No further information regarding this facility is available.

Sulfuric Acid Tank Farm

This area was located adjacent to the railroad tracks near the western end of the works. Six large ASTs were located south of the railroad tracks along the south central perimeter of the Honeywell property. The tanks were removed in 2003.

Water Wells

Two production water wells (5R10 and 5S12) are present at the General Chemical site. The water wells were reportedly installed in the 1940s, screened at depths of about 200 feet below grade and at several deeper intervals in permeable formations. These wells were originally installed as part of the West Coast Basin Barrier Project to monitor and control saltwater intrusion in the area. The wells have been abandoned. (Parsons, Aug. 1, 2003, Evaluation of Potential Impacts of the West Coast Basin Barrier Project on Hydrogeologic Conditions beneath the Honeywell El Segundo Site, 850 S. Sepulveda Blvd., El Segundo, CA).

Calcium and Ammonium Polysulfide Manufacturing

Calcium and ammonium polysulfides (fungicides) were manufactured from the mid 1950s to 1968 in the same building formerly located in the south central area of the General Chemical site. Calcium polysulfide, also referred to as lime sulfur, was produced by heating sulfur and calcium hydroxide.

Aluminum Chloride Production

Solutions of aluminum chloride were produced and distributed from the mid 1950s to 1968 in the western area of the General Chemical site. The process involved the reaction of bauxite (Al_2O_3) with liquid hydrochloric acid (HCl) to produce aluminum chloride. No waste was reportedly generated as a result of the production of aluminum chloride.

Previous Investigations

The Insecticide Grinding Building was erected in 1940 and housed formulation operations for DDT, benzene hexachloride (BHC), and TDE. The insecticide operation was shut down in 1968 and the Grinder Building dismantled in 1971-1972. The area was paved over with asphalt after soil analysis indicated the presence of 1,600 ppm of BHC and 8,300 ppm of DDT.

The Pesticide Containment Task Force toured the El Segundo Works on September 7-8, 1977. The identification of possible residues from the manufacture and handling of these pesticides was the subject of this particular study.[20] A general inspection was made of the plant site, and discussions were held with plant personnel. Soil samples from suspected disposal sites and swipe samples from Warehouse 191031 were retained for subsequent analysis.[21]

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[20] *Pesticide Containment, Allied Chemical Corporation Memorandum regarding Pesticide Containment Task Force Report #1 – El Segundo Works.*

[21] *Pesticide Containment, Allied Chemical Corporation Memorandum regarding Pesticide Containment Task Force Report #1 – El Segundo Works*

The team observed the site of the former Insecticide Grinding Building. Five soil samples were taken throughout the area. Results indicated high amounts of DDT at sample sites 1 and 5. Plant personnel augmented the Task Force's sampling by obtaining samples from various drainage areas on the site. The analytical results indicate the presence of small amounts of pesticide residues in the sulfuric acid dump and at sampling location #6.[22]

Warehouse 191031 contains the hopper structure used in the packaging of pesticides that were manufactured on site. The team observed that the hopper was still covered with white dust which resembled powered pesticides containing DDT. The interior wall ledges and recesses around the hopper were covered with settled dust with the same color characteristics as the material covering the hopper. Analytical results indicate excessive amounts of DDT in the settled dust in this area.

The settled dust covering the hopper and well ledges was removed on November 17, 1977. This dust was disposed of at an appropriate hazardous materials landfill on December 21, 1977.

Aluminum sulfate is produced when bauxite ore reacts with sulfuric acid. An inert mud called "alum mud" is generated from this process. GCC previously stored the alum mud at the south plant in a surface impoundment. After approximately 1985, the alum mud was routed to a dewatering system and Class III (non-hazardous municipal solid waste) landfill. The surface impoundment was maintained for emergency and/or excess volume use only. Aluminum sulfate production was discontinued in 1990.

The surface impoundment was located below grade on the south side of the aluminum sulfate plant. It was constructed in 1971 and is approximately 72 by 72 feet by 3 feet in depth. The base and sides of the impoundment were lined with approximately 2.5 inches of asphalt and a 10-mil polyvinyl chloride (PVC) liner. The 10-mil PVC liner is anchored on top of the asphalt with an approximately 6 inch thick layer of soil. After the installation of an alum mud dewatering system in 1985, the alum mud was rerouted from the surface impoundment to an above grade storage tank.

The alum mud was collected and disposed of off-site at the Puente Hills Landfill, Los Angeles County, California, a Class III nonhazardous landfill. In an October 1980 correspondence to AlliedSignal, the alum mud was classified nonhazardous by the California Department of Health Services (DHS) in accordance with Section 66305, Title 22, Division 4, of the California Code of Regulations. GCC annually profiled the alum mud for the 18 metals listed under Section 66699, Article 11, Title 22 of the CCR to verify the nonhazardous classification, as well as for disposal purposes. Because of the nature of the production of aluminum sulfate and the resulting inert alum mud, GCC was not required to maintain registrations and/or permits with the Los Angeles County Department of Public Works or Health Services, or DHS.

[22] *Ibid*

Five sample locations were selected upon the removal of the alum mud with final locations being determined based upon visual observation and inspection of the asphalt liner. Four soil samples were to be collected at each location: 0 to 6 inches, 18 to 24 inches, 36 to 42 inches, and 54 to 60 inches beneath the surface impoundment liner material. A total depth of 5 feet was selected because of the climatic conditions, the nature of the underlying soils, and the metals that may have been introduced. Based on the metals concentrations in the alum mud and the presence of a pond lining, it is anticipated that any metals introduced would have attenuated within the upper 5 feet. Two site background soil samples were to be collected and analyzed for the presence of metals and soil pH levels for comparison purposes.[23]

The 18 metals listed in 22 CCR § 66261.24, Table II – List of Inorganic Persistent and Bioaccumulative Toxic Substances and Their Soluble Threshold Limit Concentration, as well as aluminum were selected for a total metals concentration analysis because they are representative of many of the metals that may be present in the alum mud.[24] No results are available regarding this sampling.

Asbestos and Lead Surveys

No known asbestos or lead surveys/sampling have been conducted for the facilities on this parcel.

H. Kramer & Company

The H. Kramer & Company parcel (Parcel 3 on Figure IV.G-1) is located on the eastern portion of the proposed Sepulveda/Rosecrans Rezoning Site, between the UPRR and the BNSF railroad tracks.

Facilities and History

The Kramer property was used for the operation of a metal products (brass) foundry between 1951 and 1985. All industrial activity on this parcel ceased in 1985. Prior to that, the property was owned by Harshaw Chemical Company, which reportedly manufactured brass ammunition products. The original owner (Harshaw Chemical Company) used a waste lagoon/pond located in the northeastern section of the property to dispose of the wastes generated during the antimony smelting process. These wastes contained heavy metals, in particular arsenic.[25] The waste lagoon was then utilized by H. Kramer & Company to dispose of the slag generated during the operation of the metal products foundry until a mounded slag pile formed. The slag pile was approximately 850 feet in length and 150 feet wide. The

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[23] *Harding Lawson Associates, Closure Plan "Alum Mud" Surface Impoundment General Chemical Corporation, March 11, 1991.*

[24] *Title 22 metals consist of antimony, arsenic, barium, beryllium, cadmium, chromium VI, chromium III, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.*

[25] *Ebasco Environmental, Basis of Remedial Design Report for the H. Kramer & Company Site, El Segundo, California, November 1993.*

average depth of the slag above grade is 8 feet and below natural grade is assumed to be 15 feet. The slag material contained elevated levels of residual lead and copper.[26] The slag pile was closed in March 1995 by capping with an impermeable cover and asphalt paving.[27]

Previous Investigations

Pursuant to an order issued in 1988, the EPA supervised surface cleanup of the site. The EPA also directed a subsurface investigation which determined that the uppermost aquifer had been impacted by arsenic from this parcel. Subsequently, the Los Angeles Regional Water Quality Control Board (LARWQCB) became the lead regulatory agency for site investigation and mitigation activities. On December 28, 1992, Cleanup and Abatement Order No. 92-094 was issued by the LARWQCB for this parcel. This Order directed H. Kramer and Harshaw (with its successor companies) to implement site investigation and cleanup activities. A two phased subsurface investigation was conducted which determined the vertical and lateral extents of arsenic in groundwater and confirmed regional contamination of the groundwater by VOCs. The LARWQCB adopted Waste Discharge Requirements (WDR) Order No. 94-031 on April 4, 1994. The WDR requires compliance with the California Code of Regulations Chapter 15, Title 22 as it pertains to the closure and maintenance of an existing waste management unit during the capping of the slag pile.[28]

A public health risk assessment was completed for this parcel in February 1993. The results demonstrated that cancer and non-cancer risks for current use worker exposures to slag exceeded the EPA target risk ranges and criteria. It was calculated that these risks could be eliminated and/or acceptably managed by the installation of a cap and restrictions on future excavation activities. In August 1993, a Phase II investigation was conducted which concluded that there was regional VOC contamination in the soil and groundwater beneath the Kramer property from offsite sources, and that the arsenic plume is generally limited to within the Kramer property boundaries.[29]

A remedial cap was constructed in accordance with the requirements of the California Regional Water Quality Control Board (CRWQCB) – Los Angeles Region Clean-up and Abatement Order No. 92-094, Waste Discharge Requirements Order No. 94-031, and project specifications TS-316 dated July 29, 1994. The slag pile capping configuration pulled back the existing slag pile and graded it so that the peripheral slag pile sides had a slope of 3:1. This configuration generated approximately 9,500 cubic

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[26] *Enserch Environmental Corporation, Post-Closure Groundwater Monitoring Program, H. Kramer & Company, One Chapman Way, El Segundo, California, October 1994.*

[27] *IC Industrial Compliance, Phase II Site Investigation Report, Southern Pacific Transportation Company, El Segundo Team Track Access Road Site, El Segundo, California, December 12, 1995.*

[28] *Enserch Environmental Corporation, Post-Closure Groundwater Monitoring Program, H. Kramer & Company, One Chapman Way, El Segundo, California, October 1994.*

[29] *IC Industrial Compliance, Phase II Site Investigation Report, Southern Pacific Transportation Company, El Segundo Team Track Access Road Site, El Segundo, California, December 12, 1995.*

yards of slag that was placed on top of the existing slag deck and resulted in an average slag thickness of 11 feet above grade.[30] Outside of the asphalt boundary, cleanup levels were established for arsenic impacted soil. According to the Southern Pacific Transportation Company (SPTCo), Kramer property representatives report that the LARWQCB allowed 14.8 mg/kg total arsenic in soil to a depth of 2 feet below ground surface. Below 2 feet bgs, the threshold for total arsenic was 500 mg/kg; for soluble arsenic, it was 50 mg/l.[31]

Waste Discharge Requirements Order No. 94-031 required H. Kramer and Harshaw and its successor companies to institute a post-closure groundwater monitoring and reporting program as part of the post-closure maintenance plan for the remedial cap. The sampling results from previous soil and groundwater studies revealed patterns of arsenic presence in the soils and groundwater beneath and around the slag pile. They also 1) confirmed the presence of a competent aquitard (Bellflower Aquiclude) beneath the property, 2) established that the presence of arsenic in the Gage Aquifer is probably the result of two monitoring wells having been screened across both the Old Dune Sand Aquifer and the Gage Aquifer, 3) demonstrated that the arsenic contamination in the underlying aquifer is largely contained within site boundaries and 4) indicated that the Old Dune Sand Aquifer and Gage Aquifer beneath the property have been impacted by the regional VOC contamination.[32]

The constituents of concern from the Kramer facility are arsenic and lead. Pursuant to regulatory agency request, analyses for volatile organic compounds (VOC) have been added to this list since VOCs are present beneath the facility as a result of a regional groundwater problem.

The points of compliance for the Old Dune Sand Aquifer as it related to the remedial cap are MW-1, MW-2, and MW-7. The points of compliance for the Gage Aquifer as it relates to the facility are MW-11 and MW-13. Additional monitoring wells installed in the Old Dune Sand Aquifer include wells MW-3 and MW-4. Monitoring well MW-3 is the upgradient monitoring well for the Old Dune Sand aquifer and monitoring well MW-4 is located hydrogeologically cross-gradient from the remedial cap. Additional monitoring wells installed in the Gage Aquifer include wells MW-12 and MW-10. Monitoring well MW-12 is the upgradient monitoring well for the Gage Aquifer and monitoring well MW-10 is located hydrogeologically cross-gradient from the remedial cap. These wells monitor conditions in two aquifers beneath the site.

Groundwater monitoring and sampling began following the completion of the cap installation. During the first year, groundwater monitoring was done on a quarterly basis. Reports of analytical results

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[30] *Ebasco Environmental, Basis of Remedial Design Report for the H. Kramer & Company Site, El Segundo, California, November 1993.*

[31] *IC Industrial Compliance, Phase II Site Investigation Report, Southern Pacific Transportation Company, El Segundo Team Track Access Road Site, El Segundo, California, December 12, 1995.*

[32] *Ebasco Environmental, Basis of Remedial Design Report for the H. Kramer & Company Site, El Segundo, California, November 1993.*

were submitted to the LARWQCB following the end of each sampling event. Groundwater monitoring was to continue on a semi-annual basis for the next three years. During these three years, sampling events were to be conducted during the expected highest (January – March) and lowest (July – September) annual elevations of the Old Dune Sand aquifer groundwater potentiometric surface. Groundwater monitoring was to be discontinued following any three consecutive years of sampling when statistical analysis demonstrates that the water quality at the points of compliance has not been further degraded by any of the constituents of concern.

Asbestos and Lead Surveys

No known asbestos or lead surveys/sampling has been conducted for the facilities on this parcel.

Air Products

Air Products Corporation owns the two parcels identified on Figure IV.G-1 as Parcels 4a and 4b. Air Products Corporation has continuously owned and operated Parcel 4a (7.0 acres) since 1970. This parcel is located on Rosecrans Avenue and has been used to compress, liquefy, and distill atmospheric air into liquid nitrogen and liquid oxygen. In addition, crude argon is produced via an argon purification unit. The equipment within the air separation process area includes compressors and expanders, heat exchangers, a distillation column (cold box), and other miscellaneous equipment. In addition to the air separation process area, facility functional areas include a product loading area for the cryogenic tank trucks, a truck terminal consisting of a maintenance garage, an equipment maintenance shop/parts area, a truck scale, and a truck-fueling island with diesel fuel underground storage tanks. In addition to Parcel 4a, Air Products owns Parcel 4b (8.9 acres) which has been vacant since the 1920s.

A total of five underground storage tanks (USTs) have been removed from Parcel 4a. Four were removed in 1991 and one was removed in 2002. In both instances, the lead regulatory agency granted closure on the USTs. In addition, soil sampling and testing for gasoline, diesel, aromatic hydrocarbons and metals was performed in conjunction with the removal of a storm water interceptor trench and associated sump. These sampling and removal activities were conducted in 1998. No chemicals were observed at levels of concern within the sampled soil.[33] No other information regarding this property was available.

Asbestos and Lead Surveys

No known asbestos or lead surveys/sampling have been conducted for the facilities on these parcels.

[33] *Air Products Corporation, 2021 East Rosecrans Boulevard, El Segundo, California, memo provided by Honeywell.*

MTA/BNSF Property

The MTA/BNSF property (Parcel 5 on Figure IV.G-1) is approximately 8.9 acres. A wholesale lumber distribution facility (Learned Lumber) currently occupies this parcel. No additional information is currently available regarding this property.

Asbestos and Lead Surveys

No known asbestos or lead surveys/sampling have been conducted for the facilities on this parcel.

ENVIRONMENTAL IMPACTS

Threshold of Significance

The proposed project could potentially have a significant environmental impact if the proposed project would:

- Expose workers/visitors to the project site to soil and groundwater contamination which result in an unacceptable (as defined by regulatory agencies responsible for protection of human health in the State of California) estimate of cumulative cancer risk or noncancer health hazard.

- Expose workers to asbestos-containing materials or lead (from lead-based paint) during construction activities.

Project Impacts

Sepulveda/Rosecrans Site Rezoning

The parcels that comprise the proposed Sepulveda/Rosecrans Rezoning Site are known to contain soil and groundwater contamination due to past activities. However, at this time, the extent and type of contamination for all the parcels is not known. Without this information, based upon previous activities that have taken place on the proposed Sepulveda/Rosecrans Rezoning Site, conditions of site contamination would have the potential to expose workers and visitors at the proposed Sepulveda/Rosecrans Rezoning Site to soil and groundwater contamination levels that are above established remediation thresholds and expose workers and visitors at the proposed Sepulveda/Rosecrans Rezoning Site to cancer and/or non cancer risks that exceed health risk thresholds. Thus impacts of the proposed Sepulveda/Rosecrans Site Rezoning related to soil and groundwater contamination would be potentially significant, as determined by analysis as discussed under Subsequent Environmental Documentation, below.

Prior to construction on a given parcel on the Sepulveda/Rosecrans Rezoning site, a complete evaluation of the type and extent of the contamination and remediation of that contamination to the satisfaction of the applicable regulatory agency, the LARWQCB, would be required. The parcels

owned by Honeywell International Inc., have been characterized and remediation activities are underway. The processes to determine the cleanup goals and standards and the potential health risks from the existing contamination on each of the parcels would be similar to those described below for the proposed Plaza El Segundo Development and would be implemented through application of the mitigation measures described below. As previously stated, no land use entitlements are being requested at this time for the parcels which have not been characterized and no development would be allowed on these parcels until additional evaluation is completed in the future.

Asbestos and lead surveys have not been conducted for any of the structures that exist on the Sepulveda/Rosecrans Rezoning Site with the exception of the Honeywell International Inc. parcels. However, it is assumed that these structures contain asbestos containing material and lead due to the age of the facilities. Thus demolition and development activities on the proposed Sepulveda/Rosecrans Rezoning Site would have the potential to expose workers to hazards associated with asbestos and lead. Impacts of the proposed Sepulveda/Rosecrans Site Rezoning would be significant with respect to asbestos and lead.

Prior to the start of any demolition or construction activities on an individual parcel, surveys for these substances shall be conducted to determine whether they are present in the facilities. In the event the facilities contain asbestos and/or lead, these substances will be removed in accordance with all applicable rules and regulations prior to the start of demolition activities.

Plaza El Segundo

The information provided above under Environmental Setting and the analysis provided below regarding risk assessment and site remediation within the Plaza El Segundo Development site is in accordance with the mitigation measures for the Sepulveda/Rosecrans Site Rezoning below that require site-specific evaluation of conditions related to hazardous materials and no further analysis of this issue beyond that set forth in the following paragraphs would be required for the proposed Plaza El Segundo Development. The analysis provides additional information regarding conditions on the proposed Plaza El Segundo site and identifies remedial measures, but demonstrates that this component of the proposed Sepulveda/Rosecrans Site Rezoning would not result in new effects related to hazardous materials that were not anticipated in the Program EIR for the proposed Sepulveda/Rosecrans Site Rezoning.

The proposed Plaza El Segundo Development would be located on the Honeywell International, Inc. portion of the proposed Sepulveda/Rosecrans Rezoning Site. Based on the extensive series of studies conducted on this portion of the proposed Sepulveda/Rosecrans Rezoning Site, as described under Environmental Setting above, a variety of organic and inorganic chemicals are known to be present on the proposed Plaza El Segundo Development site. A list of chemicals detected in the shallow or shallow-surface soil and soil gas is provided in Table IV.G-4. A limited number of these chemicals have been detected at concentrations exceeding soil screening levels.

Methodology

A "Unit Concentration Approach" for risk assessment and calculating cleanup goals was developed in late 2003 at a time of simultaneously occurring remedial investigations and formulation of property-redevelopment plans. The Unit Concentration Approach was developed in consultation with the LARWQCB to allow completion of a significant portion of the conceptual approaches for risk assessment while site-characterization investigations were underway. The Unit Concentration Approach results in site-specific values of the theoretical risk of developing cancer or the theoretical hazard of noncancer health effects potentially caused by exposure of hypothetical individuals ("receptors") to a defined concentrations of "chemicals of potential concern" in soil or soil gas. The "unit concentration" was defined as 1 milligram chemical per kilogram soil (mg/kg), or 1 milligram chemical per cubic meter of air (mg/m^3). The site-specific unit-concentration values were then used to support Interim Remedial Measures at specific "hot-spot" locations identified in the remedial investigation. The site-specific unit-concentration values will also be used to support decisions regarding potentially affected soil(s) for the Final Remedial Action Plan, or in decision documents for site closure, produced by the LARWQCB.

There were two primary inter-related applications of risk-assessment processes to conditions at the proposed Plaza El Segundo Development, depending upon the type of medium:

- Soil — The Unit Concentration Approach allows for estimation of theoretical cancer risks and theoretical noncancer health-hazards following hypothetical exposures to site soils, and was conducted using LARWQCB-agreed procedures. These estimates constitute the theoretical cancer risk or noncancer health-hazard that could potentially arise, if the hypothetical receptor was to be present at a particular location at the proposed Plaza El Segundo Development and was exposed in accordance with the defined exposure pathways for the particular chemical; and

- Indoor Air — In accordance with LARWQCB-agreed procedures, computational models were used to derive risk- and hazard-estimates at unit concentrations for indoor air, based on volatilization of volatile organic compounds from subsurface soil or soil gas which then migrate via assumed cracks in the foundation into the indoor air of a building overlying the subsurface contamination.

The Risk Assessment report[34] presents the results of the Unit Concentration Approach, the risk assessment of most of the sampled locations at the Site, and derives preliminary cleanup goals for the Interim Remedial Measures at identified hot-spot locations at the proposed Plaza El Segundo. The report is summarized in the following text.

[34] *Parsons, Risk-Based Cleanup Goals for Interim Remedial Measures, Honeywell El Segundo Site, March 1, 2004.*

Receptor Characteristics

Potential receptors are defined as humans that may contact or be exposed to site related chemicals in environmental media. Consistent with agency guidance, current and reasonably anticipated future land uses were considered when selecting potential receptors. Potential receptors at the proposed Plaza El Segundo Development would include:

- Indoor Worker – for example, a future worker in the retail facilities. This hypothetical receptor may potentially be exposed via inhalation of VOCs in indoor air which emanate from soil or soil gas under the building in which this receptor works.

- Outdoor Nonintrusive Worker – for example, a future landscaping worker or a current grading contractor who is not engaged in intrusive activities (digging into soil). This receptor may potentially be exposed to chemicals via incidental ingestion, inhalation, or dermal contact with chemicals in surface soil (consisting of soil from the surface to a depth of 0.5 feet bgs). Surface soils could be present during site redevelopment or at exposed landscape features that may be part of the developed landscape in the future.

- Excavation Worker – for example, a future utility-line worker or a current grading contractor who is engaged in intrusive activities (digging into soil). This receptor may potentially be exposed via incidental ingestion, inhalation, or dermal contact with chemicals in soil. This receptor is hypothesized to contact surface (0- to 0.5-ft bgs) and shallow subsurface (0.5- to 10-ft bgs) soils at the site.

- Child Shopper – for example, a teenager that regularly socializes at the indoor retail facilities. Although a teenaged child is a more-realistic example of this receptor, the exposure estimates were based on values for a toddler-aged child as a health protective (conservative) assumption. This hypothetical receptor may potentially be exposed via inhalation of VOCs in indoor air which emanate from soil or soil gas under the building in which this receptor socializes.

Exposure Pathways

An exposure pathway is the course a chemical agent takes from a source of contamination to a receptor, and is a unique mechanism through which an individual is exposed to chemicals at, or originating from, a site. Each exposure pathway includes a chemical source or release from a source, an exposure-point location, and an exposure route. If the exposure-point location differs from the source location, a transport mechanism or a movable exposure medium (e.g., air or water) also is involved. Site-related sources, types of environmental releases, and potential receptors and activity patterns determine the significant pathways of concern and those which are incomplete or insignificant (*i.e.*, there is no connection, or a minor connection, between the source and the receptor).

Soil

Soil represents a source of, and a transport medium for, site-related chemicals. Potential release mechanisms for contaminants in surface and shallow-subsurface soil include tracking, excavation, fugitive dust generation, volatilization, and uptake from skin ("dermal contact"). Many factors affect the accessibility and release of chemicals from soil, as well as the characteristics of the receptor, including variables such as age, body size, gender, activity, and physiology.

Human receptors may be directly exposed to contaminants in surface or shallow-subsurface soils via incidental ingestion and dermal contact, and may be indirectly exposed to contaminants in soil via inhalation of dust (or volatile compounds). Receptor-specific pathways for exposure to chemicals in soil include:

- Outdoor Non-Intrusive Worker and Excavation Worker: Directly exposed to chemicals in surface or shallow-subsurface soil via incidental ingestion, inhalation of fugitive dusts from soils, and dermal contact.
- Indoor Worker and Child Shopper: No complete pathways for exposure, as these receptors are hypothesized to work or socialize inside a building and therefore, would not directly contact soil.

Human receptors would not contact deep subsurface soils (> 10-ft bgs), so there are no complete pathways for exposure of receptors to these soils.

Outdoor Air

Site related VOCs may migrate into soil pore space and then into trenches or subsurface excavations. Receptor specific pathways for exposure to VOCs in outdoor air include:

- Outdoor Non-Intrusive Worker and Excavation Worker. Exposed to VOCs via inhalation of outdoor air containing VOCs that have volatilized from soil that became exposed during grading, excavation, or placement of excavated soil on the surface.

- Indoor Worker and Child Shopper. No significant pathways for exposure, as these receptors are hypothesized to work or socialize inside a building; any VOCs that did emanate into outdoor air would dilute to concentrations markedly less than that experienced by the outdoor non-intrusive worker or excavation worker receptors.

Indoor Air

Site related VOCs may migrate into soil pore space and then into structures (via for example, cracks in a foundation). Receptors may be exposed to contaminants via inhalation of VOCs in indoor air and include:

- Indoor Worker and Child Shopper. Exposed to VOCs via inhalation of indoor air containing VOCs that have volatilized from surface of shallow-subsurface soil gas and/or soil into indoor

air. These receptors are hypothesized to work or socialize inside a building and therefore, would not be directly exposed to soil (i.e., no incidental ingestion or dermal contact).

- Outdoor Non-Intrusive Worker and Excavation Worker. No complete pathways for exposure, as these receptors are not hypothesized to be present in indoor settings during their site related activity patterns.

Table IV.G-5 shows the potential receptors, what type of contamination they could be exposed to, and how they would be exposed to that contamination.

Table IV.G-5
Exposure Scenarios

Exposure Medium	Exposure Route(s)	Receptor
Soil (all chemicals)	Ingestion Inhalation Dermal Contact	Outdoor Nonintrusive Worker Excavation Worker
Soil to Outdoor Air (volatile chemicals)	Inhalation	Outdoor Nonintrusive Worker Excavation Worker
Soil to Indoor Air (volatile chemicals)	Inhalation	Indoor Worker Child Shopper
Groundwater[1]	None	None
1. Potential health risk from drinking groundwater is not considered in the risk assessment because groundwater under the proposed Plaza El Segundo Development is not potable. Potential impacts to the groundwater resource will be addressed in the Final Remedial Action Plan.		

Human Health Risk Assessment Thresholds

In preparing a risk assessment, theoretical cancer risks or theoretical noncancer hazards are predicted. These predictions are based upon the estimated exposure of a receptor to a chemical and a chemical's toxicological value. Site-specific exposure estimates are a function of the concentration of the chemical in an environmental media (e.g., soil), receptor specific exposure characteristics (e.g., intake rate, body weight, exposure frequency, etc), and the exposure pathways relevant to a particular location. The toxicological value is an agency-promulgated value, usually derived from laboratory tests that are not specifically related to any particular project or site.

Cancer Risk: The USEPA has established a management range for the hypothetical risk of developing cancer (a probability of developing cancer) of 1×10^{-4} (1 in 10,000) to 1×10^{-6} (1 in 1 million). A hypothetical cancer risk estimate greater than 1×10^{-4} generally warrants remediation under any circumstance, while a risk estimate of 1×10^{-6} or less can be considered suitable for unrestricted land uses.

Non-Cancer Risk: Non-cancer hazard estimates are expressed as a mathematical hazard quotient (the ratio of the exposure concentration to the toxicity value) or a hazard index (a sum of hazard quotients

for chemicals that exert toxicity on the same system in the body). The target value is typically equal to 1[35] for both individual chemicals (i.e., hazard quotient) and for cumulative noncancer effects (i.e., hazard index).

For industrial/commercial land use, a hypothetical cumulative cancer risk of 1×10^{-5}[36] and a total hazard index of 1 are generally considered acceptable by USEPA. Consistent with the USEPA, the California Environmental Protection Agency (CalEPA) Office of Environmental Health Hazard Assessment (OEHHA) has required the use of a 1×10^{-5} cumulative cancer risk and total hazard index of 1 as the risk management targets for remedial actions to cleanup soils at the proposed Plaza El Segundo Development[37].

Risks from Individual Chemicals

Risk and hazard estimates were prepared with respect to each type of receptor for each of the chemicals found during the remedial investigation. The risk estimates were conducted for 61 VOCs, 29 SVOCs, 20 pesticides, 3 PCBs, dioxin, and 3 inorganics (those listed in Table IV.G-4). These risk estimates were utilized, under the supervision of the LARWQCB, to determine the location or subarea-specific cleanup goals for the project site upon completion of the remedial investigations.

As discussed above, outdoor non-intrusive worker and excavation worker receptors could be exposed to chemicals in the soil. A summary of the risk and hazard estimates (at the 1 mg/kg unit concentrations) are provided in Tables 7 and 8, respectively, in the "Risk Based Cleanup Goals for Interim Remedial Measures"[38] study, for the Outdoor Non-Intrusive Worker and Excavation Worker receptors. These tables have been included in Appendix I to this EIR. The detailed computations used to obtain the estimates summarized in these tables can be found in Appendix A of that report.

Chemical vapors that were predicted to have volatilized from soil and from soil gas into a hypothetical building within the proposed Plaza El Segundo Development were evaluated using the LARWQCB-agreed computational model and California-specific toxicity values. Risk estimates were generated for each of the volatile chemicals known to occur in site soil, for the Child Shopper and Indoor Worker at each of two depths (4 - 6 ft bgs and 8 - 10 ft bgs). A summary of the resultant theoretical cancer risk and noncancer hazard estimates are provided in Tables 9 and 10, respectively, of the "Risk Based Cleanup Goals for Interim Remedial Measures"[39] study. The detailed results from each combination of receptor and depth are provided in Appendix C of that report. Based on a review of the risk and hazard

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35 *Also shown as 1.0E+00 in some tables in this section (Table IV.G-6, for example).*

36 *Also shown as 1.0E-05 in some tables in this section.*

37 *OEHHA, October, 16, 2003 and November 4, 2003.*

38 *Risk-Based Cleanup Goals for Interim Remedial Measures, Honeywell El Segundo Site, 850 South Sepulveda Boulevard, El Segundo, California, March 1, 2004, Parsons.*

39 *Ibid.*

estimates presented in these tables, the Indoor Worker is always predicted to be at greater risk than the Child Shopper and the chemical concentrations in the 4 - 6 ft bgs interval are always predicted to pose a greater risk than those in the 8 - 10 ft bgs interval.

Risk calculations were also generated for each of the VOCs known to occur in site soil gas, for the Child Shopper and Indoor Worker at the 4 - 6 ft bgs and 8 - 10 ft bgs intervals. A summary of the resultant theoretical cancer risk and noncancer hazard estimates are provided in Tables 11 and 12, respectively, of the "Risk Based Cleanup Goals for Interim Remedial Measures"[40] study. These tables have been included in Appendix I to this EIR. The detailed results from each combination of receptor and depth interval are provided in Appendix D of that report. Based on a review of the risk and hazard estimates presented in these tables, the Indoor Worker is always predicted to be at greater risk than the Child Shopper and chemical concentrations in soil gas at the 4 - 6 ft bgs interval are always predicted to pose a greater risk than concentrations in the 8 - 10 ft bgs interval.

Cumulative Risk

The remedial investigations indicate that there are specific locations on the project site where chemical concentrations in surface and shallow subsurface soil are sufficiently elevated over selected "screening" concentrations as to warrant further risk assessment evaluation. Twenty specific locations ("hot spots") were identified for which soil concentrations exceeded health- or groundwater-protective (i.e., conservative) screening levels. These locations are listed below. The letter and number combination listed in the parentheses indicates the grid point on Figure IV.G-5 where these hot spots are located on the Plaza El Segundo site.

Hot Spot Locations

- Bone Yard (B09)
- Bone Yard (B13)
- Bone Yard (B14)
- Bone Yard (B15)
- NW (B05)
- Ortho-xylene (I03)
- Phthalic Anhydride (H04)
- Phthalic Anhydride Landfill
- Refrigerant Plant (C09)
- Refrigerant Plant (E08-E-10)
- Southwest Corner Lot (M03)
- Southwest Corner Lot (P00)
- UND-1 (C14)
- UND-1 (D14)
- UND-2 (G07)
- UND-2 (H07)
- UND-3 (J08)
- UND-4 (L08)
- UND-4 (M06)
- UND-5

[40] *Ibid.*

Figure IV.G-5 Hot Spot Locations

The maximum concentrations of all chemicals detected in samples collected from an area were used to characterize the hot spots, even if the maximum concentrations occur in samples collected from different locations within a hot spot area. In other words, the maximum concentrations of all chemicals within a hot spot were assumed to occur in the same location, even if they were in fact found at different locations within the hot spot. This is a health protective approach. These maximum concentrations were used as the exposure-point concentrations that were evaluated for each of the four receptors (Outdoor Nonintrusive Worker, Excavation Worker, Indoor Worker, Child Shopper). A summary of the predicted cumulative risks and cumulative hazards for each of the hot spots is provided in Table IV.G-6.[41]

As noted above, twenty hot spots were identified as having chemicals present in concentrations greater than screening levels. The twenty hot spots were then evaluated for the associated human health risks using the Unit Concentration Approach to characterize whether the hot spot would pose a health risk that exceeds the cancer risk standard (1×10^{-5}) or hazard quotient (greater than 1) as a result of site conditions. The results for nineteen locations were included in the risk assessment report (Parsons, March 1, 2004) and are discussed in the following text; the results for UND-5 were developed subsequent to the March 1 document and are described in a separate subsection.

Six hot spots (NW B05; Ortho-Xylene I03; Phthalic Anhydride H04[42]; UND-1 C14; UND-2 H07; and UND-4 L08) have cumulative risk and cumulative hazard values that do not exceed the target levels for chemical risk assessment for any of the site specific receptors (*i.e.*, exceedance of the screening values warranted further risk assessment attention, but the further site-specific risk assessment indicated that concentrations were within a range acceptable to LARWQCB).

Three hot spots (Bone Yard B15, Phthalic Anhydride Landfill, and UND-3 J08) have cumulative risk values that exceed target levels for the Outdoor Non-Intrusive Worker receptor hypothetically exposed to surface soils (0 to 0.5 ft bgs) because of arsenic levels in the soil. In these three locations, arsenic is present at concentrations below the regional background concentration (11mg/kg)[43]. Owing to conservatism in the exposure models and toxicity characterization, arsenic is predicted to contribute significantly to exceedances of target-risk levels even at concentrations well below the regional background concentration. However, concentrations of arsenic at and below background concentrations do not constitute an impact that is attributable to site conditions. Therefore, even though the cumulative risk value would exceed the target level at these three locations, an impact is not

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[41] *The Indoor Worker receptor was always more-sensitive (i.e., higher risk estimates) than the Child Shopper receptor; as such, the table only provides the results for the Indoor Worker Receptor.*

[42] *Although this location does not exceed any of the human health risk thresholds, it does pose a potential groundwater contamination source and has been included in the remediation measures for the identified hot spots, as discussed further below.*

[43] *Parsons, Soil Remedial Investigation Report, February 25, 2004.*

Table IV.G-6
Summary of Cumulative Cancer Risks and Cumulative Noncancer Hazards at Hot Spot Locations

Hot Spot Location	Outdoor Non-Intrusive Worker		Excavation Worker		Indoor Worker		Interim Action Warranted	Risk or Hazard Drivers[1]	Likely Remedial Method(s)
	Cumulative Risk	Cumulative Hazard	Cumulative Risk	Cumulative Hazard Index	Cumulative Risk	Cumulative Hazard Index			
Threshold	1.0E-05	1.0E+00	1.0E-05	1.0E+00	1.0E-05	1.0E+00			
Bone Yard B09	7.5E-06	1.1E-02	2.0E-07	1.0E-02	**1.03E-05**	2.2E-02	Yes	Carbon tetrachloride in soil gas	Soil-Vapor Extraction
Bone Yard B13	1.1E-06	7.2E-03	9.2E-08	2.0E-02	**4.2E-03**	**9.6E+00**	Yes	Carbon tetrachloride and chloroform in soil gas	Soil-Vapor Extraction
Bone Yard B14	**1.3E-05**	7.7E-02	3.6E-07	5.5E-02	6.1E-06	1.3E-02	Yes	Arsenic in soil; if the arsenic concentration is reduced to regional background (11 mg/kg), there is no site-attributable excess risk for other chemicals.	Excavation
Bone Yard B15	1.3E-05	1.5E-01	3.5E-07	9.9E-02	3.0E-08	1.3E-05	No	Arsenic in soil; arsenic is in soil at a concentration (9 mg/kg) that is less than regional background (11 mg/kg) and if arsenic is excluded from the risk calculations, there is no site-attributable excess risk.	None
NW B05	5.0E-06	5.9E-02	2.1E-07	5.4E-02	2.5E-10	5.0E-06	No	---	None
Ortho-Xylene I03	1.4E-06	9.5E-03	7.8E-08	1.1E-02	3.8E-06	1.3E-02	No	---	None
Phthalic Anhydride H04	1.9E-06	1.3E-02	5.4E-08	9.5E-03	4.4E-06	9.7E-03	Yes	Total petroleum hydrocarbons are present at concentrations that pose a threat to the groundwater resource	Excavation
Phthalic anhydride Landfill	1.3E-05	2.3E-02	1.4E-06	4.2E-02	9.6E-08	1.9E-04	No	Benzo(a)pyrene, benzo(a)anthracene, arsenic, and chrysene in soil. However, arsenic is present at 4.5 mg/kg, below the regional background of 11 mg/kg; if arsenic is removed from the risk calculations, there is no site-attributable excess risk.	None
Refrigerant Plant C09	2.5E-06	2.5E-02	6.9E-08	1.6E-02	**6.5E-05**	1.5E-01	Yes	Carbon tetrachloride and chloroform in soil gas.	Soil-Vapor Extraction
Refrigerant Plant E08-E10	**7.0E-05**	**1.8E+00**	1.7E-06	**1.05+00**	8.6E-07	2.7E-03	Yes	Aroclor-1254 in soil	Excavation
Southwest Corner Lot M03	**5.0E-05**	2.2E-01	1.4E-06	1.7E-01	**1.7E-05**	5.1E-02	Yes	Arsenic, Aroclor-1260, benzo(a)pyrene, and DDT in soil	Excavation

Hot Spot Location	Outdoor Non-Intrusive Worker		Excavation Worker		Indoor Worker		Interim Action Warranted	Risk or Hazard Drivers[1]	Likely Remedial Method(s)
	Cumulative Risk	Cumulative Hazard	Cumulative Risk	Cumulative Hazard Index	Cumulative Risk	Cumulative Hazard Index			
Threshold	1.0E-05	1.0E + 00	1.0E-05	1.0E + 00	1.0E-05	1.0E + 00			
Southwest Corner Lot P00	**2.0E-05**	1.7E-01	6.0E-07	1.3E-01	No VOCs Detected		Yes	Arsenic and lead in soil	Excavation
UND-1 C14	5.3E-06	1.3E-02	1.4E-07	9.3E-03	9.5E-06	1.8E-02	No	---	None
UND-1 D14	3.1E-06	2.0E-02	9.2E-08	1.5E-02	**4.2E-05**	7.5E-02	Yes	Chloroform and carbon tetrachloride in soil gas.	Soil-Vapor Extraction
UND-2 G07	4.9E-06	4.3E-02	1.8E-07	6.6E-02	**1.2E-04**	**1.9E + 00**	Yes	Tetrachloroethene, dichlorodifluoromethane, and trichlorofluorometthane in soil gas.	Soil-Vapor Extraction
UND-2 H07	7.4E-06	4.6E-02	2.1E-07	3.3E-02	6.0E-06	8.3E-02	No	---	None
UND-3 J08	1.4E-05	5.5E-02	3.9E-07	4.1E-02	One VOC present, but no toxicity data are available		No	Arsenic in soil; arsenic is in soil at a concentration (8.9 mg/kg) that is less than regional background (11 mg/kg) and if arsenic is excluded from the risk calculations, there is no site-attributable excess risk.	None
UND-4 L08	7.6E-06	4.3E-02	2.2E-07	3.1E-02	5.3E-06	8.8E-03	No	---	None
UND-4 M06	2.9E-06	1.9E-02	7.2E-07	1.1E-01	**1.9E-05**	3.4E-02	Yes	Carbon tetrachloride, chloroform, and trichloroethene in soil gas.	Soil-Vapor Extraction
UND-5 (multiple sample locations)	6 of 68: **> 1E-05**	68 of 68: < 1	224 of 224: < 1E-05	1 of 224: > **1**	6 of 25: > **1E-05**	25 of 25: < 1	Yes	Carbon tetrachloride and chloroform in soil gas; DDT, Aroclor-1260, and arsenic in soil; Total Petroleum Hydrocarbons in soil.	Capping; excavation; and soil-vapor extraction

Bold values represent locations where the cumulative risk value or hazard index exceed the target levels as a result of site conditions and remediation would be required.

identified. If arsenic were removed from the calculation, the cumulative risk value would not exceed the target levels.

The remaining 11 hot spots have cumulative risk estimates that exceed target risk levels for one or more receptors based on the presence of one or more chemicals.

The Bone Yard (B14) has a cumulative risk value exceeding the cumulative risk target for the Outdoor Non-Intrusive Worker receptor hypothetically exposed to surface soil. However, of the eleven chemicals that contribute to the excess risk, arsenic accounts for approximately 95% of the $1.3x10^{-5}$ risk estimate. As developed in the Revised Phase I Site Redevelopment Shallow Soil Interim Remedial Measure Work Plan (Parsons, March 8, 2004), a presumptive remedy for surface and shallow subsurface soils is that arsenic would be cleaned up to background levels and if this is assumed, then the site-attributable, post-remediation cumulative risk value is less than the target risk for this hot spot.

Nine hot spots have cumulative risk estimates that exceed target risk levels for one or more receptors based on the presence of one or more chemicals: Bone Yard (B09), Bone Yard (B13), Refrigerant Plant (C09), Refrigerant Plant (E08-E10), Southwest Corner Lot (M03), Southwest Corner Lot (P00), UND-1 (D14), UND-2 (G07), and UND-4 (M06).

- Six of these hot spots (Bone Yard B09 and B13, Refrigerant Plant C09, UND-1 D14, UND-2 G07, and UND-4 M06) exceed target cumulative risk levels on the basis of concentrations of volatile chemicals in soil gas. The Revised Interim Remedial Measures Work Plan (Parsons, March 8, 2004) was focused on removal of shallow subsurface soil and these particular hot spots can not be effectively remediated by shallow soil removal. Thus, remedial action at these locations will be later addressed during preparation of the Final Remedial Action Plan, which will address expansion of the operating soil-vapor extraction system.

- Three hot spots (Refrigerant Plant E08-E10, Southwest Corner Lot M03, and Southwest Corner Lot P00) contain non-volatile chemicals in the soil that could potentially pose an excess risk to the hypothetical Outdoor Non-Intrusive Worker receptor exposed to surface (0- to 0.5-ft bgs) soil. The concentrations of non-volatile chemicals in the soil at the three hot spots were re-evaluated to derive cleanup goals that ensure cumulative cancer risk target levels are not exceeded.

  Cleanup goals for chemicals detected in the surface soil at the Refrigerant Plant E08-E10, the Southwest Corner Lot M03, and the Southwest Corner Lot P00 are provided in Tables 14, 15, and 16, respectively, of the "Risk Based Cleanup Goals for Interim Remedial Measures" report (Parsons, March 1, 2004). These values form the basis of the soil-volume estimates derived in the Revised Interim Remedial Measures Work Plan (Parsons, March 8, 2004). The approach utilized to determine these cleanup goals was fundamentally conservative (health protective) and may be more stringent than necessary to meet the cumulative risk target, but the approach was readily applicable to conditions at the hot spots, and demonstrably compliant with cumulative

risk targets. More information regarding the approach can be found in "Risk Based Cleanup Goals for Interim Remedial Measures" (Parsons, March 1, 2004).

Risk assessment of UND-5 locations was conducted after publication of the risk assessment report (Parsons, March 1, 2004), but was conducted using the same Unit Concentration Approach used for the nineteen other hot spots. As displayed in Figure IV.G-5, several grid-point locations exceed the target risk level of 1×10^{-5} in surface (0- to 0.5-ft bgs) soil of UND-5: L09; and K10, K11, K13, L11, and K12 (due to adjacency). Also displayed in Figure IV.G-5 are several grid-point locations that exceed the target risk level of 1×10^{-5} in shallow subsurface (4- to 6-ft bgs) soil in UND-5: J14, K12, K14, K15, L12, L13, and L14. Remedial options for these locations are being developed under the supervision of LARWQCB[44].

Overview of Remedial Process for the Proposed Plaza El Segundo Development

As discussed above, utilization of the Plaza El Segundo portion of the site in its current condition for the development of a shopping center could potentially expose individuals to significant health risks from site contamination in the soil. However, prior to the start of any construction activities, the project site would be remediated to the satisfaction of the applicable regulatory agencies, the Los Angeles Regional Water Quality Control Board and the South Coast Air Quality Management District.

The conceptual activities for soil cleanup that could be undertaken to reduce health risks below the significance threshold levels include, but are not limited to, the following:

- Removal and offsite disposal of impacted shallow soil (already identified for shallow soil hot spots and discussed in detail below);
- Removal of volatile organic compounds (VOCs) in soil via soil vapor extraction (SVE);
- In situ treatment of impacted soil;
- Installation of engineered cap to physically cut off the exposure pathway for contaminants in impacted soil; and/or
- Installation of vapor barriers to physically cutoff soil vapor exposure pathway.

The specific measures that will be employed to address deep soil and soil gas conditions will be identified in a Soil Remediation Action Plan (SRAP) and Final RI that will be developed and approved by LARWQCB prior to the implementation of final remedial measures. These measures are likely to

[44] *As noted earlier, remedial actions taken under the supervision of a regulatory agency are exempt from CEQA under Guidelines Section 15308 and are not part of the project evaluated in this EIR. However, these measures will be identified and implemented prior to construction of the proposed Plaza El Segundo Development in order to protect the health of construction worker, employees and patrons of the development.*

involve a long term program of soil vapor extraction and treatment and will likely be identified and implemented after certification of this EIR.

Proposed Remediation Activities

The following text details the specific actions that will be implemented under the supervision of LARWQCB to remove the surface or subsurface soil contamination from the "hot spot" locations with a cumulative health risk or hazard greater than the target values for the protection of human-health, or greater than concentrations that pose a threat to the groundwater resource. Table IV.G-7 summarizes the shallow hot spots identified, the risk drivers, and the determination regarding IRM for each hot spot. Table IV.G-8 summarizes the volume calculation data for each of the hot spots. With two exceptions, the maximum excavation depths range from 0.63 feet to 1.64 feet in the areas proposed for excavation; however, a minimum of 3 feet excavation depth was assumed for the purpose of calculating volumes. In all cases, the vertical depth of excavation was calculated for the highest concentration detected within the hot spot and was projected throughout the entire area of the proposed excavation. Confirmatory sampling will be conducted in each excavated area. The cumulative risk calculations for each area will be repeated using the post-excavation data set. If the cumulative risk exceeds 1×10^{-5} or the cumulative hazard index exceeds 1, additional remediation, including additional excavation, will be required.

Procedures for removing and disposing of the contaminated soil are provided in Section 6.0 of the Revised Phase I Site Redevelopment Shallow Soil Interim Remedial Measure Work Plan (Parsons, March 8, 2004).

Bone Yard (B09)

The Bone Yard B09 hot spot area presents an excess risk (1.03E-05) to the Indoor Worker, due primarily to the concentration of carbon tetrachloride in soil gas, which at a maximum concentration of 5.8 mg/m^3 is responsible for 95 percent of the total risk. Excavation of shallow subsurface (0- to 10-ft bgs) soil is not an effective remedial option for subsurface contamination of soil gas; as such, remediation of volatile chemicals in the subsurface will be addressed in the Final Remedial Action Plan through expansion of the soil-vapor extraction system already operating at the site.

Table IV.G-7

Summary of Shallow Soil Hot-Spots Identification Through RI Evaluation, Cumulative Risk Calculations and IRM Soil Removal Actions

Hot Spot	COPC Class with SSL Exceedances Identified in RI	COPC Class Risk Driver with RBCB Exceedances Identified in Risk Assessment Report	Is Hot-Spot Addressed with IRM Shallow Soil Removal Action
Bone Yard B09	SVOCs, VOCs	VOCs (Soil Gas)	No (soil gas issue)
Bone Yard B13	VOCs	VOCs (Soil Gas)	No (soil gas issue)
Bone Yard B14	**Inorganics**	**Inorganics (Arsenic above background)**	**Yes**
Bone Yard B15	Inorganics	Inorganics (Arsenic is the risk driver)	No (Arsenic below background)
NW B05	Pesticides	None	NFA required for shallow soils
Ortho-Xylene I03	VOCs	None	NFA required for shallow soils
Phthalic Anhydride H04	**TPH**	**TPH***	**Yes**
Phthalic Anhydride Landfill	**SVOCs and TPH**	**SVOCs, TPH***	**Yes**
Refrigerant Plant C09	**TPH, VOCs**	**VOCs (soil gas), TPH***	**Yes**
Refrigerant Plant E08-E10	**VOCs, SVOCs, PCBx, and TPH**	**PCBs, TPH***	**Yes**
SW Corner Lot M03	**VOCs, SVOCs, Inorganics, Pesticides, and PCBs**	**SVOCs, Inorganics, Pesticides, and PCBs**	**Yes**
SW Corner Lot P00	**Inorganics**	**Inorganics (arsenic and lead)**	**Yes**
UND-1 C14	PCBs	None	NFA required for shallow soils
UND-1 D14	VOCs	VOCs (Soil Gas)	No (soil gas issue)
UND-2 G07	**VOCs and TPH**	**VOCs (Soil Gas), TPH***	**Yes**
UND-2 H07	Inorganics	None	NFA required for shallow soils
UND-3 J08	**VOCs, Inorganics, and TPH**	**Inorganics (Arsenic above background)**	**Yes (Combined with Landfill)**
UND-4 M06	VOCs, Pesticides and Inorganics	VOCs (soil gas)	No (soil gas issue)
UND-4 L08	TPH	TPH*	IRM Deferred for Phase II Parcels
UND-5	VOCs, SVOCs, Pesticides, PCBs, Inorganics and TPH	Delineation incomplete. Risk evaluation deferred.	Delineation incomplete. IRM deferred.

SSL: Soil Screening Level
RBCB – Risk-Based Cleanup Goal
VOCs: Volatile Organic Compound; SVOCs: Semivolatile Organic Compounds; TPH; Total Petroleum Hydrocarbons; PCBs: polychlorinated biphenyls
IRM: Interim Remedial Measure
TPH*: LARWQCB SSL is used as the action level for TPH

Table IV.G-8
Summary of Soil Excavation Estimates

Hot Spot ID	Length (yds)	Width (yds)	Depth (yds)	Volume (yds)	Primary Driver(s)	Secondary Driver(s)
Boneyard B14	36.66	23.33	1	**855.3**	Arsenic (As)	
Refrigerant Plant E08 (large area east)	14.7	10.1	1	**148.5**	PCB – Arochlor 1254	VOCs, SVOCs, TPH
Refrigerant Plant E08 (small area west)	8.6	7	1	**60.2**	TPH	VOCs, SVOCs
Subtotal				**208.7**		
Refrigerant Plant C09	14	8.6	1	**120.4**	TPH	VOCs
Phthaliic Anhydride Landfill (Incl, J08)	36.66	26.66	6.66	**6,509.2**	TPH	SVOCs, Inganics`
Phthalic Anhydride Plant H04	6.6	18.3	1	**120.8**	TPH	
UND-2 G07 (shallow area west)	10	6.66	1	**66.6**	TPH	VOCs
UND-2 G07 (deep area east)	8.3	8.3	3.33	**229.4**	TPH	VOCs
Subtotal				**296.0**		
SW Corner Lot M03 (large area west)	23.33	30	1	**699.9**	Arsenic	VOCs, SVOCs, Pesticides/PCBs
SW Corner Lot M03 (lg area ext. east)	21.6	7.33	1	**158.3**	DDT	VOCs, SVOCs, PCBs
SV Corner Lot M03 (south)	9	8.33	1	**75.0**	PCB	VOCs, SVOCs, Pesticides
Subtotal				**933.2**		
SW Corner Lot P00	10	8.3	1	**83**	Arsenic and Lead	
Total Estimated Excavation Volume (cubic yards)				**9,006**		
Total Estimated Stockpile Volume (cubic yards) (assuming soil expansion of 130%)				**11,708**		

VOCs: Volatile Organic Compounds; SVOCs: Semivolatile Organic Compounds
TPH: Total Petroleum Hydrocarbons; PCBs: polychlorinated biphenyls
yds: yards

Bone Yard (B13)

The Bone Yard B13 hot spot area presents an excess risk (4.2E-03) and noncancer hazard (HI = 9.6 or 9.6E + 00) to the Indoor Worker, due primarily to the concentration of chloroform and carbon tetrachloride in soil gas. The maximum concentration of chloroform, 17 mg/m^3, accounts for 70 percent of the total risk, while the maximum concentration of carbon tetrachloride, 1.1 mg/m^3, accounts for the remaining 30 percent of the total risk. The chloroform concentration is responsible for 64 percent of the hazard index, and the carbon tetrachloride concentration is responsible for 24 percent of the hazard index. Excavation of shallow subsurface (0- to 10-ft bgs) soil is not an effective remedial option for subsurface contamination of soil gas; as such, remediation of volatile chemicals in the subsurface will be addressed in the Final Remedial Action Plan through expansion of the soil-vapor extraction system already operating at the site.

Bone Yard (B14)

The Bone Yard B14 hot spot area presents an excess risk (1.3E-05) to the Outdoor Non-Intrusive Worker, due primarily to the concentration of arsenic in the shallow soil, which at a maximum concentration of 19 mg/kg is responsible for 94 percent of the total risk. All arsenic-bearing soil above the background concentration of 11 mg/kg would be removed from the hot spots. If arsenic concentrations are reduced to background levels, no site-attributable excess risk will exist for this hot spot. Therefore, the cleanup goal for arsenic at this hot spot is 11 mg/kg. The estimated quantity to be excavated from this hot spot is 855 cubic yards.

Bone Yard (B15)

The Bone Yard B15 hot spot area presents an excess risk (1.3E-05) to the Outdoor Non-Intrusive Worker, due primarily to the concentration of arsenic in the shallow soil. However, arsenic is at a maximum concentration of 9 mg/kg in soil, which is less than the regional background concentration of 11 mg/kg. Concentrations of the other chemical contaminants at this hot spot do not result in a risk estimate greater than the target value, and therefore, there is no site-attributable excess risk for this hot spot. There is no need for interim remedial measures at this location.

NW (B05) and Ortho-Xylene (I03)

Neither of these locations have risk assessment results in excess of target risk values. There are no needs for interim remedial measures at these locations.

Phthalic Anhydride (H04)

TPH concentrations in the Phthalic Anhydride H04 hot spot exceed the SSL of 1,000 mg/kg. Although this location does not exceed any of the human health risk thresholds, the TPH concentrations pose a threat to groundwater. The highest concentration (2,700 mg/kg) is detected in the near surface sample

of boring SB-5. Data from the surrounding area indicates that the impacts are localized and shallow. The estimated quantity of soil to be excavated from this hot spot is 120 cubic yards.

Phthalic Anhydride Landfill

The phthalic anhydride waste disposed of in the northwest corner of UND-3 contains SVOCs and TPH at concentrations in excess of the SSLs. The risk assessment indicates that maximum concentrations of COPCs in the sample taken at this location do not pose a site-attributable excess risk if arsenic, which is detected at a concentration below background, is removed from the cumulative risk calculation.

Although concentrations of chemicals detected in the waste material deposited in the Phthalic Anhydride Waste Pile do not appear to pose an excess risk, the TPH concentration exceeds the SSLs. The waste is located in a limited area currently defined by numerous borings around the fill area that do not contain the waste material. Additional Step 5 borings are planned to further define the depth of waste in this area. The estimated quantity to be excavated from this hot spot is 6,509 cubic yards. The volume estimate assumes a total excavation depth of 20 feet below ground surface.

Refrigerant Plant (C09)

The Refrigerant Plant C09 hot spot presents an unacceptable risk to the Indoor Worker from soil gas. In addition, TPH is detected in soil at concentrations greater than the SSL in the shallow soil sample from SB-48 (4,601 mg/kg). Therefore, the TPH concentration will be addressed during IRM. Any residual soil gas will be addressed in the final RAP. The estimated quantity of soil to be excavated from this hot spot is approximately 120 cubic yards.

Refrigerant Plant (E08-E10)

The Refrigerant Plant E08-E10 hot spot area presents a baseline cumulative risk of 7.0E-05 for the Outdoor Non-Intrusive Worker and a cumulative hazard index of 1.8 (1.8E + 00). The primary risk and hazard driver is the PCB Aroclor-1254 in the soil, which at a maximum concentration of 18 mg/kg is responsible for 87 percent of the total risk and 94 percent of the total hazard. The cleanup goal for PCB Aroclor-1254 in this area is 2.79 mg/kg. In addition, the TPH concentration in the shallow sample from SB-25 exceeds the SSL for TPH. This area, located east of the PCB related impacts will also be excavated. The total estimated quantity of soil to be excavated from this hot spot is approximately 209 cubic yards.

Southwest Corner Lot (M03)

The Southwest Corner Lot M03 hot spot area presents a baseline cumulative risk (5.0E-05) to the Outdoor Non-Intrusive Worker. The primary risk driver chemicals are PCB Aroclor-1260, arsenic, benzo(a)pyrene, and DDT in the soil which contribute 40 percent, 22 percent, 16 percent, and 10 percent of the total risk, respectively. The risk based cleanup goals for these chemicals are as follows:

arsenic (11 mg/kg), Aroclor-1260 (1.54 mg/kg), Benzo(a)pyrene (0.259 mg/kg), and DDT (9.32 mg/kg).

Since there are four primary risk drivers at this hot spot, the excavation area was developed for each chemical. The southernmost excavation is focused on SB-N03 because the PCB concentration there is the highest in the hot spot area. Additional delineation of PCBs to the south is warranted; therefore, the estimated excavation area may change when additional data becomes available. The northernmost excavation is a combined area focused on SB-M03 due to arsenic concentrations and SB114 in grid square M03 due to the concentration of DDT in the shallow sample. Additional delineation of the extent of DDT to the north and east is warranted; therefore, the estimated excavation area may change when additional data become available. Based on current data, the total quantity of shallow soil to be excavated from this hot spot is estimated to be 933 cubic yards.

Southwest Corner Lot (P00)

The Southwest Corner Lot P00 hot spot presents a baseline cumulative risk of 2.0E-05 for the Outdoor Non-Intrusive Worker. The primary drivers are lead, arsenic, and PCB Aroclor-1260, which contribute 48 percent, 40 percent and 6 percent of the risk, respectively. The area-specific clean up goals for these risk driver chemicals are as follows: arsenic (11 mg/kg), Aroclor-1260 (0.317 mg/kg), and lead (2.690 mg/kg). Although three primary risk drivers have been identified at this hot spot, the excavation area is relatively limited because the COPC concentrations were, for the most part, below the cleanup goal values. The estimated quantity to be excavated from this hot spot is 83 cubic yards.

UND-1 (C14)

This location does not have risk assessment results in excess of target risk values. There is no need for interim remedial measures at this location.

UND-1 (D14)

The UND-1 D14 hot spot area presents an excess risk (4.2E-05) to the Indoor Worker, due primarily to the concentration of chloroform and carbon tetrachloride in soil gas. The maximum concentration of chloroform, 151 mg/m^3, accounts for 92 percent of the total risk, while the maximum concentration of carbon tetrachloride, 1.6 mg/m^3, accounts for 7 percent of the total risk. Excavation of shallow subsurface (0- to 10-ft bgs) soil is not an effective remedial option for subsurface contamination of soil gas; as such, remediation of volatile chemicals in the subsurface will be addressed in the Final Remedial Action Plan through expansion of the soil-vapor extraction system already operating at the site.

UND-2 (G07)

TPH concentrations in the UND-2 G07 hot spot require IRM; however, soil gas is also a risk driver at this location. Soil gas will be addressed in the final RAP for the site. The TPH concentrations in two

borings exceeded the SSL. A TPH concentration of 1,600 mg/kg was detected in the near surface sample from boring SB-29; whereas the TPH exceedances in boring SB-30 are in the 4-6 ft interval (1,600 mg/kg) and the 8-10 ft interval (6,600 mg/kg). Thus the vertical limit of TPH is not defined in SB-30. The excavation depth for the area around SB-29 is assumed to be 3 feet, however; the area at SB-30 will be excavated to a minimum of 10 feet in depth based on the excessive TPH concentration detected within the 8-10 ft soil boring interval. The estimated quantity to be excavated from this hot spot is 296 cubic yards.

UND-2 (H07)

This location does not have risk assessment results in excess of target risk values. There is no need for interim remedial measures at this location.

UND-3 (J08)

The UND-3 J08 hot spot area presents an excess risk (1.4E-05) to the Outdoor Non-Intrusive Worker, due primarily to the concentration of arsenic in the shallow soil. However, arsenic is at a maximum concentration of 8.9 mg/kg in soil, which is less than the regional background concentration of 11 mg/kg. Concentrations of the other chemical contaminants at this hot spot do not result in a risk estimate greater than the target value, and therefore, there is no site-attributable excess risk for this hot spot. There is no need for interim remedial measures at this location.

UND-4 (L08)

This location does not have risk assessment results in excess of target risk values. There is no need for interim remedial measures at this location.

UND-4 (M06)

The UND-4 M06 hot spot area presents an excess risk (1.9E-05) to the Indoor Worker, due primarily to the concentration of chloroform and carbon tetrachloride in soil gas. The maximum concentration of carbon tetrachloride, 6.1 mg/m^3, accounts for 53 percent of the total risk, while the maximum concentration of chloroform, 31.9 mg/m^3, accounts for 42 percent of the total risk. Excavation of shallow subsurface (0- to 10-ft bgs) soil is not an effective remedial option for subsurface contamination of soil gas; as such, remediation of volatile chemicals in the subsurface will be addressed in the Final Remedial Action Plan through expansion of the soil-vapor extraction system already operating at the site.

UND-5 (multiple locations)

UND-5 presents a complex situation where multiple sample locations are predicted to pose an excess risk (> 1E-05) to the hypothetical receptors exposed to soil (primarily to the Outdoor Non-Intrusive Worker), to the Indoor Worker receptor from exposure to volatile chemicals in indoor air, or where

concentrations of total petroleum hydrocarbons pose a threat to the ground water resource. Potential remedial options for these are being investigated at the time of preparation of this EIR, but may include excavation, capping, *in-situ* treatment, and expansion of the existing soil-vapor extraction system.

Conclusion

Upon completion of interim remediation of the project site and approval of the SRAP by the LARWQCB, potential health risk impacts to individuals from site contamination would be less than significant with respect to the proposed Plaza El Segundo Development. Implementation of additional long-term measures to address soil gas and groundwater contamination would not affect the risks associated with construction and operation of the proposed Plaza El Segundo Development since the workers, employees and patrons of the proposed Plaza El Segundo would not be exposed to chemicals that would be remediated through these processes. Mitigation measures have been provided below to ensure that the Plaza El Segundo portion of the site is remediated prior to any development activities taking place.

Asbestos and Lead (from lead-based paint) Surveys

The asbestos found in the buildings located on the Plaza El Segundo portion of the proposed Sepulveda/Rosecrans Rezoning Site, was removed prior to the buildings being demolished. The asbestos abatement project consisted of the removal of floor tile and mastic, linoleum, roof mastic and material, and tank insulation. The removal was accomplished by certified personnel using personal protective equipment, hand tools and within a negative pressure enclosure constructed of polyethylene sheeting.

Samples of airborne fiber levels were collected during the abatement process. A detailed description of the sampling process can be found in the report entitled Honeywell International El Segundo Demo Project 850 S. Sepulveda Boulevard, El Segundo, California, Air Monitoring Project 426203AM. Results of all final clearance air samples collected upon completion of abatement and removal of engineering controls in each work area indicated that airborne fibers were below the EPA's recommended re-occupancy level of 0.01 f/cc.[45]

After removal of the asbestos containing materials from the various facilities, the facilities on the Plaza El Segundo site were demolished. There are no structures or asbestos containing materials presently located on proposed Plaza El Segundo site. Therefore, impacts to individuals or the environment from asbestos fibers would be less than significant.

Lead-based paint surveys revealed no significant results.

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[45] *Honeywell International El Segundo Demo Project 850 S. Sepulveda Blvd., El Segundo, California Air Monitoring Project 426203AM, H2 Environmental Consulting Services, Inc., September 22, 2003. Copies of this report are available at the City of El Segundo Planning Department and the El Segundo Library.*

CUMULATIVE IMPACTS

Sepulveda/Rosecrans Site Rezoning

Past industrial uses and practices on the proposed Sepulveda/Rosecrans Rezoning Site and in the surrounding area have led to contamination of the soil and groundwater. Future development on the proposed Sepulveda/Rosecrans Rezoning Site would not add to the amount of contamination in the area. In order to develop the proposed Sepulveda/Rosecrans Rezoning Site, the existing contamination in the soil and groundwater from past uses would be remediated to levels which do not pose an unacceptable risk to human health. This would be a positive impact as the levels of contamination in the area would decrease. Therefore, the proposed Sepulveda/Rosecrans Site Rezoning would not have an incremental effect that could contribute to a cumulatively considerable effect.

Plaza El Segundo Development

Past industrial uses and practices on the proposed Plaza El Segundo Development site and in the surrounding area have led to contamination of the soil and groundwater. Development of the proposed Plaza El Segundo Development would not add to the amount of contamination in the area. In order to develop the proposed Plaza El Segundo Development the existing contamination in the soil and groundwater from past uses would be remediated to levels which do not pose an unacceptable risk to human health. This would be a positive impact as the levels of contamination in the area would decrease. Therefore, the proposed Plaza El Segundo Development would not have an incremental effect that could contribute to a cumulatively considerable effect.

SUBSEQUENT ENVIRONMENTAL DOCUMENTATION

Subsequent environmental documentation must be prepared for any proposed development project within the proposed Sepulveda/Rosecrans Site. Conditions related to soil and groundwater contamination must be examined for the proposed development site, at the time the development project is proposed, in light of the Program EIR to determine whether a new Initial Study would be required to be prepared leading to either an EIR or Negative Declaration. The subsequent environmental documentation must address the following:

G-1 A full characterization of all the parcels that comprise that project site must be undertaken. The City must require that this process be initiated by requiring the project applicant to conduct a Phase I Environmental Site Assessment (ESA) or equivalent investigation and analysis for the specific project site that would be occupied by the proposed development. The Phase I ESA or equivalent document must be prepared by a licensed professional (Registered Environmental Assessor or equivalent) and submitted to the City for review.

G-2 If indicated by the initial investigation, the City must require the preparation of subsequent Phase II investigation(s) and submission to the Los Angeles Regional Water Quality Control Board and/or other appropriate agency. The project applicant must provide to the City copies of all materials submitted to the LARWQCB or any other regulatory agency.

G-3 Remediation of any environmental conditions identified in the Phase I and Phase II site assessments or investigations must be accomplished to the standards established and agreed upon by of the appropriate regulatory agency(ies) for the contemplated development, prior to the issuance of grading or building permits for the project. The project applicant must provide to the City copies of any materials received from the LARWQCB or any other regulatory agency.

G-4 If the future development project would include any part of Sepulveda/Rosecrans Rezoning Site that currently contains structures, an asbestos and lead survey must be conducted to determine the presence or absence of these substances. Removal of these substances must be conducted in accordance with all applicable rules and regulations.

MITIGATION MEASURES

The following mitigation measures are required in order to ensure hazardous material/waste impacts associated with the previous uses of the proposed Sepulveda/Rosecrans Rezoning Site are less than significant.

Sepulveda/Rosecrans Site Rezoning

Further mitigation measures for site specific projects would be identified by the Mitigation Measures described below. Before development is allowed on any part of the Sepulveda/Rosecrans Rezoning Site, the part of the site proposed for development would need to be remediated to the standards required for commercial development by LARWQCB.

G-1 A full characterization of all the parcels that comprise a specific project site must be undertaken. The City must require that this process be initiated by requiring the project applicant to conduct a Phase I Environmental Site Assessment (ESA) or equivalent investigation and analysis for the specific project site that would be occupied by the proposed development. The Phase I ESA or equivalent document must be prepared by a licensed professional (Registered Environmental Assessor or equivalent) and submitted to the City for review.

G-2 If indicated by the initial investigation, the City must require the preparation of subsequent Phase II investigation(s) and submission to the Los Angeles Regional Water Quality Control Board and/or other appropriate agency. The project applicant must provide to the City copies of all materials submitted to the LARWQCB or any other regulatory agency.

G-3 Remediation of any environmental conditions identified in the Phase I and Phase II site assessments or investigations must be accomplished to the standards established and agreed upon by of the appropriate regulatory agency(ies) for the contemplated development, prior to the issuance of grading or building permits for the project. The project applicant must provide to the City copies of any materials received from the LARWQCB or any other regulatory agency.

G-4 If the future development project would include any part of Sepulveda/Rosecrans Rezoning Site that currently contains structures, an asbestos and lead survey must be conducted to determine the presence or absence of these substances. Removal of these substances must be conducted in accordance with all applicable rules and regulations.

Plaza El Segundo Development

G-5 Remedial investigations, health risk assessments for the contemplated development and soils remedial action plans for the Plaza El Segundo portion of the project site must be completed and approved to the standards established and agreed upon in conjunction with the LARWQCB prior to the start of any project activities. The project applicant must provide to the City copies of any materials received from the LARWQCB or any other regulatory agency.

G-6 Remediation of shallow soil of the Plaza El Segundo Development site must be accomplished to the standards for commercial development established and agreed upon in conjunction with the LARWQCB and a shallow soil closure letter must be issued by the LARWQCB prior to the issuance of grading permits for construction of the proposed Plaza El Segundo Development. The project applicant must provide to the City copies of any materials received from the LARWQCB or any other regulatory agency.

LEVEL OF IMPACT AFTER MITIGATION

Sepulveda/Rosecrans Site Rezoning

With implementation of the listed mitigation measures, impacts related to hazards and hazardous materials would be less than significant.

Plaza El Segundo

With implementation of the listed mitigation measures, impacts related to hazards and hazardous materials would be less than significant.