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STATEMENT OF BASIS

PROPOSED REMEDY SELECTION FOR CONTAMINATED SOIL AND GROUNDWATER

AT

TYCO ELECTRONICS CORPORATION
300 Constitution Drive
Menlo Park, California 94025
San Mateo County

EPA ID # CAD 009 125 527

Prepared by

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1.0 Introduction

The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) has prepared this Statement of Basis (SB) to describe the proposed remedy for soil and groundwater, and to explain the reasons for this proposal at the Tyco Electronics Facility (Tyco or Facility), located at 300 Constitution Drive in Menlo Park, California. In addition, the SB includes summaries of other remedies analyzed for this facility. DTSC will select a final remedy for the Facility only after the public comment period has ended and the information submitted during this time has been reviewed and considered. DTSC is issuing this SB as part of its public participation responsibilities under Chapter 6.5 of the California Health and Safety Code, Hazardous Wastes Control Act. The corrective action process conducted at the Tyco facility addressed releases of hazardous waste and hazardous constituents at this facility. The Corrective Action Consent Agreement ("Consent Agreement") between Tyco and DTSC defined the steps and corresponding scope of work for RCRA corrective action with respect to the 81.8-acre manufacturing facility owned and/or operated by Tyco.

This document summarizes information that can be found in greater detail in the RCRA Facility Investigation (RFI) Reports, Corrective Measures Study and Implementation Plan (CMS/IP), Land Use Covenant Implementation and Enforcement Plan (LUC I&E Plan), and other documents contained in the administrative record for this facility. DTSC encourages the public to review these other documents in order to gain a more comprehensive understanding of the facility and corrective action activities that have been conducted there.

In addition to this Statement of Basis, DTSC has prepared the following documents as a part of the public review process to facilitate public comments on these documents prior to making a final decision to approve the selected remediation measures.

- Fact Sheet that summarizes the proposed remedy selection and provides a notice of the public comment period.

- Initial Study/Negative Declaration that is an environmental analysis under the California Environmental Quality Act (CEQA).

DTSC may modify the proposed remedy or select another remedy based on new information or public comments. Therefore, the public is encouraged to review and comment on all alternatives. The public can be involved in the remedy selection process by reviewing the documents during the public comment period which begins July 27, 2006 and ends September 11, 2006.

A Notice of Determination (NOD) on the CEQA environmental analysis will be filed with the State Clearinghouse after a final decision is made on the selected remediation measures and Tyco will be authorized to implement these remediation measures for soil and groundwater contamination associated with historical chemical releases.

2.0 Proposed Remedy

DTSC, in consultation with the U.S. EPA Toxic Substances Control Act (TSCA) program, is proposing the following remedies to address the contaminated media at the Tyco facility:

1) Installing five additional groundwater monitoring wells in the vicinity of the engineered cap (in the eastern portion of the site), and abandoning one well (R-51). This will result in a groundwater monitoring network of 45 wells;
2) Conducting periodic groundwater monitoring sampling. Annual measurements of water levels (gauge for depth) from 45 wells to confirm flow direction and gradient, and field chemistry testing, including pH, temperature, conductivity, salinity, and total dissolved solids (TDS) of groundwater will take place for 20 years. The five new wells will be monitored for volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs) annually for the first five years, then every five years for an additional 15 years. The existing 40 wells will be monitored for VOCs and PCBs every five years for a total of 20 years. Out of 45 wells, 16 wells which are located in the vicinity of and down-gradient of the engineered cap area (in the eastern portion of the site) will be sampled for PCBs every five years for an additional 30 years after initial 20 years of monitoring (Table 1 below);
3) Entering into a land use covenant (LUC) to restrict the future land use to commercial and industrial use only;
4) Conducting an annual site inspection to ensure that land use has been in compliance with the LUC and to report on the inspection of the engineered cap area.

Table 1 – Proposed Groundwater Monitoring Schedules

	Existing 40 wells	New 5 wells	Eastern Specific 16 wells (including the five new wells)
Physical measurement (gauging & parameters), etc.	Annually for 20 years	Initially *and annually for 20 years	
VOCs and PCBs	Initial* and then every five years for a total of 20 years, i.e. Years 1, 5, 10, 15, 20	Initially* every year for five years, then every five years for additional 15 years, i.e. Years 1 through 5, 10, 15, 20 (a total of 20 years)	
PCBs			Every five years for additional 30 years, i.e. Years 25, 30, 35, 40, 45, 50 (a total of 50 years for PCBs)

* Within 60 days after remedies are approved and new wells are installed`

A more detailed discussion of the proposed remedy is included below.

3.0 Background

3.1 Facility Location and Description

The Facility is located at 300 Constitution Drive in the City of Menlo Park, San Mateo County (Figure 1). The Facility was previously owned by Raychem Corporation (Raychem). Raychem, founded in 1957 and now a part of Tyco Electronics Corporation (Tyco), is a materials science company that develops and supplies high-performance products for the aerospace, automotive, construction, electronics, electrical power, process and telecommunications industries. Raychem purchased 40 acres of the subject property in 1965 and initiated construction of the manufacturing facility. By 1968 Raychem increased ownership of the property to 81.8 acres (Figure 2). Raychem gradually expanded the Facility with buildings stretching from Chilco Drive on the west to Willow Road on the east.

Prior to Raychem's ownership, the property was primarily undeveloped marshland with an asphalt batch plant located in the central portion of the property.

3.2 Site Conditions, Topography, and Land Use

The Tyco facility (Facility) is located in a relatively flat-lying industrial area at an elevation of approximately 4 to 7 feet above Mean Sea Level (MSL). Regionally, the Facility is located on the northern edge of a plain that slopes gently northward at a 0.4% to 0.67% slope. The area north of the Facility consists of saltwater evaporation ponds (commercially operated) and wetlands ranging in elevation between 0 and 8 feet above MSL. The Facility is bordered on the north by Bayfront Expressway, on the south by an easement for a railroad line, on the west by Chilco Street, and on the east by a recently developed parcel (self-storage facility) and re-conditioned wetlands habitat located along Willow Road.

Land use within one-quarter mile of the Raychem/Tyco vicinity is characterized by commercial, industrial, and residential developments. The nearest current sensitive population, an elementary school, is located approximately 300 feet to the south. Currently, the nearest residential populations are present approximately 650 feet south of the Facility. A new multi-units residential project is planned for about 200 feet south of the Facility. Future land use and zoning for the area east and west of the Facility will continue to be for light industrial/commercial use.

There are no bodies of surface water at the Raychem/Tyco Facility. The nearest surface water bodies are the sloughs and inlets of San Francisco Bay except for the swale located south of the Facility that contains localized shallow ponded water during the rainy season. The Facility manages storm water on the site as specified in the facility Storm Water Management Plan [periodic reports are submitted to the California Regional Water Quality Control Board (RWQCB)].

3.3 Geologic and Hydrogeologic Conditions

Geologic materials underlying the site consist of up to several feet of artificial fill (sandy gravels, clayey gravels, and sandy clay) underlain by native materials (older alluvial fan deposits, basin deposits, estuarine and channel deposits) consisting of materials ranging from high-plasticity silty clay to granular deposits of sands or sandy gravels. The predominance of the low-permeability clayey estuarine deposits has generally restricted the subsurface migration of the chemicals released at the site.

First groundwater beneath the site is found at relatively shallow depths, generally within 10 to 14 feet of the surface and it rises (due to semi-confined conditions) to within a few feet to eight to ten feet below ground surface (bgs). The upper water-bearing zone is divided into an upper Alpha unit (up to depths of 25 feet), and lower Alpha unit (25 to 37 feet deep). A Beta water-bearing zone is present starting below 37 to 43 feet bgs and extends to approximately 100 feet bgs. The Beta zone and the next (deeper) water-bearing zone are separated by low-permeability clayey materials that are tens of feet thick and extensive in area.

The Alpha water-bearing zone is characterized by hyper-saline water (more saline than sea water) for most of the site due to its close proximity to the commercial saltwater evaporation ponds that border San Francisco Bay. The Regional Water Quality Control Board (RWQCB) in a letter dated August 13, 2002, stated: "…that the quality of the shallow groundwater underlying the Tyco site is such that it is not considered as a potential source of drinking water, based on the high Total Dissolved Solids (TDS) in the shallow aquifer zone." The Alpha water-bearing zone beneath the site is therefore not considered a source of drinking water by the Regional Water Quality Control Board because of the elevated salinity in groundwater.

3.4 Hazardous Waste Facility Permit and Corrective Action Consent Agreement

Raychem managed hazardous wastes at the Facility under a Hazardous Waste Facility Permit (Permit) issued in 1983 by the California Department of Health Services (DHS, now California Environmental Protection Agency, Department of Toxic Substances Control, "DTSC").

The Permit allowed operation of the Omega Wastewater Treatment System, the Hazardous Waste Storage Yard, and the Potassium Ferrocyanide Tank Farm. Closure activities for the above-ground portions of these hazardous waste management units (HWMUs) were approved by DTSC on January 9, 1997.

DTSC conducted a RCRA Facility Assessment (RFA) in 1989 and the RFA Report recommended that further investigation was needed (see detail in Section 4 below).

Raychem and DTSC entered into a Corrective Action Consent Agreement (Agreement) on June 26, 1996 to facilitate the required RCRA Facility Investigation (RFI) for the Facility (see detail in Section 5 below). Tyco entered into another Corrective Action Consent Agreement with DTSC in September 2000. By this agreement, in addition to the

RFI activities, Tyco was required to complete Interim Measures, a Corrective Measures Study, Remedy Selection and Corrective Measures Implementation for the Site.

4.0 RCRA Facility Assessment

In the RCRA corrective action program (Figure 3), the initial site assessment is called the RCRA Facility Assessment (RFA). During the RFA, an overseeing agency typically compiles existing information on environmental conditions at a given facility and as necessary, gathers additional facility-specific information on Solid Waste Management Units (SWMUs) and other Areas of Concern (AOC), releases, potential releases, release pathways, and receptors. Information gathered during an RFA usually forms the basis for initiating a full-scale site Investigation (RCRA Facility Investigation). A Solid Waste Management Unit (SWMU) means "Any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous wastes. Such units include any area at a facility at which solid wastes have been routinely and systematically released." An Area of Concern (AOC) means "any area of a facility under the control or ownership of an owner or operator where a release to the environment of hazardous wastes or hazardous constituents has occurred, is suspected to have occurred, or may occur, regardless of the frequency or duration." If the facility poses a threat to human health or the environment DTSC may require corrective action either by a corrective action order, corrective action consent agreement, or through the facility's permit conditions.

In September 1989, DHS, the predecessor of DTSC, completed an RFA for the Raychem property. The Site has been subdivided into a western portion (Areas 1 – 5) and an eastern portion (Area 6) to facilitate reporting (Figure 2). The RFA identified 15 solid waste management units (SWMUs) which also included the permitted Hazardous Waste Management Units. The RFA also identified two general Areas of Concern (AOC) that were termed AOC1 (east end of site including Buildings O, P, Y, and surrounding areas, formerly known as the Chemical Plant Area or ChemPlant) and AOC2 (Former Pilot Plant site). In 1999-2000 three more SWMUs were added (discussions of SWMUs #16, #17, and #18 are included in the RFI report of March 2002). Appendix 1 presents a list of the SWMUs and AOCs where hazardous materials or wastes were released or could have been released to the soil. Figures 4 and 5 show the locations of all SWMUs and AOCs. DHS, based on the RFA Report, concluded that further investigation was needed to determine the nature and extent of contamination in these areas.

Raychem and DTSC entered into a Corrective Action Consent Agreement (Agreement) on June 26, 1996 to facilitate the required RCRA Facility Investigation (RFI). Tyco entered into another Corrective Action Consent Agreement with DTSC in September 2000 and further amended it on December 31, 2001. In addition to the RFI activities, Tyco was required to complete Interim Remedial Measures, a Corrective Measures Study, and a Remedy Selection with a Corrective Measures Implementation Plan for the Site.

5.0 RCRA Facility Investigation

The general objective of the RCRA Facility Investigation (RFI) is to thoroughly evaluate the nature and extent of releases of hazardous wastes and constituents. The RFI must include characterization of the facility (process, waste management, etc.), environmental setting, source areas, nature and extent of contamination, migration pathways (transport mechanisms) and all potential receptors. The RFI characterizes the nature and extent of any contamination in and around the facility with soil and groundwater samples. The investigation evaluates whether hazardous wastes or hazardous waste constituents have migrated or may migrate from the facility into the environment through the following pathways: soil, groundwater, and air.

Between 1999 and 2003 Tyco conducted RFI activities (according to the RFI Workplan approved in 1999) to gather information regarding surface and subsurface chemical impacts on soils and groundwater. The Site has been subdivided into a western portion (Areas 1 – 5) and an eastern portion (Area 6) to facilitate reporting.

The RFI identified Chemicals of Potential Concern (COPCs) in the soil and groundwater from the following general classifications:

- Volatile Organic Compounds (VOCs)
- Semi-Volatile Organic Compounds (SVOCs)
- Metals
- Total Recoverable Petroleum Hydrocarbons (TRPH)
- Polychlorinated Biphenyls (PCBs)
- Polychlorinated Dioxins and Dibenzofurans

The RFI identified localized areas of contaminated soils and concluded that most of the releases are believed to have occurred in the 1970s and 1980s. Elevated levels of COPCs (e.g. VOCs, SVOCs, PCBs) were found at a number of locations at the Facility with the main area of contamination located at the former ChemPlant. The probable sources of contamination are attributed to leaks and spills from above-ground storage tanks and piping, below-ground sumps, releases from drum storage areas and waste management practices employed in the past by the Facility.

Tyco conducted several interim remedial measures (IRMs) that resulted in source removal for soils (~5,000 cubic yard of soil removed) but also helped to reduce impacts to ground water (documented reductions in plume size and chemical concentrations, see summary in Section 6 – Interim Remedial Measures).

The groundwater RFIs were conducted between 1999 and 2004. In earlier groundwater studies the eastward edge of a VOC plume was projected off-site, extending under Willow Road. The recent 2003 and 2004 laboratory analyses (dissolved oxygen, nitrates, iron, methane, sulfate, etc.) were performed on groundwater samples to assess natural attenuation conditions at the Site (GRA, 2003 and GRA, 2004). The evaluation indicated that natural attenuation of groundwater contaminants was occurring at the Site. The studies indicate that groundwater contamination is limited to the Property and

contaminant concentrations are expected to continue to decrease with time. Extensive interim remedial soil removal in the eastern portion of the site along with continuing natural attenuation has reduced the plume size and concentrations of VOCs.

A report of groundwater flow and contaminant transport modeling was prepared by Tyco's consultant, HydroFocus (2003). Modeling of contaminant transport evaluated locations and concentrations of significant chemicals [chlorobenzene, 1,1-Dichloroethene (1,1,-DCE), and PCBs] out to the year 2072. The estimated rate of movement through groundwater for chlorobenzene was approximately 10 feet/year for the western portion of the site and 24 ft/yr for the eastern portion of the site. The groundwater velocity for PCBs was estimated at 1 ft/yr. The result of the groundwater flow and contaminant transport modeling predicted declining concentrations of chemicals over time for VOCs (e.g. Chlorobenzene and 1,1-DCE) with minimal movement of PCBs in groundwater.

Tyco also conducted soil investigations for offsite areas and detected PCBs in shallow soils in the northern portion of the railroad right-of-way, south of the Tyco property line. Tyco conducted interim soil removal in 2004 (see Section 6 - Interim Remedial Measures) from the off-site railroad right-of-way. Tyco removed soil contaminated with PCBs greater than 1 ppm which is a level considered an acceptable, non-restrictive residential level by the US EPA TSCA program. Both USEPA and DTSC have determined that no further action for off-site soil was required.

Results of soil investigation activities were organized into two RFI Reports entitled:

- *RFI Report- Soil Investigation (Final), Raychem/Tyco Facility- Expanded Area 6 (Eastern Portion of Site),dated March 2002 (GRA, 2002a);*

- *RFI Report-Soil Investigation (Final), Raychem/Tyco Facility- Areas 1 through 5 (Western and Central Portions of Site), dated June 2002 (GRA, 2002b).*

The most significant groundwater investigation and monitoring results are included in the following four reports entitled*:*

- *RFI Groundwater Report, Raychem/Tyco Electronics, 300 Constitution Drive, Menlo Park, California, dated November 2002 (GRA, 2002)*

- *Groundwater Monitoring and Preliminary Assessment of Bioattenuation Report Raychem/Tyco Electronics, dated* April *2003 (*GRA, 2003)

- *Groundwater-flow System Description and Simulated Constituent Transport*, dated November 21, 2003 (HydroFocus, 2003)

- *Groundwater Monitoring and Assessment of Natural Attenuation, Sampling Events of January 2004 and April 2004* dated May 2004 (GRA, 2004)

Two offsite soil investigation reports are entitled:

- Report, Assessment of Off-Site Soils, Sediments, and Surface Water for the Raychem/Tyco Facility, 300 Constitution Drive, Menlo Park, California (GRA, September 2003); and

- Report, Results of Soil Sampling, Railroad Right-of-Way, Near Willow Road, Menlo Park, California, Tyco EPA ID No. CAD009125527, dated September 2004 (GRA, 2004).

6.0 Interim Remedial Measures

Interim Remedial Measures (IRMs) are actions which can be initiated prior to implementation of the final corrective measure to control or eliminate the release or potential release of hazardous wastes or hazardous constituents at or from a facility. The ultimate goal of interim measures is to achieve stabilization at a facility. A site is considered stabilized when: 1) human and environmental exposure pathways are blocked; 2) off-site migration is stopped; and 3) sources of contamination are controlled.

Tyco's IRMs associated with PCB-contaminated soils consisted of voluntary soil removal/disposal activities conducted in accordance with 40 CFR§761. IRM activities for the western and eastern portions of the Site were conducted by Tyco from May 2000 through November 2004. IRMs were conducted to address soil contamination while RFI studies were ongoing. Preliminary risk assessment studies provided guidance as to necessary cleanup levels (10 ppm for onsite PCBs and 1 ppm for offsite PCBs) for the IRM activities. A total of approximately 5,000 cubic yards (cy) of contaminated soil was removed from the Site during IRM activities.

The IRMs were conducted independently of each other. After each IRM, a completion report was prepared summarizing the work performed. The IRMs were identified as Phase 1, Phase 2, Addendum Nos. 1 through 5, and Off-Site Storm Water Swale Soil Removal/Disposal. Appendix 2 summarizes IRMs performed at the Site to date. The excavation areas for all the IRMs are presented in Figure 6. Phase 1 of the IRM activities consisted of the decommissioning and demolition of Buildings P and Y, and several aboveground solvent storage tanks (e.g. xylenes and toluene) and waste storage tanks formerly located in Area 6. Phase 1 activities were completed between April and August 2000.

Phase 2 consisted of the voluntary removal of approximately 2,780 cubic yards (cy) of chemically-impacted soil from four SWMUs within Area 6 and covering the former building areas and SWMUs with select imported fill. These SWMUs are identified as:

- SWMU No. 6a- Chlorobenzene-impacted soils in the vicinity of the Hazardous Waste Storage Yard.
- SWMU No. 16- PCB-impacted soils in the vicinity of the former Dowtherm Boiler/Therminol Heater.
- SWMU No. 17- Chlorobenzene-impacted soils northeast of Building O.
- SWMU No. 18- VOC-impacted soils beneath former Building P.

Phase 2 IRM activities, including excavation and disposal of contaminated soil, importing and backfilling clean soil, and site grading operations, were completed between August 2000 and January 2001.

Subsequent IRM activities were performed as addendums to the original IRM Workplan. Addendum Nos. 1 and 2 applied to the backfill and capping of SWMU 16, respectively. Addendum No. 3 addressed the removal of soil at SWMU 18. Addendum No. 4, the remedial work in November to December 2001, included removal of soils at various

contaminated areas and storm water drain inlets, demolition of Building O, and removal of a residual power pole stub in Area 6. For Addendum No. 5, performed during the period October 2002 to February 2003, PCB-contaminated soils were removed from an area south of Building B in Area 1 of the Site, and PCB-contaminated sediments were removed from four storm water drain inlets at the Former Pilot Plant area, east of Building B. In October and November 2004, concurrent with removal of soil at the off-site storm water swale area in the railroad right-of-way, soil removal activities were performed at three additional areas at the Site where PCB-contaminated soil was reported. These areas included three locations in Area 1, south of Building B; three locations in Area 6; and one on-site location adjacent to the off-site storm water swale area in Area 6.

For the property located in the railroad right-of-way south of the Tyco facility, Tyco removed off-site soil contaminated with PCBs greater than 1 ppm which is a level considered an acceptable, non-restrictive level by the US EPA TSCA program. Both USEPA and DTSC have determined that no further action for off-site soil was required.

Details of these activities are presented in the following reports:

- *Interim Measures Implementation and Buildings P & Y Demolition Report- Area 6, dated February 19, 2001* (SCS, 2001)

- *Interim Remedial Measures Addendum #4, Implementation Summary- Area 6, dated April 9, 2002* (SCS, 2002)

- *Implementation Report, Interim Remedial Measures, Addendum #5, Soil Removal, South of Building B, Area 1, dated May 7, 2003* (SCS, 2003*)*

- *Closure Report, Soil Removal/Disposal, Off-Site Storm Water Swale Area, Railroad Right-of-way South of Tyco Facility's East End, dated December 15, 2004* (SCS, 2004)

7.0 Summary of Facility Risks

Risk assessment is a process conducted to evaluate the potential risks posed by the environmental contamination based on the effects that the contaminants have on human health and the environment. The risk assessment process entails the computation of theoretical cancer risk and potential hazards of non-cancer agents from contaminated media to human health. The risk assessment can be used to calculate cleanup levels by establishing an accepted risk level or hazardous quotient, and back-calculating to a media concentration.

The RWQCB determined in August 2003 that there was "no beneficial use" of shallow groundwater at the Facility which resulted in the elimination of consideration of groundwater as a drinking water source and thus ingestion of ground water is not considered a complete exposure pathway in the human health risk assessment.

7.1 Human Health Risk Assessment

Based on the findings of the RFIs and results of the IRMs conducted at the Site, two human health risk assessment (HHRA) studies, Western Portion and Eastern Portion of the Site ,were conducted in accordance with DTSC- approved work plans. The objective of the HHRA studies was to evaluate the potential human health risks attributable to residual chemicals of potential concern present in the soil and groundwater beneath the Site following the IRM activities. For purposes of the risk assessments, the Western Portion of the Site was further divided into two areas, Area A and Area B. The Eastern Portion of the Site was further divided into three areas, Areas A, B, and C.

The HHRA reports have been reviewed and approved by DTSC. The results of the assessment are presented in two reports, entitled:

- *Baseline Human Health Risk Assessment, Western Portion (Areas 1 through 5), Tyco Electronics (Former Raychem) Facility, Menlo Park, California*, dated April 2005 (SCS, 2005) and Addendum dated July 2005 (SCS, 2005)

- *Baseline Human Health Risk Assessment, Eastern Portion (Expanded Area 6), Tyco Electronics (Former Raychem) Facility, Menlo Park, California*, dated July 2005 (SCS, 2005)

The HHRA assumed the presence of residual contaminants, primarily PCBs, and examined the risk estimates for the following potentially exposed populations: a) on-site commercial/industrial worker, b) on-site construction/utility worker, c) off-site commercial/industrial worker, d) off-site resident, and e) hypothetical future on-site resident.

Three exposure scenarios were evaluated in the HHRA, as follows:

1. Current Unchanged Site Configuration – This scenario assumes that the site will continue to operate as a commercial/industrial facility and that the existing buildings and surface cover (i.e., pavement and landscaping) will remain in place. If buildings

and surface cover currently exist in the area evaluated, risk and hazards were estimated assuming current on-site commercial/industrial workers may inhale volatile chemicals that migrate from soil and groundwater into a building. If surface cover does not currently exist in the area, it was assumed that workers may be exposed to chemicals at the site via inhalation, incidental ingestion of soil, and dermal contact with soil.

2. Future Modified Site Configuration (Commercial/Industrial Land Use) – This scenario assumed continued use of the Project Site as a commercial/industrial facility. It further assumed that the Project Site is modified in the future and that all existing surface cover (including pavement and buildings) were removed and the underlying soil exposed. Risks and hazards were estimated assuming that future on-site commercial/industrial workers, future on-site construction workers, and future off-site commercial/industrial workers, as well as off-site residents may be exposed to site chemicals via inhalation, incidental ingestion of soil, and dermal contact with soil.

3. Hypothetical Future Modified Site Configuration (Unrestricted Land Use) – This scenario assumed that the Project Site would be redeveloped in the future for residential use (unrestricted use). It further assumed that all surface cover is removed and that single-family residential homes are developed. Under this scenario, risks and hazards were estimated assuming that future residents may be exposed to chemicals at the site via inhalation, incidental ingestion of soil, dermal contact with soil, and ingestion of homegrown produce.

The summary of risk calculations of the two baseline HHRAs are as follows:

Table 2 - Health Risk Assessment Summary for the Western Portion

	Current Unchanged Site Configuration[1]		**Future Modified Site Configuration[2]**	
	Carcinogenic Risk	Hazard Index	Carcinogenic Risk	Hazard Index
Area A[3]				
Onsite Commercial/industrial Worker	2.5×10^{-6}	0.05	6.2×10^{-6}	0.2
Onsite Construction/utility worker	4.8×10^{-7}	0.8	4.4×10^{-7}	0.6
Offsite Commercial/industrial Worker	2×10^{-9}	0.00002	2×10^{-7}	0.002
Offsite resident	3.1×10^{-9}	0.00005	4.2×10^{-7}	0.007
Hypothetical Future Onsite Resident Aggregate Risk	n/a	n/a	7×10^{-5}	5
Area B[4]				
Onsite Commercial/industrial Worker	6.2×10^{-6}	0.4	6×10^{-6}	0.4
Onsite Construction/utility Worker	5.8×10^{-7}	1	5.7×10^{-7}	1
Offsite Commercial/industrial Worker	8.4×10^{-9}	0.0001	8.4×10^{-9}	0.0001
Offsite Resident	9.7×10^{-9}	0.0003	1.8×10^{-8}	0.0004
Hypothetical Future Onsite Resident Aggregate Risk	n/a	n/a	5.1×10^{-5}	7

[1] Assumes that the site will continue to operate as a commercial/industrial facility and that the existing buildings and surface cover (i.e., pavement and landscaping) will remain in place.
[2] Assumes that all existing cover (including pavement, buildings, and engineered cap) are removed and the underlying soil is exposed.
[3] For the west end of the Tyco facility Area A = Commercially-Developed Area (Figure 7)
[4] For the west end of the Tyco facility Area B = PCB-Remediated Area (Landscape area)

Table 3 - Health Risk Assessment Summary for the Eastern Portion

	Current Unchanged Site Configuration[1]		**Future Modified Site Configuration**[2]	
	Carcinogenic Risk	Hazard Index	Carcinogenic Risk	Hazard Index
Area A[3]				
Onsite Commercial/industrial Worker	1.2×10^{-7}	0.002	1.2×10^{-6}	0.04
Onsite Construction/utility Worker	1.3×10^{-7}	0.1	1.4×10^{-7}	0.1
Offsite Commercial/industrial Worker	5.8×10^{-10}	0.000007	5.8×10^{-8}	0.0008
Offsite resident	8.3×10^{-10}	0.00002	1.2×10^{-7}	0.002
Hypothetical Future Onsite Resident Aggregate Risk	n/a	n/a	1.1×10^{-5}	0.8
Area B[4]				
Onsite Commercial/industrial Worker	1.5×10^{-5}	0.2	1.4×10^{-5}	0.2
Onsite Construction/utility Worker	1.3×10^{-6}	2.4	1.1×10^{-6}	2.6
Offsite Commercial/industrial Worker	5.6×10^{-8}	0.003	5.6×10^{-8}	0.003
Offsite Resident	8.5×10^{-8}	0.008	1.2×10^{-7}	0.01
Hypothetical Future Onsite Resident Aggregate Risk	n/a	n/a	1.3×10^{-4}	4
Area C[5]				
Onsite Commercial/industrial Worker	No complete exposure pathways	No complete exposure pathways	1.1×10^{-3}	71
Onsite Construction/utility Worker	No complete exposure pathways	No complete exposure pathways	1.1×10^{-4}	173
Offsite Commercial/industrial Worker	No complete exposure pathways	No complete exposure pathways	9.8×10^{-8}	0.005
Offsite Resident	No complete exposure pathways	No complete exposure pathways	2.1×10^{-7}	0.02
Hypothetical Future Onsite Resident Aggregate Risk			9.4×10^{-3}	1,152

[1] Assumes that engineered cap remains in place.
[2] Assumes that all existing cover (including pavement, buildings, and engineered cap) are removed and the underlying soil is exposed.
[3] For the east end of the Tyco facility Area A = Commercially-Developed Area. (Figure 8)
[4] For the east end of the Tyco facility Area B = Former Chemical Plant.
[5] For the east end of the Tyco facility Area C = Engineered Soil Cap Area.

7.1.2 Health Risk Assessment Results for the Western Portion of the Site

As shown in Table 2, the estimated carcinogenic risk for all potentially exposed populations considered under a commercial/industrial land use scenario for the Western Portion of the Site are within the range (10^{-6} to 10^{-4}) defined as the acceptable risk range by the USEPA. However, for risk management purposes, estimated risks for commercial/industrial workers that exceed 1×10^{-6} are discussed in detail below.

Western Portion - Area A

The estimated carcinogenic risk for the current on-site commercial/industrial worker in Area A is 2.5×10^{-6}. No individual chemical-specific risk exceeds 1×10^{-6}. The only complete exposure pathway identified for Area A was inhalation because the surface of Area A is currently covered by buildings and pavement. Therefore, the estimated risk for the on-site commercial/industrial worker is attributable to inhalation of volatile chemicals (specifically, benzene, PCE and vinyl chloride) migrating from soil and groundwater to indoor air. The hazard index (0.05) is well below the threshold value of 1.

The estimated carcinogenic risk for the future on-site commercial/industrial worker in Area A is 6.2×10^{-6}. This risk is attributable primarily to incidental ingestion of and dermal contact with benzo(a)pyrene in soil. The concentrations of benzo(a)pyrene are within the typical anthropogenic background range for urban and rural soils of 0.165 to 1.3 mg/kg (ATSDR 1995). As such, the detections of benzo(a) pyrene may be attributable to background levels rather than past facility operations. The hazard index (0.2) is well below the threshold value of 1.

Western Portion – Area B

The estimated carcinogenic risk for the current on-site commercial/industrial worker in Area B is 6.2×10^{-6}. The estimated risk for the on-site commercial/industrial worker is attributable to incidental ingestion of and dermal contact with PCBs in soil. Since the surface of Area B consists of exposed soil, it was assumed that current commercial/industrial workers may be exposed to chemicals detected in post-excavation confirmation samples (i.e., sidewall and bottom samples) collected from 0 to 5 feet below ground surface in Area B. It is important to note that evaluation of direct exposures to Area B soils is conservative (i.e., health-protective) because the exposed surface soils now are under DTSC-approved backfill materials following IRM excavation activities.

The estimated carcinogenic risk for the future on-site commercial/industrial worker in Area B is 6×10^{-6}. This risk is attributable to incidental ingestion of and dermal contact with PCBs detected in post-excavation samples. The hazard index (0.4) is below the threshold value of 1.

7.1.3 Health Risk Assessment Results for the Eastern Portion of the Site

With the exception of Area C (the Engineered Cap Area), the estimated carcinogenic risk for all potentially exposed populations considered under the commercial/industrial land use scenario for the Eastern Portion of the Site are within the range (10^{-6} to 10^{-4}) defined as the acceptable risk range by the USEPA. The presence of an engineered cap in Area C prevents exposure to contaminants beneath the cap. For this reason, there are no complete exposure pathways and thus no estimated risks for Area C under current conditions. However, for risk management purposes, risks were estimated for Area C assuming that the Engineered Soil Cap is removed in the future. This scenario is very unlikely as a land use covenant prohibits disturbance of the cap. The estimated risks for commercial/industrial workers in Area B that exceed 1×10^{-6} and the hazard indices for construction workers that exceed 1 are discussed in detail below.

Eastern Portion – Area B

The estimated carcinogenic risk for the current on-site commercial/industrial worker in Area B is 1.5×10^{-5} (Table 3). Risks for this area were estimated assuming that current on-site commercial/industrial workers may be directly exposed to contaminants in the area via inhalation, incidental ingestion of soil and dermal contact with soils. The risk is attributable to inhalation of benzene migrating from soil to indoor air and direct contact (i.e., ingestion and dermal contact) with benzo(a)pyrene, total PCBs and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) toxicity equivalent (TEQ) in soil. Benzo(a)pyrene concentrations (maximum concentration of 0.54 mg/kg) are within the typical anthropogenic background range for urban and rural soils of 0.165 to 1.3 mg/kg (ATSDR 1995). The average PCB concentration detected in Area B soil (the average PCB concentration in the 0 to 5-foot depth interval is 0.96 mg/kg) is below the PCB cleanup level (1 mg/kg) established by USEPA (40 CFR§761) for unrestricted use. The 2,3,7,8-TCDD TEQ concentrations (maximum concentration of 7.02×10^{-4} mg/kg) are below the action level of 1 microgram per kilogram (μg/kg) (or 1×10^{-3} mg/kg) established by USEPA for dioxins in residential soils (USEPA 1998). The hazard index (0.2) is well below the USEPA threshold value of 1. It is important to note that evaluation of direct exposure to Area B soils is conservative (i.e., health-protective) because the surface area has now been covered with a layer of DTSC-approved imported fill preventing exposure to residual surface contamination in Area B.

The estimated carcinogenic risk for the future on-site commercial/industrial worker in Area B is 1.4×10^{-5}. This risk is attributable to the same chemicals and exposure pathways identified for the current on-site commercial/industrial worker above.

The estimated hazard index for the current on-site construction/utility worker in Area B is 2.4. This value, which exceeds the threshold value of 1, is attributable to inhalation of aluminum on dust generated during construction activities. Aluminum concentrations detected in Area B soils, which range from 1,080 to 35,000 mg/kg, are consistent with background concentrations (range of 30,000 to 106,000 mg/kg and average of 73,000 mg/kg) found in California soils (Bradford, et.al., 1996).

The estimated hazard index (2.6) for the future on-site construction/utility worker also exceeds the USEPA threshold value of 1 and is attributable to background levels of aluminum.

Conclusions

Assuming that the site remains commercial/industrial and the engineered soil cap remains in place, the estimated risks from potential direct exposure to soil and groundwater at the Site ranged from 10^{-9} to 10^{-5}.

If the Site is to be re-developed, clean fill soil and new building foundations will further reduce the exposure and potential risk. Based on the findings of the HHRAs, the Site does not pose a human health risk in its current condition nor would it pose a risk in the future if the Site continues to be used as a commercial/industrial property. However, if the Site were developed as a residential property or for other land uses not included in the HHRA, further action may be required to protect human health. A Land Use Covenant (LUC) will ensure and limit future use of the Site to commercial/industrial (non-residential).

7.2 Ecological Health Screening

An ecological screening was conducted for the western and eastern portions of the Tyco site and the studies (SCS Engineers, July 2003 and November 2003) concluded that the Site poses very little threat to biota from areas contaminated with hazardous substances due to lack of complete exposure pathways. The saltwater evaporation ponds located north of the site and the wetland-mitigation area located east of the site are separated from the Tyco site by paved roads/highways (Bayfront Expressway and Willow Road).

8.0 Scope of Corrective Actions

As a result of RFIs, interim soil removals and HRAs, Tyco is required to address the corrective action for on-site contaminated soil and groundwater. Tyco has submitted a Corrective Measures Study/Implementation Plan (CMS/IP). The general objective of the CMS/IP is to develop and evaluate corrective measure alternative(s) that may be utilized at the facility to address releases of hazardous waste and constituents from the SWMUs, AOCs, and other source areas at the facility.

9.0 Summary of Alternatives

9.1 Corrective Measure Alternatives for Soil

A total of four alternatives were considered for the soil remedy:

- Alternative 1 -- No action. This alternative assumes no remediation. The "No Further Action" alternative is required to provide a baseline for comparing other alternatives. This alternative is not intended to be a viable approach.

- Alternative 2 -- Soil flushing. Soil flushing utilizes the contaminant's solubility in liquid to physically separate it from the soil matrix. In-situ soil flushing is the extraction of contaminants from the soil with water or other suitable aqueous solutions. This alternative can treat both metals and VOCs in soils. Soil flushing would be accomplished by passing extraction fluid consisting of solvents and surfactants through in-place soils using an injection or infiltration process. Extraction fluids must be recovered from the underlying groundwater and, when possible, they are recycled. The migration of contaminants into groundwater or uncontrolled migration laterally in soil (vadose zone) must be prevented by incorporating proper control measures.

- Alternative 3 -- Soil capping. This alternative consists of installation of a multi-media engineered cap over areas of contamination to prevent potential human or ecological exposure. A multi-media engineered cap consists of several discrete layers of media such as synthetic granulated clay liner, high-density polyethylene liner, geonet protective drainage cover, and protective soil layer. This treatment method is effective in handling any range of contaminants.

- Alternative 4 -- Excavation and off-site disposal. This alternative consists of soil excavation and transport to an off-site permitted treatment and disposal facility. This treatment method is effective in handling any range of contaminants.

9.2 Corrective Measures for Groundwater

Based on the fact that the San Francisco Bay Regional Water Quality Control Board has designated the groundwater use at the site as a non-drinking water source, and that the groundwater modeling results predicted the declining concentrations of chemical over time for VOCs with minimal movement of PCBs in groundwater, Tyco proposed the following remedies for groundwater:

1) installing five additional groundwater monitoring wells in the vicinity of the engineered cap (in the eastern portion of the site) (Figure 9), and abandon one well. This will result in a groundwater monitoring network of 45 wells;

2) conducting periodic groundwater monitoring sampling (as described in the table below). Tyco will conduct annual measurements of water levels (gauge for depth) to confirm flow direction and gradient, and field chemistry testing, including pH, temperature, conductivity, salinity, and total dissolved solids (TDS)

of groundwater. Any field test deviation result that is greater than 50% of the previous sampling event will trigger one round of groundwater analytical sampling and laboratory analysis at that well to determine if the chemical (VOCs and PCBs) concentrations have significantly changed.

Proposed Groundwater Monitoring Schedules

	Existing 40 wells	New 5 wells	Eastern Specific 16 wells (including the five new wells)
Physical measurement etc.	Annually for 20 years	Initially *and annually for 20 years	
VOCs and PCBs	Initial* and then every five years for a total of 20 years, i.e. Years 1, 5, 10, 15, 20	Initially *every year for five years, then every five years for additional 15 years, i.e. Years 1 through 5, 10, 15, 20 (a total of 20 years)	
PCBs			Every five years for additional 30 years, i.e. Years 25, 30, 35, 40, 45, 50 (a total of 50 years for PCBs)

* Within 60 days after remedies are approved and new wells are installed

9.3 Additional Corrective Measure for Soil and Groundwater - Institutional Controls

The CMS/IP also proposed institutional controls to maintain site use status. Institutional controls consist of entering a land use covenant and conducting an annual site inspection by the facility or DTSC to ensure the site use has not changed. In addition, Tyco will maintain adequate financial assurance for site operation and maintenance activities.

10. Evaluation of the Proposed Remedy and Alternatives

10.1 Evaluation of the soil remedy and alternatives

DTSC evaluates corrective measures alternatives for soil based on the following four standards (1-4) and five decision factors (5-9)

1) Be protective of human health and the environment

2) Attain media cleanup standards

3) Control the source of release so as to reduce or eliminate, to the extent practical, further releases that might pose a threat to human health and/or the environment.

4) Meet all applicable waste management requirements

5) Short-term and long-term effectiveness

6) Reduction of toxicity, mobility, or volume

7) Long-term reliability;

8) Implementability

9) Cost

The following table summarizes comparative analysis of four proposed alternatives.

Table 4 – Alternatives Analyses

	Alternative 1 **No Action**	**Alternative 2** **Soil Flushing**	**Alternative 3** **Soil Capping**	**Alternative 4** **Excavation and Off-site Disposal**
1) Be protective of human health and environment	Alternative does nothing to be protective of human health and the environment	May have concerns of extraction fluids or contaminants migrating vertically to groundwater or laterally to soil	Cap by itself cannot prevent the horizontal flow of groundwater	Existing utility lines, excavation fugitive emission may be a concern.
2) Attains media cleanup standards	Alternative does nothing to attain media cleanup standards.	Soil flushing target contaminant group is inorganics. May be used to treat VOCs and SVOCs. It is not effective for PCBs.	Alternative does nothing to attain media cleanup standards.	Excavation can remove all contaminants and attain cleanup standards.
3) Controls the sources of release so as to reduce or eliminate, to the extent practical, further releases that might pose a threat to human health and/or the environment	Alternative does nothing to control the source of release.	May have concerns of extraction fluids or contaminants migrating vertically to groundwater or laterally to soil	Alternative contains the contaminants by preventing vertical entry of water into waste, but does not control the sources migrating horizontally.	Excavation can eliminate the sources of releases
4) Meets all applicable waste management requirements	Alternative will not generate wastes to be managed.	Any extracted fluids will be managed accordingly	Alternative will not generate wastes to be managed.	Excavated materials will be managed accordingly.
5) Short-Term and long-term effectiveness	Alternative does not provide short-term or long-term effectiveness.	Low. There is a potential exposure of workers to chemicals and contaminants in the handling of extraction fluids and extracted fluids. It may take a long time to implement this alternative.	Moderate. Alternative does mitigate migration and eliminated the exposure of workers and the environment to contaminants by forming a surface barrier. But it cannot prevent lateral groundwater migration.	Moderate. There may be a potential exposure of workers and nearby community to contaminants during excavation. But it removes the sources of contaminants and provides long-term effectiveness.

	Alternative 1 **No Action**	**Alternative 2** **Soil Flushing**	**Alternative 3** **Soil Capping**	**Alternative 4** **Excavation and Off-site Disposal**
6) Reduction of Toxicity, Mobility and/or Volume	Alternative will not reduce toxicity, mobility, or volume of contaminants.	Low. The Site has a variety of different chemicals, it will be difficult to prepare a flushing solution that would effectively remove, reduce the toxicity, mobility and volume of various contaminants.	Low. Alternative will only reduce mobility but it will not reduce contaminants' toxicity and volume.	Low. Excavation only eliminates and reduces volume but it will not reduce contaminants' toxicity or mobility.
7) Long-Term Reliability	Alternative does not provide for any long-term reliability.	Low. Flushing requires extensive operation and maintenance such as treating desorbed contaminants in groundwater, collecting air emitted from extracted fluids etc.	Moderate. It requires some operation and maintenance.	High. The source of releases will be removed and no need of long-term operation and maintenance.
8) Implementability	Alternative requires no remedial action.	Medium. Obtaining various treatment permits and arranging offsite disposal may be difficult.	High. The Site is going to be redeveloped, the implementation of soil cap can be included in the planning and design phase of the redevelopment	Moderate. The excavation above groundwater table is not difficult, but excavation below groundwater table may require dewatering and shoring. Underground utilities may also be a concern.
9) cost	No action involved	$6,952,000 (up to 20 years)	$304,000	$1,921,000

10.2 Recommended Remedies for Soil and Groundwater

The abovementioned analysis table demonstrates that a combination of remedial alternatives 3 and 4 (soil excavation and soil capping) is a preferred soil remedy.

Tyco's interim remedial measures (IRMs) completed so far at the Site did include a combination of soil capping (engineered multi-media cap over SWMU No. 16) and excavation and off-site disposal methods (for PCBs greater than 10 ppm and for elevated VOCs). The IRMs effectively reduced chemical concentrations in soil and enable the Site to meet the corrective action objectives and consent agreement requirements. Therefore there is no more soil remedy needed for the site except for entering into a land use covenant (LUC) and conducting annual site inspections as described in the LUC Implementation and Enforcement Plan.

The LUC will restrict the Western and Eastern Portions (Areas 1 through 6) zoned for "Industrial/Commercial Land Use". The deed restriction for this Site will prohibit land use for residential, school, hospital, hospice, or daycare center, or park/recreational purposes and will eliminate the potential exposure to existing residual impacted soil and groundwater.

The LUC will restrict construction and development over the multi-layered engineered soil cap installed over SWMU No. 16 (in Area 6). No excavation will be permitted and no structures will be placed over this area and the uses would be restricted to activities such as paved parking or landscaping as approved by the engineer and DTSC. The annual inspection will ensure that the Site's land use remains commercial and industrial and that the multi-media engineered cap area is not compromised or disturbed.

Tyco however will continue the corrective action for groundwater according to requirements of DTSC and the USEPA TSCA program as follows:

1) Abandon one groundwater monitoring well (R-51), and install five new wells in the vicinity of the engineered cap. This will result in a groundwater monitoring network of 45 wells.

2) Groundwater monitoring will include annual measurements of water level (gauged for depth) to confirm flow direction and gradient and field measurements of groundwater parameters, including pH, temperature, conductivity, total dissolved solids (TDS), and oxidation reduction potential (ORP). Any deviation in the test results greater than 50% of historic values, will trigger one round of groundwater sampling and analysis at that well to determine if chemical (VOCs and PCB) concentrations have changed. The physical measurements will be done for all 45 wells for a total of 20 years.

3) Any increase in chemical concentrations at a well would require confirmation or revision of the groundwater model.

4) Monitoring wells will be observed annually for their integrity and repaired if necessary.

5) The five new wells will be sampled and analyzed for PCBs and VOCs initially and annually for the first five years, and then every five years for an additional 15 years (a total of 20 years).

6) The existing 40 groundwater will be sampled and analyzed for VOCs and PCBs initially and then every 5 years for a total of 20 years.

7) After the 20th year, the five new wells and existing 11 wells (a total of 16 wells) which are located in the eastern portion (engineered cap vicinity and downgradient area) will be monitored for PCBs every five years for an additional 30 years.

8) A financial instrument (financial assurance requirement) must be established by Tyco to cover the costs for long-term operation and maintenance activities.

11.0 Public Participation

DTSC is now formally soliciting public comments on these documents during a 45-day comment period. If DTSC approves of the CMS/IP and LUC I&E Plan, Tyco will be authorized to implement the remedies recommended in the documents and summarized in this Statement of Basis.

Public input on the proposed corrective action remedies, and on the information that supports the selection of those remedies, is an important contribution to the selection process. After DTSC receives all public comments, DTSC will make the final remedy determination. The final remedies selected could be different from those that have been proposed, depending on the information that is received through the public participation process.

The CMS/IP, LUC I&E Plan, RFI Reports, and Health Risk Assessment Reports, used as the source of information for the Statement of Basis and other project documents are available for review at:

Belle Haven Branch of the Menlo Park City Library
Reference Desk
413 Ivy Drive
Menlo Park, California 94025
650-330-2540

The complete administrative record is available for public review at:

Department of Toxic Substances Control
700 Heinz Avenue
Berkeley, California 94710
(510) 540-3975

In addition, the Statement of Basis is also available on the DTSC website at:

http://www.dtsc.ca.gov/HazardousWaste/

To be considered in the decision making, all comments on the proposed remedies should be received at the following address:

Wei-Wei Chui, Section Chief
Standardized Permitting and Corrective Action Branch
Department of Toxic Substances Control
700 Heinz Avenue, Suite 300
Berkeley California 94710-2721

To obtain additional information or if there are questions regarding the Tyco Facility, the following DTSC staff persons should be contacted:

Mr. Richard Perry
Public Participation Specialist
(510) 540-3910

Ms. Wei-Wei Chui
Section Chief
(510) 540-3975

12.0 Key References

1. Charlton International. *Revised Final Workplan for Phase I of RCRA Facility Investigation Raychem Corporation, 300 Constitution Drive, Menlo Park, California*. August 1999.

2. Department of Toxic Substances and Control (DTSC). *Corrective Action Consent Agreement in the Matter of Raychem Corporation, Menlo Park, California*. September 2000.

3. GRA Associates, Inc. and Enviro-Sciences, Inc. *Evaluation of Beneficial Uses of Ground Water in the Shallow Water-Bearing Zone, Raychem Tyco Electronics, 300 – 314 Constitution Drive, Menlo Park, California*. January 2002.

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5. GRA Associates, Inc. *RFI Report- Soil Investigation (Final), Raychem/Tyco Facility-Areas 1 through 5 (Western and Central Portions of Site), 300 Constitution Drive, Menlo Park, California*. June 2002.

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10. GRA Associates, Inc. *Ground Water Monitoring and Assessment of Natural Attenuation, Sampling Events of January 2004 and April 2004, Raychem/Tyco Electronics, 300 Constitution Drive, Menlo Park, California*. May 2004.

11. GRA Associates, Inc. *Results of Soil Sampling, Railroad Right-of-Way, Near Willow Road, Menlo Park, California.* September 2004.

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17. SCS Engineers. *Closure Report, Soil Removal/Disposal, Off-Site Storm Water Swale Area, Railroad Right-of-Way South of Tyco Facility's East End*. December 2004.

18. SCS Engineers. *Baseline Human Health Risk Assessment, Western Portion (Areas 1 through 5), Tyco Electronics (Former Raychem) Facility, Menlo Park, California*. April 2005.

19. SCS Engineers. *Baseline Human Health Risk Assessment, Eastern Portion (Expanded Area 6), Tyco Electronics (Former Raychem) Facility, Menlo Park, California*. July 2005.

20. SCS Engineers. *Draft, Corrective Measures Study and Implementation Plan, Tyco Electronics Corporation, 300 Constitution Drive, Menlo Park, California.* June 2006.

21. *Draft, Land Use Covenant Implementation and Enforcement Plan, Tyco Electronics, 300 Constitution Drive, Menlo Park, California.* June 2006

Figure 1 Site Location Map

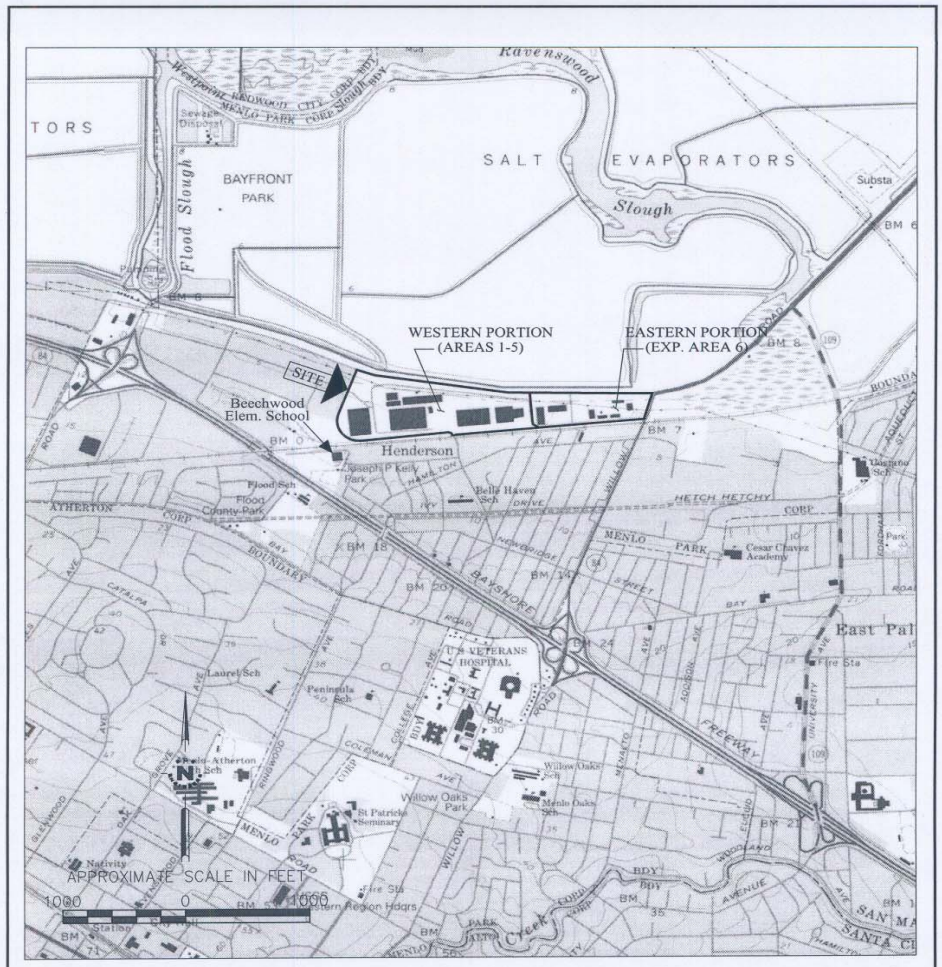


Figure 2 Site Plan Showing Western and Eastern Portion of Site

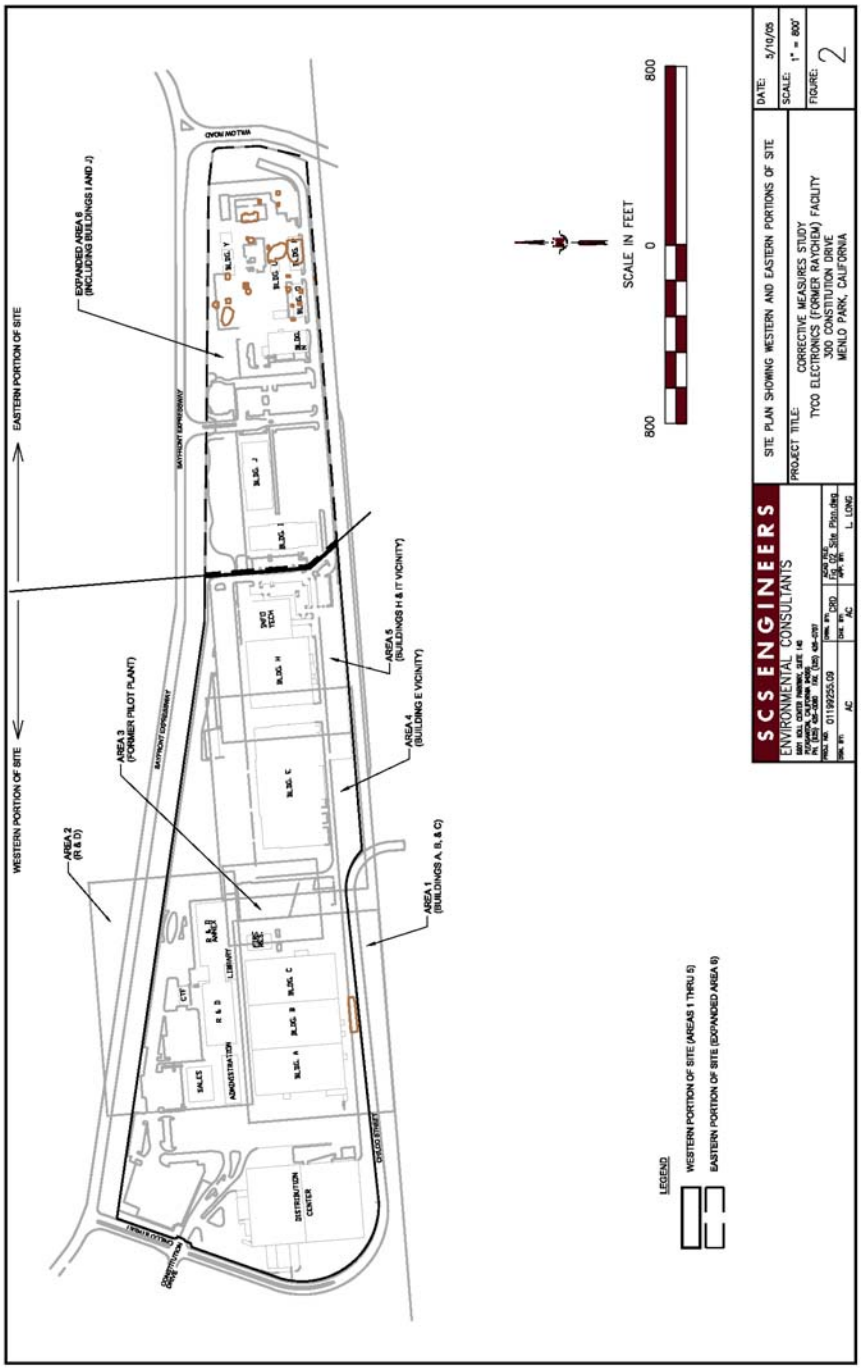


Figure 3 Corrective Action Process Flow Diagram

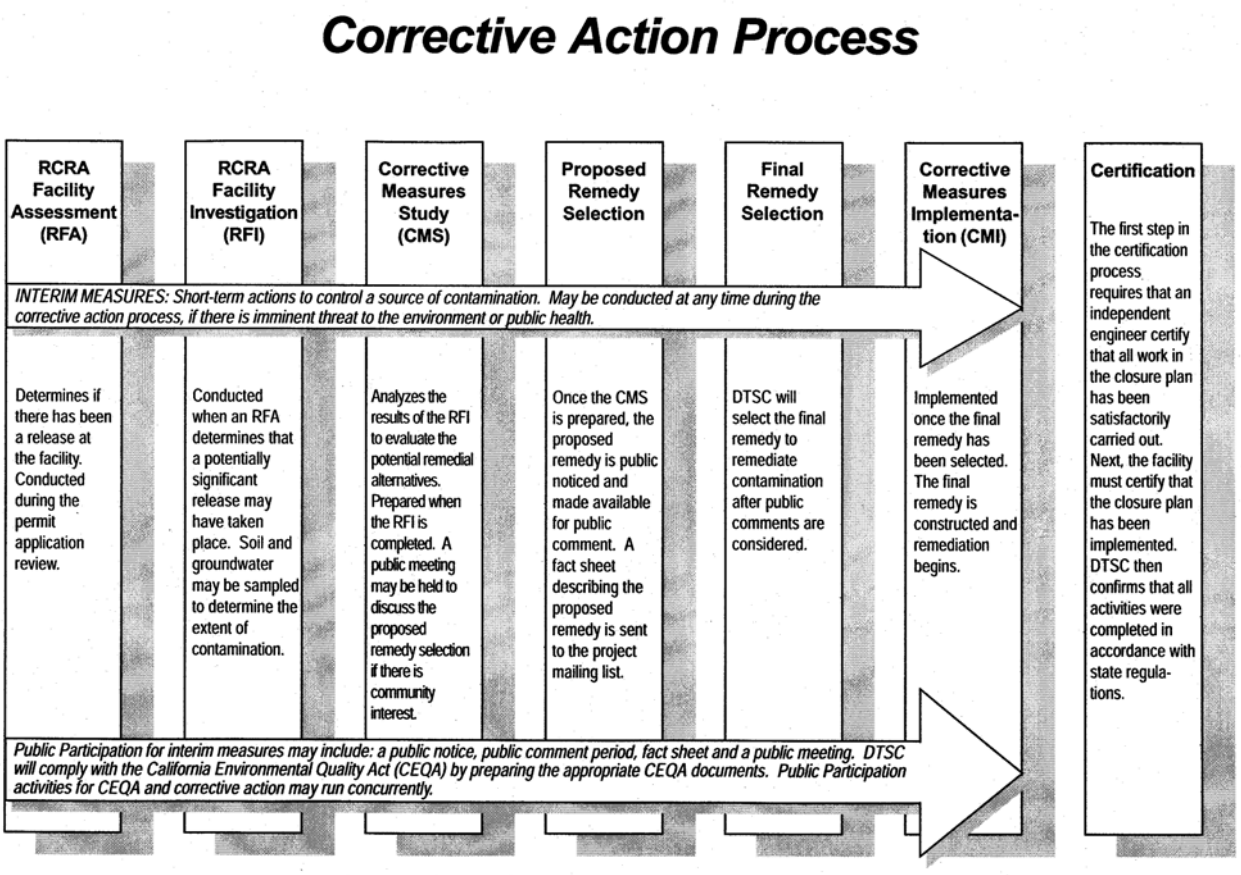


Figure 4 Locations of Solid Waste Management Units, Western Portion of Site

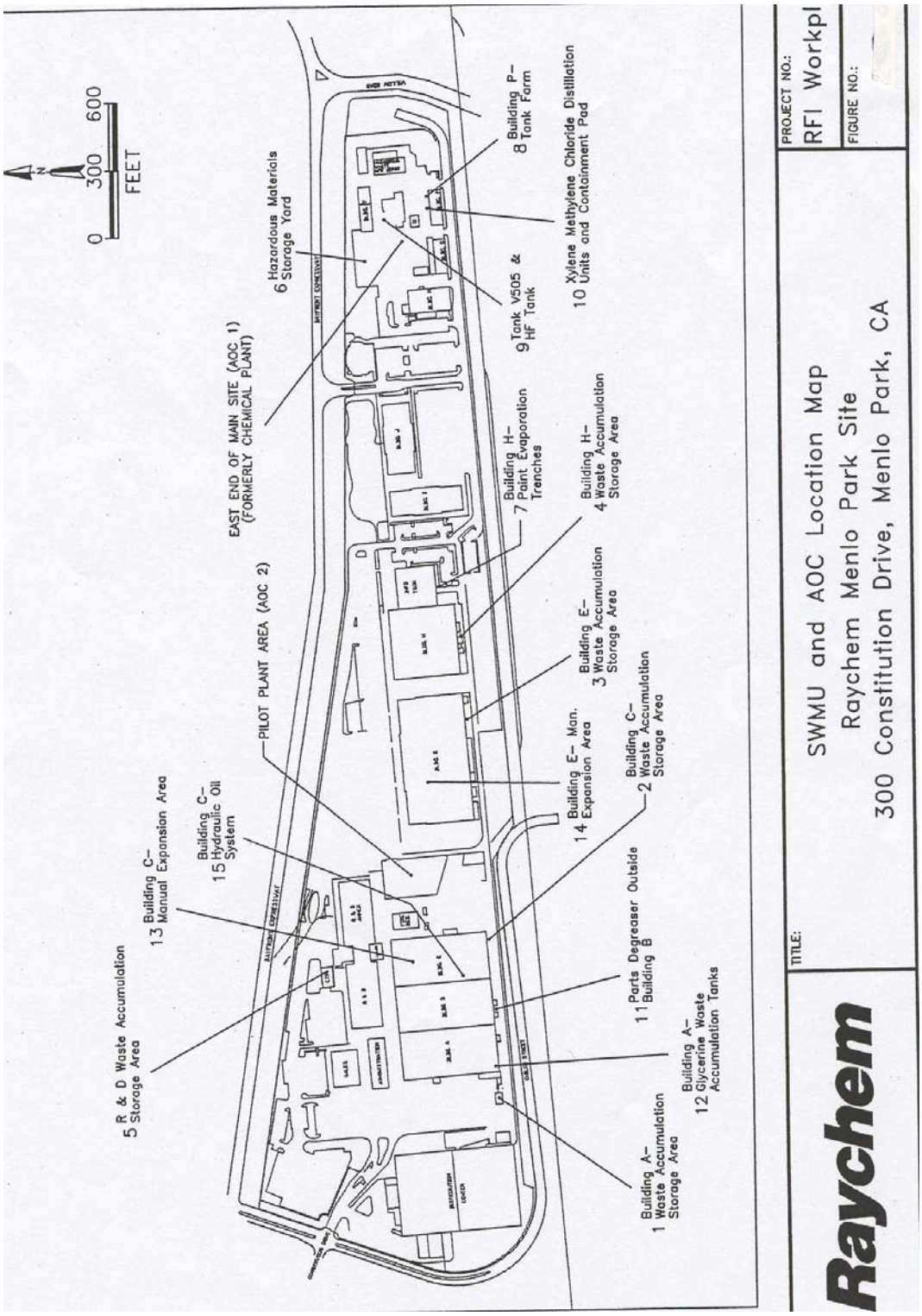


Figure 5 Location of Solid Waste Management Units, Eastern Portion of Site

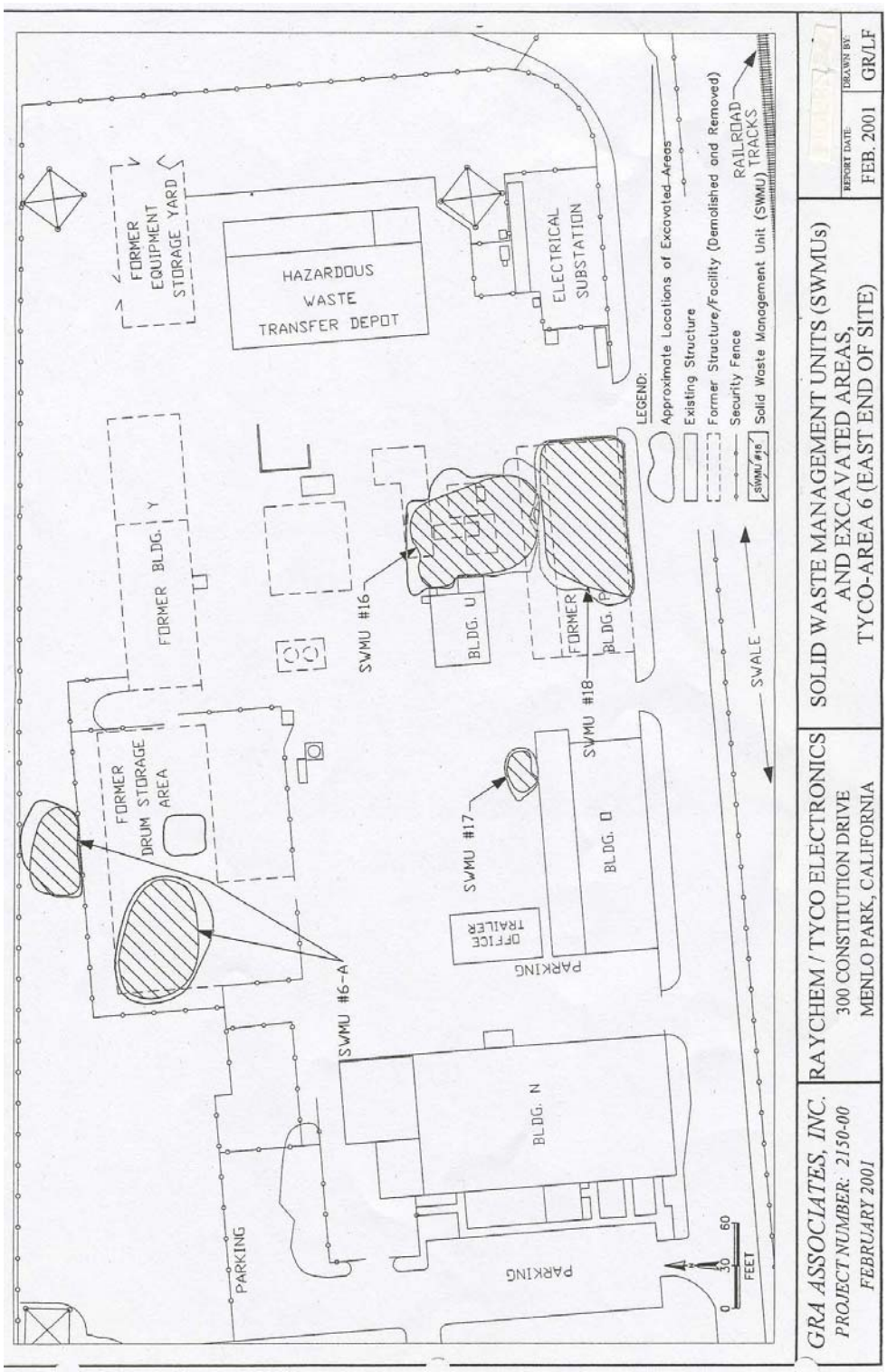


Figure 6 Site Plan Showing Interim Remedial Measure Excavation Areas

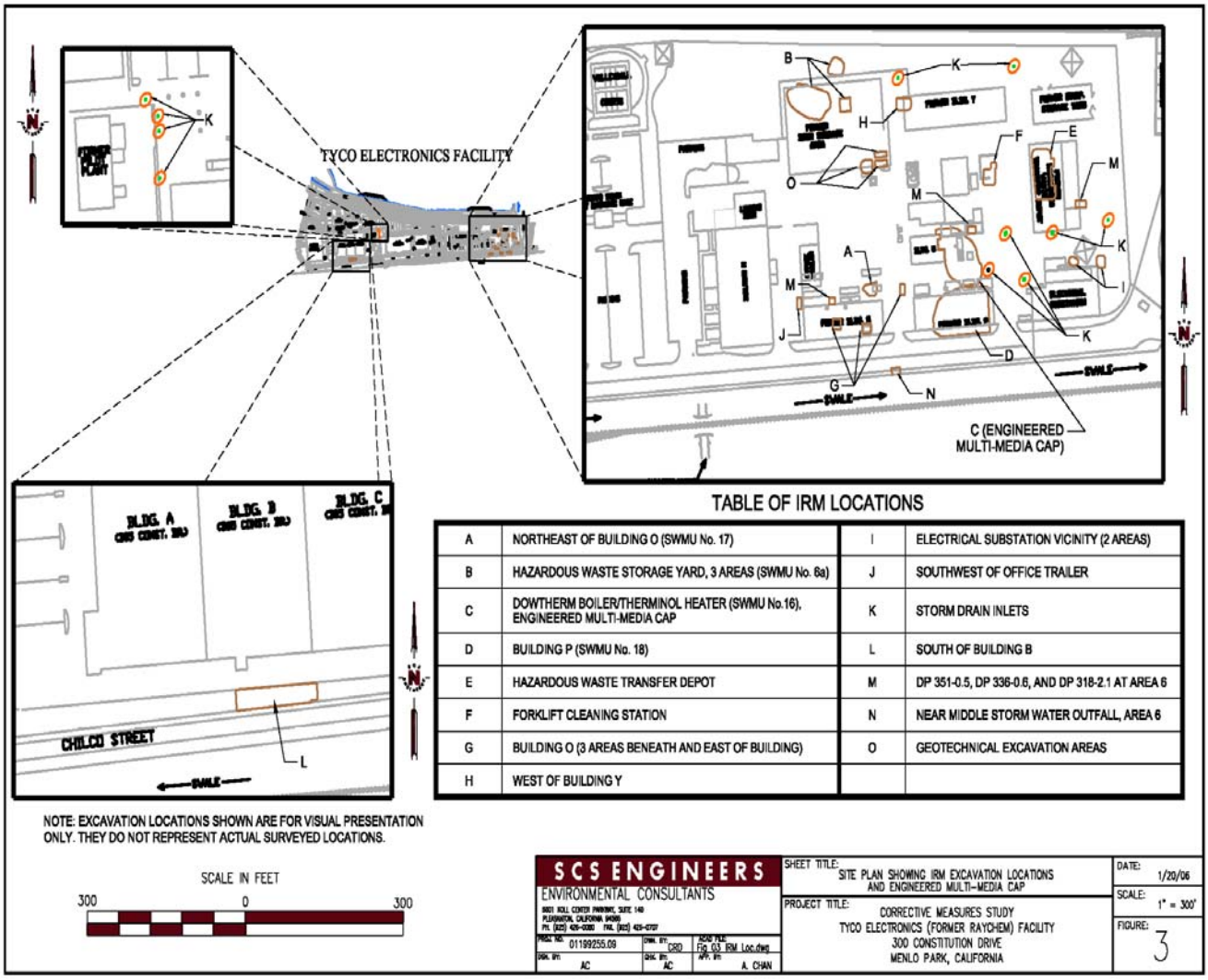


TABLE OF IRM LOCATIONS

A	NORTHEAST OF BUILDING O (SWMU No. 17)	I	ELECTRICAL SUBSTATION VICINITY (2 AREAS)
B	HAZARDOUS WASTE STORAGE YARD, 3 AREAS (SWMU No. 6a)	J	SOUTHWEST OF OFFICE TRAILER
C	DOWTHERM BOILER/THERMINOL HEATER (SWMU No.16), ENGINEERED MULTI-MEDIA CAP	K	STORM DRAIN INLETS
D	BUILDING P (SWMU No. 18)	L	SOUTH OF BUILDING B
E	HAZARDOUS WASTE TRANSFER DEPOT	M	DP 351-0.5, DP 336-0.6, AND DP 318-2.1 AT AREA 6
F	FORKLIFT CLEANING STATION	N	NEAR MIDDLE STORM WATER OUTFALL, AREA 6
G	BUILDING O (3 AREAS BENEATH AND EAST OF BUILDING)	O	GEOTECHNICAL EXCAVATION AREAS
H	WEST OF BUILDING Y		

Figure 7 West End HRA – Area A and Area B

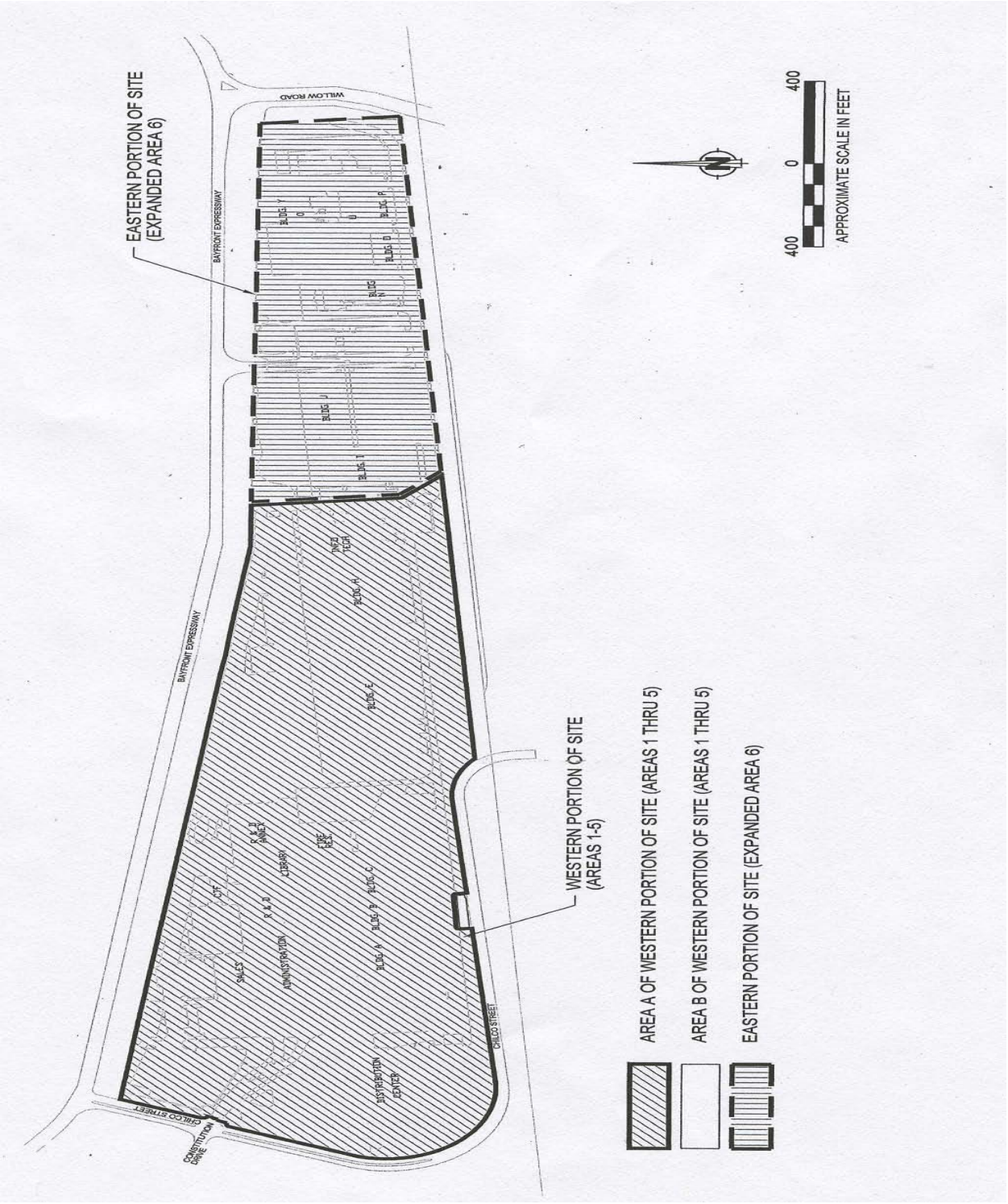


Figure 8 East End HRA – Area A, Area B and Area C

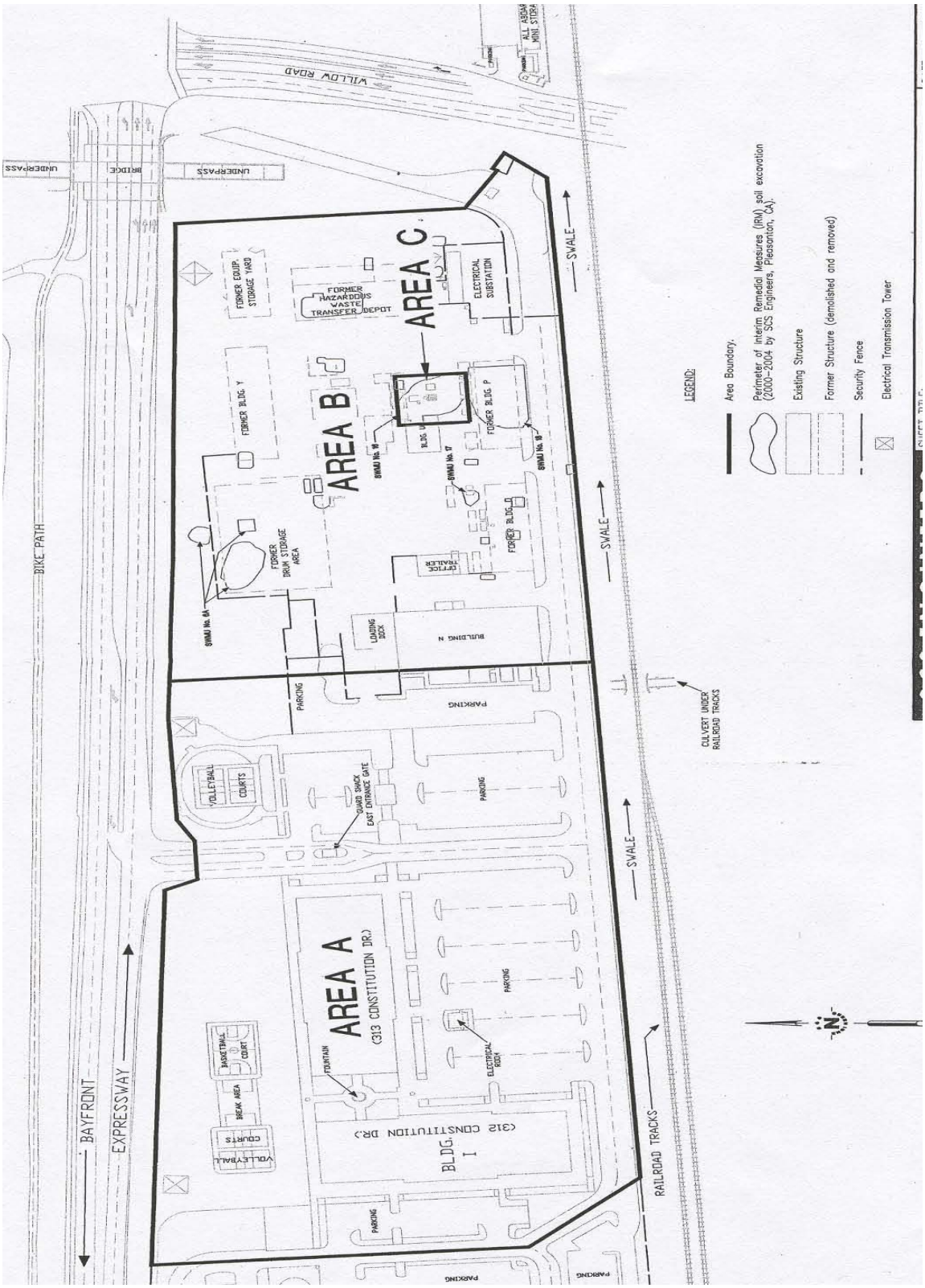
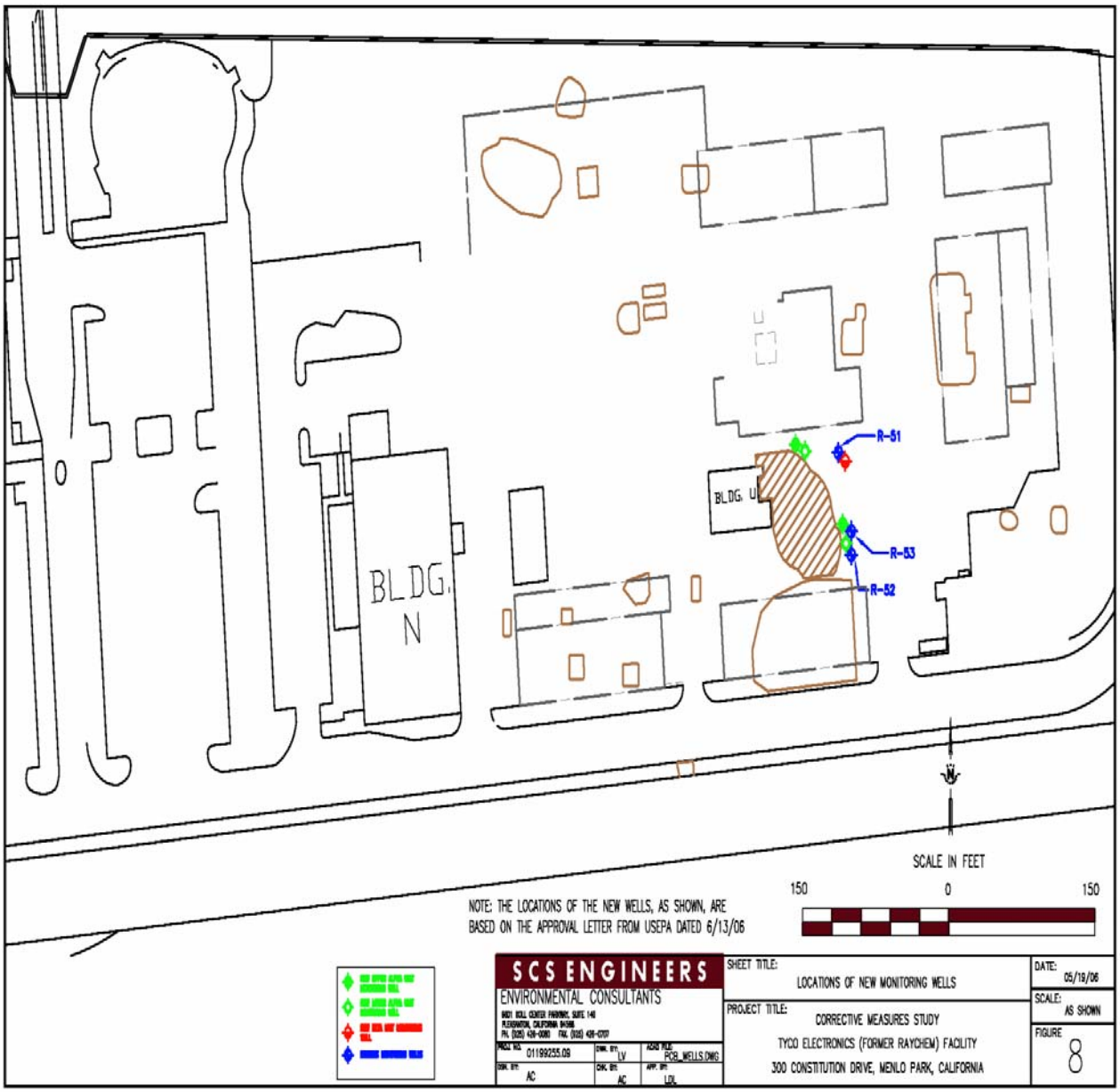


Figure 9 Location of Additional Five Groundwater Monitoring Wells



Appendix 1 List of Solid Waste Management Units and Areas of Concerns

SWMU #	Description
1	Building A – Waste Accumulation Storage Area
2	Building C – Waste Accumulation Storage Area
3	Building E – Waste Accumulation Storage Area
4	Building H – Waste Accumulation Storage Area
5	R & D Waste Accumulation Storage Area
6	Hazardous Materials Storage Yard
7	Paint Evaporation Trenches (Building H)
8	Building P Tank Farm
9	Tank V505 and HF Tank
10	Xylene and Methylene Chloride Distillation Units and Containment Pad
11	Parts Degreaser Outside Building B
12	Glycerine Waste Accumulation Tanks Building A
13	Manual Expansion Area Building C
14	Manual Expansion Area Building E
15	Hydraulic Oil System Building C
16	Former Dowtherm Boiler/Therminol Heater
17	Storage Area Northeast of Building O
18	Floor Drains and Sump in Building P

Areas of Concern

1. Chemical Plant Area (Including Building O, P, Y, and Surrounding Areas)
2. Pilot Plant Site

Appendix 2: Summary of Interim Measures Removal Activities

Phase 1 of the IRM (April and August 2000) consisted of the decommissioning and demolition of Buildings P and Y, and several aboveground xylene and waste storage tanks formerly located in Area 6. After Phase 2 (listed below), Addendum Nos. 1 and 2 (October to November 2000) applied to the backfill and capping of SWMU No. 16 respectively. All concentrations are in milligrams per kilograms (mg/kg).

IRM No.	Area	Dates of IRM	Maximum extent of excavation, No. of final confirmation samples collected	Quantity of soil excavated	Highest concentrations of Chemicals of Concern prior to IRM	Highest concentrations of Chemicals of Concern remaining after IRM
Phase 2	Northeast of Building O (SWMU No. 17)	August-September 2000	Vertically to 6 ft., laterally to approx. 30 ft. 2 base samples, and 6 sidewall samples	30 cy	**Chlorobenzene** (630 mg/kg @ 4 ft.)	**Chlorobenzene** (100 mg/kg @ 4.5 ft.)
Phase 2	Hazardous Waste Storage Yard, 3 areas (SWMU No. 6a)	August-December 2000	Vertically to 9 ft., laterally to approx. 90 ft. 20 base samples, and 17 sidewall samples	1,150 cy	**Chlorobenzene** (808 mg/kg @ 3.5 ft.)	**Chlorobenzene** (17 mg/kg @ 4 ft.)
Phase 2	Dowtherm Boiler/ Therminol Heater (SWMU No. 16)	August-October 2000	Vertically to 9 ft., laterally to approx. 100 ft. 24 base samples, and 27 sidewall samples	1,600 cy	**PCBs** (20,000 mg/kg @ 6 ft.)	**PCBs** The two highest concentrations of PCBs remaining in saturated soil (in semi-confined hypersaline groundwater) below the engineered multi-media cap area are: 2,100 mg/kg @ 16 ft. and 2,600 mg/kg @ 12 ft. (The latter sample was qualified as "R" per the 1999 Charlton International, Inc. RFI Workplan, with R defined as Reconnaissance-Level Data, Medium Quality).
Addendum No. 3	Building P (SWMU No. 18)	November-December 2000	Vertically to 8 ft., laterally to approx. 105 ft. 26 base samples, and 11 sidewall samples	1,000 cy	**Benzene** (7.4 mg/kg @ 5.3 ft.)	**Benzene** (3.9 mg/kg @ 4.5 ft.) (active 4-inch gas line restricted further excavation)

Addendum No. 4	Hazardous Waste Transfer Depot	November 2001	Vertically to 8 ft., laterally to approx. 75 ft. 14 base samples, and 14 sidewall samples	400 cy	**TRPH** (1,010 mg/kg @ 6 ft.), **PCBs** (2.8 mg/kg @ 1.5 ft.)	**TRPH** (576 mg/kg @ 4 ft. and <12.1 mg/kg at 8 ft.), **PCBs** (2.2 mg/kg @ 4 ft.)
Addendum No. 4	Forklift Cleaning Station	November 2001	Vertically to 4 ft., laterally to approx. 20 ft. 2 base samples, and 9 sidewall samples	100 cy	**PCBs** (20 mg/kg @ 0 ft.)	**PCBs** (1.3 mg/kg @ 4 ft.)
Addendum No. 4	Building O (3 areas beneath and east of building)	November 2001	Vertically to 4.5 ft., laterally to approx. 18 ft. 4 base samples, and 16 sidewall samples	100 cy	**PCBs** (207 mg/kg @ 3.5 ft.), **Chlorobenzene** (480 mg/kg @ 6.3 ft.)	**PCBs** (1.3 mg/kg @ 3 ft. and 0.13 mg/kg @ 4.5 ft.), **Chlorobenzene** (2.8 mg/kg @ 4 ft.), odor diminished
Addendum No. 4	West of Building Y	November 2001	Vertically to 8 ft., laterally to approx. 18 ft. 3 base samples, and 6 sidewall samples	150 cy	**TRPH** (2,670 mg/kg @ 1.7 ft.)	**TRPH** (758 mg/kg @ 4 ft.)
Addendum No. 4	Electrical Substation Vicinity (2 areas)	November 2001	Vertically to 4 ft., laterally to approx. 18 ft. 4 base samples, and 5 sidewall samples	70 cy	**TRPH** (1,540 mg/kg @ 1.2 ft.), **Benzo(a)pyrene** (0.54 mg/kg @ 5 ft.)	**TRPH** (133 mg/kg @ 2.5 ft.), **Benzo(a)pyrene** (<0.41 mg/kg @ 4 ft.) due to nearby monitoring well.
Addendum No. 4	Southwest of Office Trailer	December 2001	Vertically to 4 ft., laterally to approx. 9 ft. 1 base samples, and 4 sidewall samples	15 cy	**TRPH** (2,770 mg/kg @ 1.5 ft.), **PCBs** (3.8 mg/kg @ 1.5 ft.)	**TRPH** (205 mg/kg @ 4 ft.), **PCBs** (1.5 mg/kg @ 4 ft.)
Addendum No. 4	Storm Drain Inlets	October 2001	All sediments removed.	<1 cy (7 to 8 gallons)	**TRPH** (1,600 mg/kg @ 0 ft.), **PCBs** (120 mg/kg @ 0 ft.)	All sediments removed.
Addendum No. 5	South of Building B	October 2002 to February 2003, and October 2004	Vertically to 5 ft., laterally to approx. 130 ft. 28 base samples, and 5 sidewall samples	330 cy	**PCBs** (43 mg/kg @ 1.2 ft.)	**PCBs** (7.4 mg/kg @ 3 ft. and 2.18 mg/kg at 5 ft.)

	Storm Drain Inlets				**PCBs** (4 mg/kg @ 0 ft.)	All sediments removed.
In Conjunction with Storm Water Swale Soil Removal	DP 351-0.5, DP 336-0.6, and DP 318-2.1 at Area 6	October to November 2004	Vertically to 3 ft., laterally to approx. 20 ft. (max.) 3 base samples, and 15 sidewall samples	25 cy	**PCBs** (40 mg/kg @ 0.5 ft.)	**PCBs** (8.4 mg/kg @ 1 ft.)
In Conjunction with Storm Water Swale Soil Removal	Near Middle Storm Water outfall, Area 6	November 2004	Vertically to 1.5 ft., laterally to approx. 16 ft. 2 base samples, and 3 sidewall samples	10 cy	**PCBs** (180 mg/kg @ 1 ft.)	**PCBs** (0.15 mg/kg @ 1 ft.)
	Total Amount of Soil Removed			~5,000 cy		