December 19, 1989

6000 S Corporation
6000 Stevenson Boulevard
Fremont, Ca. 94538

Attn: Mr. Dale Sobek

Re: Preliminary Environmental Assessment
6000 Stevenson Blvd.
EES Project No. 1706G

Dear Mr. Sobek,

On December 8, 1989, Ensco Environmental Services, Inc. (EES) met with representatives from the City of Fremont to clarify the city's requirements regarding completion of the above referenced project. Representatives with the city's Planning Department and Hazardous Materials Division have requested that several areas of EES' report concerning the site at 6000 Stevenson Boulevard be clarified. To complete these clarifications, our firm needs copies of all documentation that your office may have concerning the items listed below. Please provide EES with copies of any documentation that your office has regarding the following:

- Analytical data from samples of the foundry sand, showing how many samples have been analyzed and what test methods were used by the analytical laboratory

- All Material Safety Data Sheets (MSDS), hazardous waste manifests, non-hazardous waste manifests or bills of lading, and empty drum sales records for materials and containers that have been removed from the site

- Chemical profile sheets showing the analyses of chemical contents of all drums and containers that have been removed from the site

- Analytical data from any samples of impounded surface water that previously accumulated on the site

- Closure plans that were filed with the City of Fremont or Alameda County Health Department for the removal and disposal of any underground or aboveground tanks on the site

- Blueprints or other building plans which show the existing warehouse where polyurethane foam manufacturing occurred. Also, any building plans which show the construction of all other buildings currently located on the site.

Review of these documents would greatly assist us in completing the project. Should you have questions regarding our request for this information, please call our offices in Fremont.

Sincerely,
Ensco Environmental Services, Inc.

Allen J. Lund, Program Manager
Assessment, Compliance, and Training

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, California 94105

94 JUL 28 AM 9:14
ALCO
HAZMAT

Dear Sir/Madam:

Enclosed please find the Site Assessment report prepared for EPA concerning the CERCLA evaluation for this site.

EPA encourages your written comments on this report. Your comments should be sent to Jim Quint, Site Assessment Manager, EPA mail stop H-8-1. If you have any questions please contact him at (415)744-2331.

Sincerely,

Thomas A. Mix, Chief
Site Evaluation and Grants Section

903 0040

Bechtel

50 Beale Street
San Francisco, CA 94105-1895
Mailing address: P.O. Box 193965
San Francisco, CA 94119-3965

Integrated Assessment

Site: Sobex, Inc.
6000 Stevenson Blvd.
Fremont, CA 94538

Site EPA ID Number: CAD 982399784

Work Assignment Number: 60-15-9J00, ARCSWEST Program

Submitted to: Michael Bellot
Site Assessment Manager
EPA Region IX

Thru: Sandra Carroll

Date: March 21, 1994

Prepared by: Thomas Genolio TG

Review and Concurrence: Catherine C. Walton CW

Bechtel Environmental, Inc.

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SECTION 1.0

INTRODUCTION

The U.S. Environmental Protection Agency (EPA), Region IX, under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), has requested Bechtel Environmental, Inc. (BEI) to conduct an integrated assessment (IA) of the Sobex, Inc. (Sobex) site in Fremont, Alameda County, Calif. The IA is being performed as part of the Superfund Accelerated Cleanup Model (SACM) Pilot Study for EPA, Region IX.

Under SACM, the IA is intended to meet the focused data needs of the EPA sections involved with the Sobex site. During the development of the IA, a scoping session was held with representatives of the Emergency Response, Enforcement, Quality Assurance Management, Remedial, Risk Assessment, and Site Assessment sections. These representatives identified their data needs and requirements, which were in turn incorporated into the IA. During the scoping session, it was determined that additional analytical data were needed to further characterize conditions at the site. A sampling and analysis plan (SAP) was submitted to the EPA on August 20, 1993. During the week of September 20, 1993, BEI, under the direction of the EPA, conducted a field sampling effort at the Sobex site.

The objectives of the IA field sampling effort included the following:

- Confirm the presence and measure the concentrations of contaminants in onsite soils and groundwater downgradient of the site
- Obtain background soil and groundwater sampling data
- Cooperatively assess the site with other regulatory agencies as part of the SACM Pilot Study
- Collect additional information to support decision making efforts for potential future action by EPA

Including this introduction, the IA for the Sobex site is divided into six sections. Section 2.0 provides a site description, ownership and operational history, environmental setting, regulatory involvement, and emergency response considerations. Section 3.0 describes the results of previous investigations at the Sobex site. Section 4.0 discusses the results of the IA field sampling effort. Section 5.0 provides an analysis of data and data quality, a comparison of analytical results to regulatory benchmarks, and a conceptual site model. Section 6.0 summarizes the IA.

The SAP, which is included as Appendix A, describes the field sampling activities that were conducted at the Sobex site. Appendix B provides the EPA Contract Laboratory Program (CLP) laboratory analytical data package. Appendix C contains the Contact Log, Contact Reports and the Site Reconnaissance Interview and Observations Report for the IA. Appendix D includes photographic documentation of the IA field sampling effort. Appendix E contains the Human Health and Ecological Concerns Form.

SECTION 2.0

SITE DESCRIPTION AND BACKGROUND

This section provides an overview of the Sobex site and the surrounding area. It describes the location, ownership and operational history, and environmental setting of the site. The environmental setting includes geology, hydrogeology, hydrology, meteorology, and human health and ecological concerns. This section also summarizes the involvement of federal, state, and local regulatory agencies and any emergency response considerations for the site.

2.1 SITE DESCRIPTION

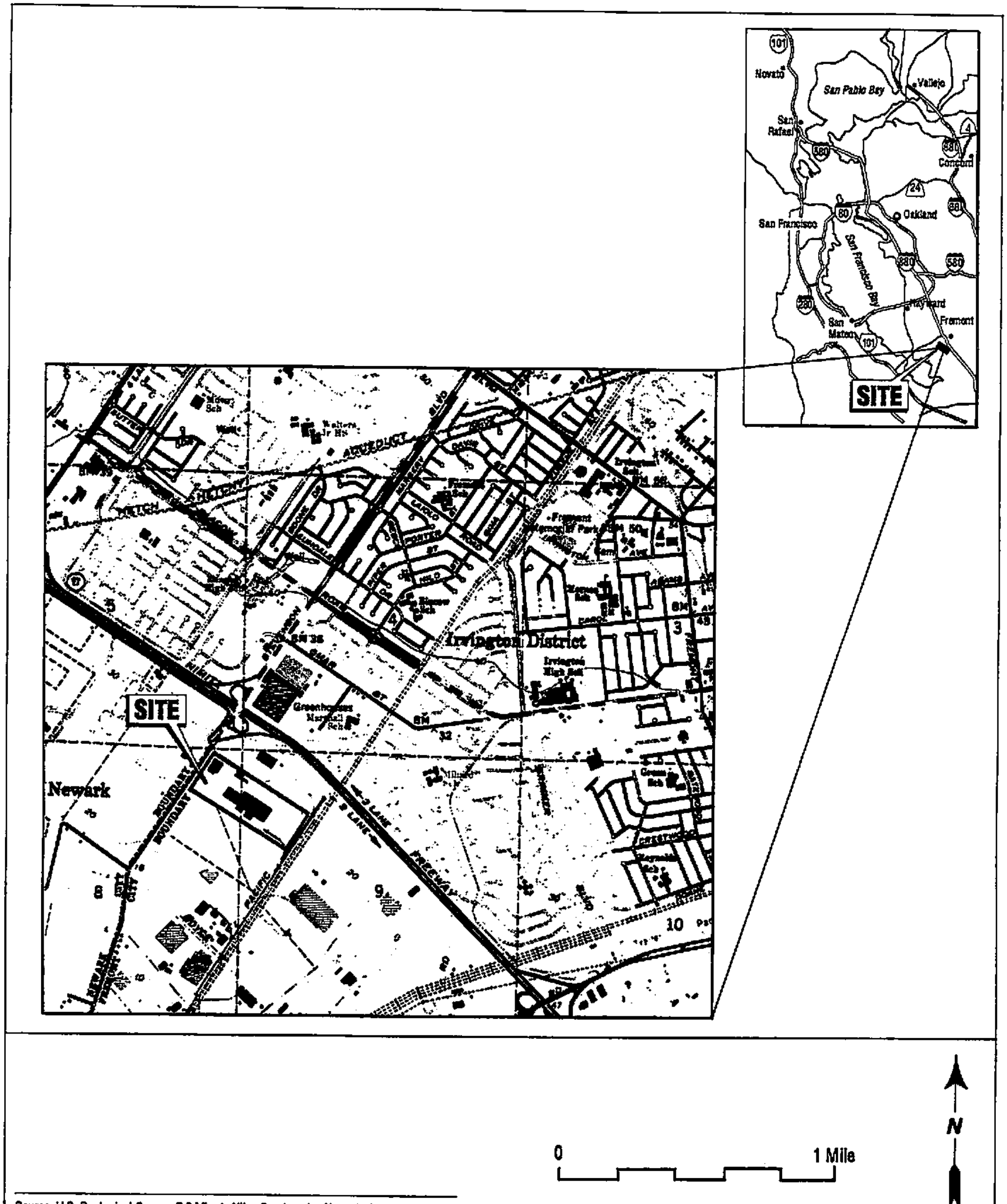
The Sobex site was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on March 1, 1988 (CAD 982399784) (1). The Sobex site was brought to the attention of EPA as a result of illegal dumping activities in another county by Dale Sobek, a Sobex representative. A preliminary assessment (PA) of the Sobex site was conducted for the EPA by the California Department of Health Services, Toxic Substances Control Division (now referred to as the California Environmental Protection Agency, Department of Toxic Substances Control) (DTSC) in March of 1988 (2). A review of the Sobex PA was conducted for the EPA by the DTSC in August 1988 (3). BEI performed a site inspection (SI) of the Sobex site in January 1992 (4).

The Sobex site is located at 6000 Stevenson Blvd. in Fremont, Alameda County, Calif. The geographic coordinates of the site are 37° 30' 59.5" N latitude and 121° 59' 06.0" W longitude (Township 5 South, Range 1 West, Sections 8 and 9, Mt. Diablo Baseline and Meridian, Niles, Calif., 7.5-minute quadrangle) (6). The site is approximately 42 acres in size and is bounded on the northwest by Stevenson Boulevard, on the northeast by Albrae Avenue, on the southeast by a railroad track and an unnamed intermittent stream, and on the southwest by Stevenson Business Park. Land use adjacent to the site is retail/commercial and light industrial (4, 5). Figure 2-1 shows the location of the Sobex site.

The site, which is owned by the 6000 S Corporation, houses a retail/commercial complex consisting of seven buildings. The complex is open and receives visitors 7 days a week. The site layout and occupants of the buildings are presented in Figure 2-2. Approximately 75 percent of the site is developed with buildings or paved parking facilities. The remaining 25 percent of the site is undeveloped and not paved. The undeveloped portion, as of September 1993, contained piles of contaminated soil and construction debris. (5, 7) The site is fenced on three sides and is accessible from Albrae Avenue and Stevenson Boulevard (5).

2.2 ENVIRONMENTAL SETTING

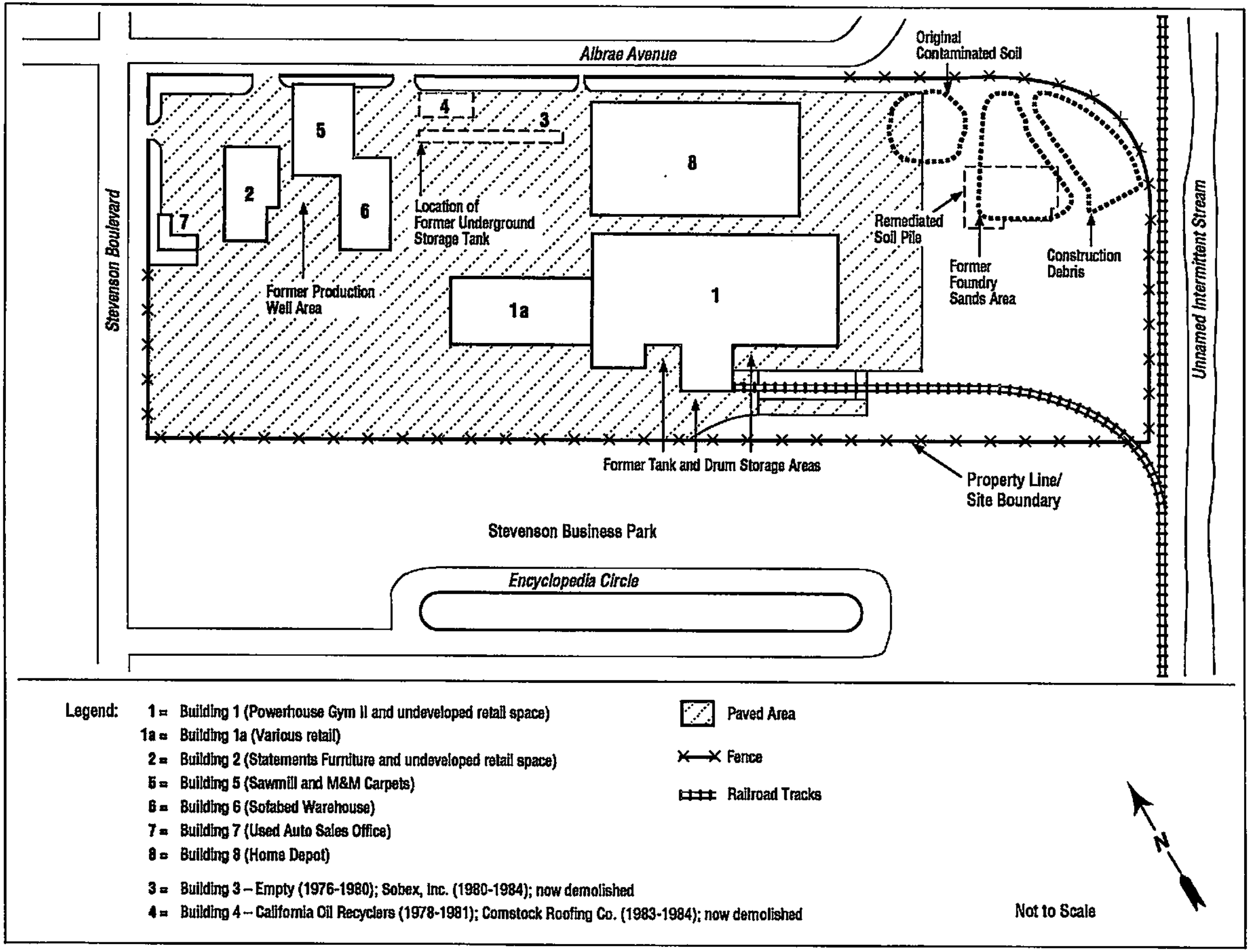
2.2.1 Geological and Hydrogeological Setting. The Sobex site is located in the South Bay groundwater basin, which rims and underlies the San Francisco Bay. The South Bay groundwater basin is an extensive alluvial and estuarine plain occupying a folded, faulted depression in the



Source: U.S. Geological Survey, 7.5 Minute Niles Quadrangle, Alameda County, California

CG/1/5o/294b

Figure 2-1 Site Location



Legend:
1 = Building 1 (Powerhouse Gym II and undeveloped retail space)
1a = Building 1a (Various retail)
2 = Building 2 (Statements Furniture and undeveloped retail space)
5 = Building 5 (Sawmill and M&M Carpets)
6 = Building 6 (Sofabed Warehouse)
7 = Building 7 (Used Auto Sales Office)
8 = Building 8 (Home Depot)
3 = Building 3 – Empty (1976-1980); Sobex, Inc. (1980-1984); now demolished
4 = Building 4 – California Oil Recyclers (1978-1981); Comstock Roofing Co. (1983-1984); now demolished

▨ Paved Area
×—× Fence
┼┼┼┼ Railroad Tracks

Figure 2-2 Site Layout

earth's crust, bordered on the east and west by the roughly parallel ridges of the Coast Range geomorphic province. The geologic formations of the South Bay Groundwater Basin have been divided into two main groups: nonwater-bearing and water-bearing. (8)

The nonwater-bearing rocks are exposed in the highland area to the east of the valley; they also occur below the valley floor at depths to 1,500 feet. Nearly all these rock types are consolidated and of low permeability. Water-bearing formations fall into two groups: the Santa Clara Formation of Plio-Pleistocene age; and Quaternary Alluvium of Pleistocene to Recent age. The Santa Clara Formation consists of semiconsolidated alluvial and lacustrine deposits, including obscurely bedded, poorly sorted, pebbly sandstone, siltstone and clay, plus lenses of sand and gravel. The Santa Clara Formation reaches depths greater than 1,000 feet. Quaternary Alluvium is the most important water-bearing formation in the Fremont area. The alluvium is composed of generally unconsolidated gravel, sand, silt, and clay. The sand and gravel deposits have the highest permeability and are thus the major aquifers; conversely, silt and clay layers have low permeability and form aquitards. Water level data indicate that some of the aquifers are interconnected to varying degrees. (8)

The Quaternary Alluvium has a series of sand and gravel aquifers and clay aquitards up to 100 feet thick. From the uppermost downward, these aquifers are the shallow unconfined, the Newark, the Centerville, the Fremont, the 400-foot, and the 500-foot aquifers. Depth to the top of the Newark aquifer in the vicinity of the site is approximately 40 feet. Near the site, the upper 40 feet of the unsaturated zone is typically silty clays/silty sands. Soils of this type have permeabilities of approximately 10^{-5} centimeters per second. (2, 8)

In the Fremont area, there are localized areas of interconnection between the shallow unconfined aquifer and the Newark aquifer, which are of concern to the Alameda County Water District and the California Regional Water Quality Control Board because of the potential for contaminant migration (9). Groundwater is present at approximately 15 feet below ground surface (bgs) in the shallow unconfined aquifer beneath the site. The unconfined aquifer in the Fremont area is not used as a source of drinking water; however, the Newark aquifer as well as aquifers beneath the Newark are important sources of municipal and domestic water supplies. (8)

There is little movement of groundwater in the area of the site. The groundwater gradient in the shallow unconfined aquifer is generally to the southeast; however, there have been documented instances of a northeast groundwater gradient. The gradient change is possibly because of heavy precipitation or tidal influences. (10) The groundwater gradient in the Newark aquifer is predominantly to the southwest (8).

There were three production wells on site. One of the three wells extended to a depth of 586 feet and was screened between 451 feet and 568 feet bgs. This well could have served as a potential conduit for contaminant migration into the deeper aquifers. (3,16) All three wells were abandoned following the protocol of the Alameda County Water District in February 1990 (11).

2.2.2 Hydrological Setting. The nearest surface water downslope of the site is an unnamed, intermittent stream about 70 feet south of the site boundary. (5) This stream discharges into Mowry Slough and finally into San Francisco Bay National Wildlife Refuge, which lies about 8,000 feet southwest of the site. Wetlands that have been developed into salt evaporation ponds make up the majority of this refuge. (2, 6)

The average slope of both the site and intervening terrain between the site and the nearest surface water is approximately 0.4 percent. A raised railroad track is located between the southeast site boundary and the unnamed, intermittent stream. The railroad track appears to prevent surface water runoff from the site from entering the intermittent stream. (2, 5)

Surface waters of the coastal wetlands and the adjacent San Francisco Bay are used as commercial resources, such as fisheries and salt evaporation, for recreation, and as a wildlife refuge. Surface water within 15 miles downstream of the site is not used for drinking water. (2)

2.2.3 ***Meteorological Setting.*** The climactic conditions in the Fremont area are generally moderate, with winter temperatures averaging approximately 55° F and summer temperatures averaging approximately 62° F. The 2-year, 24-hour rainfall event for the site is approximately 5 inches. The average annual rainfall in the area is 23.24 inches. The prevailing wind direction in the general area of the site is to the west, with an average wind speed of 8.7 miles per hour. (12)

2.2.4 ***Human Health and Ecological Concerns.*** Businesses on the entire Sobex site employ approximately 100 workers (5). According to 1990 census data, there are approximately 145,000 residents within a 4-mile radius of the site. A total of 230,000 people (residents, workers, and students) are estimated to be within 4 miles of the site. (13) No residences, schools, or daycare centers are on or within 200 feet of the site (5).

Groundwater in the Fremont area is used by the Alameda County Water District (ACWD) as a drinking-water supply source. The ACWD operates a blended water supply system that serves approximately 275,000 people. Surface water from Hetch Hetchy Reservoir and the South Bay Aqueduct contribute 44 percent of the total water supply, and the remaining 56 percent is obtained from 19 municipal wells operated by the ACWD. The 19 municipal wells are within 4 miles of the site. The nearest active municipal well is approximately 2.9 miles north of the site.

The San Francisco Bay National Wildlife Refuge is about 8,000 feet southwest of the site (6). According to the Natural Diversity Data Base (NDDB), there are two known federally listed and state-listed endangered species in the area of the San Francisco Bay National Wildlife Refuge: the salt marsh harvest mouse *(Reithrodontomys Raviventris)* and the California clapper rail *(Rallus Longirostris Obsoletus)*. According to the NDDB, there are no known federally listed and/or state-listed endangered species within 1 mile of the site. (15)

As described previously, a raised railroad track is located between the southeast site boundary and the unnamed, intermittent stream. The railroad track appears to prevent surface water runoff from the site from entering the intermittent stream. (5) The Human Health and Ecological Concerns Form is provided in Appendix E.

2.3 OPERATIONAL HISTORY

The Sobex site property has been developed since 1963. Because site usage has been extensive, this section presents only the site operations that may have generated or used hazardous substances.

From 1978 through 1979, buildings 1 and 2, (shown in Figure 2-2) were leased to Polymir Industries (Polymir), which manufactured polyurethane foam insulation board and various other foam products. Dale Sobek was the principal owner of Polymir. Polymir entered into voluntary bankruptcy in September 1978, and materials and equipment were removed by the Federal

Bankruptcy Court. (16) A 1979 aerial photograph of the site indicates the presence of drums, tanks, and chemical processing equipment at several locations near the southern portion of the Building 1 loading dock, the end of the railroad tracks, and the Building 1 alcove. These areas are paved with concrete and appear to be stained. (17) From 1978 through 1983, the Golden Gate Auto Auction leased Building 1a and the area in the southeast corner of the site for an auto auction yard, where 2,000 to 4,000 cars were parked prior to sale. During this time, Golden Gate Auto Auction installed an underground gasoline storage tank. The tank was subsequently removed in 1985 by Exceltech, Inc. (16) The 1979 aerial photograph of the site also shows visible evidence of stains just southeast of Building 3 (17). According to Dale Sobek, this area may have been used by Golden Gate Auto Auction as a steam-cleaning area for cars (5).

California Oil Recyclers leased Building 4 from 1978 through 1981. The building has since been demolished. California Oil Recyclers reclaimed oil from gasoline stations and stored it in 12,000-gallon aboveground storage tanks. Some reclaimed oil was mixed with diesel. These reclaimed products were then sold in bulk for various fuel oil uses. (16) The 1979 aerial photograph of the site indicates an area of heavily stained soil east of Building 4. It also shows aboveground tanks and drum storage areas adjacent to Building 4. (17)

The volume of liquids that were handled by California Oil Recyclers is unknown. However, typical hazardous substances from oil recycling are: total petroleum hydrocarbons as gasoline, as diesel, and as kerosene; oil and grease; metals; and volatile and semivolatile organic compounds. (18)

Sobex, Inc., a firm directed by Dale Sobek, leased Building 3 from 1980 to 1984, when the business was dissolved and operations were ceased on the property. The building has since been demolished. Operations of this company, which were chemical consulting and polyurethane foam manufacturing, were similar to Polymir. (16) Aerial photographs taken in 1981 and 1984 showed drum storage areas on the north side of Building 3 (17).

Records are not available that document the types and quantities of waste that were handled during manufacturing activities at Sobex, Inc. However, typical hazardous substances from polyurethane foam manufacturing are arsenic, barium, cadmium, chromium, cobalt, methylene chloride (dichloromethane), dichlorodifluoromethane (Freon 12), lead, methanol, methyl diphenyl diisocyanate (diphenylmethane diisocyanate), 4,4-methylene bis (2-chloroaniline), nickel, selenium, titanium oxide, toluene, diisocyanate, trichlorofluoromethane (Freon 11), trichlorotrifluoromethane (Freon 113), vinyl chloride, and zinc. (2, 18)

In the mid-1980s, buildings 3 and 4 were demolished. Construction debris and soil from the demolished buildings were moved to the undeveloped area on the southeast side of the site (see Figure 2-2). Additional soil and debris were generated during the excavation and construction of the Building 8 loading dock. (18) As of September 1993, the debris and soil from buildings 3 and 4 and Building 8 were present in two uncontained piles consisting of approximately 5,600 cubic yards of material (4). These are denoted as Soil Pile and Construction Debris in Figure 2-2. According to Dale Sobek, the soil pile has undergone bioremediation. According to a Clark & Witham work plan for sampling at the site, bioremediation activities from March 1, 1992 to September 3, 1992 included tilling, aeration, and water sprinkling. (19)

Foundry sand was brought to the site between 1985 and 1986 by American Brass & Iron Foundry of Oakland, Calif., to be used as fill to level areas for future development. The foundry sands were deposited in the undeveloped area at the east side of the site. Subsequently, the foundry sand was analyzed by Levine-Fricke, Inc. and found to be contaminated with priority pollutant metals. (20) The foundry sands were subsequently removed from the site. The removal was not overseen by any agency.

As described previously, 75 percent of the site is covered with asphalt, concrete, or buildings (5).

2.4 REGULATORY INVOLVEMENT

2.4.1 U.S. Environmental Protection Agency (EPA). The Sobex site was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on March 1, 1988 (CAD 982399784) (1). The Sobex site was brought to the attention of EPA as a result of illegal dumping activities in another county by Dale Sobek, a Sobex representative. Based on a PA of the site performed by the DTSC in 1988, the EPA decided that further investigation would be necessary to more completely evaluate the site. A site inspection (SI) was performed by BEI dated January 9, 1992. (4) Based on the findings of the SI, the EPA determined that an expanded site inspection would be appropriate for this site. The EPA subsequently decided to evaluate the site using the SACM process. A SAP was prepared for the site by BEI and submitted to the EPA on August 20, 1993 (Appendix A). During the week of September 20, 1993, BEI, under the direction of the EPA, conducted a field sampling effort at the Sobex site. The Sobex, Inc. site is listed in the Resource Conservation and Recovery Information System (RCRIS) database as of September 21, 1993, as a large quantity hazardous waste generator.

2.4.2 California Environmental Protection Agency.

Department of Toxic Substances Control (DTSC, formerly known as the Department of Health Services, Toxic Substances Control Division). In 1983, the DTSC investigated a complaint from a concerned citizen in Paskenta, Tehama County, Calif., that drums of potentially hazardous substances were being transported and disposed of at a ranch owned by Dale Sobek near Paskenta. The DTSC sampled and analyzed the contents of the drums. The analysis indicated that the drums contained hazardous substances including priority pollutant metals, flammable materials, volatile organics (e.g., methylene dichloride, tetrachloroethene), and carcinogenic compounds (e.g., 4,4-methylene bis [2-chloroaniline]). (21)

The DTSC then conducted a series of enforcement inspections at the Sobex site in Fremont. The single soil sample collected during these inspections indicated that priority pollutant metals and hydrocarbon compounds (alkanes) were present in the surface soil. Based on these inspections, the DTSC determined that the drums from the ranch in Tehama County were illegally transported from the Sobex site in Fremont. (22)

On October 19, 1983, criminal charges were filed in Alameda County Municipal Court in Fremont against Dale Sobek and his son, Drew Sobek. The Tehama County District Attorney's Office also filed a suit against Dale Sobek, seeking civil penalties. The criminal charges against the Sobeks were subsequently dropped. (4)

During the 1983 inspections, the DTSC observed a 10,000-gallon aboveground isocyanate storage tank, empty drums, and illegally stored drums containing potentially hazardous wastes (3,15). Between 1984 and 1985, these drums were removed from the property, as ordered by the DTSC, and disposed of by Chem Waste Management, Inc. (2, 4).

In 1988, the DTSC conducted a PA on the Sobex site in Fremont on behalf of the EPA. (2) The DTSC is not currently involved with this site.

California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. California Oil Recyclers abandoned the property on or about January 3, 1982, without completing cleanup activities including the removal of contaminated soils (16). The RWQCB conducted a Compliance Monitoring Inspection of the property on January 26, 1982. Reclaimed oil storage tanks, drums, an oil sump, and oil-contaminated soil were on site. Samples of standing rainwater collected from the site were analyzed and found to contain PCBs. (22) At the request of the RWQCB, the storage tanks and drums were removed. Oil-contaminated soils were either paved over or excavated and stored in the southeast part of the site. (4) In an August 17, 1992 letter, pursuant to Section 13267 of the California Water Code, the RWQCB required Mr. Sobek to prepare a work plan for characterization of groundwater contamination at the site (23).

In 1993, the RWQCB worked with the ACWD and the EPA to design a soil and groundwater sampling strategy at the site (24). During the September 1993 EPA sampling event at the Sobex site, additional volumes of soil and groundwater were collected as split samples for the RWQCB. The RWQCB analyzed the soil and groundwater split samples for total petroleum hydrocarbons (TPH) as diesel and kerosene. The results of the analyses indicated that TPH as diesel and kerosene were not detected above instrument detection limits in any of soil and groundwater split samples. (25)

In accordance with RWQCB directives and with technical and regulatory assistance from the ACWD, a soil and groundwater characterization work plan was prepared in 1993 by consultants to the site owner. The work plan indicated that quarterly monitoring of shallow groundwater at the site would be conducted. Soil and groundwater sampling and analyses were conducted by the site owner in April 1993; however, continuous quarterly groundwater monitoring at the site has not occurred. The RWQCB sent a letter to the site owner in January 1994, reiterating the quarterly groundwater monitoring requirements. Currently, the RWQCB is considering enforcement actions at the site. (26)

2.4.3 Alameda County Water District (ACWD). In 1990, the ACWD required that the site owner prepare a plan to remediate the potentially contaminated soil pile stored in the southeast portion of the site (Figure 2-2). The soil pile originated from the demolition of the former California Oil Recyclers' operation. Bioremediation was initiated by the site owner in 1990 without approval by the ACWD. (4)

The ACWD worked with the RWQCB to establish the need for a groundwater monitoring plan to assess the potential contamination of the shallow aquifer beneath the site. In a March 4, 1992 letter, the ACWD requested that the site owner characterize the potential groundwater contamination at the site. The scope of work included the installation of two monitoring wells. (27) It appears that Resna Industries, Inc. was retained by the site owner to perform the work. A work plan was prepared in February 1992 by Resna Industries, Inc.; however, the work was not performed. (28) A second work plan, submitted to the ACWD on January 26, 1993, was prepared by Clark & Witham, Inc. for the site owner. The scope of work included soil boring and monitoring well construction, quarterly monitoring, and soil pile sampling. Clark & Witham, Inc. conducted the work at the site in April 1993. (19)

In accordance with ACWD directives, a work plan was prepared to determine the effect of foundry sands storage at the site on groundwater beneath the site. A modified Waste Extraction Test

(WET), using extraction solution adjusted to simulate local rainwater pH, was performed on soil samples for the former foundry sands area by the site owner in late 1993. Test results indicated that storage of foundry sands did not present a threat to groundwater beneath the site. The ACWD, with technical assistance from the RWQCB, reviewed the test results and has indicated that the foundry sands issue has been satisfactorily addressed. (26)

2.4.4 Alameda County Department of Health (ACDH). From 1985 to 1986, Mr. Sobek obtained approximately 2,000 to 4,000 cubic yards of foundry sands from American Brass and Iron Foundry of Oakland, Calif. to be used as fill (16). Foundry sand is a listed waste under California Code of Regulations, Title 22, Article 11. Dale Sobek litigated with American Brass and Iron Foundry, charging that the company falsely represented its sand material as acceptable for fill. Mr. Sobek requested that American Brass and Iron Foundry take back the sands for proper disposal or prove that the material was suitable for fill. (4) Prior to such action, the ACDH reviewed and commented on a sampling plan submitted by Environmental Technology International Corporation for the site owner. The objective of the sampling plan was to characterize the foundry sands on site. (7) It appears that the sampling plan was not implemented. Subsequently, the foundry sands were removed from the site. The removal was not overseen by any agency. Currently, the ACDH is not actively involved with the site.

2.4.5 Alameda County District Attorney's Office. The Alameda County District Attorney's Office assisted the ACWD, the RWQCB, and the City of Fremont with enforcement actions related to foundry sand disposition and groundwater monitoring (29). Currently, the Alameda County District Attorney's Office is not actively involved with the site.

2.4.6 City of Fremont, Hazardous Materials Division. Site activities relating to the construction debris pile, building cleanup, past hazardous material storage practices and any resulting contamination, and closure of the California Oil Recyclers' facility were reviewed by the City of Fremont, Hazardous Materials Division, with assistance from the ACWD and the Alameda County District Attorney's Office (4). Currently, the City of Fremont is not actively involved with the site.

2.5 EMERGENCY RESPONSE CONSIDERATIONS

The National Contingency Plan [40 CFR 300.415 (b) (2)] authorizes the EPA to consider emergency response actions at those sites that pose an imminent threat to human health or the environment. For the following reasons, a referral to Region IX's Emergency Response Section does not appear to be necessary:

- No known municipal drinking-water wells in the Fremont area are contaminated with hazardous substances that may be attributed to the site.
- No residences, schools, or daycare centers are on or within 200 feet of areas of contamination at the site.

SECTION 3.0

SUMMARY OF PREVIOUS INVESTIGATIONS

Numerous sampling activities have been conducted by state agencies and environmental consultants at the Sobex site. A summary of these previous sampling events and the results are presented below. A list of previous sampling events performed at the site is presented in Table 3-1. Figure 3-1 shows previous sampling locations and the results of the April 1993 Clark and Witham, Inc. sampling event.

3.1 STANDING SURFACE WATER

On January 16, 1982, RWQCB representatives inspected the Sobex site. One sample of standing water surrounding the oil drum storage area adjacent to Building 3 was collected and found to contain PCBs at 32 micrograms per liter (µg/l). No background standing water sampling was performed. (30) No information on data quality is available.

3.2 DRUMS

On August 13, 1983, DTSC representatives collected samples from several 55-gallon drums on Mr. Sobek's property outside the town of Paskenta in Tehama County, Calif. Liquid samples were collected from the inside of 55-gallon drums, and soil samples were collected from the area where the drums were stored. According to a DTSC letter, preliminary laboratory results showed that there were hazardous substances in the drums. No information is available regarding analytes or concentrations detected. The drums appeared to have been transported from the Sobex site in Fremont, Calif. (2, 4, 21)

3.3 SOILS

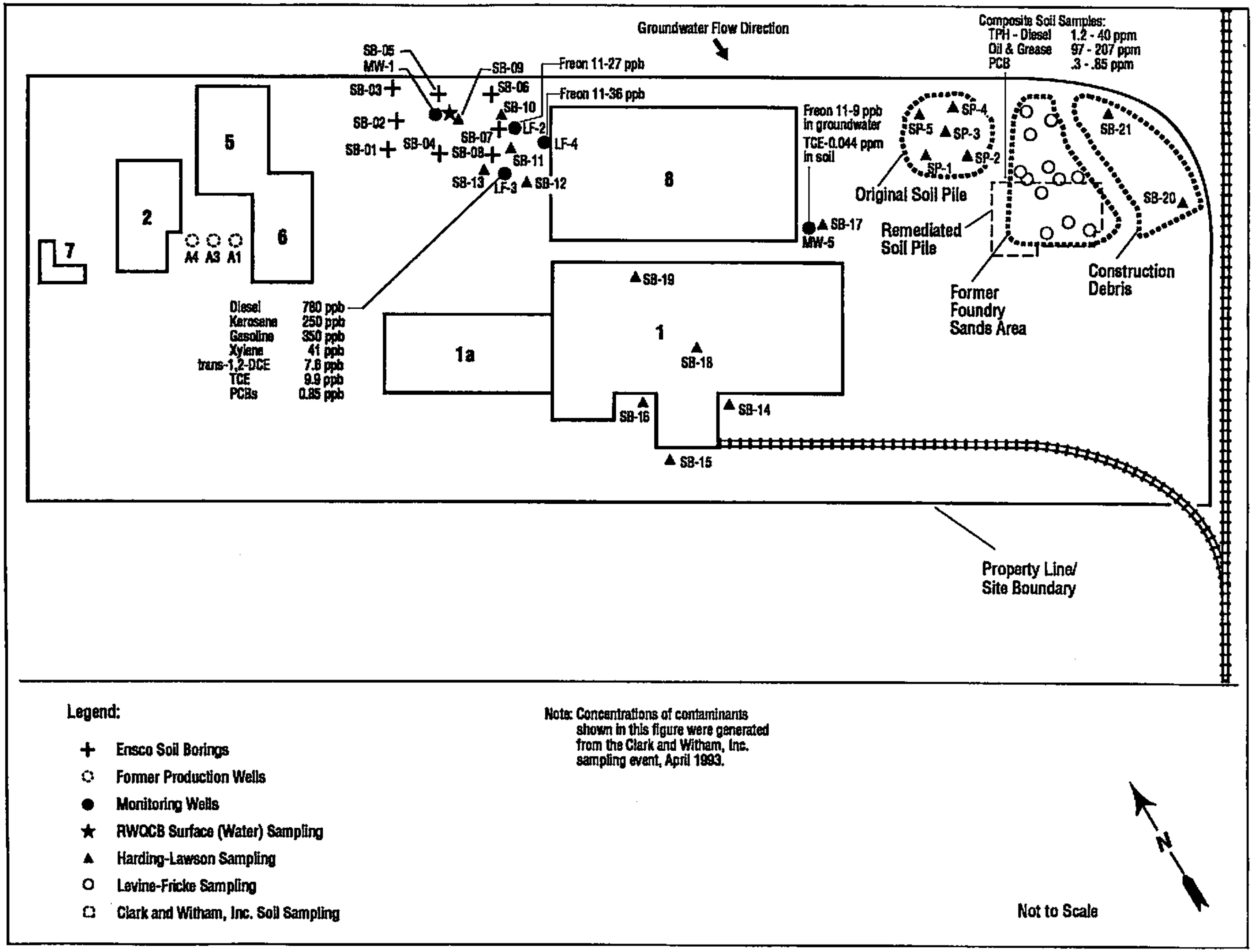
An 8,000-gallon underground gasoline storage tank was once located adjacent to Building 3. The tank was removed in 1985 and subsequent soil sampling was performed by Exceltech, Inc. A soil sample was obtained from beneath the tank at a depth of 13 feet bgs. Benzene, toluene, and xylene were present at 0.09 milligram per kilogram (mg/kg), 0.11 mg/kg, and 0.06 mg/kg, respectively. (31) No information on data quality is available.

In March 1989, Ensco Environmental Services, Inc. (Ensco) drilled nine borings (SB-01 through SB-08 and MW-1) in the former location of buildings 3 and 4. Soil samples were obtained from the borings at approximately 6 feet and 10 feet bgs. No background soil samples were collected. Soil samples were analyzed for TPH (the TPH analysis includes the analytes gas, diesel, and kerosene), oil and grease, PCBs, and volatile and semivolatile organic compounds.

Two soil samples and one foundry sand sample were also analyzed for priority pollutant metals. No information on data quality is available. The analytical results of the soil samples showed that oil, grease, diesel, gasoline, toluene, ethyl benzene, and xylenes were present. No PCBs were detected in the soil samples. Several metals were detected in the soil and foundry sand samples,

Table 3-1
Summary of Previous Sampling Activities

Sample Collected By	Sample Date	Type of Sample(s)
RWQCB, S.F. Bay Region	1/16/82	standing surface water
DTSC	9/13/83	55-gallon drums (liquid)
Exceltech, Inc. (Contracted by Golden Gate Auto Auction)	4/8/85	soil
American Brass and Iron Foundry	6/15/85	foundry sands
Polymatrix Associates (Contracted by Ensco)	2/89	groundwater (deep production zones)
Ensco (Contracted by Wallace, Roberts, and Todd as part of an EIR)	3/89	soil (borings), groundwater (shallow monitoring wells) and foundry sands
Levine-Fricke, Inc. (Contracted by 6000 S Corporation)	12/27/89	groundwater (deep production wells)
Levine-Fricke, Inc. (Contracted by 6000 S Corporation)	5/21/90	foundry sands
Harding Lawson Associates (Contracted by 6000 S Corporation)	9/19-9/25/90	groundwater (shallow monitoring wells) and soil
Clark and Witham, Inc.	4/13/93	groundwater and soil



Note: Concentrations of contaminants shown in this figure were generated from the Clark and Witham, Inc. sampling event, April 1993.

Figure 3-1 Previous Sampling Locations

including chromium, lead, arsenic, and zinc. Low levels of volatile organic compounds (VOCs) were also detected. (18) The analytical results of the soil and foundry sand samples are presented in Table 3-2.

In September 1990, Harding Lawson Associates (HLA) drilled eight borings to a depth of 16 feet to 26 feet bgs in the former location of buildings 3 and 4 (LF-2, LF-3, LF-4, SB-09, SB-10, SB-11, SB-12, SB-13). Two samples per boring were submitted for analysis. The soil samples were obtained from various depths. Additional samples collected include five composited samples from the soil pile southeast of Building 8 (SP-1, SP-2, SP-3, SP-4, SP-5); two soil borings to a depth of 6 feet bgs from the construction debris pile (SB-20, SB-21); three grab samples from former drum, tank, and equipment storage areas southwest of Building 1 (SB-14, SB-15, SB-16); one sample from the loading dock area southeast of Building 8 (SB-17); and two samples from under Building 1 (SB-18, SB-19). The samples were analyzed for TPH, PCBs, and VOCs. No information on data quality is available. Oil and grease, kerosene, gasoline, and diesel were found in the samples taken from the soil pile. Toluene (260 mg/kg), ethylbenzene (170 mg/kg), and xylenes (810 mg/kg) were found at elevated levels in boring SB-12 at a depth of 11 feet. PCBs were detected at concentrations up to 2.8 mg/kg in soil samples taken from buildings 3 and 4 and the soil pile. (32) The analytical results are presented in Table 3-2.

In April 1993, Clark and Witham Inc. collected 24 soil samples from the soil pile east of Building 8. The samples were composited into six samples and analyzed for TPH as diesel by a DHS method, oil and grease by Standard Method 5520F, and for PCBs by EPA Method 8080. Analytical results indicated the presence of diesel (up to 140 mg/kg), oil and grease (up to 205 mg/kg), and PCB Aroclor 1254 (up to 0.85 mg/kg) in composited samples. During construction of onsite monitoring well MW-5, a soil sample was obtained at a depth of 10 feet bgs from the soil boring southeast of Building 8. The sample was analyzed for TPH by a DHS method for benzene, toluene, ethylbenzene, and xylene by EPA Method 8020; PCBs by EPA Method 8080; and VOCs by EPA Method 8240. Only trichloroethene (TCE) at 0.044 mg/kg was detected in the soil sample. No other analytes were detected. (33) The analytical results are presented in Table 3-2.

3.4 GROUNDWATER

Three production wells located between Building 2 and Building 6 (A1, A3, and A4) were installed in the early 1960s. The locations of the three wells are shown on Figure 3-1. Well construction information for Well A1 is not available. In July of 1962, Well A1 was paved over. In 1989, Well A1 was uncovered as part of the Polymatrix Associates sampling event. The previous use of Well A1 is unknown. Well construction information for wells A3 and A4 is presented in the Report of Closure of Deep Production Wells prepared by Levine-Fricke, Inc. in 1990. (32) Well A4 was 270 feet deep and screened between 227 feet and 240 feet bgs. Well A3 was 586 feet deep and screened between 451 feet and 475 feet bgs Well A3 was reportedly used as a supply well (downhole pump installed) for air conditioning and irrigation water. Well A4 was used for water recharge. (11) Wells A3 and A4 were properly abandoned in 1990 (32).

In February 1989, Polymatrix Associates was contracted by Ensco to obtain groundwater samples from A1 and A3. The purpose of this sampling event was to obtain information on groundwater contamination under the site for an Environmental Impact Report on further commercial development of the property. Analyses requested included priority pollutant metals, VOCs, PCBs, oil and grease, and TPH. The method of obtaining these samples and other relevant sampling and

Table 3-2 Summary of Previous Sampling Results
Soil Samples
(Units in mg/kg)

SAMPLE EVENT	SAMPLE LOCATION	SAMPLE ID/NO.	SAMPLE DEPTH (FT.)	Aromatic Hydrocarbons														VOCs			
				Benzene	Toluene	m-Xylene	Ethylbenzene	Tot. Xylenes	TPH Diesel	TPH Gasoline	Oil and Grease	TPH Kerosene	PCBs	Chloroform	1,1-DCA	Methylene Chloride	1,1,1-TCA	Acetone	2-Butanone	TCE	4-Methyl 2-Pentanone
EXCELTECH 1985	Former Underground Tank Area (West Side of Building 3)	GGAC-01	13	0.09	0.11	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ENSCO 1989	Building 3 and 4	SB-01-1	6	ND	ND	NA	ND	ND	ND	ND	150	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-01-2	11	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-02-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	0.026	ND	ND	ND	NA	NA	NA	NA
		SB-02-3	10	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	0.023	ND	ND	0.070	NA	NA	NA	NA
		SB-03-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-03-2	11	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-04-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-04-2	11	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-05-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-05-2	11	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-06-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-06-2	10.5	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	0.051	ND	0.034	NA	NA	NA	NA
		SB-07-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-07-2	11	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	0.050	ND	NA	NA	NA	NA
		SB-08-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-08-2	11	ND	0.3	ND	1.9	16	7,900	79	810	NA	ND	0.011	ND	ND	ND	NA	NA	NA	NA
		MW-01-1	6	ND	ND	ND	ND	ND	22	ND	ND	NA	ND	0.022	ND	ND	ND	NA	NA	NA	NA
		MW-01-2	11	ND	ND	ND	ND	ND	27	ND	ND	NA	ND	0.027	ND	ND	ND	NA	NA	NA	NA
HLA 1990	Building 3 and 4	LF-2	1.5	ND	ND	NA	ND	ND	2.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		LF-2	6	ND	ND	NA	ND	ND	1.3	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		LF-3	16	ND	ND	NA	ND	0.15	ND	25	ND	130	ND	ND	ND	ND	ND	ND	ND	ND	ND
		LF-3	26	ND	ND	NA	ND	ND	30	ND	ND	ND	ND	ND	ND	ND	ND	0.013	ND	ND	ND
		LF-4	6	ND	ND	NA	ND	ND	2.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		LF-4	11	ND	ND	NA	ND	ND	ND	ND	ND	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
		SB-9	1.5	ND	ND	NA	ND	ND	25	ND	46	ND	detect	ND	ND	ND	ND	ND	ND	ND	ND
		SB-9	6	ND	ND	NA	ND	ND	2.0	ND	56	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		SB-10	1.5	ND	ND	NA	ND	ND	53	ND	140	ND	0.7	ND	ND	ND	ND	0.043	ND	ND	ND
		SB-10	6	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	0.007	ND	0.013	ND	ND	ND	ND
		SB-11	1.5	ND	0.016	NA	0.0099	0.076	180	ND	220	ND	1.7	ND	ND	ND	ND	0.2	0.041	0.0029	0.026
		SB-11	6	ND	ND	NA	ND	ND	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		SB-12	11	ND	260	NA	170	810	ND	7,600	180	15,000	detect	ND	ND	ND	ND	ND	ND	ND	ND
		SB-12	16	0.0054	0.11	NA	0.11	0.30	ND	3.2	ND	15	ND	ND	ND	ND	ND	0.022	ND	0.0093	ND
		SB-13	1.5	ND	ND	NA	ND	ND	120	ND	72	ND	0.23	ND	ND	ND	ND	ND	ND	ND	ND
		SB-13	5	ND	ND	NA	ND	ND	1.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Construction Debris	SB-20	1.5	0.0026	ND	NA	ND	ND	4.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		SB-20	6	ND	ND	NA	ND	ND	3.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		SB-21	1.5	ND	ND	NA	ND	ND	1.5	34	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		SB-21	5	ND	ND	NA	ND	ND	22	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	S.W. of Building 1	SB-14	2	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		SB-15	2	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.026	ND	ND	ND
		SB-16	2	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Soil Pile	SP-1	1 foot, 2 feet, and 4 feet composite samples	ND	ND	NA	ND	ND	94	ND	ND	ND	0.29	ND	ND	ND	ND	ND	ND	ND	ND
		SP-2		ND	ND	NA	ND	ND	16	ND	270	ND	0.25	ND	ND	ND	ND	ND	ND	ND	ND
		SP-3		ND	ND	NA	ND	ND	1000	ND	100	ND	0.66	ND	ND	ND	ND	ND	ND	ND	ND
		SP-4		ND	0.0029	NA	ND	0.0069	40	ND	180	ND	0.46	ND	ND	ND	ND	ND	ND	ND	ND
		SP-5		ND	ND	NA	ND	ND	53	ND	210	ND	2.80	ND	ND	ND	ND	ND	ND	ND	ND
	N.E. of Building 8	SB-17	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.017	ND	0.010	ND
	Inside Building 1	SB-18	2	ND	ND	NA	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
		SB-19	2	ND	ND	NA	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
Clark and Witham, Inc., 1993	Soil Boring MW-5	S-MW5	10	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	0.044	ND
	Soil Pile	SS1-SS4	Composite samples 1 foot	NA	NA	NA	NA	ND	1.6	NA	ND	NA	0.58	NA	NA	NA	NA	NA	NA	NA	NA
		SS5-SS8		NA	NA	NA	NA	NA	140	NA	97	NA	0.74	NA	NA	NA	NA	NA	NA	NA	NA
		SS9-SS12		NA	NA	NA	NA	NA	5	NA	205	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
	Soil Pile	SS1-SS4	Composite samples 2 feet	NA	NA	NA	NA	NA	3.3	NA	ND	NA	0.48	NA	NA	NA	NA	NA	NA	NA	NA
		SS5-SS8		NA	NA	NA	NA	NA	1.5	NA	ND	NA	0.3	NA	NA	NA	NA	NA	NA	NA	NA
		SS9-SS12		NA	NA	NA	NA	NA	1.2	NA	58	NA	0.85	NA	NA	NA	NA	NA	NA	NA	NA

Volatile and semivolatile organics never detected at the site are not included in this table.
"detect" indicates that PCBs were found in soil, but the results were unreadable in data sheets
NA-Not Analyzed
ND-Not Detected above detection limits

Table 3-2 Summary of Previous Sampling Results (Cont'd)
(Units in mg/kg)

SAMPLE EVENT	SAMPLE LOCATION	SAMPLE ID/NO.	SAMPLE DEPTH (FT.)	Chromium	Lead	Nickel	Antimony	Barium	Copper	Cobalt	Molyb-denum	Selenium	Silver	Beryllium	Cadmium	Mercury	Vanadium	Arsenic	Zinc
Ensco * 1989	Foundry Sands	S-1	surface	0.67	10	ND	ND	5	ND	ND	ND	ND	ND	ND	ND	NA	0.18	0.06	4.1
	Buildings 3 and 4	SB-02-1	6	52	30	67	30	NA	21	NA	NA	ND	ND	ND	ND	0.08	ND	16	43
		SB-08-2	11	39	30	58	30	NA	18	NA	NA	ND	ND	ND	ND	0.09	ND	13	40
Levine-Fricke 1990	Foundry Sands	Composite	Composite	82	2,500	18	NA	370	120	3.3	7	0.6	2.4	1.9	12	NA	24	11	1,400

ND-Not Detected
NA-Not Analyzed
*** Only Three Samples Were Analyzed For Metals**

analysis quality control information are not available; however, it is reported that the wells were not purged prior to obtaining the samples. Results of the Polymatrix Associates analyses showed PCBs at 19 micrograms per liter (µg/l) and diesel and gasoline up to 740,000 µg/l in samples collected from wells A1 and A3. Chromium (60 µg/l), lead (830 µg/l), nickel (90 µg/l), and zinc (110,000 µg/l) were also detected. (18) The analytical results are presented in Table 3-3.

In March 1989, Ensco installed a monitoring well (MW-1) near the former location of buildings 3 and 4. The well extends to a depth of 25 feet bgs. The screened interval is unknown. As part of the Environmental Impact Report, Ensco obtained additional groundwater grab samples from MW-1, as well as from soil borings SB-2 and SB-7 in the buildings 3 and 4 areas. The sampling locations are shown in Figure 3-1. The samples were analyzed for TPH, VOCs, and PCBs. The grab samples were obtained from a depth of approximately 25 feet bgs. No information on data quality is available. The analyses detected one VOC (1,1,1-trichloroethane at 9.3 µg/l in a grab sample from SB-7). (18) The analytical results are presented in Table 3-3. It should be noted that the Ensco report was not issued as a final document.

In December 1989, Levine-Fricke, Inc. was contracted by Mr. Sobek to obtain groundwater samples from the three production wells (A1, A3, and A4) between Building 2 and Building 6. The purpose of this sampling event was to document the abandonment of these wells at the request of the ACWD and to test for priority pollutant metals, VOCs, PCBs, oil and grease, and TPH. The only well noted to be purged prior to sampling was Well A3. Purging was conducted because of the floating hydrocarbon product present in the well. Purging was done by employees of Mr. Sobek and no information on the thickness of hydrocarbon product or quantity purged is on record. It was noted that the volume that was purged was stored in a 55-gallon drum for further testing and disposal. Samples submitted for PCB analysis were transported by Levine-Fricke, Inc. personnel to the laboratory, while samples submitted for metals analysis were transported by Mr. Sobek. (11) No information on data quality is available.

Toluene, total xylenes, diesel, gasoline, Freon 11, PCBs, chromium, nickel, arsenic and zinc were detected in samples from the three wells. In particular, PCBs and diesel were detected at 3.9 µg/l and 1,600 µg/l, respectively, in a sample from Well A3. In addition, the floating product purged from Well A3 was analyzed and PCBs were detected at 360,000 µg/l. Although arsenic was originally detected at 500 µg/l, subsequent results were non detect (ND) upon reanalysis. (11) The analytical results are presented in Table 3-3. As previously discussed, the three wells were abandoned in February 1990 following ACWD guidelines.

In September 1990, HLA was contracted by Mr. Sobek to perform a site characterization investigation by request of the ACWD and the RWQCB. HLA installed three additional monitoring wells near Building 8. These wells were installed to an average depth of 25 feet bgs and are screened between approximately 12 feet and 22 feet bgs. The wells are referred to as LF-2, LF-3, and LF-4 (there is no LF-1 on site). Samples were obtained from the four onsite monitoring wells (MW-1, LF-2, LF-3, and LF-4) and analyzed for PCBs using EPA Method 8080, VOCs using EPA Method 8240, and TPH using EPA Method 8015M. All wells were purged prior to being sampled.

Analytical results of a groundwater sample from monitoring well LF-2 indicate the presence of gasoline (9,600 µg/l), kerosene (4,900 µg/l), toluene (25 µg/l), total xylenes (2,800 µg/l), PCBs (1.0 µ/l) and Freon 11 (14 µg/l). Diesel (85 µg/l) and Freon 11 (5.8 µg/l) were detected in monitoring well LF-4. No contaminants were detected from the sample taken from monitoring well MW-1. This report was not issued as a final document. (32) The analytical results are presented in Table 3-3.

Table 3-3 Summary of Previous Groundwater Sampling Results
(Units in µg/l)

SAMPLE EVENT	SAMPLE LOCATION	SAMPLE ID/NO.	DEPTH OR SCREENED INTERVAL (FT.)	Aromatic Hydrocarbons					TPH Diesel	TPH Gasoline	Oil and Grease	TPH Kerosene	PCBs	VOCs		Metals				
				Benzene	Toluene	m-Xylene	Ethylbenzene	Tot. Xylenes						1,1,1-TCA	Freon 11	Chromium	Lead	Nickel	Arsenic	Zinc
Polymatrix Feb.1989	Production Well Area By Building 2	A1	Screened Interval Unknown	ND	ND	ND	ND	ND	ND	ND	560	NA	ND	ND	NA	ND	830	60	NA	110000
		A3	Screened Bet. 451 and 475 feet	ND	ND	ND	ND	ND	330,000	1,800	740,000	NA	19	ND	NA	60	60	90	NA	50
Ensco March 1989	Buildings 3 and 4	SB-2	Grab Sample 25 ft	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND	NA	NA	NA	NA	NA	NA
		SB-7	Grab Sample 25 ft	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	9.3	NA	NA	NA	NA	NA	NA
		MW-1	Screened Interval Unknown	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA
Levine-Fricke 1990	Production Well Area By Building 2	A1	Screened Interval Unknown	ND	2	ND	ND	ND	ND	ND	ND	NA	ND	NA	6	10	ND	40	500*	ND
		A3	Screened Bet. 451 and 475 feet	ND	NA	ND	ND	4	1600	97	ND	NA	3.9	NA	NA	20	ND	40	500*	20
		A4	Screened Bet. 227 and 240 feet	ND	NA	ND	ND	ND	59	ND	ND	NA	ND	NA	NA	50	ND	10	800*	10
HLA 1990	Buildings 3 and 4	LF-2	Screened Bet. 12 and 22ft	ND	25	NA	ND	2800	ND	9,600	ND	4,900	1	NA	ND	NA	NA	NA	NA	NA
		LF-3	Screened Bet. 12 and 22ft	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA	14	NA	NA	NA	NA	NA
		LF-4	Screened Bet. 12 and 22ft	ND	ND	NA	ND	ND	85	ND	ND	ND	ND	NA	5.8	NA	NA	NA	NA	NA
		MW-1	Screened Interval Unknown	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA	NA	NA
		MW-1 dup	Screened Interval Unknown	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA	NA	NA
		blank	not applicable	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA	NA	NA
Clark and Witham, Inc. Δ April 1993	Buildings 3 and 4	MW-1	Screened Interval Unknown	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
		LF-2	Screened Bet. 12 and 22ft	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	27	NA	NA	NA	NA	NA
		LF-3	Screened Bet. 12 and 22ft	ND	ND	NA	ND	41	780	350	ND	250	ND	ND	ND	NA	NA	NA	NA	NA
		LF-4	Screened Bet. 12 and 22ft	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	36	NA	NA	NA	NA	NA
		MW-5	Screened Bet. 10 and 20ft	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	9	NA	NA	NA	NA	NA

VOCs not detected at the site are not included in this table

ND-Not Detected above detection limits

NA-Not Analyzed

*** Reanalyzed, the results were ND**

****Analysis of the floating product purged from Well A3 indicated 360,000 µg/l.**

Δ Trans-1,2-dichloroethene and trichloroethene were detected in LF-3 at 7.6 ppb and 9.9 ppb, respectively.

In April 1993, Clark and Witham, Inc. installed an additional groundwater monitoring well (MW-5) on the east side of Building 8. The well was installed to a depth of 20.1 feet bgs and screened between 12 feet and 19 feet bgs. Groundwater samples were collected from five monitoring wells (MW-1, LF-2, LF-3, LF-4, MW-5) and analyzed for TPH using a DHS method, oil and grease using Standard Method 5520F, PCBs using EPA Method 8080, and VOCs using EPA Method 8240. None of the analytes tested for in the groundwater sample collected from MW-1 was detected. Freon 11 was detected at 27 parts per billion (ppb), 36 ppb, and 9 ppb in samples collected from monitoring wells LF-2, LF-4, and MW-5, respectively. The sample collected from monitoring well LF-3 indicated levels of diesel (780 ppb), kerosene (250 ppb), gasoline (350 ppb), total xylenes (41 ppb), trans-1,2-dichloroethene (DCE) (7.6 ppb), and TCE (9.9 ppb). No other analytes in the five monitoring wells were detected. (33) The analytical results are presented in Table 3-3.

3.5 FOUNDRY SANDS

In addition to the March 1989 soil and groundwater sampling, Ensco obtained a composited grab sample designated S-1 from the foundry sands pile. The sample was submitted for priority pollutant metals analysis; no further data are provided on how or where the sample was obtained. Low levels of selected metals were detected in the sample. (18) The analytical results are presented in Table 3-2.

In May 1990, Levine-Fricke was contracted by Mr. Sobek to sample the foundry sands pile to assess the concentration of total metals present and to evaluate those concentrations relative to disposal regulations. Sample locations within the former foundry sands area were randomly selected. The sampling locations are shown in Figure 3-1. Twelve samples were obtained, composited into three samples, and submitted for priority pollutant total metals analysis. However, only one composite foundry sands sample was analyzed. Information on data quality is not available. Concentrations of metals were detected in the one sample analyzed; however, levels were below the California Soluble Threshold Limit Concentration and the Total Threshold Limit Concentration for all metals except lead. Lead was detected at 2,500 mg/kg. (20) It appears that the foundry sands were removed from the site and returned to the American Brass & Iron Foundry in 1991. The removal was not overseen by any agency. The analytical results are presented in Table 3-2.

3.6 SUMMARY OF PREVIOUS SAMPLING ACTIVITIES

Previous sampling results at the site indicate that TPH, metals, VOCs, and PCBs are present in soils and groundwater at the site. As described in previous sections and shown on Figure 3-1, during the April 1993 sampling event, low levels of TPH, TCE and PCBs were found in soil samples collected from the soil pile in the eastern corner of the site and a soil sample taken during the installation of MW-5. The results of the groundwater sampling in April 1993 showed low levels of Freon 11 in monitoring wells LF-2, LF-4, and MW-5, and TPH, DCE, and TCE in LF-3. It was determined during the sampling event that the shallow groundwater flow direction is to the southeast. None of the samples was analyzed for metals, and no background soil samples have been collected.

The results of previous sampling events at the site show that total petroleum hydrocarbons as diesel and gasoline, priority pollutant metals, selected VOCs, and PCBs are present in the soil and groundwater at the site. Tables 3-4 and 3-5 present a summary of contaminants detected in soil and groundwater samples taken at the site and compares these levels of contamination to relevant benchmarks. As shown in Table 3-4, ethylbenzene, total xylenes, PCBs, beryllium, and arsenic were detected in soils above the EPA Region IX Preliminary Remedial Goals (PRGs) for soil. The majority of the highest concentrations of organic compounds were detected in the buildings 3 and 4 areas. The highest concentrations of metals were detected primarily in the foundry sands area. It should also be noted that only samples from the foundry sands and the building 3 and 4 areas were analyzed for metals. As shown in Table 3-5, total xylenes, PCBs, and zinc were detected above the EPA Maximum Contaminant Levels (MCLs). The substances were detected in the former production wells, except for total xylenes, which was detected in a grab sample from the former buildings 3 and 4 areas. Total xylenes, PCBs, lead, and zinc were detected in groundwater above the PRGs for tap water. The highest concentrations of metals and PCBs were detected in the former production wells. The highest concentrations of VOCs were detected in the buildings 3 and 4 areas.

Table 3-4
Summary of Previous Soil Sampling Detections and Relevant Benchmarks

(Units in mg/kg)

ANALYTE	MINIMUM	MAXIMUM	AVERAGE	PRGs (mg/kg)	Location Where Max. Detected
Benzene	0.0026	0.0054	0.0040	4.6	SB-12
Toluene	0.0029	260	52	280	SB-12
Ethylbenzene***	0.0099	**170**	43	68	SB-12
Tot. Xylenes***	0.0069	**810**	**138**	99	SB-12
TPH Diesel	1.3	7900	418	none	SB-8-2
TPH Gasoline	1.1	7600	1106	none	SB-12
Oil and Grease	46	810	203	none	SB-8-2
Kerosene	1	15000	3787	none	SB-12
PCBs***	0.23	**2.8**	**0.89**	0.37	SP-5
Chloroform	0.022	0.027	0.025	1.6	MW-1-2
1,1-DCA	0.007	0.051	0.029	400	SB-6-2
Methylene Chloride	0.05	0.05	0.05	57	SB-7-2
1,1,1-TCA	0.013	0.34	0.141	49	SB-6-2
Acetone	0.013	0.2	0.054	13,000	SB-10
2-Butanone	0.041	0.041	0.041	520	SB-11
TCE	0.0029	0.01	0.0074	34	SB-17
4-Methyl 2-Pentanone	0.026	0.026	0.026	51,000	SB-11
Chromium	0.67	82	43.41	none	foundry sands
Lead ***	10	**2,500**	**643**	500	foundry sands
Nickel	18	67	48	200	SB-2-1
Antimony	30	30	30	820	SB-2-1
Barium	5	370	188	100,000	foundry sands
Copper	18	120	53	76,000	foundry sands
Cobalt	3.3	3.3	3.3	NA	foundry sands
Molybdenum	7	7	7	10,000	foundry sands
Selenium	0.6	0.6	0.6	10,000	foundry sands
Silver	2.4	2.4	2.4	10,000	foundry sands
Beryllium***	1.9	1.9	1.9	1.3	foundry sands
Cadmium	12	12	12	490	foundry sands
Mercury	0.08	0.09	0.09	610	SB-8-2
Vanadium	0.18	24	12	14,000	foundry sands
Arsenic***	0.057	16	10	3.3	SB-2-1
Zinc	4.1	1,400	372	100,000	foundry sands

*** Analytes detected above PRGs

NA = Not available

PRG = EPA Region IX Preliminary Remedial Goals (11/8/93)

All PRG values are from the Industrial Soil listing except for lead, which is from the Residential Soil list There is no Industrial Soil Listing for lead.

Table 3-5

Summary of Previous Groundwater Sampling Detections and Relevant Benchmarks

(μg/l)

ANALYTE	MINIMUM	MAXIMUM	AVERAGE	MCLs	PRGs Tap Water	Location Where Max. Detected
Toluene	2	25	13.5	1,000	930	LF-2
Tot. Xylenes ***	4	2,800	1,402	10	1,900	LF-2
TPH Diesel	59	330,000	82,936	none	none	A3
TPH Gasoline	97	9,600	3,832.30	none	none	A3
Oil and Grease	560	740,000	370,280	none	none	A3
Kerosene	4,900	4,900	4,900	none	none	LF-2
PCBs ***	3.9	19	11.45	0.5	0.01	A3
1,1,1-TCA	9.3	9.3	9.3	200	1,500	SB-7
Freon 11	5.8	36	16.3	none	1,700	LF-4
Trans-1,2-DCE	7.6	7.6	7.6	100	150	LF-3
Trichloroethene**	9.9	9.9	9.9	5	3	LF-3
Chromium	10	60	35	100	none	A3
Lead ***	830	830	830	none	500	A1
Nickel	10	90	48	100	730	A3
Arsenic** ***	500/(ND)	800/(ND)	600/(ND)	50	0.049	A4
Zinc ***	10	110,000	27,520	5,000	11,000	A1

MCL = EPA Maximum Contaminant Level

PRG = EPA Region IX Preliminary Remedial Goals (11/8/93)

** Reanalyzed, the results were ND

*** Analytes detected above PRGs

MCLs were obtained from the USEPA, Region 9, Drinking Water Standards and Health Advisories

All PRG values are from the Industrial Soil listing except for lead, which is from the Residential Soil listing. There is no Industrial Soil listing for lead.

SECTION 4.0

DESCRIPTION OF INTEGRATED ASSESSMENT RESULTS

This section discusses the results of the IA field sampling effort conducted by BEI at the Sobex site. This EPA-sponsored sampling effort was conducted under protocol specified in the *Preparation of a U.S. EPA Region IX Sample Plan for EPA-lead Superfund Projects* guidance document. Laboratory services were obtained and coordinated through the EPA Region IX Quality Assurance/Management Section (QAMS). The EPA Region IX CLP laboratories were used for the analyses. All CLP laboratory analytical data were validated by the EPA Region IX QAMS. The SAP is included as Appendix A. Appendix B provides the EPA CLP laboratory analytical data package.

4.1 SUMMARY OF IA FIELD SAMPLING EFFORT ACTIVITIES

From September 20 to September 27, 1993, a field sampling event was conducted at the Sobex site to confirm the presence and measure the concentrations of contaminants in onsite soils and groundwater downgradient of the site, obtain background soil and groundwater sampling data, collect additional information to support decision making efforts for potential future action by EPA, and cooperatively assess the site with other regulatory agencies as part of the SACM Pilot Study.

Soil samples were collected at 10 onsite locations including one background location. Three surface soil samples and 15 subsurface soil samples (including background samples) were collected. The samples (including duplicates and equipment rinsates) were collected and submitted to an EPA-designated CLP laboratory for Routine Analytical Services (RAS) metals, RAS pesticides/PCBs and/or RAS VOCs analyses. Figure 4-1 shows the locations of the soil samples.

Surface soil samples were collected as grab samples (independent, discrete samples) using a stainless steel hand trowel. Samples were collected from the soil surface at a depth of approximately 0 inches to 6 inches bgs. The sample was collected and placed in a sample-dedicated 1-gallon disposable pail and homogenized with a trowel. Material in the pail was transferred with a trowel from the pail to the appropriate sample containers, chilled and processed for shipment to the laboratory.

Two surface soil samples (SL-1 and SL-2) were collected in the uncovered northeast portion of the former foundry sands area. The soil encountered in this area of the site was course-grained sandy loam. The samples were analyzed for RAS metals.

Prior to collecting several of the designated subsurface soil samples, overlying concrete was removed with a coring device. BEI and its subcontractor, Jamco Drilling, cored through approximately 1 foot of concrete at six locations (SL-5, SL-6, SL-7, SL-8, SL-9, and BS-1).

Subsurface samples were collected by boring to the desired sample depth, using a 3-inch diameter hand auger. Once the desired sample depth was reached, the auger was removed from the hole. Accumulated soil cuttings were set aside in sample-dedicated, disposable pails or in plastic and eventually transferred into 55-gallon drums. A different, clean auger was inserted in the hole and used to collect the sample. The samples to be analyzed for RAS metals were collected and placed arcs/93-0717b.013

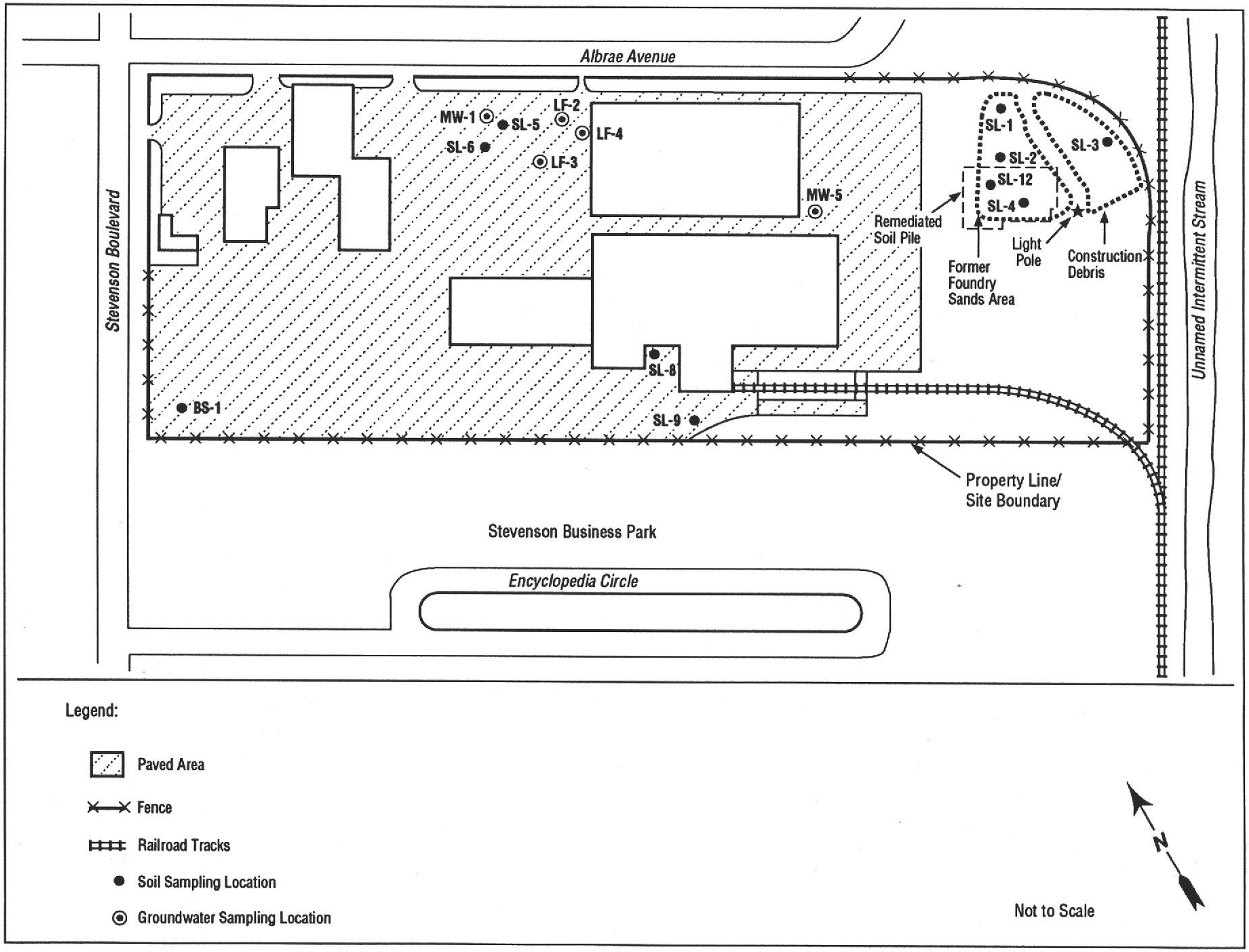


Figure 4-1 Soil and Groundwater Sampling Locations

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in a sample-dedicated 1-gallon disposable pail and homogenized with a trowel. Material in the pail was transferred with a trowel from the pail to the appropriate sample containers, chilled, and processed for shipment to the laboratory. Samples to be analyzed for RAS VOCs were transferred directly from the auger to the appropriate sample containers, chilled, and processed for shipment to the laboratory. Samples to be analyzed for RAS VOCs were collected first and RAS metals last.

One subsurface soil sample (SL-3) was collected at 2 feet below the surface of the construction debris and analyzed for RAS metals and RAS pesticides/PCBs. Two subsurface soil samples (SL-4, SL-12) were collected from the soil pile at a depth of 2 feet from the surface of the pile. One duplicate sample (SL-13) was collected at sample location SL-12 at a depth of 2 feet. The samples were analyzed for RAS metals. Four subsurface soil samples were collected from the buildings 3 and 4 areas at two soil sample locations. Two soil samples were collected at each sample location at a depth of 6 feet (SL-5.1, SL-6.1) and 8 feet (SL-5.2, SL-6.2) bgs. One duplicate sample (SL-10) was collected at sample location (SL-5) at a depth of 6 feet bgs. Soil samples collected in the buildings 3 and 4 areas were analyzed for RAS metals, RAS VOCs, and RAS pesticides/PCBs. Soil samples were collected at two locations in the area south of Building 1, at the sites of the two former storage areas within the area south of Building 1. One subsurface soil sample was collected at each sample location. Samples were collected at a depth of 2 feet below the concrete (SL-8, SL-9). The soil samples collected in the area south of Building 1 were analyzed for RAS metals and RAS Pesticides/PCBs. The subsurface soils at the site were generally clayey loam.

Four background soil samples were collected at a location of undisturbed soil at the far western corner of the site. One background soil sample location representative of natural conditions in the area was chosen. Samples were collected at the surface (BS-1.1), at depth of 2 feet (BS-1.2), at a depth of 6 feet (BS-1.3), and at a depth of 8 feet (BS-1.4) bgs. Background soil samples were analyzed for RAS metals, RAS pesticides/PCBs, and RAS VOCs as appropriate.

Groundwater samples were collected from monitoring wells at five onsite locations: MW-1, LF-2, LF-3, LF-4, and MW-5. Prior to collecting samples, appropriate field testing was conducted and the wells were purged. A peristaltic pump was used to draw water from the wells. At each groundwater sampling location, a filtered and an unfiltered sample were collected. The sample was filtered with a 5 micron filter to remove the larger particles that had been entrained in the water sample. Filtered samples were designated by the sample number appended by an "F" (i.e., LF-3F). The water levels in the monitoring wells were approximately 14 feet bgs. A double volume sample collected at sample location LF-2 was identified to the laboratory for use in laboratory QA/QC. One duplicate groundwater sample (MW-6) was collected at sample location LF-3. The samples (including duplicates and equipment rinsates) were collected and submitted to a CLP laboratory for RAS metals and RAS pesticides/PCB analyses. Filtered samples were analyzed for RAS metals only. Figure 4-1 shows the locations of the groundwater samples.

Additional volumes of soil and groundwater were collected as split samples for the RWQCB. Split soil samples SL-4, SL-6, BS-1.1, and BS-1.2, and split groundwater samples LF-2, LF-3, LF-4, MW-5, and a duplicate of MW-5 were collected for the RWQCB. The samples were relinquished to an RWQCB representative and analyzed by the RWQCB for TPH. Additional volumes of soil and groundwater were also collected as split samples for the 6000 S Corporation. Split soil samples SL-5.1, SL-5.2, SL-6.1, SL-6.2, BS-1.1, BS-1.2, BS-1.3, and BS-1.4 and split groundwater samples MW-1, LF-2, LF-3, LF-4, and MW-5 were collected for the 6000 S Corporation. The samples were relinquished to a representative of the 6000 S Corporation. It is not known if the samples were analyzed.

Four 55-gallon drums containing investigation-derived wastes (i.e., auger cuttings and purged groundwater) are stored inside a locked warehouse in Building 1a.

4.2 SOIL SAMPLING RESULTS

The discussion of the analytical results for soil describes only those levels that are greater than three times background (reference) concentrations and were not qualified or "flagged" during data validation. Table 4-1 lists all the analytical results for soil.

4.2.1 Former Location of Foundry Sands. Analytical results of surface soil samples SL-1 and SL-2 show elevated levels of lead and manganese. Lead was detected at 822 mg/kg in SL-1 and 1,110 mg/kg in SL-2. Manganese was found at 3,490 mg/kg in SL-1 and 3,090 mg/kg in SL-2.

4.2.2 Construction Debris. Analytical results of subsurface soil sample SL-3, collected from a depth of 2 feet bgs, show elevated levels of lead and PCBs (as Aroclor-1254). Lead was detected at 200 mg/kg in SL-3. PCBs (as Aroclor-1254) was found in SL-3 at 100 micrograms per kilogram (µg/kg).

4.2.3 Soil Pile. Analytical results of subsurface soil samples SL-4, SL-12, and SL-13 (duplicate of SL-12), collected from depths of 2 feet bgs, show elevated levels of lead and zinc. Lead was found at 6,560 mg/kg in SL-4, 403 mg/kg in SL-12, and 345 mg/kg in SL-13. Zinc was found at 48,600 mg/kg in SL-4, 1,420 mg/kg in SL-12, and 1,820 mg/kg in SL-13.

4.2.4 Former Buildings 3 and 4 Areas. Analytical results of subsurface soil samples SL-5.1, SL-5.2, SL-6.1, and SL-6.2, collected from depths of 6 feet bgs (SL-5.1 and SL-6.1) and 8 feet bgs (SL-5.2 and SL-6.2), show that no compounds were detected at greater than three times the background (reference) concentrations. The samples were analyzed for both RAS metals and RAS pesticides/PCBs. It may be noted that Aroclor-1254 was detected but the concentration of 12 µg/kg is qualitative because the concentration is below the Contract Required Quantitation Limit (CRQL).

4.2.5 Area South of Building 1. Analytical results of subsurface soil sample SL-9, collected from a depth of 2 feet bgs, show elevated levels of 4,4'-dichlorodiphenyldichloroethylene (4,4'-DDE) and 4,4'-dichlorodiphenyl dichloroethane (4,4'-DDD). The substances 4,4'-DDE and 4,4'-DDD were found in SL-9 at 12 µg/kg and 10 µg/kg, respectively.

4.2.6 Background. Analytical results of background surface soil sample BS-1.1 shows concentrations of lead at 9.3 mg/kg, manganese at 523 mg/kg, and zinc at 50.3 mg/kg. Analytical results of background soil sample BS-1.2 collected from a depth of 2 feet bgs shows concentrations of lead at 9.1 mg/kg, manganese at 463 mg/kg, and zinc at 57.9 mg/kg. Analytical results of background soil sample BS-1.3 collected from a depth of 6 feet bgs shows concentrations of lead at 8.1 mg/kg, manganese at 457 mg/kg, and zinc at 56.1 mg/kg. Analytical results of background soil sample BS-1.4 collected from a depth of 8 feet bgs shows concentrations of lead at 8.1 mg/kg, manganese at 401 mg/kg, and zinc at 55.3 mg/kg. The substances 4,4'-DDE and 4,4'-DDD were not detected in any of the background soil samples above the detection limit (3 µg/kg). PCBs (as Aroclor-1254) were not detected in any of the background soil samples above the detection limit (30 µg/l for BS-1.2, and BS-1.3 and 34 µg/l for BS-1.4).

Table 4-1 Analytical Results for Soil (metals)

Sample Location	SL-1		SL-2		SL-3		SL-4		SL-5.1		SL-5		SL-5.2	
Sample Identification	SL-1		SL-2		SL-3		SL-4		SL-5		*SL-10 Dup		SL-5	
Area Collected	Foundry Sands		Foundry Sands		Const. Debris		Soil Pile		Bldg. 3 and 4		Bldg. 3 and 4		Bldg. 3 and 4	
Sample Depth	Surface		Surface		2 feet		2 feet		6 feet		6 feet		8 feet	
Date of Collection	9/21/93		9/21/93		9/21/93		9/21/93		9/23/93		9/23/93		9/23/93	
Metals	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val
Aluminum	23,300		22,400		21,100		18,100		24,100		22,300		19,700	
Antimony	22.4	J	21	J	23.8	J	45.7	J	24.7	J	25.2	J	19.5	J
Arsenic	7.1		4.8		5.4		5.4		7.6		7.3		6.9	
Barium	354		303		301		178		220		220		182	
Beryllium	1.4		1.4		0.69 L	J	0.52 L	J	0.76 L	J	0.71 L	J	0.62 L	J
Cadmium	2.7	J	3.4	J	0.43 U	J	7.8	J	0.46 U	J	0.45 U	J	0.44 U	J
Calcium	81,700		85,300		25,300		8,670		6130		5,300		5,400	
Chromium	64.9	J	57.1	J	84.2	J	98.4	J	89.2	J	88.6	J	82.7	J
Cobalt	8.3 L	J	4.5 L	J	14.1		10.7 L	J	13.4		13.8		13.1	
Copper	81.6		80.6		51.6		46		33.8		33.2		29.3	
Iron	21,600		20,200		27,400		28,700		28,600		28,300		25,500	
Lead	822		1,110		200		6,560		9		8.2		6.9	
Magnesium	19,600		18,600		13,300		9,420		15,100		15,200		14,300	
Manganese	3,490		3,090		661		479		473		463		491	
Mercury	0.24	J	0.27	J	0.11 U		0.11 U		0.11 U		0.11 U		0.11 U	
Nickel	34.3		22.9		77.5		66.6		104		105		100	
Potassium	1,880		1,940		2,350		2,070		2,680		2360		2,520	
Selenium	1.1		1.5		0.94 L	J	1.7		0.91 U		0.91 U		0.88 U	
Silver	1	J	1.5 L	J	0.67 L	J	0.67 U		0.68 U		0.68 U		0.66 U	
Sodium	1,650		1,730		1,740		1,040 L	J	1,050 L	J	1,030 L	J	591 L	J
Thallium	1.4 U		1.4 U		1.5 U		1.6 U		1.6 U		1.6 U		1.5 U	
Vanadium	40.8	J	24.9	J	59.2	J	51.1	J	57	J	54.4	J	50.3	J
Zinc	679		731		532		48,600		63.1		58.4		53.5	

Notes:

All concentrations listed are in milligrams per kilogram (mg/kg)

U - Not detected above CRDL

L - The analyte was analyzed for, but the results fell between the method detection limit (MDL) or the instrument detection limit (IDL) and the contract required detection limit (CRDL). Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

J - The analyte was analyzed for and was positively identified, but the reported numerical value is the approximate concentration of the analyte.

* SL-10 is the duplicate of SL-5.1

Table 4-1 Analytical Results for Soil (Cont'd)
(metals)

Sample Location	SL-6		SL-6		SL-12		SL-12		SL-8		SL-9		BS-1	
Sample Identification Area Collected Sample Depth Date of Collection	SL-6.1 Bldg. 3 and 4 6 feet 9/23/93		SL-6.2 Bldg. 3 and 4 8 feet 9/23/93		SL-12 Soil Pile 3 feet 9/24/93		* SL-13 Dup Soil Pile 3 feet 9/24/93		SL-8 So. of Bldg. 1 2 feet 9/23/93		SL-9 So. of Bldg. 1 2 feet 9/23/93		BS-1.1 Background Surface 9/23/93	
Metals	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val
Aluminum	25,800		18,600		18,600		21,900		22,700		17,400		20,000	
Antimony	25.1	J	21.6	J	24.3	J	34.7	J	23.9	J	23.5	J	24.9	J
Arsenic	6.4		6.9		3.6		9.3		5.9		5		4.9	
Barium	244		145		191		243		281		274		257	
Beryllium	0.77 L	J	0.48 L	J	0.69 L	J	0.71 L	J	0.68 L	J	0.56 L	J	0.60 L	J
Cadmium	0.46 U	J	0.50 U	J	0.85 L	J	1.6	J	0.49 U	J	0.49 U	J	0.48 U	J
Calcium	11,100		4,670		14,300		11,600		4,920		5,220		3,410	
Chromium	95.9	J	89.6	J	80.7	J	110	J	83.4	J	71.9	J	78.2	J
Cobalt	13.8		11.8 L	J	11.3		14.4		21.1		15.1		14.5	
Copper	33.7		29.1		38		58.9		31		32.8		27.5	
Iron	29,600		26,900		22,900		36,900		26,900		25,300		26,300	
Lead	9.6		6		403		345		8		13		9.3	
Magnesium	16,400		14,700		10,700		13,000		10,400		11,900		10,600	
Manganese	479		501		682		611		566		507		523	
Mercury	0.11 U		0.12 U		0.11 U		0.12		0.12 U		0.12 U		0.12 U	
Nickel	108		101		62		92.5		94		89.4		89.2	
Potassium	2,940		2,090		2,030		2,480		1,970		1,760		1,900	
Selenium	0.92 U		1.0 U		0.89 U		1.2		1.7		0.98 U		1.0 L	J
Silver	0.69 U		0.75 U		0.67 U		0.74 L	J	0.74 U		0.74 U		0.72 U	
Sodium	2,030		791 L	J	1,720		1,940		843 L	J	1,020 L	J	2,450	
Thallium	1.6 U		1.7 U		1.6 U		1.6 U		1.7 U		1.7 U		1.7 U	
Vanadium	60.9	J	48.6	J	48.1	J	61.3	J	57.8	J	45.4	J	48.7	J
Zinc	65.8		53		1,420		1,820		47.7		60		50.3	

Notes:

All concentrations listed are in milligrams per kilogram (mg/kg)

U - Not detected above the CRDL

L - The analyte was analyzed for, but the results fell between the method detection limit (MDL) or the instrument detection limit (IDL) and the contract required detection limit (CRDL). Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

J - The analyte was analyzed for and was positively identified, but the reported numerical value is the approximate concentration of the analyte.

* SL-13 is the duplicate of SL-12

Table 4-1 Analytical Results for Soil (Cont'd)
(metals)

Sample Location	BS-1		BS-1		BS-1	
Sample Identification	BS-1.2		BS-1.3		BS-1.4	
Area Collected	Background		Background		Background	
Sample Depth	2 feet		6 feet		8 feet	
Date of Collection	9/23/93		9/23/93		9/23/93	
Metals	Result	Val	Result	Val	Result	Val
Aluminum	24,400		17,600		14,200	
Antimony	30.9	J	23.7	J	24.4	J
Arsenic	8.3		7.3		6.3	
Barium	310		179		150	
Beryllium	0.74 L	J	0.53 L	J	0.55 L	J
Cadmium	0.46 L	J	0.46 U	J	0.46 U	J
Calcium	12,500		8,340		8,350	
Chromium	93.6	J	74.9	J	64.7	J
Cobalt	14.8		13.3		12.5	
Copper	35		33.1		31.8	
Iron	30,300		26,800		25,600	
Lead	9.1		8		8.1	
Magnesium	20,100		14,300		13,100	
Manganese	463		457		401	
Mercury	0.12 U		0.11 U		0.12 U	
Nickel	104		100		92.7	
Potassium	2,560		1,890		1,470	
Selenium	0.92 U		0.91 U		0.92	
Silver	0.69 U		0.69 U		0.69 U	
Sodium	2,660		630 L	J	437 L	J
Thallium	1.6 U		1.6 U		1.6 U	
Vanadium	58.6	J	43.8		36.5	J
Zinc	57.9		56.1		55	

Notes:

All concentrations listed are in milligrams per kilogram (mg/kg)

U - Not detected above the CRDL.

L - The analyte was analyzed for, but the results fell between the method detection limit (MDL) or the instrument detection limit (IDL) and the contract required detection limit (CRDL). Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

J - The analyte was analyzed for and was positively identified, but the reported numerical value is the approximate concentration of the analyte.

Table 4-1 Analytical Results for Soil (Cont'd)
(VOCs)

Sample Location	SL-5		SL-5		SL-5		SL-6		SL-6		BS-1		BS-1	
Sample Identification	SL-5.1		* SL-10 Dup		SL-5.2		SL-6.1		SL-6.2		BS-1.3		BS-1.4	
Area Collected	Bldg. 3 and 4		Bldg. 3 and 4		Bldg. 3 and 4		Bldg. 3 and 4		Bldg. 3 and 4		Background		Background	
Sample Depth	6 feet		6 feet		8 feet		6 feet		8 feet		6 feet		8 feet	
Date of Collection	9/23/93		9/23/93		9/24/93		9/24/93		9/23/93		9/23/93		9/23/93	
Metals	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val
Chloromethane	11 U	J	11 U	J	11 U	J	11 U	J	11 U	J	11 U	J	11 U	J
Bromomethane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Vinyl Chloride	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Chloroethane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Methylene Chloride	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Acetone	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Carbon disulfide	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
1,1-Dichloroethene	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
1,1-Dichloroethane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
1,2-Dichloroethene	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Chloroform	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
1,2-Dichloroethane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
2-Butanone	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
1,1,1-Trichloroethane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Carbon tetrachloride	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Bromodichloromethane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
1,2-Dichloropropane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
cis-1,3-Dichloropropane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Trichloroethene	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Dibromochloromethane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
1,1,2-Trichloroethane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Benzene	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
trans-1,3-Dichloropropane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Bromoform	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
4-Methyl-2-pentanone	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
2-Hexanone	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Tetrachloroethene	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
1,1,2,2-Tetrachloroethane	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Toluene	14		19		35		74		53		110		90	
Chlorobenzene	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Ethylbenzene	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Styrene	11 U		11 U		11 U		11 U		11 U		11 U		11 U	
Xylene (total)	11 U		11 U		11 U		11 U		11 U		11 U		11 U	

Notes:

All concentrations listed are in micrograms per kilogram (µg/kg)

U - Not detected above the CRQL

* SL-10 is the duplicate of SI-5.1

Table 4-1 Analytical Results for Soil (Cont'd) (pesticides/PCBs)

Sample Location	SL-3		SL-5		SL-5.1		SL-5		SL-6		SL-6		SL-8	
Sample Identification	SL-3		SL-5.1		* SL-10 Dup		SL-5.2		SL-6.1		SL-6.2		SL-8	
Area Collected	Const. Debris		Bldg. 3 and 4		Bldg. 3 and 4		Bldg. 3 and 4		Bldg. 3 and 4		Bldg. 3 and 4		So. of Bldg. 1	
Sample Depth	2 feet		6 feet		6 feet		8 feet		6 feet		8 feet		2 feet	
Date of Collection	9/21/93		9/23/93		9/23/93		9/23/93		9/23/93		9/23/93		9/23/93	
Metals	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val
alpha-BHC	2 U	J	2 U	J	11 U	J	11 U	J	11 U	J	11 U	J	11 U	J
beta-BHC	2 U		2 U		11 U		11 U		11 U		11 U		11 U	
delta-BHC	2 U		2 U		11 U		11 U		11 U		11 U		11 U	
gamma-BHC (Lindane)	2 U		2 U		11 U		11 U		11 U		11 U		11 U	
Heptachlor	2 U		2 U		11 U		11 U		11 U		11 U		11 U	
Aldrin	3 U		2 U		11 U		11 U		11 U		11 U		11 U	
Heptachlor epoxide	2 U		2 U		11 U		11 U		11 U		11 U		11 U	
Endosulfan I	2 U		2 U		11 U		11 U		11 U		11 U		11 U	
Dieldrin	3 U		3 U		11 U		11 U		11 U		11 U		11 U	
4,4'-DDE	4 U		3 U		11 U		11 U		11 U		11 U		11 U	
Endrin	3 U		3 U		11 U		11 U		11 U		11 U		11 U	
Endosulfan II	3 U		3 U		11 U		11 U		11 U		11 U		11 U	
4,4'-DDD	3 U		3 U		11 U		11 U		11 U		11 U		11 U	
Endosulfan sulfate	3 U		3 U		11 U		11 U		11 U		11 U		11 U	
4,4'-DDT	3 U		3 U		11 U		11 U		11 U		11 U		11 U	
Methoxychlor	15 U		17 U		11 U		11 U		11 U		11 U		11 U	
Endrin ketone	3 U		3 U		11 U		11 U		11 U		11 U		11 U	
Endrin aldehyde	3 U		3 U		11 U		11 U		11 U		11 U		11 U	
alpha-Chlordane	2 U		2 U		2 U		2 U		2 U		2 U		2 U	
gamma-Chlordane	2 U		2 U		2 U		2 U		2 U		2 U		2 U	
Toxaphene	150 U		170 U		160 U		180 U		180 U		170 U		180 U	
Aroclor-1016	30 U		33 U		31 U		35 U		36 U		33 U		35 U	
Aroclor-1221	60 U		66 U		64 U		71 U		73 U		67 U		71 U	
Aroclor-1232	30 U		33 U		31 U		35 U		36 U		33 U		35 U	
Aroclor-1242	30 U		33 U		31 U		35 U		36 U		33 U		35 U	
Aroclor-1248	30 U		33 U		31 U		35 U		36 U		33 U		35 U	
Aroclor-1254	100		33 U		31 U		35 U		12 L	J	33 U		35 U	
Aroclor-1260	25 L	J	33 U		31 U		35 U		36 U		33 U		35 U	

Notes:

All concentrations listed are in micrograms per kilogram (µg/kg)

U - Not detected above the CRQL

* SL-10 is the duplicate of Sl-5.1

Table 4-1 Analytical Results for Soil (Cont'd) (pesticides/PCBs)

Sample Location	SL-9		BS-1		BS-1		BS-1	
Sample Identification	SL-9		BS-1.2		BS-1.3		BS-1.4	
Area Collected	So. of Bldg 1		Background		Background		Background	
Sample Depth	2 feet		2 feet		6 feet		8 feet	
Date of Collection	9/23/93		9/23/93		9/23/93		9/23/93	
Metals	Result	Val	Result	Val	Result	Val	Result	Val
alpha-BHC	2 U		2 U		2 U		2 U	
beta-BHC	2 U		2 U		2 U		2 U	
delta-BHC	2 U		2 U		2 U		2 U	
gamma-BHC (Lindane)	2 U		2 U		2 U		2 U	
Heptachlor	2 U		2 U		2 U		2 U	
Aldrin	2 U		2 U		2 U		2 U	
Heptachlor epoxide	2 U		2 U		2 U		2 U	
Endosulfan I	2 U		2 U		2 U		2 U	
Dieldrin	3 U		3 U		3 U		3 U	
4,4'-DDE	12		3 U		3 U		3 U	
Endrin	3 U		3 U		3 U		3 U	
Endosulfan II	3 U		3 U		3 U		3 U	
4,4'-DDD	10		3 U		3 U		3 U	
Endosulfan sulfate	3 U		3 U		3 U		3 U	
4,4'-DDT	3 U		3 U		3 U		3 U	
Methoxychlor	17 U		15 U		17 U		17 U	
Endrin ketone	3 U		3 U		3 U		3 U	
Endrin aldehyde	3 U		3 U		3 U		3 U	
alpha-Chlordane	2 U		2 U		2 U		2 U	
gamma-Chlordane	2 U		2 U		2 U		2 U	
Toxaphene	170 U		150 U		150 U		170 U	
Aroclor-1016	34 U		30 U		30 U		34 U	
Aroclor-1221	69 U		61 U		60 U		69 U	
Aroclor-1232	34 U		30 U		30 U		34 U	
Aroclor-1242	34 U		30 U		30 U		34 U	
Aroclor-1248	34 U		30 U		30 U		34 U	
Aroclor-1254	34 U		30 U		30 U		34 U	
Aroclor-1260	34 L	J	30 U		30 U		34 U	

Notes:

All concentrations listed are in micrograms per kilogram (µg/kg)

U - Not detected above CRQL

Table 4-2 Analytical Results for Groundwater (metals)

Sample Location	LF-3		LF-3		LF-4		LF-4		MW-1		MW-1		LF-2	
Sample Identification	LF-3		* MW-6 Dup		LF-4		LF-4F		MW-1		MW-1F		LF-2	
Area Collected	Bldg. 3 and 4		Bldg. 3 and 4		Bldg. 3 and 4		Bldg. 3 and 4		background		background		Bldg. 3 and 4	
Depth to Groundwater	14.4 feet		14.4 feet		14.3 feet		14.3 feet		14.6 feet		14.6 feet		13.3 feet	
Date of Collection	9/24/93		9/24/93		9/24/93		9/24/93		9/24/93		9/24/93		9/27/93	
Metals	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val
Aluminum	46.6 L	J	35.0 U		5,240		35.0 U		35.0 U		35.0 U		38.6 L	J
Antimony	19.0 U		19.0 U		19.0 U		19.0 U		19.0 U		19.0 U		19.0 U	
Arsenic	302		286		11.6		3.0 U		3.8 L	J	4.0 L	J	3.0 U	
Barium	376		338		392		83.1 L	J	246		251		80.4 L	J
Beryllium	1.0 U		1.0 U		1.0 U		1.0 U		1.0 U		1.0 U		1.0 U	
Cadmium	2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U	
Calcium	115,000		121,000		130,000		103,000		94,800		97,200		85,000	
Chromium	3.0 U		3.0 U		15.5		3.0 U		3.3 L	J	3.2 L	J	3.0 U	
Cobalt	5.0 U		5.0 U		29.3 L	J	5.0 U		5.0 U		5.0 U		5.0 U	
Copper	2.0 U		2.0 U		52.4		2.0 U		2.0 U		2.0 U		2.0 U	
Iron	3,320		1,010		9,610		39.1 L	J	72.1 L	J	36.1 L	J	137	
Lead	3.0 U		4		19		3.0 U		3.0 U		3.0 U		3.0 U	
Magnesium	72,000		76,100		65,500		59,400		78,300		79,300		49,800	
Manganese	7,520		7,520		2,610		506		127		87.9		773	
Mercury	0.20 U		0.20 U		0.20 U		0.20 U		0.3		0.29		0.20 U	
Nickel	22.2 L	J	11.0 U		67.8		12.3 L	J	11.0 U		11.0 U		11.0 U	
Potassium	1,590 L	J	1,550 L	J	2,210 L	J	1,660 L	J	1,890 L	J	1,720	J	1,760 L	J
Selenium	4.0 U		4.0 U		7.3		5.2		4.0 U		4.0 U		4.0 U	
Silver	2.0 U	R	2.0 U	R	2.0 U	R	2.0 U	R	2.0 U	R	2.0 U	R	2.0 U	R
Sodium	153,000		144,000		112,000		115,000		146,000		145,000		132,000	
Thallium	10.2		7.0 U		7.2 L	J	7.0 U		7.0 U		7.0 U		7.0 U	
Vanadium	4.6 L	J	4.9 L	J	33.5 L	J	3.0 U		3.0 U		3.9 L	J	3.0 U	
Zinc	8.2 L	J	9.2 L	J	52.5		3.0 U		3.0 U		3.0 U		3.0 U	

Notes:

All concentrations listed are in micrograms per liter (μg/l). * MW-6 is the duplicate of LF-3

U - Not detected above CRDL R - The analyte was analyzed for, but the presence or absence of the analyte has not been verified.

L - The analyte was analyzed for, but the results fell between the method detection limit (MDL) or the instrument detection limit (IDL) and the contract required detection limit (CRDL). Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection. J - The analyte was analyzed for and was positively identified, but the reported numerical value is the approximate concentration of the analyte.

A sample number appended with an "F" indicates that the sample was filtered with a 5.0 micron filter.

Table 4-2 Analytical Results for Groundwater (Cont'd)
(metals)

Sample Location	LF-2		LF-3		MW-3F		MW-5		MW-5	
Sample Identification	LF-2F		LF-3F		* MW-6F		MW-5		MW-5F	
Area Collected	Bldg. 3 and 4		Bldg. 3 and 4		Bldg. 3 and 4		So.of Bldg. 8		So.of Bldg. 8	
Depth to Groundwater	13.3 feet		14.4 feet		14.4 feet		12.1 feet		12.1 feet	
Date of Collection	9/27/93		9/24/93		9/24/93 *		9/27/93		9/27/93	
Metals	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val
Aluminum	45.3 L	J	35.0 U		58.6 L	J	3,320		73.8 L	J
Antimony	19.0 U		19.0 U		19.0 U		19.0 U		19.0 U	
Arsenic	3.0 U		330		392		3.7 L	J	3.0 U	
Barium	75.7 L	J	363		365		105 L	J	41.9 L	J
Beryllium	1.0 U		1.0 U		1.0 U		1.0 U		1.0 U	
Cadmium	2.0 U		2.0 U		2.0 U		2.0 U		2.0 U	
Calcium	78,900		113,000		115,000		68,200		50,400	
Chromium	3.0 U		3.0 U		3.0 U		29.3		16.2	
Cobalt	5.0 U		5.0 U		5.0 U		5.0 U		5.0 U	
Copper	2.0 U		2.0 U		2.0 U		2.0 U		2.0 U	
Iron	38.6 L	J	3,680		4,250		4,920		51.0 L	J
Lead	3.0 U		3.0 U		4.6		8		3.0 U	
Magnesium	46,200		71,000		72,400		45,500		39,700	
Manganese	683		7,670		8,450		396		82.1	
Mercury	0.20 U		0.20 U		0.20 U		0.20 U		0.34	
Nickel	11.0 U		19.3 L	J	20.1 L	J	31.7 L	J	11.0 U	
Potassium	1,760 L	J	1,350 L	J	1,020 L	J	2,280 L	J	2090 L	J
Selenium	4.0 U		4.0 U		4.0 U		9.7		8.2	
Silver	2.0 U	R	2.0 U	R	2.0 U	R	2.0 U	R	2.0 U	R
Sodium	129,000		150,000		140,000		81,100		75,500	
Thallium	7.0 U		7.0 U		7.1 L	J	7.0 U		7.0 U	
Vanadium	3.3 L	J	3.0 U		3.0 U		13.2 L	J	3.0 U	
Zinc	3.0 U		3.0 U		8.3 L	J	21		3.0 U	

Notes:

All concentrations listed are in micrograms per liter (µg/l). * MW-6F is the duplicate of LF-3F

U - Not detected above the CRDL R - The analyte was analyzed for, but the presence or absence of the analyte has not been verifie

L - The analyte was analyzed for, but the results fell between the method detection limit (MDL) or the instrument detection limit (contract required detection limit (CRDL). Results are estimated and are considered qualitatively acceptable but quantitatively unr uncertainties in the analytical precision near the limit of detection. J - The analyte was analyzed for and was positively identifie reported numerical value is the approximate concentration of the analyte.

A sample number appended with an "F" indicates that the sample was filtered with a 5.0 micron filter.

Table 4-2 Analytical Results for Groundwater (Cont'd)
(pesticides/PCBs)

Sample Location	LF-3		LF-3		LF-4		MW-1		LF-2		MW-5	
Sample Identification	LF-3		* MW-6 Dup		LF-4		MW-1		LF-2		MW-5	
Area Collected	Bldg 3 and 4		Bldg 3 and 4		Bldg 3 and 4		Background		Bldg 3 and 4		So. of Bldg. 8	
Depth to Groundwater	14.4 feet		14.4 feet		14.3 feet		14.6 feet		13.3 feet		12.4 feet	
Date of Collection	9/24/93		9/24/93		9/21/93		9/24/93		9/27/93		9/27/93	
Metals	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val	Result	Val
alpha-BHC	0.05 U		0.05 U		0.05 U		0.05 U		0.05 U		0.05 U	
beta-BHC	0.05 U		0.05 U		0.05 U		0.05 U		0.05 U		0.05 U	
delta-BHC	0.05 U		0.05 U		0.05 U		0.05 U		0.05 U		0.05 U	
gamma-BHC (Lindane)	0.05 U		0.05 U		0.05 U		0.05 U		0.05 U		0.05 U	
Heptachlor	0.05 U		0.05 U		0.05 U		0.05 U		0.05 U		0.05 U	
Aldrin	0.05 U		0.05 U		0.05 U		0.05 U		0.05 U		0.05 U	
Heptachlor epoxide	0.05 U		0.05 U		0.05 U		0.05 U		0.05 U		0.05 U	
Endosulfan I	0.05 U		0.05 U		0.05 U		0.05 U		0.05 U		0.05 U	
Dieldrin	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
4,4'-DDE	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Endrin	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Endosulfan II	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
4,4'-DDD	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Endosulfan sulfate	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
4,4'-DDT	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Methoxychlor	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Endrin ketone	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
Endrin aldehyde	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
alpha-Chlordane	0.05 U		0.05 U		0.05 U		0.05 U		0.05 U		0.05 U	
gamma-Chlordane	0.05 U		0.05 U		0.05 U		0.05 U		0.05 U		0.05 U	
Toxaphene	5 U		5 U		5 U		5 U		5 U		5 U	
Aroclor-1016	1 U		1 U		1 U		1 U		1 U		1 U	
Aroclor-1221	2 U		2 U		2 U		2 U		2 U		2 U	
Aroclor-1232	1 U		1 U		1 U		1 U		1 U		1 U	
Aroclor-1242	1 U		1 U		1 U		1 U		1 U		1 U	
Aroclor-1248	1 U		1 U		1 U		1 U		1 U		1 U	
Aroclor-1254	1 U		1 U		1 U		1 U		1 U		1 U	
Aroclor-1260	1 U		1 U		1 U		1 U		1 U		1 U	

Notes:

All concentrations listed are in micrograms per liter (µg/l)

U - Not detected above CRQL

* MW-6 is the duplicate of LF-3

4.3 GROUNDWATER SAMPLING RESULTS

The discussion of the analytical results for groundwater describes only those levels that are greater than three times background (reference) concentrations and meet all CLP required quality control criteria. Table 4-2 lists all the analytical results for groundwater.

Analytical results of unfiltered groundwater samples collected from onsite monitoring wells indicate that several metals were detected. Most of the maximum concentrations of metals were found in monitoring well LF-4. Results show maximum concentrations of copper at 52.4 µg/l, lead at 19.0 µg/l, nickel at 67.8 µg/l, and zinc at 52.5 µg/l in monitoring well LF-4. Arsenic and manganese were detected at maximum concentrations in sample number MW-6F (duplicate of sample LF-3F), at 392 µg/l and 8,450 µg/l, respectively. Chromium was detected at its maximum concentration of 29.3 µg/l in monitoring well MW-5. No analytes of the RAS pesticides/PCBs analyses were detected in groundwater samples collected during this event.

Analytical results of the filtered groundwater sample collected from monitoring well LF-4 indicate that copper, lead, and zinc were not detected above their respective Contract Required Detection Limits (CRDLs). Nickel was detected in the filtered sample collected from monitoring well LF-4 at 12.3 µg/l. Chromium was detected in the filtered sample collected from monitoring well MW-5 at 16.2 µg/l. Generally, metals were detected at significantly lower concentrations in the filtered groundwater samples as compared to their corresponding unfiltered samples. However, arsenic and manganese were detected in the unfiltered sample collected from monitoring well LF-3 at 302 µg/l and 7,520 µg/l, respectively. These concentrations are lower than the levels detected in the corresponding filtered samples (LF-3F). Arsenic and manganese were detected in sample LF-3F at 330 µg/l and 7,670 µg/l, respectively. This anomaly in the analytical results may be due to the sample matrix, poor laboratory techniques, or method defects.

4.4 FIELD MODIFICATIONS

The following modifications to the SAP (Appendix A) were implemented during the field sampling effort:

- According to the SAP, soil cuttings were originally to be placed back into the soil borings from which the sample was obtained. However, per the ACWD's request, soil cuttings generated during the subsurface sampling were placed into Department of Transportation (DOT)-approved 55-gallon steel drums and stored in a secured area on site. The drums will be transported off site and disposed at an appropriate facility.

- Subsequent to coring through the surface layer of concrete at sample location SL-7, it was determined that a hand auger would not penetrate the soil due to subsurface obstructions. Soil samples SL-7.1, SL-7.2, and duplicate sample SL-11 were abandoned.

- Due to the abandonment of sample location SL-7, modifications to the sample plan were implemented. To collect a duplicate sample, an additional soil sample location was designated in the soil pile area. Subsurface soil sample SL-12 and duplicate sample SL-13 were collected at a depth of 2 feet below the surface of the soil pile. The samples were analyzed for RAS metals. To collect the correct number of QA/QC samples designated in the SAP, soil sample SL-5.2 was designated as a laboratory QA/QC sample.

- Split samples were collected and relinquished to a representative of the 6000 S Corporation. Split soil samples SL-5.1, SL-5.2, SL-6.1, SL-6.2, BS-1.1, BS-1.2, BS-1.3, and BS-1.4, and split groundwater samples MW-1, LF-2, LF-3, LF-4, and MW-5 were collected for the 6000 S Corporation. It is not known how the samples were preserved or if the samples were analyzed.
- According to the SAP, if the turbidity of the groundwater in the well to be sampled was above 10 Nephelometric Turbidity Units (NTUs), groundwater samples collected for metals analysis would consist of both a filtered and a nonfiltered sample. Because of inconsistent turbidity readings and the visually turbid groundwater samples, all groundwater samples collected for RAS metals analysis consisted of both a filtered and an unfiltered sample.
- According to the SAP, groundwater samples were to be collected with a Teflon bailer and samples were to be filtered with filters that attach to the outlet device of a bottom-emptying bailer. A modification of this procedure was made because of the inability to obtain 5.0 micron filters that attach to the outlet device of a bailer. Consequently, all groundwater samples were collected with a peristaltic pump. Groundwater samples collected for metals analyses were filtered with a 5.0 micron filter that attached directly to the pump tubing. After the filtered sample was collected, the filter was removed and the unfiltered samples were collected.
- The field sampling schedule, with an original end date of September 24, 1993, was delayed until September 27, 1993, because of site access problems.

According to the SAP, the exact soil sampling locations were to be determined in the field. The exact soil sampling locations for the IA field sampling event at the Sobex site are (See Figure 3-1) as follows: SL-1 is in the former foundry sands area, 58 feet southwest of the fence on the northeastern side of the site and 158 feet southeast of the edge of the paved parking area; SL-2 is in the former foundry sands area, 35 feet southwest of SL-1; SL-3 is in the construction debris, 165 feet east of the light pole; SL-4 is in the soil pile, 151 feet northwest of the lightpole; SL-12 is in the soil pile, 25 feet north of SL-4; SL-5 is in the former buildings 3 and 4 areas, 162.5 feet northwest of the parking lot entrance from Albrae Avenue closest to building 8 and 75 feet southwest from the landscaped area at a right angle; SL-6 is in the former buildings 3 and 4 areas, 55 feet southwest of SL-5 and 50 feet northwest at a right angle; SL-8 is in the area south of Building 1, 50 feet northwest of the northeast side of the alcove; SL-9 is in the area south of Building 1, 62.5 feet northwest of the north corner of Building 1 and 50 feet northwest at a right angle; BS-1 is in the western corner of the site, 75 feet southeast from the northwest property line and 75 feet northeast from the southwest property line.

SECTION 5.0

DATA ANALYSIS

This section analyzes the data collected during the IA field sampling effort. It discusses the quality and usability of the analytical data, compares the data to benchmarks, and outlines a conceptual site model.

5.1 DISCUSSION OF DATA QUALITY

The samples obtained during the 1993 EPA sampling effort at the Sobex site were collected in accordance with the SAP (Appendix A). The samples were analyzed through EPA's CLP. Data validation was performed by EPA Region IX QAMS.

As previously discussed, soil samples collected during the September 1993 sampling event were analyzed for RAS metals, RAS Pesticides/PCBs, and RAS VOCs. Groundwater samples were analyzed for RAS metals and RAS Pesticides/PCBs.

The soil results of the metals analysis were qualified for several analytes. Mercury was detected in two of the equipment blanks collected. The reported results for mercury were 0.27 µg/l and 0.23 µg/l, which are above the Contract Required Detection Limit (CRDL) of 0.20 µg/l. Therefore, concentrations of mercury were flagged as estimated for two samples. The results for mercury in soils and groundwater were also flagged, because a CRDL standard was not analyzed during the analysis of samples for mercury. However, the laboratory did use a standard at the CRDL in the calibration of the analytical instrument. Because the concentrations of the mercury were very low or below the detection limit, the effect of these items on the characterization of the site is minimal.

In addition, the matrix spike recovery results for antimony, cadmium, chromium, and vanadium in a QC sample did not meet the laboratory criteria for accuracy. The percent recoveries were below the 75 to 125 percent range requirement. Therefore, the results may be biased low, and false negatives may exist.

The relative percent differences of the duplicate pairs of arsenic, copper, iron, and nickel were 88.4, 43.1, 46.8, and 39.5 respectively. The reason for the imprecision regarding these analytes is unknown. The analysis of the samples for these analytes was flagged as "J," an estimated quantity.

As shown on Table 4-2, the analytical results for silver were rejected in all of the groundwater samples. The data were rejected because the matrix spike recovery limits were outside the method QC limits. The reported values were below the instrument detection limit in all samples; however, the validation indicated that the low matrix spike recovery may result in the reporting of false negatives.

Several of the groundwater results are flagged with an "L" because the concentrations detected were above the instrument detection limits but below the CRDL. The concentrations are considered qualitatively acceptable but quantitatively unreliable. In addition, the relative percent differences in the two duplicate pairs were higher than expected for iron, lead, and thallium. The imprecision of these results could be due to the turbidity of the samples (unfiltered); however, the effect on the quality of the data is unknown. Lead was detected in the downgradient well sample LF-4 (unfiltered) at 19 µg/l, and was not qualified. Lead was not detected in the upgradient sample MW-1, and these results were not qualified.

The results for both the RAS volatiles and RAS pesticides/PCBs were generally unqualified, except that the quantitative limits for chloromethane and acetone were estimated, due to large percent differences in the continuing calibrations. However, chloromethane and acetone were not detected in any samples. Aroclor-1254 and Aroclor-1260 were detected in samples SL-3 and SL-6.1, but the results were below the CRDL and are considered quantitative rather than qualitative.

In summary, the quality of the data is generally adequate to meet the objectives of the IA. The data for the contaminants of concern (lead, manganese, 4,4'-DDE) at the site are not qualified. Sufficient unqualified data are available to confirm the presence of contaminants in onsite soils and groundwater. The background soil and groundwater sampling data are adequate for comparison to site conditions. These data are also usable for HRS purposes. Complete details of the QAMS' data validation reports can be found in Appendix B.

5.2 DATA COMPARISONS

For the purpose of this report, the health-based benchmarks for groundwater are the federal maximum contaminant levels (MCLs). The U.S. EPA Region IX Preliminary Remediation Goals (PRGs) were also used to compare levels of contaminants in soil and groundwater. PRGs are used by the EPA as a rapid reference for screening concentrations in environmental media and as indicators for further investigation at CERCLA sites.

Groundwater data from the 1993 EPA sampling event indicate that arsenic and manganese are present above their respective MCLs. Arsenic was detected at a maximum concentration of 392 µg/l and the MCL for arsenic is 50 µg/l. Manganese was detected at a maximum concentration of 8,450 µg/l and the MCL for manganese is 50 µg/l. Arsenic and manganese were also detected above the PRGs for each substance. The PRGs for arsenic and manganese are 0.049 µg/l and 3,700 µg/l, respectively. Both arsenic and manganese were also detected at concentrations greater than three times background levels. Although the background concentration reported for arsenic was qualified by U.S. EPA QAMS and is considered an estimated quantity, arsenic concentrations were detected at greater than 40 times the reported background level.

Soil sampling data indicate that arsenic and beryllium are present above their respective PRGs. Arsenic was detected at a maximum concentration of 9.3 mg/kg and the PRG for arsenic in industrial soil is 3.3 mg/kg. Beryllium was found at a maximum concentration of 1.4 mg/kg and the PRG for beryllium in industrial soil is 1.3 mg/kg. Table 5-1 shows the highest unqualified concentrations detected for each analyte and its corresponding benchmark. If none of the reported results for a given analyte are unqualified, then the highest qualified concentration is listed.

5.3 CONCEPTUAL SITE MODEL

A simplified conceptual site model was developed for the Sobex site based on the potential sources/areas of contamination and receptors. The conceptual site model addresses known conditions at the site and evaluates only current scenarios. The conceptual site model is shown in Figure 5-1.

Table 5-1 Data Comparisons for August 1993 Sampling Event
(units: water in µg/l, soil in mg/kg, unless otherwise shown)

ANALYTE	SAMPLE MATRIX	†CRDL/CRQL	MCL (in µg/l)	∞PRG (in µg/l for water) (in mg/kg for soil)	MAXIMUM CONCENTRATION DETECTED (in µg/l for water and mg/kg for soil)
Aluminum	SOIL	40		100,000	25,800
	GROUNDWATER	200	50	37,000	5,240
Antimony	SOIL	12		820	* 45.7
	GROUNDWATER	60	6	15	** 19.0
Arsenic	SOIL	2		3.3	9.3
	GROUNDWATER	10	50	0.049	392
Barium	SOIL	40		100,000	354
	GROUNDWATER	200	2,000	2,600	392
Beryllium	SOIL	1		1.3	1.4
	GROUNDWATER	5	4	0.02	**1.0
Cadmium	SOIL	1		1,000	* 7.8
	GROUNDWATER	5	5	18	** 2.0
Calcium	SOIL	1,000			85,300
	GROUNDWATER	5,000	Δ		130,000
Chromium	SOIL	2			* 110
	GROUNDWATER	10	100		29.3
Cobalt	SOIL	10			21.1
	GROUNDWATER	50	Δ		* 29.3
Copper	SOIL	5		76,000	81.6
	GROUNDWATER	25	1,000	1,400	52.4
Iron	SOIL	20			36,900
	GROUNDWATER	100	300		9,610
Lead	SOIL	0.6			6,560
	GROUNDWATER	3	50		19
Magnesium	SOIL	1000			20,100
	GROUNDWATER	5,000	Δ		79,300
Manganese	SOIL	3		10,000	3,490
	GROUNDWATER	15	50	180	8,450
Mercury	SOIL	0.1		610	** 0.12
	GROUNDWATER	0.2	2	11	0.3
Nickel	SOIL	8		41,000	108
	GROUNDWATER	40	100	730	67.8
Potassium	SOIL	1,000			2,940
	GROUNDWATER	5,000	Δ		* 2,210
Selenium	SOIL	1		10,000	1.7
	GROUNDWATER	5		180	9.7
Silver	SOIL	2		10,000	** 0.75
	GROUNDWATER	10	100	180	** 2.0
Sodium	SOIL	1,000			2,660
	GROUNDWATER	5,000			153,000
Thallium	SOIL	2			** 1.7
	GROUNDWATER	10	2		10.2
Vanadium	SOIL	10		14,000	* 61.3
	GROUNDWATER	50		260	* 33.5
Zinc	SOIL	4		100,000	48,600
	GROUNDWATER	20	5,000	11,000	52.5
Toluene	SOIL	10		280	110
PCB (Aroclor-1254)	SOIL	1		0.37	100 µg/kg
4,4'-DDE	SOIL	0.1		8.4	12 µg/kg
4,4'-DDD	SOIL	0.1		12	10 µg/kg

Notes:

MCL = Federal Maximum Contaminant Level from the EPA Region IX Drinking Water Standards and Health Advisories Table, December 1992.

PRG = Preliminary Remediation Goal from the U.S. EPA Region IX Preliminary Remediation Goals, Third Quarter 1993

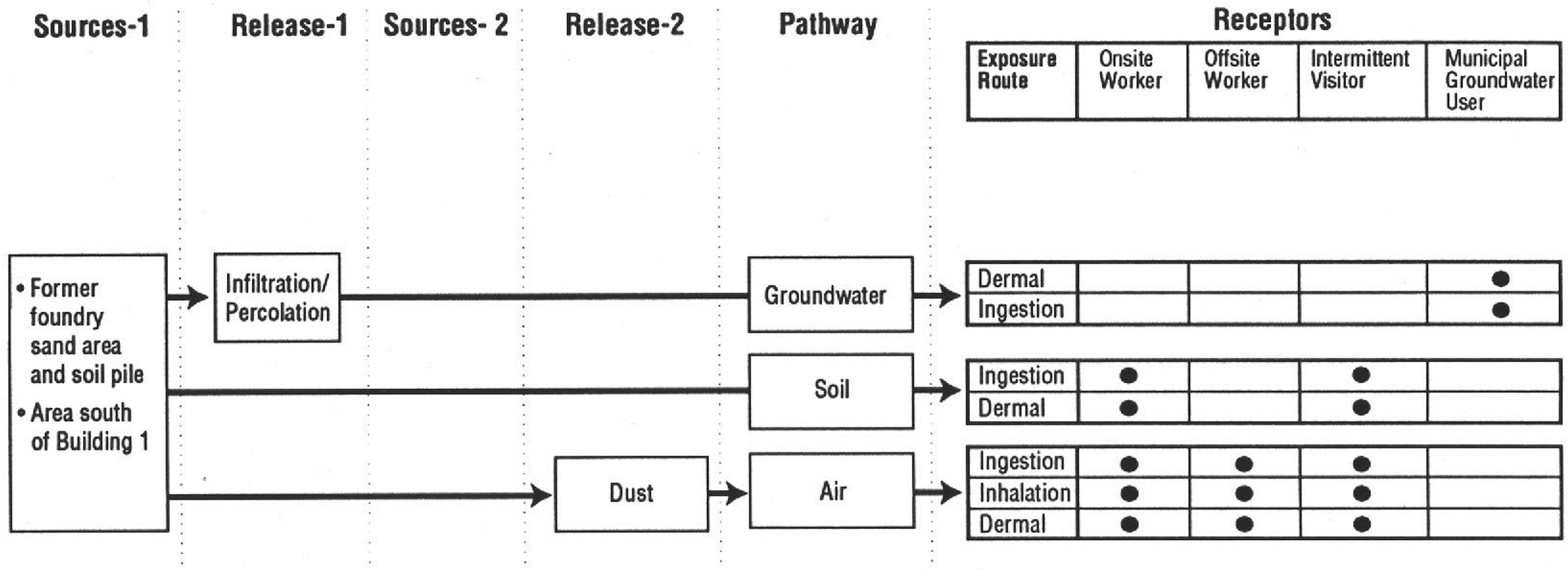
Δ = Benchmark Unavailable ∞ - The PRGs for soil are taken from the Industrial Soil listing.

* = Analyte qualified by U.S. EPA QAMS; the associated numerical value is an estimated quantity.

** = Analyte was not detected above the given detection limit.

† = The Contract Required Detection Limit (CRDL) corresponds to the resuts for metals and the Contract Required Quantitation Limit (CRQL) corresponds to the results for VOCs and Pesticides/PCBs.

arcs93-0717b.016



Exposure Route	Onsite Worker	Offsite Worker	Intermittent Visitor	Municipal Groundwater User
Dermal				●
Ingestion				●
Ingestion	●		●	
Dermal	●		●	
Ingestion	●	●	●	
Inhalation	●	●	●	
Dermal	●	●	●	

Figure 5-1 Conceptual Site Model

In the Fremont area, there are localized areas of interconnection between the shallow unconfined and Newark aquifers, which are of concern to the ACWD and the RWQCB because of the potential for contaminant migration. Deeper aquifers, including the Newark, are important sources of municipal and domestic water supplies. There are 19 municipal drinking-water wells within 4 miles of the site. The ACWD water system supplies water to approximately 275,000 people. Although groundwater is the primary pathway of concern for the site, the distance from the site to the nearest municipal drinking-water well is approximately 2.9 miles. Furthermore, all municipal drinking-water wells are upgradient of the site. (16)

Analytical results of unfiltered groundwater samples collected from onsite monitoring wells showed elevated concentrations of metals, including lead up to 19.0 µg/l, nickel at 67.8 µg/l, zinc up to 52.5 µg/l, arsenic up to 392 µg/l, manganese up to 8,450 µg/l, and chromium up to 29.3 µg/l. It should be noted that the concentrations of lead, nickel, zinc, and chromium were non-detect or lower in the corresponding filtered sample.

5.2.1 Former Foundry Sands Area and Soil Pile. Analytical results of surface soil samples collected within the former foundry sands area and the adjacent soil pile showed elevated concentrations of metals, including lead up to 6,650 mg/kg, zinc up to 48,600 mg/kg, and manganese up to 3,490 mg/kg. Groundwater is the primary pathway of concern through leaching of hazardous substances from the soil to groundwater. Potential routes of exposure associated with this pathway are ingestion and dermal contact of contaminated groundwater. The potential receptors are municipal groundwater users.

Soil exposure is also a potential pathway of concern because of the unrestricted access to the former foundry sands area and the soil pile. Potential routes of exposure associated with the soil pathway are ingestion and dermal contact of contaminated soils. The potential receptors are onsite workers and intermittent visitors.

Air is a potential pathway of concern during any disturbance (e.g., excavation, tilling) of the former foundry sands area and/or the soil pile. Particulate emissions could be blown around the site and to nearby businesses. Potential routes of exposure associated with the air pathway are ingestion, inhalation, and dermal contact of contaminated particulate emissions. The potential receptors are onsite and offsite workers and intermittent visitors.

The surface water pathway does not seem to be a pathway of concern for the site. The average slope of both the site and intervening terrain between the site and the nearest surface water is approximately 0.4 percent. A raised railroad track is located between the southeast site boundary and the unnamed intermittent stream. The railroad track appears to prevent surface water runoff from leaving the site and entering the intermittent stream.

5.2.2 Area South of Building 1. Analytical results of subsurface soil samples collected from a depth of 2 feet bgs within the area south of Building 1 showed elevated concentrations of pesticides and Aroclor-1254. Although the area is covered with concrete, the depth to groundwater is approximately 15 feet bgs. Leaching of hazardous substances from the soils to groundwater is a potential but unlikely pathway of concern. Contaminated groundwater beneath the site could potentially affect municipal water supplies. However, the levels are low and the contaminants were only found in two samples. The potential route of exposure associated with this pathway are ingestion and dermal contact of contaminated groundwater. The potential receptors are municipal groundwater users.

Surface water, soil, and air are not pathways of concern because the soil in the area south of Building 1 is covered with concrete. Any surface water runoff traveling through or originating from the site would not come in contact with the hazardous substances in the soil. In addition, particulate emissions from the soil have a low potential of migrating to nearby residences and businesses. As described in Section 2.2.4, there are no terrestrial and aquatic ecological receptors near the Sobex site.

SECTION 6.0

SUMMARY

The Sobex site is located at 6000 Stevenson Blvd. in Fremont, Alameda County, Calif. The site is approximately 42 acres and is bounded on the northwest by Stevenson Boulevard, on the northeast by Albrae Avenue, on the southeast by a railroad track and an unnamed intermittent stream, and on the southwest by Stevenson Business Park. Land use adjacent the site is retail/commercial and light industrial.

The site, which is owned by the 6000 S Corporation, houses a retail/commercial complex consisting of seven buildings. The complex is open and receives visitors 7 days a week. Approximately 75 percent of the site is developed with buildings or paved parking facilities. The remaining 25 percent of the site is undeveloped and not paved. The undeveloped portion, as of September 1993, contained piles of contaminated soil and construction debris. The site is fenced on three sides and is accessible from Albrae Avenue and Stevenson Boulevard.

The Sobex site property has been developed since 1963. Several historical site operations and activities generated or used hazardous substances.

From 1978 through 1979, buildings 1 and 2 were leased to Polymir Industries, which manufactured polyurethane foam insulation board and various other foam products. Polymir Industries entered into voluntary bankruptcy in September 1978 and materials and equipment were removed by the Federal Bankruptcy Court. A 1979 aerial photograph of the site indicates the presence of drums, tanks, and chemical processing equipment at several locations near the southern portion of the Building 1 loading dock, the end of the railroad tracks, and the Building 1 alcove. These areas are paved with concrete and appear to be stained. From 1978 through 1983, the Golden Gate Auto Auction leased Building 1a and the area of the southeast corner of the site for an auto auction yard, where 2,000 to 4,000 cars were parked prior to sale. During this time, Golden Gate Auto Auction installed an underground gasoline storage tank. The tank was subsequently removed in 1985 by Exceltech, Inc. The 1979 aerial photograph of the site also shows visible evidence of stains just southeast of Building 3. This area may have used by Golden Gate Auto Auction as a steam-cleaning area for cars. California Oil Recyclers leased Building 4 from 1978 through 1981. The building has since been demolished. California Oil Recyclers reclaimed oil from gasoline stations and stored it in 12,000-gallon aboveground storage tanks. These reclaimed products were then sold in bulk for various fuel oil uses. The 1979 aerial photograph of the site indicates an area of heavily stained soil east of Building 4. It also shows aboveground tanks and drum storage areas adjacent to Building 4. Sobex, Inc. leased Building 3 from 1980 to 1984, when the business was dissolved and operations were ceased on the property. The building has since been demolished. Operations of this company, which were chemical consulting and polyurethane foam manufacturing, were similar to Polymir Industries. Aerial photographs taken in 1981 and 1984 showed drum storage areas on the north side of Building 3.

In the mid-1980s, buildings 3 and 4 were demolished. Construction debris and soil from the demolished buildings were moved to the undeveloped area in the southeast portion of the site. Some of the contaminated soil stored in the undeveloped area may have originated during the excavation and construction of the Building 8 loading dock. As of September 1993, the debris and soil were present in two uncontained piles consisting of approximately 5,600 cubic yards of material. A Clark & Witham work plan, prepared for the site owner in 1993, indicated that bioremediation activities of the soil pile had occurred. Activities included tilling, aeration, and water sprinkling from March 1, 1992 to September 3, 1992.

Foundry sand was brought to the site between 1985 and 1986 by American Brass & Iron Foundry of Oakland, Calif. to be used as fill to level areas for future development. The foundry sands were deposited in the undeveloped area at the east side of the site. Subsequently, the foundry sand was analyzed by Levine-Fricke, Inc. and found to contain priority pollutant metals. The foundry sands were subsequently removed from the site. The removal was not overseen by any agency.

Many of the potential areas of contamination above have been covered with asphalt, concrete, or buildings.

Numerous sampling activities have been conducted by state agencies and environmental consultants at the Sobex site. The results of previous sampling events at the site show that total petroleum hydrocarbons as diesel and gasoline, priority pollutant metals, selected volatile organics, and PCBs are present in the soil and groundwater. Ethylbenzene, total xylenes, PCBs, beryllium, and arsenic were detected in site soils above the EPA Region IX Preliminary Remedial Goals for soil.

From September 20 to September 27, 1993, under the direction of the EPA, a field sampling event was conducted at the Sobex site. Soil samples were collected at 10 onsite locations including the background location. Groundwater samples were collected from monitoring wells at five onsite locations. The samples (including duplicates and equipment rinsates) were submitted to an EPA-designated Contract Laboratory Program laboratory for analysis.

Analytical results of surface soil samples SL-1 and SL-2, collected in the former foundry sands area, show elevated levels of lead and manganese. Analytical results of subsurface soil sample SL-3, collected from the construction debris area, show an elevated level of lead and PCB (aroclor-1254). Analytical results of subsurface soil samples SL-4, SL-12, and SL-13 (duplicate of SL-12), collected from the soil pile area, show elevated levels of lead and zinc. Analytical results of subsurface soil samples SL-8 and SL-9, collected from the area south of building 1, show elevated levels of 4.4'-DDE and 4.4'-DDD. Analytical results of subsurface soil samples SL-5.1, SL-5.2, SL-6.1, and SL-6.2, collected from the former buildings 3 and 4 areas, show that no substances were detected at greater than three times the background (reference) concentrations.

Groundwater data from the 1993 EPA sampling event indicate that arsenic and manganese are present above their respective Maximum Contaminant Levels. Arsenic was detected at a maximum concentration of 392 micrograms per liter and the Maximum Contaminant Level for arsenic is 50 micrograms per liter. Manganese was detected at a maximum concentration of 8,450 micrograms per liter and the Maximum Contaminant Levels for manganese is 50 micrograms per liter. Arsenic and manganese were also detected above the Preliminary Response Goals for each substance. The Preliminary Response Goals for arsenic and manganese are 0.049 micrograms per liter and 3,700 micrograms per liter, respectively. Both arsenic and manganese were detected at concentrations greater than three times background levels. Although the background concentration reported for arsenic was qualified by U.S. EPA QAMS and is considered an estimated quantity, arsenic concentrations were detected at greater than 40 times the reported background level.

In the Fremont area, there are localized areas of interconnection between the shallow unconfined and Newark aquifers, which is a concern of the Alameda County Water District and the Regional Water Quality Control Board because of potential for contaminant migration. Deeper aquifers including the Newark, are important sources of municipal and domestic water supplies. Groundwater is the primary pathway of concern for the site.

A simplified conceptual site model was developed for the Sobex site, based on the potential sources/areas of contamination and receptors. Analytical results of surface soil samples collected within the former foundry sands area and the adjacent soil pile, showed elevated concentrations of metals including lead, zinc, and manganese. Groundwater is the primary pathway of concern through leaching of hazardous substances from the soil to groundwater. Analytical results of unfiltered groundwater samples collected showed elevated concentrations of arsenic, chromium, lead, manganese, zinc, and nickel. It should be noted that the concentrations of lead, nickel, zinc, and chromium were non-detect or lower in the corresponding filtered sample. Potential routes of exposure associated with this pathway are ingestion and dermal contact of contaminated groundwater. The potential receptors are municipal groundwater users.

Soil is a potential pathway of concern because of the unrestricted access to the former foundry sands area and the soil pile. Potential routes of exposure associated with the soil pathway are ingestion and dermal contact of contaminated soils. The potential receptors are onsite workers and intermittent visitors.

Air is a potential pathway of concern during any disturbance (e.g., excavation, tilling) of the former foundry sands area and/or the soil pile. Particulate emissions could be blown around the site and to nearby businesses. Potential routes of exposure associated with the air pathway are ingestion, inhalation, and dermal contact of contaminated particulate emissions. The potential receptors are onsite and offsite workers and intermittent visitors.

The surface water pathway does not seem to be a pathway of concern for the site. The average slope of the site and intervening terrain between the site and the nearest surface water is approximately 0.4 percent. A raised railroad track is located between the southeast site boundary and the unnamed intermittent stream. The railroad track appears to prevent surface water runoff from leaving the site and entering the intermittent stream.

REMEDIAL SITE ASSESSMENT DECISION - EPA REGION IX

Site Name: Sobex, Inc. **EPA ID#:** CAD982 399 784

Alias Site Names: 6000 S Corporation

City: Fremont **County or Parish:** Alameda **State:** Ct

Refer to Report Dated: March 21, 1994 **Report type:** Integrated Assessment

Report developed by: Bechtel Environmental, Inc.

DECISION:

☐ **1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:**

☑ 1a. Site does not qualify for further remedial site assessment under CERCLA (Site Evaluation Accomplished - SEA)

☐ 1b. Site may qualify for further action, but is deferred to: ☐ RCRA ☐ NRC

☐ **2. Further Assessment Needed Under CERCLA:**

2a. (optional) Priority: ☐ Higher ☐ Lower

2b. Activity Type:
☐ PA
☐ SI
☐ ESI
☐ HRS evaluation
☐ Other:

DISCUSSION/RATIONALE:

Report Reviewed, Approved, and Site Decision Made by: Michael E. Bellot

Signature:

Date: 7/12/94

EPA Form # 9100-3 Rev. 5/93

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SOBEX, INC.
INTEGRATED ASSESSMENT
APPENDIX A

Sampling and Analysis Plan

Printed on 50% recycled paper.

U.S. Environmental Protection Agency, Region IX
Toxics & Waste Management Division

Field Operations Branch

Sampling and Analysis Plan

Sobex, Inc.
6000 Stevenson Boulevard
Fremont, CA

Site EPA ID: CAD 982399784

Anticipated Sampling Dates: September 20, 1993 to September 24, 1993

Prepared by:
Bechtel Environmental, Inc.
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1.0 OBJECTIVES OF SAMPLING EFFORT

Bechtel Environmental, Inc. (BEI) will conduct this field sampling effort to gather data as part of an Integrated Assessment (IA) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund). The IA builds upon the body of information developed during previous investigations, collecting additional data through a site reconnaissance visit, and collecting physical environmental samples to analyze for the presence of hazardous substances. The field sampling effort is being performed as part of the Superfund Accelerated Cleanup Model (SACM) Pilot Study for Region IX.

Field sampling will be conducted under protocol accepted by the U.S. Environmental Protection Agency (EPA) as specified in the *Preparation of a U.S. EPA Region IX Sample Plan for EPA-Lead Superfund Projects* guidance document (Quality Assurance Management Section, U.S. EPA, Region IX, November, 1992) and the programmatic Quality Assurance Project Plan, Revision 1 (QAPjP) submitted by BEI on January 22, 1993 and approved by the EPA on February 5, 1993. Laboratories participating in the EPA Contract Laboratory Program (CLP) will be utilized for analyses. Laboratory services will be obtained and coordinated through the EPA Quality Assurance Management Section (QAMS).

The site being evaluated is the Sobex, Inc. (Sobex) site (CAD 982399784) in Fremont, Alameda County, California. The results of previous sampling results indicate that TPH, metals, volatile organic compounds, and PCBs may be present in soils and groundwater at the site. However, of the ten previous sampling events at the site, only the data collected during the April 1993 sampling event are of known quality. Furthermore, soil and groundwater at the site has not been satisfactorily characterized for metals contamination, and no background soil samples have been collected.

The potentially contaminated soil and groundwater resulted from the industrial processes and hazardous substance handling practices of a waste oil recycling facility and two polyurethane foam manufacturing companies formerly located at the site. The objective of BEI's sampling effort is to confirm the presence and measure the concentrations of contaminants in onsite and background soils and groundwater, collect additional information to support decision making efforts for potential future action by EPA, to cooperatively assess the site with other regulatory agencies as part of the SACM Pilot Study, and to verify the presence of contaminants previously identified, but the analysis have questionable or unavailable QA/QC documentation.

2.0 BACKGROUND

2.1 Location

The Sobex site is located at 6000 Stevenson Boulevard in Fremont, California, in Alameda County. The geographic coordinates of the property are approximately 37° 30' 59.5" N latitude and 121° 59' 6.0 W" longitude (Township 5 South, Range 1 West, Sections 8 and 9, Mt. Diablo Baseline and Meridian, Niles, California 7.5-minute quadrangle). Figure 2-1 shows the location of the Sobex site. (5)

Source: U.S. Geological Survey, 7.5 Minute Niles Quadrangle, Alameda County, California

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Figure 2-1 Site Location

2.2 Site Description

The site is approximately 42 acres in size. As shown on Figure 2-2, the property is bounded on the west by Stevenson Boulevard, on the north by Albrae Avenue, on the east by a railroad track and an unnamed intermittent stream, and on the south by Stevenson Business Park. Land use near the site is retail/commercial, light industrial, and multi-residential complexes. (6)

The property, which is owned by the 6000 S Corporation, houses a retail/commercial complex consisting of seven buildings. The site layout and occupants of the buildings are presented in Figure 2-2. (6,7) Approximately 75 percent of the site is developed with buildings or paved parking facilities. The remaining 25 percent of the site is undeveloped and not paved. As of the most recent site visit, the undeveloped portion contained piles of contaminated soil, construction debris and automobiles stored for auction. (6,8,9)

2.3 Operational History

The Sobex site property has been developed since 1963. Because site usage has been extensive, this section presents only the site operations that may have generated or used hazardous substances. (7)

From 1978 through 1979, Buildings 1 and 2, shown in Figure 2-2, were leased to Polymir Industries (Polymir), which manufactured polyurethane foam insulation board and various other foam products. Mr. Sobek was the principal of Polymir. Polymir entered into voluntary bankruptcy in September 1978. An auction was held, and materials and equipment were removed by the Federal Bankruptcy Court. (7,10)

A 1979 aerial photograph of the site indicates the presence of drums, tanks, and chemical processing equipment at several locations near the southern portion of the Building 1 loading dock, the end of the railroad tracks, and the Building 1 alcove. These areas are paved with concrete and appear to be stained. From 1978 through 1983, the Golden Gate Auto Auction leased Building 1a and the area of the southeast corner of the site for an auto auction yard, where 2,000 to 4,000 cars were parked prior to sale. During this time, Golden Gate Auto Auction installed an underground gasoline storage tank. The tank was subsequently removed in 1985 by Exceltech, Inc. (11) The 1979 aerial photograph of the site shows visible evidence of stains just southeast of Building 3. (10) According to Mr. Sobek, this area may have used by Golden Gate Auto Auction as a steam cleaning area for cars. (9)

California Oil Recyclers leased Building 4 from 1978 through 1981. The building has since been demolished. California Oil Recyclers reclaimed oil from gasoline stations and stored it in above-ground, 12,000-gallon storage tanks. Some reclaimed oil was mixed with diesel. These reclaimed products were then sold in bulk for various fuel oil uses. (7) The 1979 aerial photograph of the site indicates an area of heavily stained soil east of Building 4. It also shows above-ground tanks and drum storage areas adjacent to Building 4. (10)

The volume of liquids that were handled by California Oil Recyclers is unknown. However, typical contaminants from oil recycling are: total petroleum hydrocarbons as

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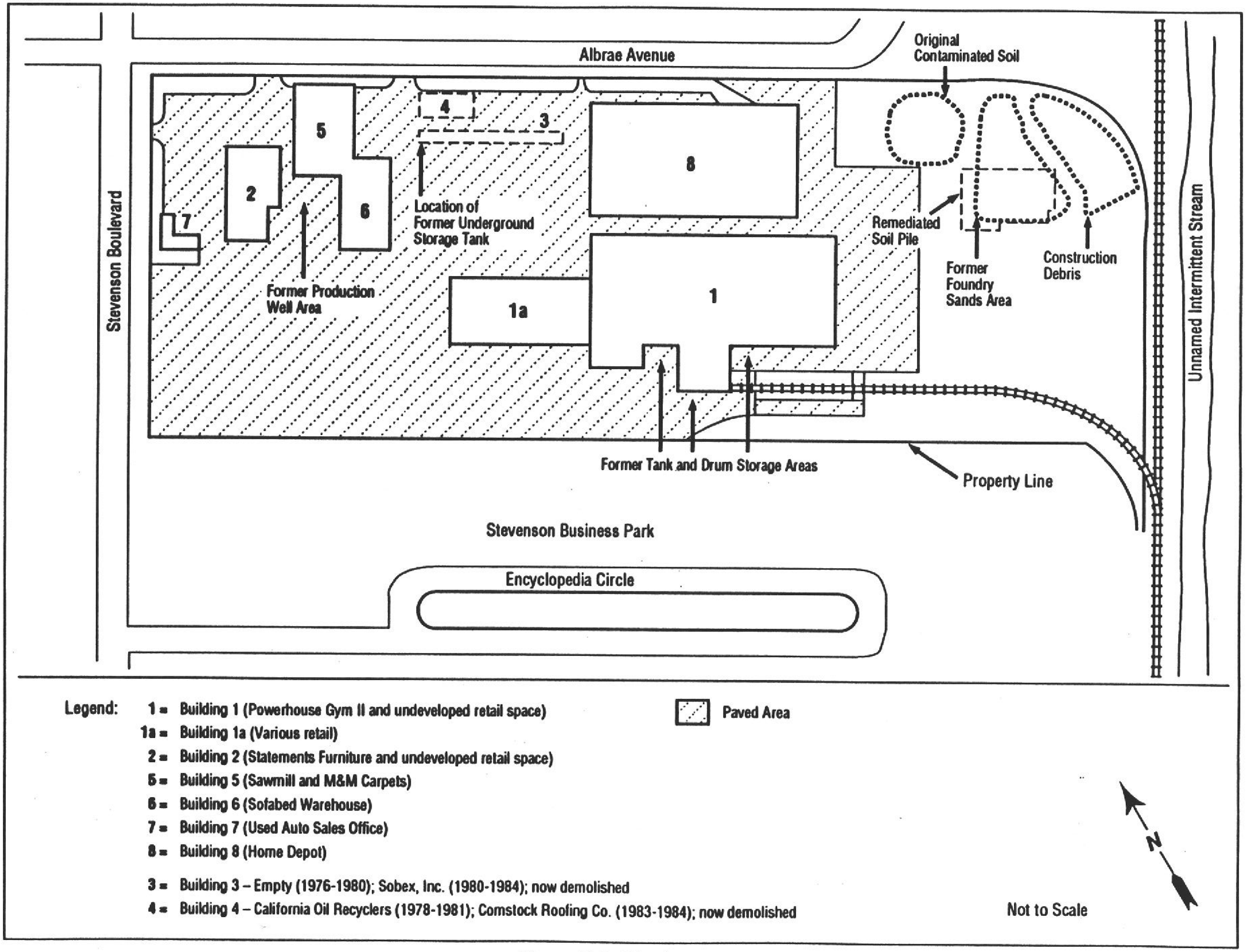

Legend:
1 = Building 1 (Powerhouse Gym II and undeveloped retail space)
1a = Building 1a (Various retail)
2 = Building 2 (Statements Furniture and undeveloped retail space)
5 = Building 5 (Sawmill and M&M Carpets)
6 = Building 6 (Sofabed Warehouse)
7 = Building 7 (Used Auto Sales Office)
8 = Building 8 (Home Depot)

3 = Building 3 – Empty (1976-1980); Sobex, Inc. (1980-1984); now demolished
4 = Building 4 – California Oil Recyclers (1978-1981); Comstock Roofing Co. (1983-1984); now demolished

▨ Paved Area

Figure 2-2 Site Layout

gasoline, as diesel, and as kerosene; oil and grease; PCBs; metals; and volatile and semivolatile organic compounds.

Sobex, Inc., a chemical consulting firm directed by Mr. Sobek, leased Building 3 from 1980 to 1984, when the business was dissolved and operations were ceased on the property. The building has since been demolished. Sobex, Inc. operated a polyurethane foam manufacturing operation similar to that of Polymir. (3,12) Aerial photographs taken in 1981 and 1984 indicate drum storage areas on the north side of Building 3. (9)

Records do not exist that document the types and quantities of waste that were handled during manufacturing activities at Sobex, Inc. However, typical contaminants from polyurethane foam manufacturing are: arsenic, barium, cadmium, chromium, cobalt, methylene chloride (dichloromethane), dichlorodifluoromethane (Freon 12), lead, methanol, methyl diphenyl diisocyanate (diphenylmethane diisocyanate), 4,4'-methylenebis [2-chloroaniline], nickel, selenium, titanium oxide, toluene, diisocyanate, trichlorofluoromethane (Freon 11), trichlorotrifluoromethane (Freon 113), vinyl chloride, and zinc. (3,12)

In the mid-1980s, Buildings 3 and 4 were demolished. Construction debris and soil from the demolished buildings were moved to the undeveloped area on the east side of the site (see Figure 2-2). In addition, some of the potentially contaminated soil in the undeveloped area may have originated from the construction of the Building 8 loading dock. The debris and soil were stored in two uncontained piles consisting of approximately 5,600 cubic yards of material. (4) According to Mr. Sobek, the soil pile has undergone bioremediation. Bioremediation activities included tilling, aeration, and water spraying from March 1, 1992 to September 3, 1992. (13)

Foundry sand was brought to the site in 1986 by American Brass & Iron Foundry (ABI) of Oakland, California, to be used as fill to level areas for future development. Subsequently, the foundry sand was analyzed by Levine-Fricke and found to be contaminated with priority pollutant metals. (8,9,14) It appears that the foundry sand has since been removed from the site. The removal was not overseen by any agency.

2.4 Previous Investigations

As described in Section 2.3, numerous sampling activities have been conducted by state agencies and environmental consultants at the Sobex site. A summary of these sampling events and the results are presented below. A summary of sampling events performed at the site is presented in Table 2-1.

2.4.1 Standing Surface Water. On January 16, 1982, Regional Water Quality Control Board representatives inspected the Sobex site. One sample of standing water surrounding the oil drum storage area adjacent to Building 3 was collected and found to contain PCBs at 32 micrograms per liter (µg/l). No background sampling was performed. (23)

2.4.2 Drums. On August 13, 1983, California Department of Health Services (DHS) representatives collected samples from several 55-gallon drums on Mr. Sobek's property

Table 2-1

SUMMARY OF SAMPLING ACTIVITIES

Sample Collected By	Sample Date	Type of Sample(s)
RWQCB, S.F. Bay Region	1/16/82	Standing surface water
CA-DHS	10/13/83	55-gallon drums (liquid)
Exceltech, Inc. (Contracted by Golden Gate Auto Auction)	4/8/85	soil
American Brass and Iron Foundry	6/15/85	foundry sands
Polymatrix Associates (Contracted by Ensco)	2/89	groundwater (deep production zones)
Ensco (Contracted by Wallace, Roberts, and Todd as part of an EIR)	3/89	Soil (borings), groundwater (shallow monitoring wells) and foundry sands
Levine-Fricke (Contracted by 6000 S Corporation)	12/27/89	groundwater (deep production wells)
Levine-Fricke (Contracted by 6000 S Corporation)	5/21/90	foundry sands
Harding-Lawson (Contracted by 6000 S Corporation)	9/19-25/90	groundwater (shallow monitoring wells) and soil
Clark and Witham, Inc.	4/13/93	groundwater and soil

outside the town of Paskenta in Tehama County, California. Liquid samples were collected from the inside of 55-gallon drums and oil and dirt samples were collected from the area where the drums were stored. According to a DHS letter, preliminary laboratory results showed that there were hazardous substances in the drums. No information was available regarding analytes or concentrations detected. The drums appeared to have been transported from the Sobex site in Fremont, California. (2,3)

2.4.3 Soils. An 8,000-gallon underground gasoline storage tank was once located adjacent to Building 3. The tank was removed in 1985 and subsequent soil sampling was performed by Exceltech, Inc. A soil sample was obtained from beneath the tank at a depth of 13 feet below ground surface (bgs). Benzene, toluene, and xylene were present at 0.09 milligrams per kilogram (mg/kg), 0.11 mg/kg, and 0.06 mg/kg, respectively. (11)

In March 1989, Ensco Environmental Services, Inc. drilled nine borings (SB-01 through SB-08 and MW-1) in the former location of Buildings 3 and 4. Soil samples were obtained from the borings at approximately 6 and 10 feet bgs. Sampling locations are shown on Figure 2-3. No background soil samples were collected. Soil samples were analyzed for total petroleum hydrocarbons (TPH) (the TPH analysis includes the analytes gas, diesel, and kerosene), oil and grease, PCBs, and volatile and semivolatile organic compounds. Two soil samples and one foundry sand sample were also analyzed for priority pollutant metals. No information on data quality is available. The analytical results of soil samples results showed that oil, grease, diesel, gasoline, toluene, ethyl benzene, and xylenes were present. No PCBs were detected in the soil samples. Several metals were detected in the soil and foundry sand samples including chromium, lead, arsenic, and zinc. (8) The analytical results of the soil and foundry sand samples are presented in Table 2-2.

In September 1990, Harding Lawson Associates (HLA) drilled eight borings to a depth of 16 to 26 feet in the former location of Buildings 3 and 4 (LF-2, LF-3, LF-4, SB-09, SB-10, SB-11, SB-12, SB-13), and submitted two samples per boring for analysis. The soil samples were obtained from various depths. Additional samples included: five composited samples from the soil pile southeast of Building 8 (SP-1,SP-2, SP-3, SP-4, SP-5); two soil borings to a depth of 6 feet from the construction debris pile (SB-20, SB-21); three grab samples from former drum, tank, and equipment storage areas southwest of Building 1 (SB-14, SB-15, SB-16); one sample from the loading dock area southeast of Building 8 (SB-17); and two samples from under Building 1 (SB-18, SB-19). The samples were analyzed for TPH, PCBs, and volatile organic compounds (VOCs). No information on data quality is available. Oil and grease, kerosene, gasoline, and diesel were found at elevated levels in the samples taken from the soil pile. Toluene (260 mg/kg), ethylbenzene (170 mg/kg), and xylenes (810 mg/kg) were found at elevated levels in boring SB-12. PCBs were detected from 0.7 to 2.8 mg/kg in soil samples taken from Buildings 3 and 4 and the soil pile. (9) The analytical results are presented in Table 2-2.

In April 1993, Clark and Witham, Inc. collected 24 soil samples from the soil pile east of Building 8. The samples were composited into six samples and analyzed for TPH as diesel (DHS method), oil and grease (EPA method 5520BF), and PCBs (EPA Method 8080). Analytical results indicated the presence of diesel (1.2 to 140 mg/kg), oil and grease (97 to 205 mg/kg), and the PCB aroclor 1254 (0.3 to 0.85 mg/kg) in composited samples. During construction of an onsite monitoring well (MW-5), a soil sample was obtained at 10 feet bgs from the soil boring southeast of Building 8. The sample was analyzed for TPH (DHS method), benzene, toluene, ethylbenzene, and xylene (BTEX) (EPA method 8020); PCBs (EPA method 8080); and VOCs (EPA method 8010). Only trichloroethene (TCE) at 0.044 mg/kg was detected in the soil sample. All other analytes were not detected (31). The analytical results are presented in Table 2-2.

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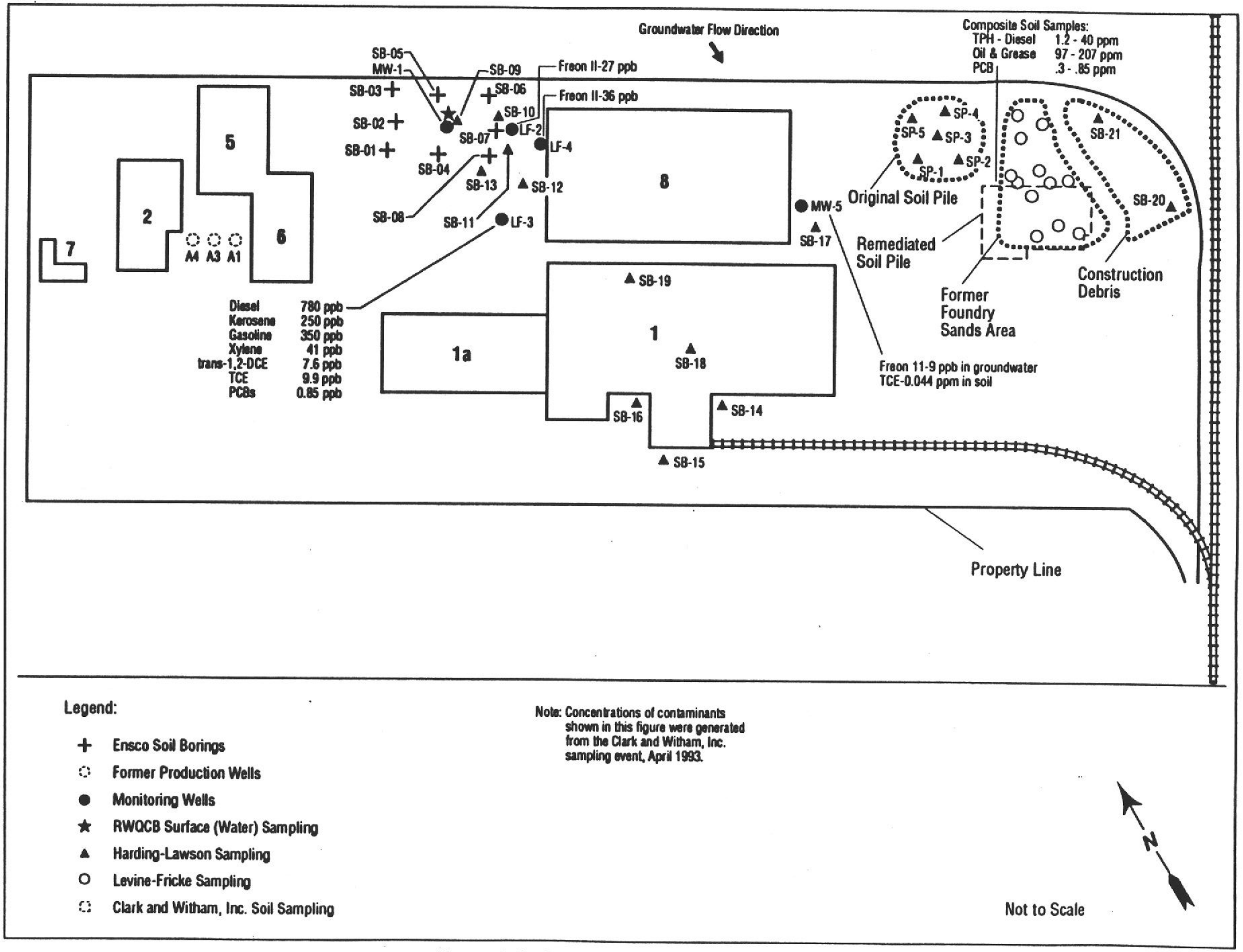

Note: Concentrations of contaminants shown in this figure were generated from the Clark and Witham, Inc. sampling event, April 1993.

Figure 2-3 Previous Sampling Locations

2.4.4 Groundwater Three production wells located between Building 2 and Building 6 were installed in the early 1960s. The locations of the three wells are shown on Figure 2-3. These wells were designated A1, A3, and A4. Well construction information for Well A1 is not available. In July of 1962, Well A1 was paved over. In 1989, Well A1 was uncovered as part of the Polymatrix Associates sampling event. The previous use of Well A1 is unknown. (29) Well construction information for wells A3 and A4 is presented in the Report of Closure of Deep Production Wells prepared by Levine-Fricke in 1990. The production wells were properly abandoned in 1990. (29) Well A4 was 270 feet deep and screened between 227 and 240 feet. Well A3 was 586 feet deep and screened between 451 and 475 feet. Well A3 was reportedly used as a pumping well (downhole pump installed) for air conditioning and irrigation water. Well A4 was used for water recharge.

In February 1989, Polymatrix Associates was contracted by Ensco Environmental Services, Inc. (Ensco) to obtain groundwater samples from A1 and A3. The purpose of this sampling event was to obtain information on groundwater contamination under the site for an Environmental Impact Report on further commercial development of the property. Analyses requested included priority pollutant metals, volatile organic compounds, PCBs, oil and grease, and total petroleum hydrocarbons. The method of obtaining these samples and other relevant sampling and analysis quality control information are not available; however, it is reported that the wells were not purged prior to obtaining the samples. Results of the Polymatrix Associates analyses showed PCBs at 19 µg/l and diesel and gasoline from (560 µg/l to 740,000 µg/l) in samples collected from wells A1 and A3. Chromium (60 µg/l), lead (60 µg/l to 830 µg/l), nickel (60 µg/l to 90 µg/l), and zinc (50 µg/l to 110,000 µg/l) were also detected. (8) The analytical results are presented in Table 2-3.

In March 1989, Ensco installed a monitoring well (MW-1) near the former location of Buildings 3 and 4. The well extends to a depth of 25 feet. The screened interval is unknown. As part of the Environmental Impact Report, Ensco obtained additional groundwater grab samples from MW-1 as well as from soil borings SB-2 and SB-7 in the Building 3 and 4 area. The sampling locations are shown in Figure 2-3. The samples were analyzed for total petroleum hydrocarbons, volatile organic compounds, and PCBs. The grab samples were obtained from a depth of approximately 25 feet bgs. No information on data quality is available. The analyses detected one volatile organic compound (1,1,1-trichloroethane at 9.3 µg/l in a grab sample from SB-7). The analytical results are presented in Table 2-3. It should be noted that the Ensco report was not issued as a final document.

In December 1989, Levine-Fricke was contracted by Mr. Sobek to obtain groundwater samples from the three production wells (A1, A3, and A4) between Building 2 and Building 6. The purpose of this sampling event was to document the abandonment of these wells at the request of the Alameda County Water District and to test for priority pollutant metals, volatile organic compounds, PCBs, oil and grease, and total petroleum hydrocarbons. The only well noted to be purged prior to sampling was Well A3. Purging was conducted because of the floating hydrocarbon product present in the well. Purging was done by employees of Mr. Sobek and no information on the thickness of hydrocarbon product or quantity purged is on record. It was noted that the volume that was purged was stored in a 55-gallon drum for further testing and disposal. Samples submitted for PCB analysis were transported by Levine-Fricke personnel to the laboratory, while samples submitted for metals analysis were transported by Mr. Sobek. No information on data quality is available.

Table 2-2 SUMMARY OF PREVIOUS SAMPLING RESULTS

SOIL SAMPLES
(Units in mg/kg)

SAMPLE EVENT	SAMPLE LOCATION	SAMPLE ID/NO.	SAMPLE DEPTH (FT.)	Aromatic Hydrocarbons					TPH Diesel	TPH Gasoline	Oil and Grease	Kerosene	PCBs	Chloroform	1,1-DCA	Methylene Chloride	1,1,1-TCA	Acetone	2-Butanone	TCE	4-Methyl 2-Pentanone
				Benzene	Toluene	m-Xylene	Ethylbenzene	Tot. Xylenes													
EXCELTECH 1985	Former Underground Tank Area (West Side of Building 3)	GGAC-01	13	0.09	0.11	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ENSCO 1989	Building 3 and 4 Detection Limits Are Unavailable	SB-01-1	6	ND	ND	NA	ND	ND	ND	ND	150	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-01-2	11	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-02-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	0.026	ND	ND	ND	NA	NA	NA	NA
		SB-02-3	10	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	0.023	ND	ND	0.070	NA	NA	NA	NA
		SB-03-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-03-2	11	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-04-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-04-2	11	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-05-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-05-2	11	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-06-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-06-2	10.5	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	0.051	ND	0.034	NA	NA	NA	NA
		SB-07-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-07-2	11	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	0.050	ND	NA	NA	NA	NA
		SB-08-1	6	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
		SB-08-2	11	ND	0.3	ND	1.9	16	7,900	79	810	NA	ND	0.011	ND	ND	ND	NA	NA	NA	NA
		MW-01-1	6	ND	ND	ND	ND	ND	22	ND	ND	NA	ND	0.022	ND	ND	ND	NA	NA	NA	NA
		MW-01-2	11	ND	ND	ND	ND	ND	27	ND	ND	NA	ND	0.027	ND	ND	ND	NA	NA	NA	NA
HLA 1990	Building 3 and 4	LF-2	1.5	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	2.2	ND(<1.0)	ND(< 50)	ND(< 1.0)	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
		LF-2	6	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	1.3	1.1	ND(< 50)	ND(< 1.0)	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
		LF-3	16	ND(< 50)	ND(< 50)	NA	ND(< 50)	0.15	ND(<10)	25	ND(< 50)	130	ND(<.033)	ND(< 50)	ND(< 50)	ND(< 50)	ND(< 50)	ND(<100)	ND(<100)	ND(< 50)	ND(<100)
		LF-3	26	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	30	ND(<1.0)	ND(< 50)	ND(< 1.0)	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	0.013	ND(<10)	ND(< 5.0)	ND(<10)
		LF-4	6	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	2.6	ND(<1.0)	ND(< 50)	ND(< 1.0)	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
		LF-4	11	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	ND(<1.0)	ND(<1.0)	ND(< 50)	1.0	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
		SB-9	1.5	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	25	ND(<1.0)	46	ND(< 1.0)	detect	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
		SB-9	6	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	2.0	ND(<1.0)	56	ND(< 1.0)	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND	ND(<10)	ND(< 5.0)	ND(<10)
		SB-10	1.5	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	53	ND(<1.0)	140	ND(< 1.0)	0.7	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	0.043	ND(<10)	ND(< 5.0)	ND(<10)
		SB-10	6	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	ND(<1.0)	ND(<1.0)	ND(< 50)	ND(< 1.0)	ND(<.033)	ND(< 5.0)	0.007	ND(< 5.0)	0.013	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
		SB-11	1.5	ND(< 5.0)	0.016	NA	0.0099	0.076	180	ND(<1.0)	220	ND(< 1.0)	1.7	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	0.2	0.041	0.0029	0.026
		SB-11	6	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	1.4	ND(<1.0)	ND(< 50)	ND(< 1.0)	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
		SB-12	11	ND(< 5000)	260	NA	170	810	ND(<1000)	7,600	180	15,000	detect	ND(<5000)	ND(<5000)	ND(<5000)	ND(<5000)	ND(<10000)	ND(<10)	ND(<5000)	ND(<10000)
		SB-12	16	0.0054	0.11	NA	0.11	0.30	ND(<1.0)	3.2	ND(< 50)	15	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	0.022	ND(<10)	0.0093	ND(<10)
		SB-13	1.5	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	120	ND(<1.0)	72	ND(< 1.0)	0.23	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
		SB-13	5	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	1.5	ND(<1.0)	ND(< 50)	ND(< 1.0)	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
	Construction Debris	SB-20	1.5	0.0026	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	4.8	ND(<1.0)	ND(< 50)	ND(< 1.0)	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
		SB-20	6	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	3.6	ND(<1.0)	ND(< 50)	ND(< 1.0)	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
		SB-21	1.5	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	1.5	34	ND(< 50)	ND(< 1.0)	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(<10)
		SB-21	5	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	22	2.0	ND(< 50)	ND(< 1.0)	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(<10)	ND(<10)	ND(< 5.0)	ND(< 10)
	S.W. of Building 1	SB-14	2	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	NA	NA	ND	NA	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 10)	ND(< 10)	ND(< 5.0)	ND(< 10)
		SB-15	2	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	NA	NA	ND	NA	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	0.026	ND(< 10)	ND(< 5.0)	ND(< 10)
		SB-16	2	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	NA	NA	ND	NA	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 10)	ND(< 10)	ND(< 5.0)	ND(< 10)
	Soil Pile	SP-1	1 foot, 2 feet, and 4 feet composite samples	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	94	ND(< 1.0)	ND	ND(< 1.0)	0.29	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 10)	ND(< 10)	ND(< 5.0)	ND(< 10)
		SP-2		ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	16	ND(< 1.0)	270	ND(< 1.0)	0.25	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 10)	ND(< 10)	ND(< 5.0)	ND(< 10)
		SP-3		ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	1000	ND(< 1.0)	100	ND(< 1.0)	0.66	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 10)	ND(< 10)	ND(< 5.0)	ND(< 10)
		SP-4		ND(< 5.0)	0.0029	NA	ND(< 5.0)	0.0069	40	ND(< 1.0)	180	ND(< 1.0)	0.46	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 10)	ND(< 10)	ND(< 5.0)	ND(< 10)
		SP-5		ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	53	ND(< 1.0)	210	ND(< 1.0)	2.80	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 10)	ND(< 10)	ND(< 5.0)	ND(< 10)
	N.E. of Building 8	SB-17	2	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	NA	NA	NA	NA	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	0.017	ND(< 10)	0.010	ND(< 10)
	Inside Building 1	SB-18	2	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	NA	NA	NA	NA	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 10)	ND(< 10)	ND(< 5.0)	ND(< 10)
		SB-19	2	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	NA	NA	NA	NA	ND(<.033)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 5.0)	ND(< 10)	ND(< 10)	ND(< 5.0)	ND(< 10)
Clark and Witham, Inc., 1993	Soil boring MW-5	S-MW5	10	ND(<0.02)	ND(<0.02)	NA	ND(<0.02)	ND(<0.02)	ND(<1.0)	ND(<0.5)	ND	NA	ND(<.033)	ND(<0.02)	ND(<0.02)	ND(<0.5)	ND(<0.02)	ND(<0.5)	ND(< 10)	0.044	ND(< 10)
	Soil Pile	S-1-SS1 to S2-SS12	Composite samples	NA	NA	NA	NA	NA	140	NA	205	NA	0.85	NA	NA	NA	NA	NA	NA	NA	NA

Volatile and semivolatile organics never detected at the site are not included in this table.
"detect" indicates that PCBs were found in soil, but the results were unreadable in data sheets
NA-Not Analyzed
ND-Not Detected above detection limits
Detection limits for ENSCO were not available

Table 2-2(cont.) SUMMARY OF PREVIOUS SAMPLING RESULTS

SOIL AND FOUNDRY SANDS SAMPLES - METALS ANALYSES

(Units in mg/kg)

SAMPLE EVENT	SAMPLE LOCATION	SAMPLE ID/NO.	SAMPLE DEPTH (FT.)	Chromium	Lead	Nickel	Antimony	Barium	Copper	Cobalt	Molyb-denum	Selenium	Silver	Beryllium	Cadmium	Mercury	Vanadium	Arsenic	Zinc
Ensco * 1989	Foundry Sands	S-1	surface	0.67	10	ND	ND	5	ND	ND	ND	ND	ND	ND	ND	NA	0.18	0.057	4.1
	Buildings 3 and 4	SB-02-1	6	52	30	67	30	NA	21	NA	NA	ND	ND	ND	ND	0.08	ND	16	43
		SB-08-2	11	39	30	58	30	NA	18	NA	NA	ND	ND	ND	ND	0.09	ND	13	40
Levine-Fricke 1990	Foundry Sands	Composite	Composite	82	2,500	18	ND(<1)	370	120	3.3	7	0.6	2.4	1.9	12	ND(>.01)	24	11	1,400

ND-Not Detected

NA-Not Analyzed

*** Only three samples were analyzed for metals. No detection limits are available.**

Table 2-3 SUMMARY OF PREVIOUS GROUNDWATER SAMPLING RESULTS
(Units in µg/l)

SAMPLE EVENT	SAMPLE LOCATION	SAMPLE ID/NO.	DEPTH OR SCREENED INTERVAL (FT.)	Aromatic Hydrocarbons					TPH	TPH	Oil and									
				Benzene	Toluene	m-Xylene	Ethylbenzene	Tot. Xylenes	Diesel	Gasoline	Grease	Kerosene	PCBs	1,1,1-TCA	Freon 11	Chromium	Lead	Nickel	Arsenic	Zinc
Polymatrix Feb, 1989	Production Well Area By Building 2	A1	Screened Interval Unknown	ND(< 4.4)	ND(<6.0)	NA	ND(<7.2)	ND(<15)	ND(< .05)	ND(< .05)	**560**	NA	ND(< 0.5)	ND(< 3.8)	NA	ND(< .05)	**830**	**60**	NA	**110000**
		A3	Screened Bet. 451 and 475 feet	ND(< 4.4)	ND(<6.0)	NA	ND(<7.2)	ND(<15)	**330,000**	**1,800**	**740,000**	NA	**19**	ND(< 3.8)	NA	**60**	**60**	**90**	NA	**50**
Ensco March, 1989	Buildings 3 and 4	SB-2	Grab Sample 25 ft	ND(< 25)	ND(<1.0)	NA	ND(<30)	ND(<1.0)	ND(< .05)	ND(< .05)	NA	NA	ND(< 3.8)	ND(< 3.8)	NA	NA	NA	NA	NA	NA
		SB-7	Grab Sample 25 ft	ND(< 25)	ND(<1.0)	NA	ND(<30)	ND(<1.0)	ND(< .05)	ND(< .05)	ND(< .05)	NA	ND(< .05)	**9.3**	NA	NA	NA	NA	NA	NA
		MW-1	Screened Interval Unknown	ND(< 25)	ND(<1.0)	NA	ND(<30)	ND(<1.0)	ND(< .05)	ND(< .05)	ND(< .05)	NA	ND(< .05)	ND(< 3.8)	NA	NA	NA	NA	NA	NA
Levine-Fricke 1990	Production Well Area By Building 2	A1	Screened Interval Unknown	ND(<1.0)	**2**	NA	ND(<1.0)	ND(<1.0)	ND(<50)	ND(<50)	ND(<50)	NA	ND(< 0.3)	NA	**6**	**10**	ND(< .01)	**40**	**500***	ND(<.01)
		A3	Screened Bet. 451 and 475 feet	ND(<1.0)	NA	NA	ND(<1.0)	**4**	**1600**	**97**	ND(<50)	NA	**3.9**	NA	NA	**20**	ND(< .01)	**40**	**500***	**20**
		A4	Screened Bet. 227 and 240 feet	ND(<1.0)	NA	NA	ND(<1.0)	ND(<1.0)	**59**	ND(<50)	ND(<50)	NA	ND(< 0.3)	NA	NA	**50**	ND(< .01)	**10**	**800***	**10**
Harding Lawson 1990	Buildings 3 and 4	LF-2	Screened Bet. 12 and 22ft	ND(<25)	**25**	NA	ND(<25)	**2800**	ND(< 50)	**9,600**	ND(< 20000)	**4,900**	**1**	NA	ND(< 25)	NA	NA	NA	NA	NA
		LF-3	Screened Bet. 12 and 22ft	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	ND(< 50)	ND(< 50)	ND(< 20000)	ND(< 50)	ND(< 2.0)	NA	**14**	NA	NA	NA	NA	NA
		LF-4	Screened Bet. 12 and 22ft	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	**85**	ND(< 50)	ND(< 20000)	ND(< 50)	ND(< 2.0)	NA	**5.8**	NA	NA	NA	NA	NA
		MW-1	Depth: 24.60 feet	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	ND(< 50)	ND(< 50)	ND(< 20000)	ND(< 50)	ND(< 2.0)	NA	ND(< 5.0)	NA	NA	NA	NA	NA
		MW-1 dup	Depth: 24.60 feet	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	ND(< 50)	ND(< 50)	ND(< 20000)	ND(< 50)	ND(< 2.0)	NA	ND(< 5.0)	NA	NA	NA	NA	NA
		blank	Depth: 24.60 feet	ND(< 5.0)	ND(< 5.0)	NA	ND(< 5.0)	ND(< 5.0)	ND(< 50)	ND(< 50)	ND(< 20000)	ND(< 50)	ND(< 2.0)	NA	ND(< 5.0)	NA	NA	NA	NA	NA
Clark and Witham, Inc., 1993	Building 3 and 4	MW-1	Depth: 24.60 feet	ND(< 2.0)	ND(< 2.0)	NA	ND(< 2.0)	ND(< 1.5)	ND(< 50)	ND(< 50)	ND(< 1000)	ND(< 50)	ND(<1.0)	ND(< 2.0)	ND(< 2.0)	ND(< 2.0)	NA	NA	NA	NA
		LF-2	Screened Bet. 12 and 22ft	ND(< 2.0)	ND(< 2.0)	NA	ND(< 2.0)	ND(< 1.5)	ND(< 50)	ND(< 50)	ND(< 1000)	ND(< 50)	ND(<1.0)	ND(< 2.0)	**27**	NA	NA	NA	NA	NA
		LF-3	Screened Bet. 12 and 22ft	ND(< 2.0)	ND(< 2.0)	NA	ND(< 2.0)	**41**	**780**	**350**	ND(< 1000)	**250**	**0.85**	ND(< 2.0)	ND(< 2.0)	NA	NA	NA	NA	NA
		LF-4	Screened Bet. 12 and 22ft	ND(< 2.0)	ND(< 2.0)	NA	ND(< 2.0)	ND(< 1.5)	ND(< 50)	ND(< 50)	ND(< 1000)	ND(< 50)	ND(<1.0)	ND(< 2.0)	**36**	NA	NA	NA	NA	NA
	South of Building 8	MW-5	Screened Bet. 12 and 19ft	ND(< 2.0)	ND(< 2.0)	NA	ND(< 2.0)	ND(< 1.5)	ND(< 50)	ND(< 50)	ND(< 1000)	ND(< 50)	ND(<1.0)	ND(< 2.0)	**9**	NA	NA	NA	NA	NA

Volatile Organics not detected at the site are not included in this table

ND-Not Detected above detection limits

NA-Not Analyzed

*** Reanalyzed, the results were ND(< 40)**

****Analysis of the floating product purged from Well A3 indicated 360,000 µg/l.**

During the Clark and Witham, Inc. sampling event, trans-1,2-dichloroethane and trichloroethene were detected in LF-3 at 7.6 ppb and 9.9 ppb, respectively.

Toluene, total xylenes, diesel, gasoline, Freon 11, PCBs, chromium, nickel, arsenic and zinc were detected in samples from the three wells. In particular, PCBs were detected at 3.9 µg/l in a sample from Well A3, as well as diesel at 1,600 µg/l. In addition, the floating product purged from Well A3 was analyzed and PCBs were detected at 360,000 µg/l. Although arsenic was originally detected at 500 µg/l, subsequent results were non detect (ND) upon reanalysis. The three wells were abandoned in February 1990 following Alameda County Water District guidelines.(29) The analytical results are presented in Table 2-3.

In September 1990, HLA was contracted by Mr. Sobek to perform a site characterization investigation by request of the Alameda County Water District and the Regional Water Quality Control Board. HLA installed three additional monitoring wells near Building 8. These wells were installed to an average depth of 25 feet bgs and are screened between approximately 12 and 22 feet. The wells are referred to as LF-2, LF-3, and LF-4 (there is no LF-1 on site). Samples were obtained from the four onsite monitoring wells (MW-1, LF-2, LF-3, and LF-4) and were analyzed for PCBs, VOCs, and TPH. All wells were purged and EPA analytical methods were used. Analytical results of a groundwater sample from monitoring well LF-2 indicates the presence of gasoline (9,600 µg/l), kerosene (4,900 µg/l), toluene (25 µg/l), and total xylenes (2,800 µg/l). PCBs were also detected in LF-2 at 1.0 µ/l. Analytical results of a sample taken from monitoring well LF-2 indicated the presence of trichlorofluoromethane (Freon 11)(14 µg/l). Diesel (85 µg/l) and Freon 11 (5.8 µg/l) were detected in monitoring well LF-4. No contaminants were detected from the sample taken from MW-1. This report was not issued as a final document. (9) The analytical results are presented in Table 2-3.

In April 1993, Clark and Witham, Inc. installed an additional groundwater monitoring well (MW-5) on the east side of Building 8. The well was installed to a depth of 20.1 feet bgs and screened between 12 and 19 feet. Groundwater samples were collected from five monitoring wells (MW-1, LF-2, LF-3, LF-4, MW-5) and analyzed for TPH, oil and grease, PCBs, and volatile organic compounds. None of the analytes tested for in the groundwater sample collected from MW-1 were detected. Freon 11 was detected at 27 parts per billion (ppb), 36 ppb, and 9 ppb in samples collected from monitoring wells LF-2, LF-4, and MW-5, respectively. The sample collected from LF-3 indicated levels of diesel (780 ppb), kerosene (250 ppb), gasoline (350 ppb), total xylenes (41 ppb), trans-1,2-dichloroethene (7.6 ppb), and TCE (9.9 ppb). No other analytes in the five monitoring wells were detected. (30) The analytical results are presented in Table 2-3.

2.4.5 Foundry Sands. In addition to the March 1989 soil and groundwater sampling, Ensco obtained a composited grab sample designated S-1 from the foundry sands pile. The sample was submitted for priority pollutant metals analysis (no further data is provided on how or where the sample was obtained). Low levels of selected metals were detected in the sample. (8) The analytical results are presented in Table 2-3.

In May 1990, Levine-Fricke was contracted by Mr. Sobek to sample the foundry sands pile to assess the concentration of total metals present and to evaluate those concentrations relative to disposal regulations. Sample locations within the former foundry sands area were randomly selected. The sampling locations are shown in Figure 2-3. Twelve samples were obtained, composited into three, and submitted for priority pollutant total metals analysis. However, only one composite foundry sands sample was analyzed. Information on data quality is not available. Concentrations of metals were detected in the one sample analyzed; however, levels were below the Soluble Threshold Limit Concentration and the Total Threshold Limit Concentration for all metals except lead. Lead was detected in the total metals analysis at 2,500 mg/kg and cadmium was detected at 12 mg/kg. It appears that the foundry sands were removed from the site and transported back to the ABI Foundry in 1991. The removal was not overseen by any agency. (14) The analytical results are presented in Table 2-2.

2.4.6 ***Summary of Sampling Activities.*** The results of previous sampling results at the site indicate that TPH, metals, volatile organic compounds, and PCBs may be present in soils and groundwater at the site. However, only the data collected during the April 1993 sampling event are of known quality. As described in previous sections and shown on Figure 2-3, during the April 1993 sampling event, low levels of TPH, TCE and PCBs were found in soil samples from the soil pile and a soil sample taken during the installation of MW-5. The results of the groundwater sampling in April 1993 showed low levels of freon in wells LF-2, LF-4, and MW-5, and TPH, DCE, TCE and PCBs in LF-3. It was determined during the sampling event that the groundwater flow direction is to the south. None of the samples were analyzed for metals, and no background soil samples have been collected.

2.5 Apparent Problem

The apparent problems at the Sobex site are:

- Historical aerial photos of the site indicate several areas of stained soil, as well as drum and tank storage areas, which exist or once existed on site.
- The construction debris pile may contain TPH, volatile organic compounds, metals, and PCBs.
- The soil pile may be contaminated with metals.
- The foundry sands pile formerly located on site may have contained metals.
- Groundwater sampling conducted in April 1993 indicated the presence of volatile organic compounds in groundwater beneath the site.

3.0 INTEGRATED ASSESSMENT/SITE ASSESSMENT FACTORS

3.1 Waste Type

Based on past investigations, the following are the potential hazardous substance types that may be associated with the Sobex site:

- Soil and groundwater contaminated with metals, volatile organic compounds, and PCBs.

3.2 Sampling Recommendations

3.2.1 ***Soil Sampling.*** As shown in Figure 3-1, sampling of soils will be conducted at 10 locations including the background location. Three surface soil samples and 15 subsurface soil samples (including background samples) will be collected.

CG/Ba/So/294

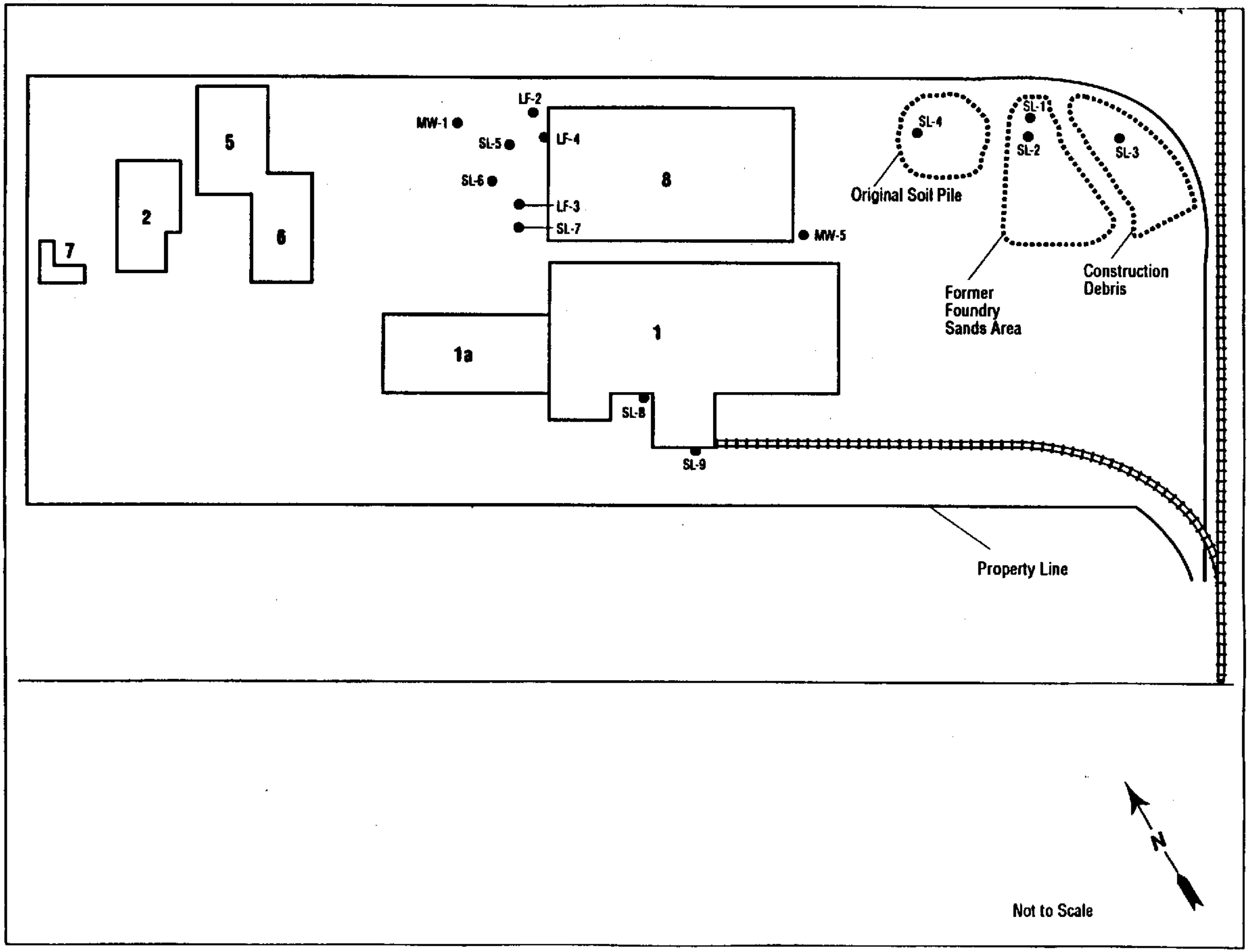

Figure 3-1 Sampling Locations

For sample locations in which more than one subsurface soil sample will be collected, the sample number (e.g. SL-1) will be appended with a ".1". A sample number with a ".1" will represent the shallowest subsurface soil sample taken from the corresponding sample location (e.g., sample number SL-4.1 represents the shallowest subsurface soil sample taken at sample location SL-4); a sample with a ".2" will represent the deeper subsurface soil sample taken at the corresponding sample location. Soil sample locations, excluding background sample locations, are shown in Figure 3-1.

The exact sample locations will be determined in the field based on accessibility. A summary of the potential sources of contamination, sample locations, sample depth, number of samples, and analytical parameters is shown in Table 3-1.

The following rationale was used to determine the sample locations:

Former Foundry Sands Area. Foundry sand was brought to the site in 1985-1986 by American Brass & Foundry to be used as fill to level areas for future development. The foundry sands were subsequently analyzed by Levine-Fricke in May 1990, and were found to contain metals, including lead at 2,500 mg/kg. No EPA sample method numbers were listed in the analytical results and there is incomplete information on the QA/QC procedures followed during this sampling event and the results of these procedures. The foundry sands were removed from the site in 1991, however, post-removal sampling was not performed. Surface soil samples will be collected from the former foundry sands area and analyzed for metals to determine the efficiency of the removal of foundry sands from the site.

The collection of samples representative of residual foundry sands at the site would be extremely difficult because the former foundry sands area is reportedly partially covered by the soil pile. Therefore, soil samples will be collected from areas not covered by the soil pile and/or not disturbed by the bioremediation activities associated with the soil pile. Representative samples of the former foundry sands area are most likely to be obtained from the northeast portion of the area because the southwestern portion is reportedly covered by the soil pile. Two surface soil samples (SL-1 and SL-2) will be collected in the uncovered northeast portion of the former foundry sands area. The sampling locations will be determined by use of aerial photographs of the site which show foundry sands storage areas and from historical information about the removal.

Surface soil samples collected from the former foundry sands area will be analyzed using CLP for Routine Analytical Services (RAS) metals only.

Construction Debris. The construction debris was generated from the demolition of Buildings 3 and 4. Previous soil sampling results indicate that gasoline and diesel are present in the construction debris pile. No PCBs were detected above the detection limits. However, no EPA sample method numbers were listed in the soil sampling results and information is incomplete regarding QA/QC procedures conducted during these sampling events or the results of these procedures. Although metals are contaminants typically associated with oil recycling and polyurethane foam manufacturing facilities, the samples were not analyzed for metals.

One subsurface soil sample will be collected from the construction debris and analyzed for metals and PCBs to determine whether contaminants associated with the California Oil Recyclers and Sobex, Inc. operations are present. The sample will be collected at a depth of 2 feet to ensure the collection of an undisturbed soil sample. Approximately 3,800 cubic

Table 3-1

SUMMARY OF SAMPLING AND ANALYSIS PROGRAM

SOILS

Potential Source of Contamination	Sample Location	Sample Depth (ft)	Number of Samples	Analytical Parameters
Former Foundry Sands Area	SL-1, SL-2	0-0.5	2	RAS Metals
Construction Debris	SL-3	2	1	RAS Metals RAS PCBs
Soil Pile	SL-4	2	1	RAS Metals
Buildings 3 and 4 Area	SL-5, SL-6, SL-7	6, 8	6	RAS Metals RAS Volatile Organic Compounds RAS PCBs
	SL-10 (Dup)	6	1	
	SL-11 (Dup)	6	1	
Area South of Building 1	SL-8, SL-9	2	2	RAS Metals RAS PCBs
Background Areas	BS-1	0-0.5, 2, 6, 8	4	RAS Metals RAS Volatile Organic Compounds RAS PCBs

yards of construction debris were transported from the Building 3 and 4 area to its current location. One soil sample (SL-3) will be collected at 2 feet below the surface of the construction debris and analyzed for RAS metals and RAS Pesticides/PCBs. At the RWQCB's request, additional volumes of soil may be collected to be analyzed by the RWQCB for TPH and oil and grease.

Soil Pile. The soil pile originated from the excavation of the Building 1 loading dock and the demolition of Buildings 3 and 4. Previous soil pile sampling results indicate that oil and grease, diesel, and PCBs were detected in the soil pile. Although metals are contaminants typically associated with oil recycling and polyurethane foam manufacturing facilities, the samples were not analyzed for metals.

As part of the onsite bioremediation of the soil pile, approximately 1,800 cubic yards of soil was reportedly tilled to a depth of 12 inches, aerated, and watered for a period of 5 months and is thus considered fairly homogeneous. Consequently, one sample is considered sufficient for a representative sampling of the soil pile. The sample will be collected at a depth of 2 feet from the top of the pile (which is 4 feet high) to determine the presence and concentrations of contaminants in the soil pile beneath the 12-inch tilling depth. The sample will be collected and analyzed for RAS metals. The Clark and Witham sampling event provided analytical data regarding the concentrations of volatile organic compounds (EPA method 8240) and PCBs (EPA method 8080) in the soil pile.

One subsurface soil sample (SL-4) will be collected from the soil pile at a depth of 2 feet from the surface of the pile. The sample will be analyzed for RAS metals. At the RWQCB's request, additional volumes of soil may be collected to be analyzed by the RWQCB for TPH and oil and grease.

Former Buildings 3 and 4 Area. The former Buildings 3 and 4 area may contain contaminants typical of waste oil recycling and polyurethane foam manufacturing facilities. Previous soil sampling results indicate that TPH, VOCs, and PCBs were detected in soil and groundwater in the Buildings 3 and 4 area. However, no EPA sample method numbers were listed in the soil sampling results and information is incomplete regarding QA/QC procedures conducted during these sampling events or the results of these procedures. Additionally, although metals are contaminants typically associated with oil recycling and polyurethane foam manufacturing facilities, samples previously collected from this area were not analyzed for metals.

Subsurface soil samples from the Buildings 3 and 4 area will be collected and analyzed to determine the presence of VOCs, PCBs, and metals contamination in this area. The entire Buildings 3 and 4 area is approximately 80,000 square feet. According to previous sample results, the highest concentrations of contaminants in soil were found in the area adjacent to previous sample locations SB-08, SB-11, SB-12, and SB-13 (See Section 2.4). The highest concentrations were found at a depth of 11 feet bgs. The Buildings 3 and 4 area is covered by asphalt and approximately 5 feet of fill material. The fill material was used to grade the area prior to installing the Home Depot parking lot.

Six subsurface soil samples will be collected from the Buildings 3 and 4 area at three soil sample locations adjacent to previous sample locations SB-08, SB-11, SB-12, and SB-13. Two soil samples will be collected at each sample location at a depth of 6 feet (SL-5.1, SL-6.1, SL-7.1) and 8 feet (SL-5.2, SL-6.2, SL-7.2) bgs in order to locate contamination below the fill and to determine the depth of contamination.

Soil collected in the Buildings 3 and 4 area will be analyzed for RAS metals, RAS volatile organic compounds, and RAS Pesticides/PCBs. At the RWQCB's request, additional volumes of soil may be collected to be analyzed by the RWQCB for TPH and oil and grease.

Area South of Building 1. The area south of Building 1 was used by Polymir to store above-ground storage tanks, drums, and equipment. Previous soil sampling results indicate that volatile organic substances were detected in this area. However, no EPA sample method numbers were listed in the soil sampling results and information is incomplete regarding QA/QC procedures conducted during these sampling events or the results of these procedures. Additionally, the samples were not analyzed for metals.

There were three tank and equipment storage areas south of Building 1 including the area adjacent to the south end of the Building 1 loading dock, the Building 1 alcove, and adjacent to the railroad tracks. The area south of Building 1 is approximately 25,000 square feet. Soil samples will be collected and analyzed to determine the presence and concentrations of metals and PCBs in the soils underlying the storage areas. This area is covered by concrete and the material directly beneath the concrete is likely to be fill used to grade the area.

Two soil samples will be collected at two locations in the area south of Building 1 (one sample location in each of two former storage areas within the area south of Building 1). The sample locations will be determined by use of aerial photographs of the site. One subsurface soil sample will be collected at each sample location. Samples will be collected at a depth of 2 feet (SL-8, SL-9) below the concrete and fill material will be avoided.

Soil collected in the area south of Building 1 will be analyzed for RAS metals and RAS Pesticides/PCBs. At the RWQCB's request, additional volumes of soil may be collected to be analyzed by the RWQCB for TPH.

Background Sample Areas. Four background soil samples will be collected at a location of undisturbed soil within 0.5 mile of the site. One background soil sample location representative of natural conditions in the area will be chosen and samples will be collected at four intervals. Samples will be collected at the surface (BS-1.1), at depth of 2 feet (BS-1.2), at a depth of 6 feet (BS-1.3), and at a depth of 8 feet (BS-1.4) bgs.

Background soil samples will be analyzed using the CLP for RAS metals, RAS Pesticide/PCBs and RAS volatile organic compounds as appropriate. At the RWQCB's request, additional volumes of soil may be collected to be analyzed by the RWQCB for TPH and oil and grease.

3.2.2 Groundwater Sampling. As shown in Figure 3-1, groundwater sampling will be conducted at five onsite monitoring wells. A summary of the potential sources of contamination, sample locations, number of samples, and analytical parameters is shown in Table 3-2.

During the 1993, Clark and Witham, Inc. investigation, groundwater samples were collected from the onsite monitoring wells. The samples were analyzed for total petroleum hydrocarbons by DHS method; and oil and grease by standard method 5520 BF; PCBs by EPA method 8080; and VOCs by EPA method 8240. The sampling procedures and analytical methods appear to meet EPA quality criteria. As part of this sampling event, samples will be analyzed for RAS metals and RAS Pesticides/PCBs. At RWQCB's

Table 3-2

SUMMARY OF SAMPLING AND ANALYSIS PROGRAM

GROUNDWATER

Potential Source of Contamination	Sample Location	Number of Samples *	Analytical Parameters
Buildings 3 and 4 Area	MW-1, LF-2, LF-3, LF-4	4	RAS Metals RAS PCBs
	MW-6 (Dup)	1	
Southeast of Building 8	MW-5	1	RAS Metals RAS PCBs

Note: TPH and oil and grease parameters will be analyzed by the RWQCB laboratory
TPH = Total Petroleum Hydrocarbons
* Numbers do not include rinsates

request, split samples may be collected and analyzed by a RWQCB laboratory for oil and grease and TPH.

There is little movement of groundwater in the area of the site due to the generally flat topography of the area. According to the Clark and Witham Investigation, the groundwater gradient in the shallow unconfined aquifer is generally to the south. The depth to groundwater is approximately 15 feet. As part of this investigation, groundwater wells within a mile of the site were located and evaluated based on proximity to the site, depth, and screened interval. No off-site hydraulically upgradient well (appropriate for sampling) appears to be located within 0.5 mile of the site. (17)

All monitoring wells on site will be sampled to evaluate possible groundwater contamination. The following rationale was used to determine the sample locations:

Former Buildings 3 and 4 Area. Groundwater samples will be collected from MW-1, LF-2, LF-3, and LF-4 in the Buildings 3 and 4 area to determine the presence and levels of metals and PCBs in the shallow groundwater. Depth to groundwater is approximately 15 feet bgs. All onsite groundwater monitoring wells are screened between approximately 15 and 25 feet bgs. The samples will be collected in this shallow water-bearing zone.

According to past sampling results, MW-1 is north of the areas of soil contamination at the site. During the April 1993 Clark and Witham, Inc. sampling event, it was determined that the groundwater gradient is to the south. Monitoring well MW-1 is the northernmost monitoring well at the site and is upgradient of the contaminants in the former Buildings 3 and 4 area. As mentioned previously, no off-site hydraulically upgradient wells are located within 0.5 mile of the site.

Groundwater samples collected from monitoring wells MW-1, LF-2, LF-3, and LF-4 in the former Buildings 3 and 4 area will be analyzed for RAS metals and RAS Pesticides/PCBs. At the RWQCB's request, additional volumes of groundwater may be collected to be analyzed by the RWQCB for TPH.

Area Southeast of Building 8. As part of the Clark and Witham, Inc. investigation in April 1993, a monitoring well (MW-5) was installed southeast of Building 8. The well was installed to a depth of 20.1 feet bgs. A groundwater sample will be collected from MW-5 to determine the presence and levels of metals and PCBs in the shallow groundwater beneath the site.

Groundwater samples collected from monitoring well MW-5 in the area south of Building 8 will be analyzed for RAS metals and RAS Pesticides/PCBs. At the RWQCB's request, additional volumes of groundwater may be collected to be analyzed by the RWQCB for TPH and oil and grease.

4.0 REQUEST FOR ANALYSES

The U.S. Environmental Protection Agency has requested that BEI conduct field sampling activities at the Sobex, Inc. site (CAD 982399784) in Fremont, Alameda County, California. The sampling event will occur in September 1993. The following samples (including duplicates and equipment rinsates) will be collected and submitted to an EPA-designated CLP laboratory for analyses:

- Eleven low concentration soil samples will be analyzed for RAS VOCs, RAS Pesticides/PCBs and RAS metals.
- Three low concentration soil samples will be analyzed for RAS metals and RAS Pesticides/PCBs.
- Four low concentration soil samples will be analyzed for RAS metals only.
- Eight low concentration water samples will be analyzed for RAS Pesticides/PCBs and RAS metals.
- Two low concentration water samples will be analyzed for RAS Pesticides/PCBs, RAS metals, and RAS VOCs.
- One low concentration water sample will be analyzed for RAS metals only.

At RWQCB's request, split samples will be collected and analyzed by a RWQCB-designated laboratory for oil and grease and TPH.

Tables 4-1, 4-2 give the required number of sample containers, volumes, and required preservatives for the sample analyses.

4.1 Surface Soil Sampling Analyses

Surface soil samples will be taken at two onsite locations SL-1 and SL-2 and one background location BS-1. As shown in Table 4-1, each surface soil sample will be analyzed using the CLP for RAS metals.

4.2 Subsurface Soil Sampling Analyses

Fifteen subsurface soil samples will be taken at nine locations: SL-3, SL-4, SL-5, SL-6, SL-7, SL-8, and SL-9 and background location BS-1. One single volume subsurface soil sample collected at sample location SL-7.2 will be identified to the laboratory for use in laboratory quality assurance/quality control (QA/QC). Two duplicate subsurface soil samples will be collected at sample locations SL-5.1 and SL-7.1 because these are two areas where high levels of contaminants may be present.

As shown in Table 4-1, samples from the Buildings 3 and 4 area and subsurface background samples will be analyzed for RAS VOCs, RAS Pesticides/PCBs, and RAS metals. Samples collected from other areas will be analyzed for metals only.

TABLE 4-1
REQUEST FOR ANALYSES
MATRIX = SOIL

CLP ANALYSES REQUESTED						ROUTINE ANALYTICAL SERVICES (RAS)		
CHEMISTRY TYPE						ORGANICS		INORGANICS
SPECIFIC ANALYSES REQUESTED						RAS VOCs	RAS Organochlorine Pesticides/PCBs	RAS Metals
PRESERVATIVES						Chill to 4°C	Chill to 4° C	Chill to 4° C
ANALYTICAL HOLDING TIME(s)						Hold <14 days	Hold <14 days prior to extraction, 40 days after extraction	Hold to 6 months (28 days for Hg)
CONTRACT HOLDING TIME(s)						Hold <10 days	Hold <10 days prior to extraction 40 days after extraction	Hold <35 days (26 days for Hg)
SAMPLE x SAMPLE						NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS
SAMPLE NUMBER	SAMPLE LOCATION	SPECIAL DESIGNATION	SAMPLING SCHEDULE	CONCENTRATION		2 x 120 ml wide mouth glass vials or 6" brass liner	1 x 4 oz wide mouth glass jar or 6" brass liner	1 x 8 oz wide mouth glass jar or 6" brass liner
				LOW	MED			
SL-1	foundry sand area		20-Sep	X				1
SL-2	foundry sand area		20-Sep	X				1
SL-3	Construction Debris		20-Sep	X			1	1
SL-4	Soil Pile		20-Sep	X				1
SL-5.1	Building 3 & 4 area		21-Sep	X		2	1	1
SL-5.2	Building 3 & 4 area		21-Sep	X		2	1	1
SL-6.1	Building 3 & 4 area		21-Sep	X		2	1	1
SL-6.2	Building 3 & 4 area		21-Sep	X		2	1	1
SL-7.1	Building 3 & 4 area		21-Sep	X		2	1	1
SL-7.2	Building 3 & 4 area	Lab QA/QC	21-Sep	X		2	1	1
SL-8	South of Building 1		22-Sep	X			1	1
SL-9	South of Building 1		22-Sep	X			1	1
SL-10	SL-5.1	DUPLICATE	21-Sep	X		2	1	1
SL-11	SL-7.1	DUPLICATE	21-Sep	X		2	1	1
BS-1.1	Background	BACKGROUND	22-Sep	X				1
BS-1.2	Background	BACKGROUND	22-Sep	X			1	1
BS-1.3	Background	BACKGROUND	22-Sep	X		2	1	1
BS-1.4	Background	BACKGROUND	22-Sep	X		2	1	1
TOTALS			low conc	18		20	14	18

Split samples collected for the RWQCB TPH analysis are not included in this table.

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TABLE 4-2
REQUEST FOR ANALYSES
MATRIX = WATER

CLP ANALYSES REQUESTED			ROUTINE ANALYTICAL SERVICES (RAS)					
CHEMISTRY TYPE						ORGANICS		INORGANICS
SPECIFIC ANALYSES REQUESTED						RAS VOCs	RAS Organochlorine Pesticides/PCBs	*RAS Metals
PRESERVATIVES						Add 2 drops 1:1 HCL. Chill to 4° C	Chill to 4 Degrees C	Add HNO3 to pH≤2, Chill to 4° C
ANALYTICAL HOLDING TIME(s)						Hold <14 days	Hold <7 Days prior to extraction 40 days after extraction	Hold to 6 months (28 days for Hg)
CONTRACT HOLDING TIME(s)						Hold <10 days	Hold <5 days prior to extraction 40 days after extraction	Hold to 6 months (26 days for Hg)
SAMPLE x SAMPLE						NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS
SAMPLE NUMBER	SAMPLE LOCATION	SAMPLING SCHEDULE	SPECIAL DESIGNATION	CONCENTRATION LOW	MED	3 x 40 ml glass vials	2 x 1 liter amber glass bottle	1 x 1 liter polyethylene bottle
MW-1	Bldg 3 and 4	23-Sep-93		X			2	1
LF-2	Bldg 3 and 4	23-Sep-93	LAB QA/QC	X			4	2
LF-3	Bldg 3 and 4	24-Sep-93		X			2	1
LF-4	Bldg 3 and 4	23-Sep-93		X			2	1
MW-5	S.E. of Building 8	24-Sep-93		X			2	1
MW-6	LF-3	24-Sep-93	DUPLICATE	X			2	1
MW-7	SL-4	20-Sep-93	RINSATE	X				1
MW-8	SL-7.2	21-Sep-93	RINSATE	X		3	2	1
MW-9	BS-1.4	22-Sep-93	RINSATE	X		3	2	1
MW-10	LF-4	23-Sep-93	RINSATE	X			2	1
MW-11	MW-5	24-Sep-93	RINSATE	X			2	1
TOTALS		low conc		11		6	22	12

Split samples collected for the RWQCB TPH analysis are not included in this table.

* If the turbidity in the well to be sampled is greater than 10 Nephelometric Turbidity Units (NTUs), groundwater samples collected for metals analysis will consist of both a filtered and an unfiltered sample. Filtered samples will be designated by the sample number appended with an "F" (i.e. LF-3F).

4.3 Groundwater Sampling Analyses

As described in Table 4-2, groundwater samples will be collected from five locations: MW-1, LF-2, LF-3, LF-4, and MW-5. A double volume sample collected at sample location LF-2 will be identified to the laboratory for use in laboratory QA/QC. One duplicate groundwater sample will be collected at sample location LF-3 because analytical results of the Clark and Witham, Inc. sampling event indicate the presence of trans-1,2, dichloroethene at 7.6 ppb and trichloroethylene at 9.9 ppb.

As shown in Table 4-2, each groundwater sample (including laboratory QC samples) will be analyzed using the CLP for RAS metals and RAS Pesticides/PCBs.

4.4 Equipment Rinsate Sample Analyses

Three equipment rinsate samples will be prepared following the decontamination of the subsurface soil sampling equipment used to collect samples SL-4, SL-7.2, and BS-1.4. Equipment rinsate sample MW-7 will be analyzed for RAS metals only. Equipment rinsate samples MW-8 and MW-9 will be analyzed for RAS VOCs, RAS pesticides/PCBs, and RAS metals.

Two equipment rinsate samples will be prepared following the decontamination of the sampling equipment used to collect sample LF-4 and MW-5. Equipment rinsate samples MW-10 and MW-11 will be analyzed for RAS metals and RAS Pesticides/PCBs.

5.0 METHODS AND PROCEDURES

This section describes the procedures to be used in collecting soil and groundwater samples. All samples will be handled in accordance with approved QAPjP procedures and the chain-of-custody guidelines specified in Section 7.3 and transferred into pre-cleaned containers. The containers will be labeled as described in Section 7.5, sealed with tape, and placed in coolers for transport to the laboratory. Samples will be collected in containers, preserved as appropriate, and analyzed within specific holding times specified in section 7.2. Samplers will don clean, disposable latex gloves at each sampling site.

Soil sampling locations will be determined in the field based on accessibility, visable signs of potential contamination (i.e. stained soils), and topographical features which may affect contaminant migration (i.e. depressions that may indicate surface water flow). Soil locations will be recorded in the field logbook after sampling is completed. A sketch of the sample location will be entered into the logbook and any physical reference points will be labeled. If possible distances to reference points will be given.

5.1 Surface Soil Samples

Surface soil samples will be collected as grab samples (independent, discrete samples). Surface soil samples will be collected using a stainless steal hand trowel. Samples will be collected from the soil surface at a depth of approximately zero to six inches. The sample will be collected and placed in a sample-dedicated 1-gallon disposable pail and homogenized with a trowel. Material in the pail will be transferred with a trowel from the pail to the appropriate sample containers, chilled and processed for shipment to the laboratory. Sample containers will be filled to the top and measures will be taken to prevent soil from remaining in the lid threads prior to being sealed to prevent potential contaminant migration to or from the sample.

5.2 Subsurface Soil Samples

Prior to collecting subsurface soil samples, overlying concrete and/or asphalt will be removed with a coring device.

Subsurface samples will be collected by boring to the desired sample depth using a 3-inch diameter hand auger. Once the desired sample depth is reached, the auger will be removed from the hole and accumulated soil will be set aside in a sample-dedicated, disposable pail. A different, clean auger will be inserted in the hole and used to collect the sample. Subsurface soil samples will be collected at depth intervals of 2 to 2.5 feet, 6 to 6.5 feet, and 8 to 8.5 feet depending on the sample location. The samples to be analyzed for RAS metals will be collected and placed in a sample-dedicated 1-gallon disposable pail and homogenized with a trowel. Material in the pail will be transferred with a trowel from the pail to the appropriate sample containers, chilled and processed for shipment to the laboratory. Samples to be analyzed for RAS volatile organic compounds will be transferred directly from the auger to the appropriate sample containers, chilled and processed for shipment to the laboratory. Samples to be analyzed for RAS volatile organic compounds will be collected first and RAS metals last. Sample containers will be filled to the top and measures will be taken to prevent soil from remaining in the lid threads prior to being sealed to prevent potential contaminant migration to or from the sample.

5.3 Groundwater Samples

5.3.1 Water-Level Measurements. Prior to purging, all wells will be sounded for depth to water from top of casing and total well depth. An electronic sounder, accurate to the nearest +/- 0.01 ft, will be used to measure depth to water in each well. When using an electronic sounder, the probe is lowered down the casing to the top of the water column, the graduated markings on the probe wire are used to measure the depth to water from the surveyed point on the rim of the well casing. Typically, the measuring device emits a constant tone when the probe is submerged in standing water and most electronic water level sounders have a visual indicator consisting of small light bulb or diode that turns on when the probe encounters water. Total well depth will be sounded from the surveyed top of casing by lowering the weighted probe to the bottom of the well. Because the weighted probe will sink into silt at the bottom of well screens, total well depths will be measured and recorded to the nearest 0.1 ft.

Water level sounding equipment will be decontaminated before and after use in each well. Water levels will be collected in wells which have the least amount of known contamination first. Wells with known or suspected contamination will be measured last. Monitoring well characteristics for each well onsite (well depth, screened interval, water level, casing diameter) are shown in Table 5-1.

5.3.2 Well Purging. All wells will be purged prior to sampling A minimum of three casing volumes of water will be purged using an electric submersible pump or hand pump depending on the diameter and capacity of the well. Water will be collected into a measured

Table 5-1

Well Characteristics

Onsite Monitoring Wells	**Well Depth** (feet)	**Screened Interval** (feet)	**Water Level Depth** (feet) (4/13/93)	**Casing Diameter** (inches)
MW-1	24.60	unknown	12.90	2
LF-2	25.04	12 to 22	10.80	2
LF-3	25.30	12 to 22	13.24	2
LF-4	24.95	12 to 22	12.19	2
LF-5	20.10	12 to 19	12.23	2

bucket to record the purge volume. The volume of one casing volume will be calculated using the standard equation of a cylinder which in dimensional form is:

In dimensional form this becomes:

$$\mathbf{V = \pi\, d^2\, h\, /\, 77.01}$$

where:

V is the volume of one well casing of water (in gallons, 1 gallon = 7.48 ft^3);

d is the inner diameter of the well casing (in inches); and

h is the total height of the water column in the well (in feet).

If a monitoring well dewaters during purging and three casing volumes are not purged, that well will be allowed to recharge up to 80 percent of static water column, and dewatered once more. After water levels have recharged to 80 percent of the static water column, groundwater samples will be collected.

Prior to the start of purging and after each well volume is purged, water temperature, pH, and specific conductance will be measured using field test meters. If the well purge volume is not known, water temperature, pH, and specific conductance will be measured every 5 minutes. Samples will be collected after these parameters have stabilized; indicating representative formation water is entering the well. Three consecutive measurements which display consistent values of all parameters will be taken prior to sampling. Typically, the temperature should not vary by more than +/- 1°C, pH by more than 0.2 pH units, and specific conductance by more than 10% from reading to reading. No water that has been tested with a field meter probe will be collected for chemical analysis. If these parameters have not stabilized after five casing volumes have been purged (30 minutes if the purge volume is not known), purging will cease, a notation will be recorded in the field logbook and samples will be collected. In accordance with Section 7.1, depth to water measurements, field measurements of parameters, and purge volumes will be recorded in the field logbook.

All field meters will be calibrated according to manufacturers guidelines and specifications prior to beginning field work every day. Field meter probes will be decontaminated before and after use at each well.

5.3.3 Groundwater Monitoring Well Sampling. The five onsite monitoring wells (MW-1, LF-2, LF-3, LF-4, MW-5) will be sampled starting with MW-1, the northernmost well in the Building 3 and 4 area. Prior to sampling, the water level in the well will be measured and the well will be purged of standing water. A minimum of three casing volumes of water will be purged using an electric submersible pump or hand pump. The well will be sampled within 24 hours after purging. Clean PVC gloves will be donned prior to collecting each sample.

After well purging and prior to collecting groundwater samples for metals analysis, the turbidity of the groundwater will be measured with a portable turbidity meter. A column of water will be retrieved from the well with a Teflon bailer. A small amount of groundwater will be transferred into a disposable container. Turbidity measurements will be conducted and the turbidity reading will be recorded in the field notebook. The volume of water used to measure turbidity will not be used as the sample for laboratory analysis.

If the turbidity of the groundwater in the well to be sampled is above 10 Nephelometric Tubidity Units (NTUs), groundwater samples collected for metals analysis will consist of both a filtered and an unfiltered sample. A 5-micron filter will be used to remove larger particles that have been entrained in the water sample. A column of water collected for metals analyses will be retrieved from the well with a Teflon bailer. The filter will be attached to the outlet device of the bottom-emptying, Teflon bailer. A clean unused filter will be used for each collected filtered sample. After the filtered sample has been collected, the filter will be removed and an unfiltered sample will be collected. Groundwater samples collected for Pesticide/PCB analysis will not be filtered.

All groundwater samples will be analyzed for RAS metals and RAS Pesticides/PCBs. Groundwater samples will be transferred from the bailer directly into the appropriate sample containers with preservative. The preservative for RAS metals analysis is nitric acid (HNO3), which is used to lower the pH of the sample to ≤2. Following sample collection, the sample containers will be tightly capped, labeled, placed in a cooler with ice, and entered onto chain of custody documents for shipment to the laboratory.

5.4 Equipment Rinsate Samples

Equipment rinsate samples will be collected to evaluate field sampling and decontamination procedures by pouring laboratory-grade, certified organic-free water (for organics) or deionized water (for inorganics) over the decontaminated sampling equipment. One equipment rinsate sample will be collected each day at the locations described in Section 4.0. Equipment rinsate samples will be obtained by passing water through or over decontaminated sampling devices. The rinsate samples that are collected will be analyzed for RAS metals and RAS volatile organic compounds. The equipment rinsate samples will also be used to evaluate the sample field handling shipping process.

The equipment rinsate samples will be preserved, packaged, and sealed in the manner described in Section 7.0 of this sample plan. A separate CLP sample number and station number will be assigned to each sample, and it will be submitted blind to the laboratory.

5.5 Decontamination Procedures

The decontamination procedures that will be followed are in accordance with approved QAPjP procedures. Decontamination of sampling equipment must be conducted consistently as to assure the quality of samples collected. All equipment that comes into contact with potentially contaminated soil, water, or sediment will be decontaminated. Disposable equipment intended for one time use will not be decontaminated, but will be packaged for appropriate disposal. Decontamination will occur prior to and after each use of a piece of equipment. All sampling devices used, including trowels and augers will be steam-cleaned or decontaminated according to EPA Region IX recommended procedures.

The following, to be carried out in sequence, is an EPA Region IX recommended procedure for the decontamination of sampling equipment:

1. Wash with non-phosphate detergent and tap water, using a brush if necessary

2. Tap-water rinse

3. 0.1 N nitric acid rinse (when cross contamination from metals is a concern)
4. Deionized/distilled water rinse
5. Pesticide grade solvent (hexane) rinse (when semivolatile and non-volatile organic contamination may be present) in a decontamination bucket
6. Deionized/distilled water rinse (twice)
7. Organic free water rinse (HPLC grade)

Equipment will be decontaminated in a predesigned area on pallets or plastic sheeting, and clean equipment will be stored on plastic sheeting in uncontaminated areas. Materials to be stored more than a few hours will also be covered.

6.0 DISPOSAL OF RESIDUAL MATERIALS

In the process of collecting environmental samples at the Sobex site during the field investigation, the BEI site team will generate different types of potentially contaminated investigation-derived wastes (IDW) that include the following:

- Used personal protective equipment (PPE)
- Decontamination fluids
- Disposable sampling equipment
- Purged groundwater water
- Soil cuttings from soil borings.

The EPA's National Contingency Plan (NCP) requires that management of IDW generated during SIs comply with all applicable or relevant and appropriate requirements (ARARs) to the extent practicable. The sampling plan will follow the Office of Emergency and Remedial Response (OERR) Directive 9345.3-02 (May 1991) which provides the guidance for the management of IDW during SIs. In addition, other legal and practical considerations that may affect the handling of IDW will be considered.

Listed below are the procedures that will be followed for handling the IDW. The procedures have enough flexibility to allow the site investigation team to use its professional judgment on the proper method for the disposal of each type of IDW generated at each sampling location.

- Used PPE and disposable equipment will be double bagged and placed in a municipal refuse dumpster on site. These wastes are not hazardous and can be sent to a municipal landfill. Any PPE and disposable equipment that is to be disposed of which can still be reused will be rendered inoperable before disposal in the refuse dumpster.

- Decontamination fluid that will be generated during the sampling event will consist of nitric acid, pesticide grade solvent, organic free or deionized water, residual contaminants and water with non-phosphate detergent. The volume and concentration of the decontamination fluid will be sufficiently low to allow disposal at the site. The water (and water with detergent) will be poured onto the ground or into a storm drain. Pesticide grade solvents will allowed to evaporate from the decontamination bucket. The nitric acid will be diluted and/or neutralized with sodium hydroxide and tested with pH paper before pouring onto the ground or into a storm drain.

- Purged groundwater from the monitoring wells will be contained in sealed Department of Transportation (DOT)-approved 55-gallon drums labeled with well identification, and date and time of collection. The drums will be stored inside the onsite fenced area until analytical results are received from the laboratory. Depending on the analytical results of the groundwater samples from the wells and the volume of purge water generated during the field investigation, the fluids in the drums may be disposed of on site or transported off site for disposal at an appropriate facility.

- Soil cuttings generated during the subsurface sampling will be placed back into the soil borings from which the sample was obtained. Any remaining soil cuttings will be spread around the sampling location.

7.0 SAMPLE DOCUMENTATION AND SHIPMENT

7.1 Field Logbooks

Field logbooks will document where, when, how, and from whom any vital project information was obtained. Logbook entries will be complete and accurate enough to permit reconstruction of field activities. At a minimum, the following sampling information will be recorded:

- Site sketch
- Sample location and description
- Sampler's name(s)
- Date and time of sample collection
- Designation of sample as composite or grab
- Type of sample (i.e., matrix)
- Type of sampling equipment used
- Onsite measurement data (e.g. temperature, pH, conductivity, etc.)
- Field observations and details important to analysis or integrity of samples (e.g., heavy rains, odors, colors, etc.)

- Preliminary sample descriptions (e.g., clay loam soil, very wet)
- Type of preservation used
- Instrument reading (e.g., OVM, HNU, etc.)
- Lot numbers of the sample containers, sample tag numbers, chain-of-custody form numbers, and chain-of-custody seal numbers
- Shipping arrangements (Federal Express air bill number)
- Recipient laboratory(ies).

A separate logbook will be maintained for each project. Logbooks are bound with consecutively numbered pages. Each page will be dated and the time of entry noted in military time. All entries will be legible, written in black ink, and signed by the individual making the entries. Language will be factual, objective, and free of personal opinions or other terminology which might prove inappropriate. In addition to the sampling information, the following specifics will also be recorded in the field logbook:

- Team members and their responsibilities
- Time of site arrival/entry on site and time of site departure
- Other personnel on site
- A summary of any meetings or discussions with any potentially responsible parties (PRPs), representatives of PRPs, or federal, state, or other regulatory agencies
- Any deviations from sampling plans, site safety plans, and QAPjP procedures
- Any changes in personnel and responsibilities as well as reasons for the changes
- Levels of safety protection
- Equipment calibration and equipment model and serial number.

7.2 Bottles and Preservatives

The number of sample containers, volumes, and materials are listed in the Section 4.0, Request for Analyses tables. The containers are pre-cleaned and will not be rinsed prior to sample collection. Preservatives, if required, will be added by BEI to the containers prior to shipment of the sample containers to the laboratory.

7.2.1 Soil Samples

Volatile Organic Compounds. Surface soil samples will be collected using a stainless steel hand trowel and transferred into 120-milliliter (ml), wide-mouth glass vials. Subsurface soil samples will be collected using a hand auger and transferred into 120-ml, wide-mouth glass vials. At each surface and subsurface soil sampling location, two 120-ml glass vials will be collected for each laboratory. The samples will be chilled to 4°C immediately upon collection.

Total Metals. Surface soil samples will be collected using a stainless steel hand trowel and transferred into 8-ounce, wide-mouth glass jars. Subsurface soil samples will be collected using a hand auger and transferred into 8-ounce, wide-mouth glass jars. At each surface soil and subsurface location, one 8-ounce glass jar will be collected for each laboratory. The samples will be chilled to 4°C immediately upon collection.

7.2.2 Water Samples

Total Metals. Low concentration groundwater samples collected for total metals analysis will be collected in 1-liter polyethylene bottles. The samples will be preserved by adding nitric acid (HNO3) to the sample bottle. The bottle will be capped and lightly shaken to mix in the acid. A small quantity of sample will be poured into the bottle cap where the pH will be tested using litmus paper. The pH must be less than or equal to 2. The sample in the cap will be discarded, and the pH of the sample will be adjusted further if necessary. The samples will be chilled to 4°C immediately upon collection and preservation.

7.2.3 Equipment Rinsate Samples

Volatile Organic Compounds. Low concentration equipment rinsate samples to be analyzed for volatile organic compounds will be collected in 40-ml glass vials. Two drops of 1:1 HCl will be added to the vial prior to sample collection. A pH test will be conducted on at least one vial to ensure the pH is less than 2. The tested vial will be discarded. If the pH is greater than 2, additional HCl will be added to the sample vials. Another vial will be pH tested to ensure the pH is less than 2. The tested vial will be discarded. The vials will be filled so that no headspace occurs. The samples will be chilled to 4°C immediately upon collection.

Total Metals. Low concentration water samples collected for total metals analysis will be collected in 1-liter polyethylene bottles. The samples will be preserved by adding nitric acid (HNO3) to the sample bottle. The bottle will be capped and lightly shaken to mix in the acid. A small quantity of sample will be poured into the bottle cap where the pH will be tested using litmus paper. The pH must be less than or equal to 2. The sample in the cap will be discarded, and the pH of the sample will be adjusted further if necessary. The samples will be chilled to 4°C immediately upon collection and preservation.

7.3 Sample Traffic Report And Chain-Of-Custody Records, And QA/QC Summary Forms

Organic and inorganic traffic reports and chain-of-custody records are used to document sample collection and shipment to laboratory for analysis. Traffic report and chain-of-custody records are used when shipping samples for RAS analyses. All sample shipments will be accompanied by a traffic report and chain-of-custody record. One form will be completed and sent with the samples for each laboratory and each shipment (i.e., each day). If multiple coolers are sent to a single lab on a single day, one form will be completed and sent with the samples for each cooler.

The traffic report and chain-of-custody record will identify the contents of each shipment and maintain the custodial integrity of the samples. Generally, a sample is considered to be in someone's custody if it is either in someone's physical possession, in someone's view, locked up, or kept in a secured area that is restricted to authorized personnel. Until the samples are shipped, the custody of the samples will be the responsibility of BEI. The site leader or designee will sign the traffic report and chain-of-custody record. The site leader or designee will sign the "relinquished by" box and note date, time, and air bill number.

The blue (original) copy of the forms will be sent to the EPA Region IX Quality Assurance Management Section (QAMS), the pink (second) copy will go to the Sample Management Office (SMO), and the white (third) and yellow (fourth) copies will accompany the samples to the laboratory. A copy of the original will be made for the BEI Master files.

A quality assurance/quality control (QA/QC) summary form will be completed for each laboratory and each matrix of the sampling event. The sample numbers for all rinsate samples, reference samples, laboratory QC samples, and duplicates will be documented on this form (see Section 8.0). The original form will be sent to QAMS; a photocopy will be made for the BEI Master File. This form is not sent to the laboratory.

A self-adhesive custody seal will be placed across the lid of each sample. For VOC samples, the seal will be wrapped around the cap. The shipping containers in which samples are stored (usually sturdy picnic cooler or ice chest) will be sealed with self-adhesive custody seals any time they are not in someone's possession or view before shipping. All custody seals will be signed and dated.

The "CLP Paperwork Instructions," Appendix G to the guidelines on "Preparation of a U.S. EPA Region 9 Sample Plan for EPA-Lead Superfund Projects," will be taken to the field as a reference. Corrections on sample paperwork will be made by placing a single line through the mistake and initialing and dating the change. The correct information will be entered above, below, or after the mistake.

7.4 Photographs

Photographs will be taken at every sample location and at other areas of interest on site. They will serve to verify information entered in the field logbook. When a photograph is taken, the following information will be written in the logbook or will be recorded in a separate field photography log:

- Time, date, location, and, if appropriate, weather conditions
- Complete description of the subject photographed
- Name of person taking the photograph

7.5 Labeling, Packaging, And Shipment

All samples collected will be labeled in a clear and precise way for proper identification in the field and for tracking in the laboratory. The CLP samples will have preassigned, identifiable, and unique numbers. At a minimum, the sample labels will contain the following information: CLP Case Number, station location, date of collection, analytical parameter(s), and method of preservation. Every sample, including samples collected from a single location but going to separate laboratories, will be assigned a unique sample number.

All sample containers will be placed in a strong-outside shipping container (usually a sturdy picnic cooler with hard plastic inside). The following outlines the packaging procedures that will be followed for low concentration samples.

1. When ice is used, secure the drain plug of the cooler with fiberglass tape to prevent melting ice from leaking out of the cooler.
2. Line the bottom of the cooler with bubble wrap to prevent breakage during shipment.
3. Check screw caps for tightness and, if not full, mark the sample volume level of liquid samples on the outside of their sample bottles with indelible ink.
4. Secure bottle/container tops with strapping tape and custody seal all container tops.
5. Affix sample labels onto the containers with clear tape.
6. Wrap all glass sample bottles in bubble wrap to prevent breakage.
7. Seal all sample containers in heavy duty plastic bags. Write the sample numbers on the outside of the plastic bags with indelible ink.

All samples will be placed in coolers with the appropriate traffic report and chain-of-custody forms. All forms will be enclosed in a large plastic bag and affixed to the underside of the cooler lid. Empty space in the cooler will be filled with bubble wrap or styrofoam peanuts to prevent movement and breakage during shipment. Vermiculite will also be placed in the cooler to absorb spills if they occur. Ice used to cool samples will be double sealed in two zip lock plastic bags and placed on top and around the samples to chill them to the correct temperature. Each ice chest will be securely taped shut with nylon strapping tape, and custody seals will be affixed to the front, right and back of each cooler.

The Region IX Regional Sample Control Center (RSCC) will be notified daily (phone 415-882-3069) of the sample shipment schedule (Friday shipments must be reported no later than noon) and will be provided with the following information:

- Sampling contractor's name
- The name and location of the site
- Case number or SAS number
- Sample identification number
- Total number(s) by concentration and matrix of samples shipped to each laboratory
- Carrier, air bill number(s), method of shipment (priority next day)
- Sample date and time it was sampled

- Shipment date and when it should be received by lab
- Irregularities or anticipated problems associated with the samples
- Whether additional samples will be shipped or if this is the last shipment.

8.0 QUALITY CONTROL

8.1 Equipment Rinsate Samples

Equipment rinsate samples will be prepared to evaluate field sampling, decontamination and sample shipment procedures. The equipment rinsate samples will be prepared by pouring laboratory-grade, certified organic-free water (for organics) or deionized water (for inorganics) over the decontaminated sampling equipment. The equipment rinsate samples that are collected will be analyzed for RAS volatile organic compounds, RAS Pesticides/PCBs and RAS metals as appropriate.

A minimum of one equipment rinsate sample will be prepared each day that sampling equipment is decontaminated in the field. Equipment rinsate samples will be obtained by passing water through or over the decontaminated sampling device.

The equipment rinsate samples will be preserved, packaged, and sealed as appropriate for water samples. A separate CLP sample number and station number will be assigned to each rinsate sample, and it will be submitted blind to the laboratory.

8.2 Background (Reference) Samples

The background (reference) samples will be collected in an area which is unlikely to have received contaminants. Background samples are intended to be representative of conditions that exist in the site vicinity. Background samples will be taken in similar geological strata to the other sample locations and at similar depth. A minimum of 10 percent of the total number of samples collected will be background samples.

Background soil samples will be obtained from sample locations BS-1.

Background samples will be preserved, packaged, and sealed in the same manner as other soil or water samples. A separate CLP sample number and station number will be assigned to each background sample, and it will be submitted blind to the laboratory.

8.3 Duplicate Samples

Duplicate samples are collected simultaneously with a standard sample from the same source under identical conditions into separate sample containers. A duplicate sample is treated independently of its counterpart in order to assess laboratory performance through comparison of the results. At least 10 percent of samples collected per event will be duplicates. At least one duplicate will be collected for each sample matrix. Every analytical group for which a standard sample is analyzed will also be tested for in one or more duplicate samples. Duplicate samples should be collected from areas of known or suspected contamination.

A duplicate subsurface soil sample will be collected at sample locations SL-5.1 and SL-7.1. A duplicate groundwater sample will be collected at sample location LF-3.

As described in Sections 5.1 and 5.2 soil samples to be analyzed for RAS metals will be homogenized with a trowel in a sample-dedicated 1-gallon disposable pail. Homogenized material from the bucket will then be transferred to the appropriate wide-mouth glass jars for both the regular and duplicate samples. All jars designated for a particular analysis will be filled sequentially before jars designated for another analysis are filled. Soil samples to be analyzed for RAS volatile organic compounds will not be homogenized. When collecting duplicate soil samples to be analyzed for RAS volatile organic compounds, equivalent portions of sample collected from the same boring will be transferred to both regular and duplicate sample containers. When collecting duplicate groundwater samples, bottles with the two different sample identification numbers will alternate in the filling sequence [i.e. RAS metals designation LF-3, RAS metals designation MW-6 (duplicate)].

Duplicate samples will be preserved, packaged, and sealed in the same manner as other samples of the same matrix. A separate CLP sample number and station number will be assigned to each duplicate, and it will be submitted blind to the laboratory.

8.4 Laboratory Quality Control Samples

Laboratory quality control (QC) samples are analyzed by the EPA contract as part of the CLP standard laboratory quality control protocols. The laboratory monitors the precision and accuracy of the results of their analytical procedures through analysis of QC samples. In part, laboratory QC samples consist of matrix spike samples and matrix spike duplicate samples. The term "matrix" refers to use of the actual media collected in the field (i.e., soil and water samples). Laboratory QC samples are an aliquot (subset) of the field sample. They are not a separate sample but a special designation of an existing sample. A routinely collected soil sample (a full 8-oz. sample jar or two 120-ml sample vials) contains sufficient volume for both routine sample analysis and additional laboratory QC analyses. However, for water samples, double volumes of samples are supplied to the laboratory for its use. Two sets of water sample containers are filled and all containers are labeled with a single sample number. The laboratory is alerted as to which sample is to be used for QC analysis by notation on the sample container label and the traffic report and chain-of-custody record. Laboratory QC samples should be collected from areas of known or suspected contamination.

At a minimum, one laboratory QC sample is required per week or one per 20 samples (including blanks and duplicates), whichever is greater. If the sample event lasts longer than 1 week or involves collection of more than 20 samples per matrix, additional QC samples will be designated. For this sampling event, samples collected at the following locations will be the designated laboratory QC samples:

- For soil, sample location SL-7.2
- For groundwater, sample location LF-2

8.4 Split Samples

The RWQCB has requested split soil and groundwater samples to analyze for total petroleum hydrocarbons and oil and grease at its laboratory. Split samples may be requested by the EPA (for audit purposes), another regulatory agency, or other concerned party. The procedure for providing the split samples are as follows:

1. The number of samples collected at a single sampling point will be multiplied by the number of required split samples.
2. Samples will be taken as close as possible to each other at the same location for soil samples.
3. The sample(s) will be placed in separate bottles or liners and handled as described above for routine samples.
4. The sampling point of the split samples will be documented in the field logbook.
5. Split samples will be placed in bottles or liners and all remaining handling (including labeling, packing, shipping, and analysis) will be the responsibility of the requestor.
6. The field team will receive a receipt from the party requesting the split sample.

8.5 Field Variances

As conditions in the field may vary, it may become necessary to implement minor modifications to sampling as presented in this plan. When appropriate, QAMS will be notified of the modifications and a verbal approval will be obtained before implementing the modifications. Modifications to the approved plan will be documented in the IA Report.

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HEALTH AND SAFETY PLAN

for

SAMPLING AND ANAYLSIS

at the

SOBEX SITE

FREMONT, CALIFORNIA

EPA CONTRACT NUMBER 68-W9-0060

EPA WORK ASSIGNMENT 60-15-9J00

August 1993

Submitted to:

U.S. Environmental Protection Agency
Hazardous Waste Management Division
Field Operations Branch
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1.0 INTRODUCTION

1.1 Overview

The California Occupational Safety and Health Administration (Cal/OSHA) promulgated standards, Title 8, California Code of Regulations (8 CCR), Section 5192, "Hazardous Waste Operations and Emergency Response," to protect the health and safety of hazardous waste workers. The OSHA standards, along with the EPA requirements of RCRA, CERCLA/SARA, and the Bechtel Health and Safety Program form the basis for this site-specific health and safety plan.

Bechtel will comply with rules and regulations applicable to this work and with appropriate guidelines set forth by government and industry consensus groups. In addition, Bechtel will comply with regulations and guidelines and existing health requirements of the USEPA ARCSWEST Program. The ARCSWEST Project Health and Safety Manager (PHSM) or their designee will work with field personnel and the EPA's health and safety representative to provide a safe and healthy work environment for the field sampling team and visitors.

1.2 Applicability

Although this plan is designed to be specific with regard to the planned work activities and potential encounters with identified contaminants, the nature and type of this field work requires a certain amount of flexibility to be incorporated. Unforeseen situations may arise or conditions may change during the course of the work that require deviation and changes in the plan. Changes in the plan will be initiated by the Site Health and Safety Officer (SHSO) and approved by the PHSM.

Subcontractors shall be responsible for developing their own health and safety plans for onsite implementation. The subcontractor's Health and Safety Plan may be modeled after the Bechtel Health and Safety Plan. The subcontractor's Health and Safety Plan must be reviewed and approved by the PHSM or their designee prior to the initiation of any on-site work activity.

Unforeseen health and safety related issues, hazards or conditions identified on site shall be reported verbally to the PHSM and the Project Manager (PM) by the SHSO promptly. A written report shall follow as soon as possible.

1.3 Field Activities

This Health and Safety Plan (HSP) covers Bechtel's employee field activities during the performance of the Integrated Assessment (IA) field investigation at the Sobex site located in Fremont, California. The field investigation will include the following field activities:

- Collection of surface soil samples using hand trowels.
- Collection of subsurface soil samples using a hand auger to the maximum boring depth of 12 feet.
- Purging and the collection of groundwater well samples using teflon bailers

Section 4.0 of the Sobex IA Sampling and Analysis Plan provides the field sampling methods and procedures.

1.4 Organization and Responsibilities

The health and safety management of the sampling activities will be in accordance with ARCSWEST Program Procedure 8.01.

The PM or designee (Site Leader) is responsible for work activities at the site, and is responsible for Bechtel health and safety compliance. The PM will also ensure that adequate budget, staff, equipment, and procedures are provided to implement onsite work. The PM will ensure that the PHSM or designee reviews and approves sampling plans, budgets, and project instructions.

The PHSM leads all ARCSWEST health and safety program efforts, and is responsible for ongoing management of all ARCSWEST health and safety program activities.

The Site Health and Safety Officer (SHSO) reports to the ARCSWEST PHSM on site health and safety matters. While on site, the SHSO will coordinate all matters related to health and safety. The SHSO has the authority to:

- Require specific health and safety precautions prior to site entry by Bechtel or Bechtel-directed personnel.
- Require any Bechtel personnel to obtain immediate medical attention if warranted.
- Order the immediate evacuation of Bechtel personnel from any area.
- Implement and enforce this Health and Safety Plan.
- Stop Bechtel work when the safety, health, and well-being of Bechtel personnel or the environment may be adversely affected.

1.5 General Safety Rules and Requirements

1.5.1 Accident/Incident Reporting

All accidents/incidents (near misses, property damage, and personal injury/illness), however insignificant, must be reported, following the stabilization of any resulting emergency conditions, to the SHSO.

1.5.2 Alcohol, Drugs, and Firearms

Alcoholic beverages, unauthorized narcotics, weapons (loaded or unloaded) will not be permitted with the boundaries of the site. Individuals under the influence of alcohol or drugs shall not be allowed on site. Persons under medical treatment may be allowed to work on site with a written approval from their physician. A copy of the physician's written approval will be filed with the PHSM prior to starting work.

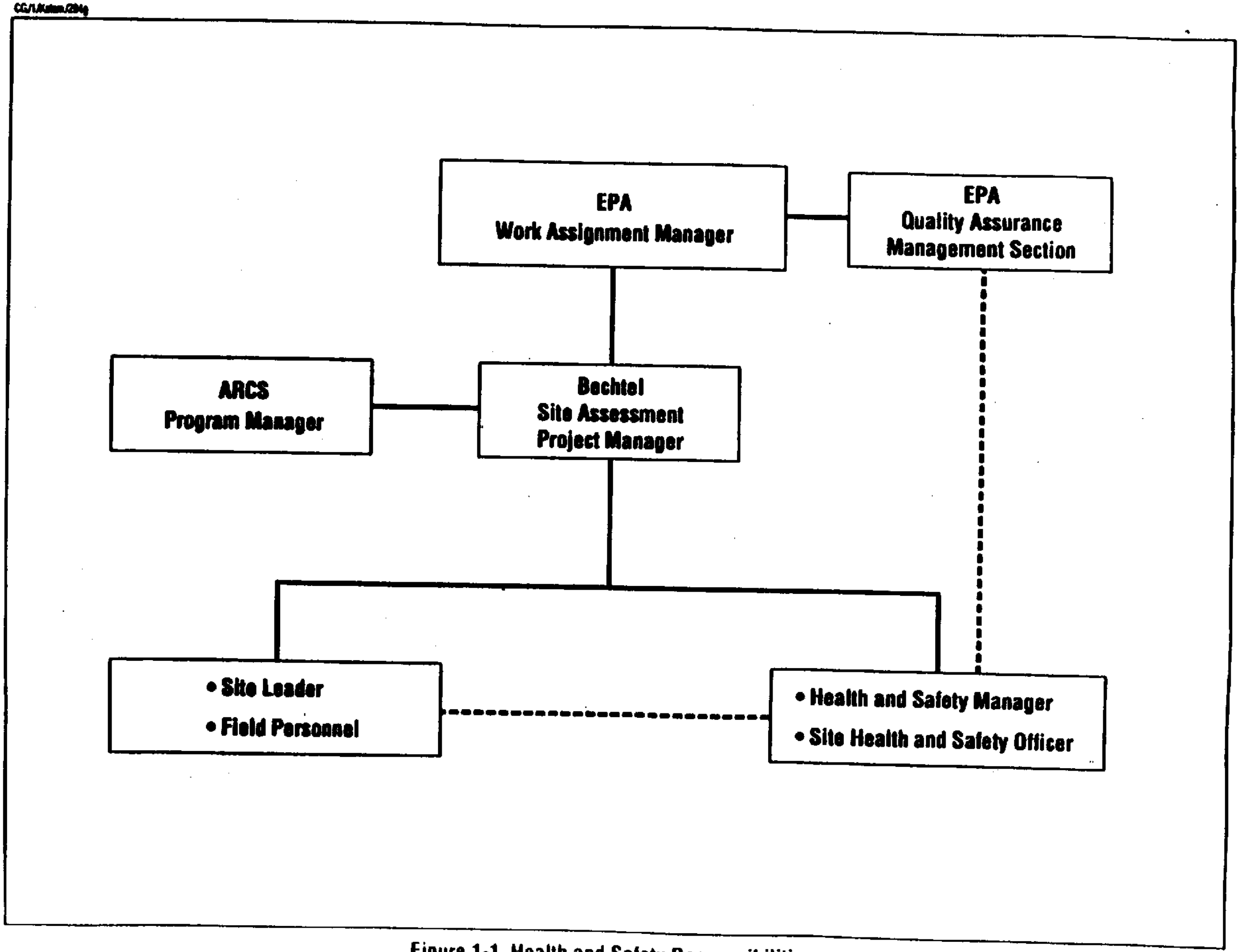


Figure 1-1 Health and Safety Responsibilities

1.5.3 Buddy System

At a minimum, the buddy system will be adhered to for all work activities performed within the Exclusion Zone (EZ) or the Contamination Reduction Zone (CRZ). There will always be no less than two people attending to or present during any given field activity. The EZ and CRZ are discussed in Section 4.0.

1.5.4 Vehicle Safety

The following procedures will be adhered to by all field personnel:

- All drivers of vehicles on site will observe a maximum speed limit of 9 mph.
- All vehicles must be driven and parked in authorized areas only.
- Vehicles and equipment used on this project shall be legally registered and/or have valid operating permits.
- All personnel shall wear seat belts while driving or riding as passengers on site.

1.5.5 Smoking, Eating, Drinking or Chewing

Personnel shall not engage in smoking, eating, drinking, or chewing gum/tobacco except in areas designated by the SHSO. Designated smoking areas will be identified during site mobilization. There will be NO smoking, eating, drinking or chewing in vehicles or on equipment in the designated work areas.

1.5.6 Horseplay

Horseplay will not be tolerated on this project. Personnel will either be warned or removed from the site, depending on the circumstances.

1.5.7. Unsafe Conditions

Any person observing an act by another individual or a condition which may jeopardize the health and/or safety of other workers, the environment, or the community on this project will immediately warn others present, then notify the SHSO.

1.5.8 Equipment and Tools

Personnel shall maintain tools and equipment in safe working order. Personnel who are unfamiliar with the proper use and safety features of a tool or piece of equipment shall be given thorough instruction before use and close supervision thereafter.

1.5.9 Housekeeping

All project grounds, work areas, equipment and vehicles shall be maintained in a clean and safe condition. Areas and surfaces shall be kept free of debris, unnecessary tools and material, and any other items capable of causing slip, trips or falls.

2.0 SITE BACKGROUND AND GENERAL DISCUSSION

2.1 Site Location

The Sobex site is located at 6000 Stevenson Boulevard in Fremont, California. The site resides on 42 acres of land, and is bounded on the west by Stevenson Boulevard, on the north by Albrae Avenue, on the east by a railroad track and an unnamed stream, and on the south by Stevenson Business Park. Figure 2-1 provides a map of the location of the Sobex site.

2.2 Site Description

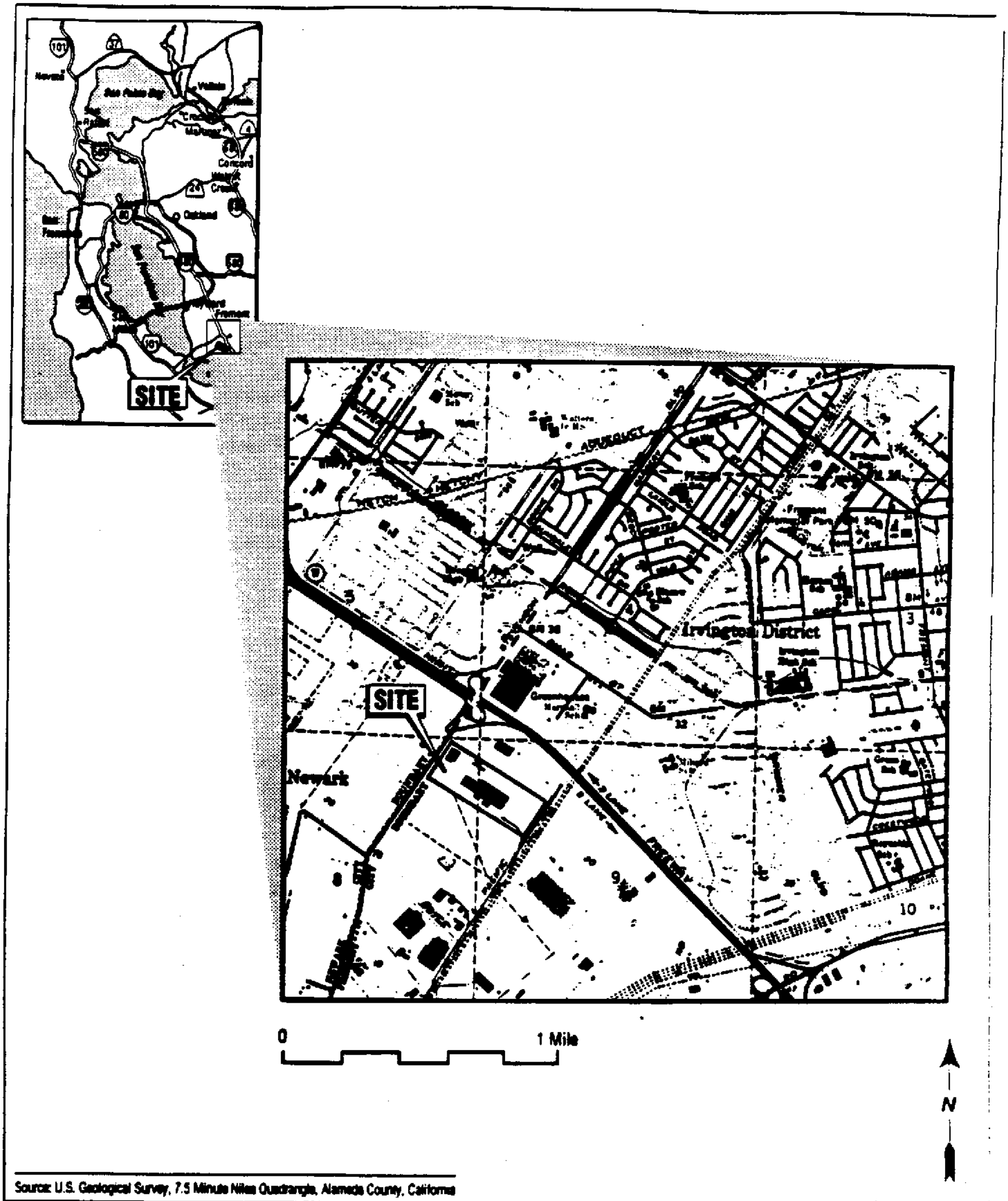
The property, which is owned by the 6000 S Corporation, houses a retail/commercial complex consisting of seven buildings with parking facilities. Approximately 25 percent of the 42 acres is undeveloped and unpaved. The undeveloped area of the site contains piles of contaminated soil, construction debris, and automobiles stored for auction. Previous analysis of soil and groundwater samples collected from the site indicate the presence of hazardous substances including PCBs, metals, volatile organic compounds, and total petroleum hydrocarbons. Figure 2-2 provides a map of the layout of the Sobex site.

2.2 Site Operational History

The Sobex property has been developed since 1963. The following is a brief history of the operations that may have generated or used hazardous substances.

From 1978 through 1979, Buildings 1 and 2, were leased to Polymir Industries (Polymir), which manufactured polyurethane foam insulation board and various other foam products. A 1979 aerial photograph of the site, provided in the Sobex IA Work Plan, indicates the presence of drums, tanks, and chemical processing equipment at several locations near the southern portion of the Building 1 loading dock, the end of the railroad tracks, and the alcove. These areas are paved with concrete and appear to be stained. Polymir entered into voluntary bankruptcy in September 1978.

From 1978 through 1983, the Golden Gate Auto Auction leased Building 1a and the area of the southeast corner of the site for an auto auction yard, where 2,000 to 4,000 cars were parked prior to sale. During this time, Golden Gate Auto Auction installed an underground gasoline storage tank, which was subsequently removed in 1985. The aerial photograph indicates visible stains southeast of Building 3, which may have been used for steam cleaning cars.

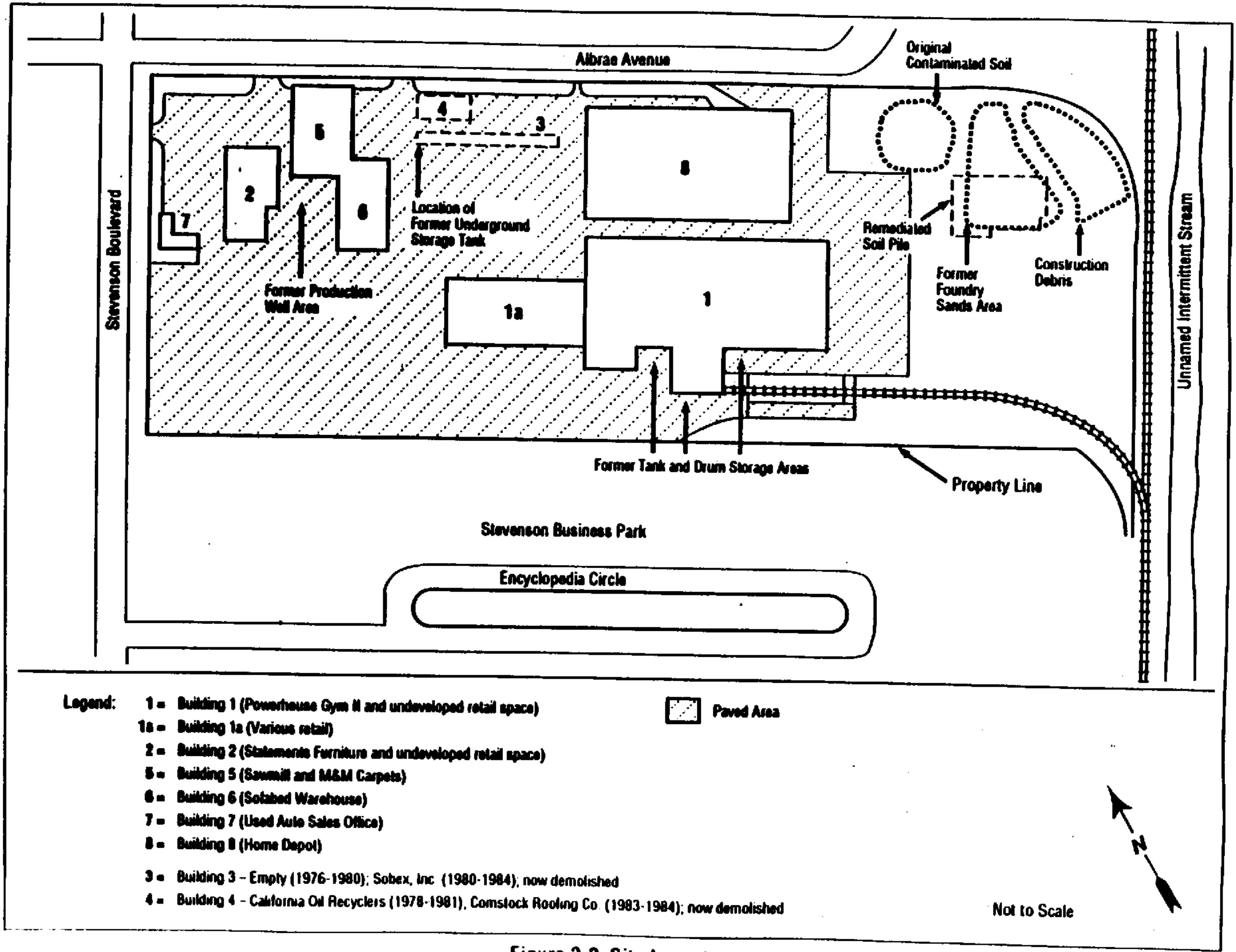


Source: U.S. Geological Survey, 7.5 Minute Niles Quadrangle, Alameda County, California

CGJ/Sa/2/4

Figure 2-1 Site Location

CG/lb/So/294



Legend:

1 = Building 1 (Powerhouse Gym II and undeveloped retail space)
1a = Building 1a (Various retail)
2 = Building 2 (Statements Furniture and undeveloped retail space)
5 = Building 5 (Sawmill and M&M Carpets)
6 = Building 6 (Sofabed Warehouse)
7 = Building 7 (Used Auto Sales Office)
8 = Building 8 (Home Depot)

3 = Building 3 – Empty (1976-1980); Sobex, Inc. (1980-1984); now demolished
4 = Building 4 – California Oil Recyclers (1978-1981), Comstock Roofing Co. (1983-1984); now demolished

▨ Paved Area

Figure 2-2 Site Layout

From 1978 through 1981 California Oil Recyclers leased Building 4. The building has since been demolished. California Oil Recyclers reclaimed oil from gasoline stations and stored it in above-ground, 12,000-gallon storage tanks. The aerial photograph indicates an area of heavily stained soil east of Building 4, and above-ground storage tanks and drum storage areas adjacent to Building 4.

From 1980 to 1984 Sobex Inc., a chemical consulting firm leased Building 3. The business was dissolved, operations were ceased, and the building has since been demolished. Sobex was a polyurethane foam manufacturing company, similar to Polymir. The aerial photograph indicates drum storage areas on the north side of Building 3.

Potentially contaminated construction debris and soil from the demolished buildings were moved to the undeveloped area on the east side of the site. Some of the potentially contaminated soils may have also originated during the excavation and construction of the Building 8 loading dock. In addition, foundry sand was brought to the site in 1985-1986 by American Brass & Iron Foundry (ABI) of Oakland, California, to be used as fill to level areas of future development. The foundry sand was found to be contaminated with priority pollutant metals and was removed from the site.

Section 2.0 of the Sobex IA Work Plan provides the site operational history in detail.

3.0 HAZARD ANALYSIS

Information developed based on the previous site investigation and IA Work Plan and Sampling and Analysis Plan prepared for the site has identified three classes of potential hazards: physical, chemical, and biological. These three classes are discussed below.

3.1 Physical Hazards

The potential physical hazards that are associated with this project include those of outdoor construction such as: exposure to high noise levels; operation and handling of heavy equipment; rotating/moving equipment; slipping, tripping, and falling; temperature extremes that cause sunburn and heat stress; fire and explosion hazards; and traffic inside and outside the site. Many of these items are low probability events with a high severity for injury. Both low probability events and those to which workers are more or less continuously exposed can be avoided with the use of common sense and proper vigilance to the task being performed, and to the conditions of the workplace.

3.1.1 Noise

The use of heavy equipment, drilling equipment, and other energized equipment as well as hand tools on this project poses a high potential for personnel to be exposed to noise levels above the time weighted average (TWA) of 85 dBA for an 8 hour work period. For this reason, measures will be taken by the SHSO to establish controls, administer the use of hearing protection, and monitor noise exposure levels in work areas of concern. Personnel who are operating loud equipment or who must work next to this equipment will wear hearing protection such as ear plugs or muffs to reduce their exposure.

3.1.2 Heavy Equipment

Heavy equipment shall be operated in accordance with Cal/OSHA Title 8 General Industry and Construction Safety Orders:

- The operation of heavy equipment shall be limited to personnel specifically trained in its operation.
- All safety equipment required by Cal/OSHA and OSHA standards shall be present on the machinery and maintained in good working order (backup, alarms, etc.).
- The operator shall use the safety device provided with the equipment, including seat belts.
- All personnel not directly required in an area where equipment is in use shall remain a safe distance from the equipment.
- Personnel directly involved in an activity shall avoid moving into the path of operating equipment. Areas blinded from the operator's vision shall be avoided.
- Additional riders shall not be allowed on equipment unless specifically designed for that use.

Heavy equipment brought onto the work site shall have a safety inspection and maintenance program in place to insure that the equipment is maintained and in safe operating condition. A written statement that the equipment has undergone mechanical and safety inspection by a qualified mechanic prior to arrival at the work site shall be provided to the SHSO.

3.1.3 Rotating/Moving Equipment

The rotating shafts associated with the drilling rig create pinch points which can cause serious injury. In all cases, rotating shafts or gears should be covered to prevent accidental contact. In some cases, such as on a drill rig where rotating parts cannot be adequately guarded, only experienced operators will be allowed to work around these rotating parts. Personnel who must work around rotating equipment should not wear loose fitting clothing that could get caught. Protective clothing such as Tyvek coveralls and gloves must be taped at the wrists and ankles.

3.1.4 Slips/Trips/Falls

The work area may contain various types of equipment or man-made and natural hazards that can pose slipping, tripping, and falling hazards. Some of these include wet surfaces, drill rods, hoses, boring holes, sampling equipment, and sample storage coolers. To minimize risks, housekeeping of the work area will be necessary and shall be conducted every day.

3.1.5 Heat Stress

Performing physical activities outdoors may present a risk of developing symptoms of heat-related illness for those who are susceptible. The sampling activities scheduled for the site may be performed during periods of warm weather. This increases the risk of heat stress and heat-related illness. Heat-related problems are discussed below.

Heat Rash. Heat rash is caused by continuous exposure to heat and humid air and aggravated by chafing clothes. The condition decreases the body's ability to tolerate heat and may increase penetration of chemicals through the skin in a hazardous environment.

- Symptoms: Mild red rash, especially in areas of the body that come in contact with protective clothing/gear.
- Treatment: Decrease amount of time in protective gear, and provide powder to help absorb moisture and decrease chafing.

Heat Cramps. Heat cramps are caused by perspiration that is not balanced by adequate fluid intake. Heat cramps are often the first sign of a condition that may lead to heat stoke.

- Symptoms: Acute painful spasms of voluntary muscles; (e.g., abdomen and extremities).
- Treatment: Remove victim to a cool area and loosen clothing. Have patient drink 1-2 cups of water immediately, and every 20 minutes thereafter, until symptoms subside. Total water consumption should be 1-2 gallons per day. Consult a physician.

Heat Exhaustion. Heat exhaustion is a state of very definite weakness or exhaustion caused by the loss of fluids from the body. This condition is much less dangerous than heat stroke, but it must still be treated.

- Symptoms: Pale, clammy, moist skin, profuse perspiration, and extreme weakness. Body temperature is normal, pulse is weak and rapid and breathing is shallow. The person may have a headache, vomit, and be dizzy.
- Treatment: Remove the person to a cool, air-conditioned place, loosen clothing, place in a head-low position, and provide bed rest. Consult a physician, especially in severe cases. The normal thirst mechanism is not sensitive enough to ensure body fluid replacement. Have the patient drink 1-2 cups of water immediately, and every 20 minutes thereafter, until symptoms subside. Total water consumption should be 1-2 gallons per day.

Heat Stroke. Heat stroke is an acute and dangerous reaction to heat stress caused by a failure of heat regulating mechanisms of the body, (i.e., the individual's temperature control system that causes sweating and perspiration stops working correctly). The body temperature rises so high that brain damage and death will result if the person is not cooled quickly.

- Symptoms: Red, hot, dry skin, although person may have been perspiring earlier; nausea; dizziness; confusion; extremely high body temperature; rapid breathing and pulse; unconsciousness or coma.
- Treatment: Cool the victim quickly. If the body temperature is not brought down fast, permanent brain damage or death will result. Soak the victim in cool but not cold water, sponge the body with cool water, or pour water on the body to reduce the body temperature to a safe level (102°F). Observe the victim and obtain medical help. Do not give the victim coffee, tea, or alcoholic beverages.

3.1.6 Prevention of Heat Related Illness

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat stroke or heat exhaustion, the person may be predisposed to additional heat injuries. To avoid heat stress, a combination of the following preventive measures will be taken as determined necessary by the SHSO:

- Adjust work schedules:

  - Modify work/rest schedules according to monitoring requirements.

  - Mandate work slowdowns as needed.

- Rotate personnel:

  - Alternate job functions to minimize stress or overexertion at one task.

  - Assign additional personnel to work teams.

  - Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.

- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.

- Maintain workers' body fluids at normal levels.

This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, (i.e., 8 fluid ounces (0.23 liters) of water must be ingested for approximately every 8 ounces (0.23 kg) of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. A combination of the following strategies will be used to ensure adequate fluid replenishment:

- Maintain water temperature at 50° to 60°F (10° to 15.6°C).

- Provide small disposable cups that hold about 4 ounces (0.1 liter).

- Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or fluids/electrolyte replacement drinks) before beginning work.

- Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.

- Train workers to recognize and treat heat stress. As part of training, identify the signs and symptoms of heat stress.

3.1.7 Fire Prevention and Protection

General fire prevention can be accomplished by good site preparation and housekeeping. Clearing of all surface debris and combustible material (brush, pallets, trash) from the work areas and off-site disposal or staging of these materials can reduce fire hazards as well as enhance the controllability of a fire, should one occur.

Use and storage of flammable or combustible materials, fuel, or other substances shall be in accordance with Cal/OSHA handling and storage requirements and special procedures set forth by the manufacturer.

The best fire protection (suppression) is the availability and use of portable fire extinguishers. The following extinguishers will be available where applicable:

- All construction /heavy equipment, shall be equipped with a 10-lb ABC fire extinguisher.
- All field vehicles shall be equipped with a 5-lb ABC fire extinguisher.
- All "hot work", such as welding or cutting, shall be done with a 10-lb ABC fire extinguisher in the immediate work area.
- Temporary offices shall be equipped with at least a 10-lb ABC fire extinguisher.
- A 10-lb ABC fire extinguisher shall be located within 50 feet of the storage/staging areas. These areas shall be kept free of weeds and debris.

Personnel shall immediately report all fires regardless of size or damages incurred to the SHSO and Site Leader. Personnel shall not attempt to extinguish fires which appear to be out of control.

3.1.8 Traffic

Work activities involving traffic and street disruption present a safety hazard to the project field personnel, other people working in the area, as well as the general public. Should work restrict or interfere with general access along the site traffic control measures (i.e. traffic control, flaggers, barricades, warning signs, etc.) meeting the requirements of Cal/OHSA Title 8, and any other applicable local, state, and federal requirements will be implemented.

3.2 Chemical Hazards

Previous field sampling activities have identified volatile organics, TPH, PCBs, and metals in the groundwater and in the soil at a depth of 1 to 11 feet below ground surface. A detailed discussion of sample locations and analytical results is provided in Section 4.0 of the Sobex IA Work Plan. A list of potential contaminants, their Permissible Exposure Limits (PEL), routes of exposure, and maximum concentrations detected in soils is provided in Table 3-1.

The 0.1 normal nitric acid and hexane used for sample equipment decontamination creates a potential for exposure to these chemicals. Respiratory protection, Tyvek coveralls, and gloves will be worn to eliminate exposure via these pathways.

TABLE 3-1
Potential Contaminant Chemical Hazard Information

Chemical	OSHA PEL(1)	Principal Exposure Pathway (2)	Maximum Groundwater Concentration Detected (µg/l)	Maximum Soil Concentration Detected (mg/l)
Acetone	750 ppm	Inhalation	ND	0.2 mg/kg
Benzene	0.1 ppm	Inhalation Skin Absorption Skin/Eye Irritant	ND	0.0054
2-Butanone (MEK)	200 ppm	Inhalation Eye Irritant	ND	0.027
1,1-Dichlorethene	100 ppm (3)	Inhalation Skin/Eye Irritant	ND	0.051
Ethylbenzene	100 ppm	Inhalation Skin Absorption	ND	170
Kerosene	None	None	4,900	15,000
Methylene Chloride	100 ppm	Inhalation Skin/Eye Irritant	ND	0.05
4-Methyl-2-pentanone	None	None	ND	0.026
PCB's	0.5 mg/m^3	None	19	2.8

(1) Referenced from Title 8, California Code of Regulations, Section 5155, Permissible Exposure Limits (PEL) for Chemical Contaminants, 1993.
(2) Referenced from Dangerous Properties of Industrial Materials, 7th Edition, Vol. I and II, N. Irving Sax and Richard J. Lewis, Sr., 1989.
(3) Referenced from NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, 1990.
ND - Not Detected

TABLE 3-1 (continued)
Potential Contaminant Chemical Hazard Information

Chemical	OSHA PEL(1)	Principal Exposure Pathway (2)	Maximum Groundwater Concentration Detected (µg/l)	Maximum Soil Concentration Detected (mg/l)
1,1,1-Trichloroethane	10 ppm (3)	Inhalation Skin Absorption	9.3	0.34
Tetrachloroethene	25 ppm (3)	Inhalation Skin/Eye Irritant	ND	0.01
Toluene	100 ppm	Inhalation Skin/Eye Irritant	25	260
TPH Diesel	None	None	330,000	7,900
TPH Gasoline	None	None	9,600	7,600
Trichlorofluoromethane (Freon 11)	1000 ppm	Inhalation	14	ND
Xylene (Total)	100 ppm	Inhalation Skin Absorption Skin/Eye Irritant	2,800	810

(1) Referenced from Title 8, California Code of Regulations, Section 5155, Permissible Exposure Limits (PEL) for Chemical Contaminants, 1993.

(2) Referenced from Dangerous Properties of Industrial Materials, 7th Edition, Vol. I and II, N. Irving Sax and Richard J. Lewis, Sr., 1989.

(3) Referenced from NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, 1990.

ND - Not Detected

TABLE 3-1 (continued)
Potential Contaminant Chemical Hazard Information

Chemical	**OSHA PEL(1)**	**Principal Exposure Pathway (2)**	**Maximum Groundwater Concentration Detected (µg/l)**	**Maximum Soil Concentration Detected (mg/l)**
Arsenic	0.01 mg/m^3	Inhalation Skin Absorption Skin/Eye Irritant	ND	16
Cadmium	0.05 mg/m^3	Inhalation	ND	12
Chromium	0.5 mg/m^3	Inhalation	60	82
Lead	0.05 mg/m^3	Inhalation	830	2,500
Zinc (respirable/nuisance dust)	5.0 mg/m^3	Inhalation	110,000	1,400

(1) Referenced from Title 8, California Code of Regulations, Section 5155, Permissible Exposure Limits (PEL) for Chemical Contaminants, 1993.
(2) Referenced from Dangerous Properties of Industrial Materials, 7th Edition, Vol. I and II, N. Irving Sax and Richard J. Lewis, Sr., 1989.
(3) Referenced from NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, 1990.
ND - Not Detected

3.3 Biological Hazards

All personnel working on this site may be subject to the biological hazards associated with the ecological environment of the project site. Initial site-specific health and safety training will discuss the following hazards.

3.3.1 Rattlesnakes

The most prevalent hazard potential is an unexpected encounter with the Western Diamondback Rattlesnake (Crotalus adamanteus). This animal, though characteristically dormant during winter months in colder climates, may be found active throughout the seasonal variance on this site. Its roaming activity is primarily nocturnal, but the trend is to seek heat at night when temperatures are lower, and seek cooler shady refuge during the hot daylight periods. Care must be taken when turning over objects providing potential refuge or when reaching or stepping in locations where full visual inspection is not possible. In general, this species is non-aggressive and will retreat from a predator (including humans) rather than attack. This species of pit viper when striking and making contact with its victim usually injects venom, through two sharp tissue protrusions or "fangs" extending from the roof of its mouth. The trait which confirms a rattlesnake bite from those of numerous non-poisonous snakes in the region is a characteristic pair of puncture marks as opposed to a general mouth-shaped bite. The venom, if injected, intermixes in the circulatory system causing coagulation and destruction of the blood-related proteins and may lead to death if untreated. The victim will typically experience intense burning and pain sensations radiating away from the bite locations. First aid should be administered immediately and should include removing the victim from danger, applying a cold pack to the bitten area, sending for medical help or transporting the victim to a medical facility, and keeping the individual calm and immobile.

3.3.2 Bees, Wasps, Yellow Jackets, Black Widow Spiders, Scorpions, and Brown Recluse Spiders

These insects present a most significant hazard to those individuals sensitized to their "bite" or sting. Prior to initial assignment on this project, personnel with known allergic responses to insect stings will be identified. The SHSO or their designee will confirm that treatment is accessible before commencement of onsite activities.

In all cases, a victim suspected of being stung by a scorpion, or bitten by a black widow or a brown recluse spider, must be immediately transported to the emergency medical facility.

3.3.3 Ticks

Lyme Disease is a spirochete-type bacterial infection that is transmitted to humans and some animals by two species of ticks. The deer tick is probably the more prevalent. The female is approximately 1/4 inch long, and is black and red in color. Spotted fever is also transmitted to humans by ticks. Ticks are normally found in wooded and bushy areas. When walking through tall brush areas, periodically check yourself and your co-workers for the presence of any ticks or other insects that can cause vector-borne diseases and illness.

4.0 SITE WORK ZONES

To reduce the accidental spread of hazardous substances by workers from the contaminated area to the clean area, exclusion zones will be established around each sampling location. The establishment of work zones will help ensure that personnel and clean areas are properly protected from contamination resulting from sampling activities. The work zones when conducting hazardous waste work must be identified to all onsite personnel and visitors as exclusion, contamination reduction, and support zones.

4.1 Exclusion Zone (EZ)

The Exclusion Zone (EZ) is the area where contamination does or could occur. The primary activity performed in the EZ will be sampling. The area around each sampling location or the entire sampling area may be termed the exclusion zone based on the availability of space.

4.2 Contamination Reduction Zone (CRZ)

The Contamination Reduction Zone (CRZ) is the transition area between the contaminated area and the clean area. This zone is designed to reduce the probability that the clean Support Zone (SZ) will become contaminated or affected by other site hazards. The distance between the EZ and the SZ provided by the CRZ, together with decontamination of workers and equipment, limits the physical transfer of hazardous substances into clean areas.

The Support Zone is the location of the administrative and other support functions needed to keep the operations in the EZ and the CRZ running smoothly. Any function that need not or cannot be performed in a hazardous or potentially hazardous area is performed here.

Personnel may wear normal work clothes within this zone. Potentially contaminated clothing, equipment, and samples must remain in the CRZ until decontaminated.

Support Zone personnel are responsible for alerting the proper agency in the event of an emergency. All emergency telephone numbers, change for the telephone (if necessary), evacuation route maps, and vehicle keys should be kept in the SZ.

5.0 DECONTAMINATION PROCEDURES

Decontamination refers to the process, means, and controls applied to prevent hazardous substances from leaving the controlled area where unprotected persons or the environment may be exposed. On this project, decontamination requirements are applied at the hot line boundaries to prevent spread of hazardous materials into uncontrolled or uncontaminated areas.

5.1 Facilities

Appropriately located decontamination (decon) stations will be established at the specific areas. Figure 5-1 provides a schematic description of the decon procedures. Entry to and exit from the EZ will be limited to this point. The decon station will be established adjacent to the EZ. In addition to personal decon facilities for each work area, a base decon facility will be established at the main equipment decon/steam cleaning area which shall be set up prior to commencement of any investigative field activities.

The SHSO shall ensure that all field personnel use appropriate decon procedures and that decon equipment (i.e., detergent, rinse solution, wash tubs, brushes, paper towels, and plastic bags) is available at the station. All personnel will be required to decontaminate their tools and protective equipment prior to leaving the CRZ. After decon procedures are completed, personnel shall thoroughly wash their hands and all exposed skin surfaces before taking a break, eating, smoking, etc.

5.2 Personnel Decontamination

After exiting the EZ, personnel will decon in the following sequence:

1. Deposit equipment used on site for decon as described in the Sobex Sampling and Analysis Plan (tools, sampling devices and containers, monitoring instruments, clipboards, etc.) and deposit on plastic drop cloths. During hot weather, a cool-down station may be set up within this area.
2. Drop leather gloves (if used). Remove hard hat. Scrub outer gloves and rubber boots (or boot covers) with detergent and water. Rinse copiously with uncontaminated water.
3. Remove tape from wrists and ankles.
4. Remove outer booties and gloves. Discard in container. ***Note: Decon booties if reusable.***
5. Remove boots.
6. Remove and discard Tyvek suit, if worn. If contaminated, discard as trash after decontaminating, cutting into three pieces, and place in plastic bags.
7. Remove respirator and decontaminate. Avoid touching face with fingers when removing.
8. Remove hearing protection (if worn).
9. Remove inner gloves. Discard in container.
10. Thoroughly wash hands, neck, and face.
11. Proceed to Support Zone.

Figure 5-1 provides a flow diagram for proper decontamination procedures.

Dispose of all used disposable personal protective equipment in accordance with Section 4.0 of the Sobex Sampling and Analysis Plan.

Note: A portable eye wash station capable of at least 15 minutes continuous dual stream flow shall be available at each location where corrosive chemicals may be present or set up within 50 feet of any field sampling activities. Eating, drinking, smoking, or chewing gum or tobacco are prohibited prior to decontamination.

After each use, respirators will be either washed or wiped clean (as applicable). Cartridges will replaced if breakthrough or resistance to breathing occurs.

5.3 Equipment Decontamination

Splash protective face shields may be worn during all equipment decontamination.

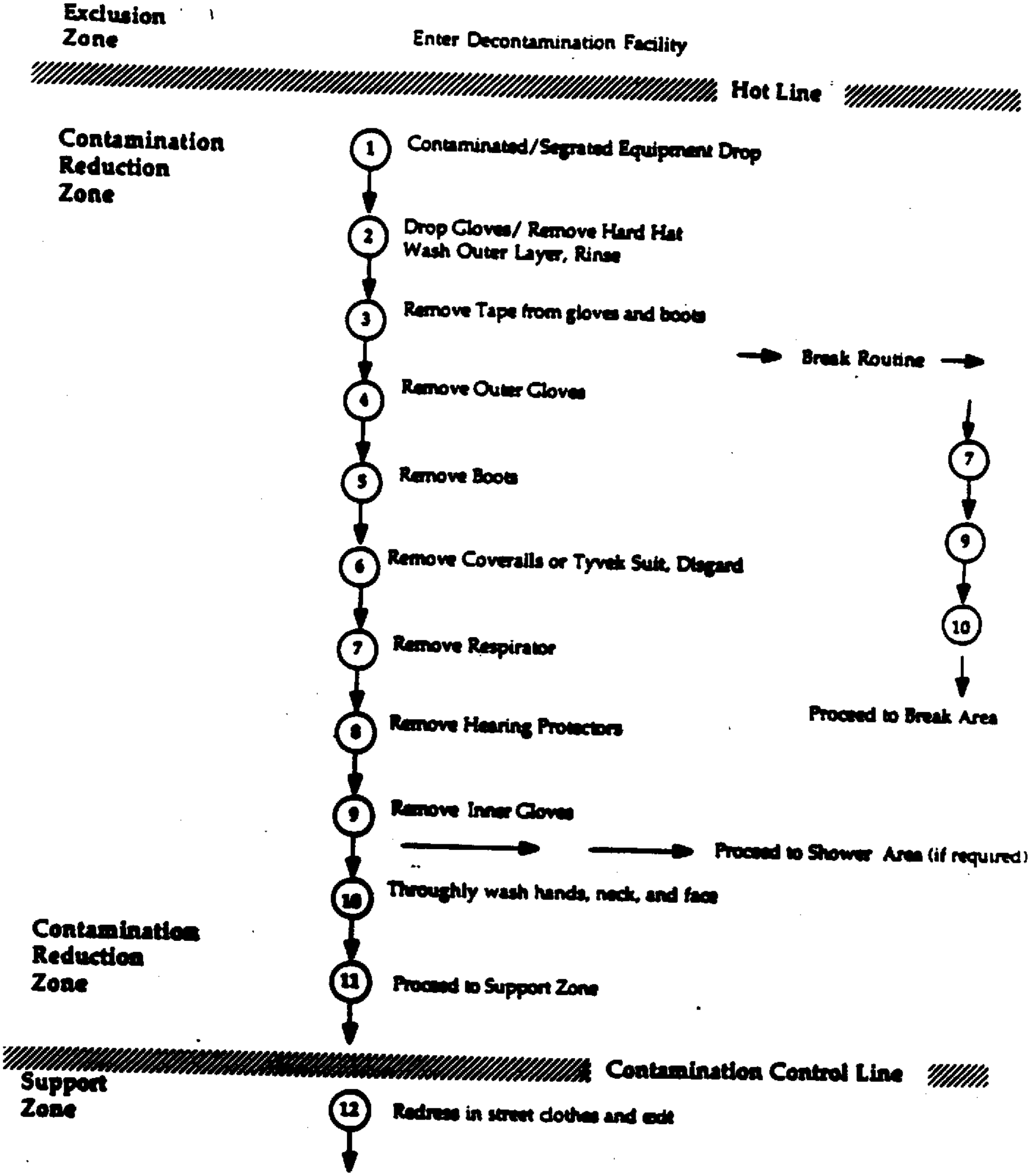
Equipment and vehicles will be decontaminated on a lined and bermed decontamination pad located on the site. At the end of each work day and upon the completion of the work, the Bechtel Field Sampling team shall completely decon sampling equipment before leaving the site.

The SHSO shall visually inspect all decontaminated equipment before it leaves the site.

Decontamination of equipment will be accomplished by one or more of the following methods:

- Physical removal of gross contamination (clods of dirt, chunks of mud)
- High-pressure water
- Hot water with steam
- Approved chemical cleaning agents
- Rinsing with copious amounts of water

Figure 5-1 Decontamination Procedures



All runoff generated during steam-cleaning and other decon methods of heavy equipment shall be contained and stored in DOT approved 55-gallon drums, labeled, and placed in a controlled storage area.

5.1 Disposal of Residual Material

In the process of collecting samples at the Sobex site the Bechtel Field Sampling team will generate potentially contaminated investigation-derived wastes (IDW) from drill cuttings, unused sample materials, decontamination fluids, and used personal protective equipment. The procedures for the proper handling, storage, and disposal of all IDW generated at the site is described in Section 4.0 of the Sobex IA Sampling and Analysis Plan.

6.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment can reduce the possibility of contact with hazardous materials, but it should be used in conjunction with proper site entry protocols and other safety considerations. No single combination of protective apparel and equipment is capable of protecting against all hazards. The use of protective apparel and equipment can create significant worker hazards (e.g., heat stress, physical and psychological stress, impaired vision, mobility, and communications). For any given situation, apparel and equipment will be selected to provide a level of protection commensurate with the degree of hazard (see Table 6-1). Overprotection, as well as underprotection, can be hazardous and must be avoided.

This section is intended to allow the SHSO the flexibility to provide a range of protection based upon actual working conditions and expected contaminants. The SHSO will ensure that appropriate clothing/equipment is available.

Factors included in the selection of the PPE ensembles on this project include, but are not necessarily limited to:

- The job hazard analysis associated with a specific work element (the nature of the chemical or physical agent, concentration, intensity, toxicity and potential for exposure through inhalation, ingestion, skin absorption, direct contact, splash, or impact)
- The results of air monitoring surveys, if any
- Existing site characterization data
- Performance characteristics of selected PPE against known and suspected hazards
- Compatibility with other equipment
- Duration of use
- Special conditions (i.e. fire, and explosion)

The PPE associated with each level of protection at project commencement shall be as follows:

Level D. Level D protection is for use when no respiratory protection and minimal skin protection is required. This level of protection includes the following protective apparel and equipment:

- Hard hat
- Eye protection (e.g., safety glasses or goggles)
- Sturdy work garments with long sleeves
- Work gloves
- Surgical Latex inner gloves
- Sturdy work boots
- Disposable booties

Modified Level D. Modified Level D is for use when hazardous substances are known, however the specific work activities present no potential for significant airborne exposures. This level of protection includes the following protective apparel and equipment:

- Dust respirator
- Hard hat
- Eye protection (e.g., safety glasses, goggles, and/or face shield)
- Tyvek suits
- Nitrile outer gloves
- Surgical Latex inner gloves
- Neoprene boots with steel toe and shank
- Hearing protection (as needed)

Modified Level D protection does not require ports (e.g., wrists, ankles) to be taped unless determined necessary by the SHSO.

Modified Level C. Modified Level C protection is for use when the potential exposure to airborne contaminants is probable when performing specific work activities. This level of protection will include the following:

- Air Purifying Respirator (APR) with MSA or North combination HEPA cartridges for pesticides, organic vapors, acid gases, dusts, mists, and fumes
- Hard hat
- Eye protection (e.g., safety glasses, goggles, and/or face shield)

- Polycoated Tyvek suit
- Nitrile outer gloves
- Surgical Latex inner gloves
- Neoprene boots with steel toe and shank
- Hearing protection (as needed)

Table 6-1
Personal Protective Ensemble for Field Activities at the Sobex Site

Work Location	Job Function	Level	Respiratory	Face	Skin Outer	Skin Inner	Other
All on site locations	Surface soil sampling	Modified D	Dust respirator	Safety glasses	Nitrile gloves; Tyvek coveralls; tape openings	Surgical Latex gloves;	Hard Hat Neoprene Boots
All on site locations	Subsurface Soil sampling	Modified C	APR w/GMA-H Cartridge	Safety glasses	Nitrile gloves; Tyvek coveralls; tape openings	Surgical Latex gloves;	Hard Hat Neoprene Boots
All on site locations	Groundwater bailing and sampling	Modified C	APR w/GMA-H Cartridge	Safety glasses and Splash shield	Nitrile gloves; Polycoated Tyvek coveralls; tape openings	Surgical Latex gloves;	Hard Hat Neoprene Boots Ear plugs/muffs
Background	Subsurface Soil sampling	Modified D	Dust respirator	Safety glasses	Nitrile gloves	Surgical Latex gloves;	Hard Hat Neoprene Boots Ear plugs/muffs

7.0 EXPOSURE MONITORING

Exposure to airborne contaminants from the sampling activities is highly probable. The SHSO or their designee will conduct air monitoring using an HNU photoionization detector (PID) or OVA for organic vapors, and a Mini Ram Dust./Aerosol monitor.

Background levels will be determined prior to onsite activities and during all subsurface work. Breathing zone levels will be measured during all subsurface and groundwater sampling using an HNU or OVA, and a Mini Ram Dust/Aerosol monitor. The data will be used to upgrade or downgrade personal protective equipment levels.

7.1 Perimeter Monitoring

No perimeter monitoring is required.

7.2 Periodic Monitoring

Monitoring will be conducted during the sampling process at each location to document zero exposure and as a safety precaution. If the background concentration levels reach or exceed ambient air concentrations for organic vapors of two (2) to five (5) ppm above background levels continuously for more than two (2) minutes and/or reaches or exceeds the Cal/OSHA PEL for Total Dust of $0.05 mg/m^3$ continuously in the breathing zone for more than two (2) minutes the following must be done:

- Leave the area immediately and don respirator with cartridges, if not wearing one.
- Test for benzene using a draeger pump and benzene tubes.
- If results are positive for benzene, document concentration levels (level B is required)
- If benzene is not detected, continue sampling activities wearing air purifying respirator with cartridges.

7.3 Personal Monitoring

The selective monitoring of high-risk workers, (i.e., those who are closest to the source of contaminant generation) is highly recommended. This approach is based on the rationale that the probability of significant exposure varies directly with distance from the source. If workers closest to the source are not significantly exposed, then all other workers are, presumably, also not significantly exposed and probably do not need to be monitored.

Personal monitoring will be conducted as breathing zone monitoring as specified in Section 7.2 using direct reading instruments such as an OVA or HNU, and a Mini Ram Dust/Aerosol monitor.

7.4 Heat Stress Monitoring

Wearing PPE puts a hazardous waste worker at considerable risk of developing heat stress. This can result in health effects ranging from transient heat fatigue to serious illness or death. Heat stress is caused by a number of interesting factors, including environmental conditions, clothing work load, and the individual characteristics of the worker. Because heat stress is probably one of the most common (and potentially serious) illnesses at field sites, regular monitoring and other preventive precautions are vital.

Refer to Section 3.1.5 and 3.1.6 for the details on the symptoms, treatment, and prevention of heat related illnesses.

For workers wearing semipermeable or impermeable encapsulating ensembles (i.e., Polycoated Tyvek suits), the ACGIH standard cannot be used. For these situations, workers should be monitored when the temperature in the work area is above 70°F (21°C).

When monitoring the worker or when self-monitoring, the procedures listed below will be followed:

- Count the radial pulse during a 30-second period as early as possible in the rest period.
- If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third (1/3) and keep the rest period the same.
- If the heart rate still exceed 110 beats per minute at the beginning of the rest period, reduce the following work cycle by one-third (1/3).

Rest periods are dependent on the worker's ability to perform under stress, the temperature, the level of protection, and the level of activity. Each worker is responsible for self-monitoring as well as looking out for their coworkers when heat stress conditions occur. Table 7-1 can be used to determine monitoring frequency. This table will be used to determine the initial frequency when work/rest scenario, monitoring of pulse and temperature will determine future rest periods.

Table 7-1
Frequency Of Physiological Monitoring for Fit and Acclimated Workers(a)

Adjusted Temperature(b)	Normal Work Ensemble(c)	Impermeable Ensemble
	After Each:	After Each:
90°F (32.2°C) or above	45 minutes of work	15 minutes of work
87.5 - 90°F (30.8 - 32.2°C)	60 minutes of work	30 minutes of work
82.5 - 87.5°F (28.1 - 30.8°C)	90 minutes of work	60 minutes of work
77.5 - 82.5°F (25.3 - 28.1°C)	120 minutes of work	90 minutes of work
72.5 - 77.5°F (22.5 - 25.3°C)	150 minutes of work	120 minutes of work

Notes:

(a) For work levels of 250 kilocalories/hour.

(b) Calculate the adjusted air temperature (T_a adj) by using this equation: T_a adj (°F) = T_a (°F) + (13 x % sunshine/100). Measure air temperature (T_a) with a standard mercury-in-glass thermometer with the bulb shielded from radiant heat. Estimate the percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100% sunshine = no cloud cover and a sharp, distinct shadow; 0% sunshine = no shadow).

(c) A normal work ensemble consists of coveralls or other cotton clothing with long sleeves and pants.

7.4 Monitoring Instruments

It is imperative that personnel using monitoring instruments be thoroughly familiar with their use, limitations, and operating characteristics. All instruments have inherent constraints in their ability to detect and/or quantify the hazards for which they were designed. One or all of the following pieces of equipment will be used:

- HNU PI 101 or Century OVA - for detecting organic vapors
- Draeger pump with detector tubes for benzene
- Sound Level Meter

8.0 RESPIRATORY PROTECTION PROGRAM

Onsite sampling activities will require site personnel to wear respiratory protection equipment.

8.1 Respirator Selection

All respiratory protective equipment used on this project will have current NIOSH/MSHA certification for contaminants or environments for which such respirator use is prescribed in this Health and Safety plan.

Respiratory protection equipment that may be used on the site project include:

- Dust respirator
- Full face and half face piece air purifying respirator with MSA or North combination cartridges good for pesticides, organic vapors, acid gases, dusts, mist and fumes.

8.2 Respirator Fit Testing

All individuals have been fit tested and trained to wear a respirator.

8.3 Special Concerns

Facial hair can prevent or disrupt the seal between the respirator face piece and the user's skin. The respirators will not be worn when any condition prevents a good seal of the face piece to the face. Beards, mustaches, sideburns, and stubble which interferes with the seal will not be permitted. Employees who wear prescription eyewear present a special problem. Spectacle temple bars or straps which pass between the sealing surface of a full face piece respirator and the wearer's face prevent a good seal and will not be worn.

Spectacles with short temple bars that do not interfere with respirator seal and are taped to the employee's face may be used temporarily. Respirator manufacturers offer spectacle inserts which are mounted inside a full face piece respirator.

8.4 General Limitations for Respirator Use

The following criteria will be followed:

- *Oxygen deficient atmospheres.* Atmosphere-supplying respirators will be used in environments immediately dangerous to life or health (atmospheres containing less than 19.5 percent oxygen at sea level).
- *Eye irritation.* When working in contaminated environments or where there is potential for eye irritation, a full-face unit will be used.
- *Nuisance dust.* Any approved dust respirator can be used for nuisance dusts.

9.0 EMERGENCY PLAN

Upon arrival at the site, a staging area and the nearest telephone will be determined. The basis for the selection of the staging area will be its proximity to the sampling locations and telephone for calling emergency services. In an emergency, all personnel (except medical) will evacuate to the staging area. The nearest medical facility is the Washington Hospital of Fremont (see Table 9-1). Site personnel will be given directions to the hospital before commencing sampling activities. Injured personnel should be treated following standard life support and first aid practices and evacuated at the same time as other personnel.

When necessary to warn personnel, a series of short blasts of the vehicles' horn will be adequate.

The Bechtel Field Sampling team will carry first aid kits, decontamination solutions, and water.

When calling for emergency assistance, provide the following information to the response agency:

1. Name of the person making the call
2. Telephone number you are calling from and your location
3. Nature of the emergency and the type of assistance needed
4. Actions already taken
5. Other response agencies notified
6. Name of any persons injured or exposed
7. Chemicals (agents) involved, if known

Wait for the response agency to ask questions prior to terminating the call.

Table 9-1
Route to Hospital
and
Emergency Telephone Numbers

Nearest Emergency Use Telephone		
Ambulance Service		911
Police Department		911
Fire Department		911
Hospital	Washington Hospital	(510) 791-3430
Local EPA Contact	Mike Bellot	(415) 744-2405
Poison Control Center		N/A
CHEMTREC		(800) 424-9300 (24 Hrs.)
Project Manager	Kate Walton	Home: (510) 893-8943 Office: (415) 768-9494
Project Health and Safety Manager	Danielle Dalesandro	Home: (510) 889-9131 Office: (415) 768-2589
Assist. Health and Safety Manager	Greg Olson	Home: (510) 934-9132 Office: (415) 768-4302
Labor Relations Safety and Health	Ross Fisher	Office: (415) 768-0444

FOR DIRECTIONS TO WASHINGTON HOSPITAL:

- **GO NORTH ON THE 880 FREEWAY.**
- **EXIT MOWRY (EAST)**

THE HOSPITAL IS FULLY EQUIPPED TO HANDLE ALL EMERGENCIES.

THE HOSPITAL ENTRANCE FOR EMERGENCIES IS ON MOWRY AVENUE.

Washington Hospital
2000 Mowry Avenue
Fremont, CA

10.0 Training Requirements

Bechtel personnel accessing this site will be currently trained per the requirements of 8 CCR Section 5192 "Hazardous Waste Operations and Emergency Response."

A predeparture health and safety review will be conducted by the PHSM or SHSO to ensure that employees assigned to perform work at the Sobex site clearly understand the unique hazards and requirements associated with the site. Main topics of the training session will include:

- Site health and safety plan review
- Health and safety hazards associated with the site and sampling
- Work practices by which employees can minimize risks from hazards
- Medical surveillance requirements and recognition of overexposure symptoms
- Decontamination, site control, and emergency procedures
- Use of appropriate personal protective equipment and engineering controls

The SHSO will conduct an initial a Kickoff Site Safety Meeting prior to the start of field work to review decon setup and procedures; work zone delineation; and emergency procedures. Documentation of such training topic(s) covered, instructor's name, and personnel who attended the training will be maintained in the site log, and a copy will be submitted to the PHSM upon returning from the field. Periodic meetings may be required if the job exceeds five (5) days in length or at the start of a new site activity. All safety meetings will be documented in writing, signed by attendees, and forwarded to the PHSM upon return from the field.

11.0 MEDICAL SURVEILLANCE

Medical surveillance will be conducted in compliance with ARCSWEST Program Procedure 8.03. Personnel required to work onsite will have been subjected to an annual baseline health assessment prior to participating in onsite activities, and have a current physician's statement on file with the ARCSWEST PHSM. These will be reviewed for approval before personnel can go to the site. Medical surveillance programs are established to monitor and document workers' health during BEI project activities, and are a major component of the Health and Safety Program. All onsite Bechtel personnel are actively participating in the Bechtel Medical Surveillance Program, and are medically qualified to conduct the required work.

SOBEX, INC.
INTEGRATED ASSESSMENT
APPENDIX B

EPA Contract Laboratory Program (CLP)
Laboratory Analytical Data Package

Printed on 50% recycled paper.

160 Spear Street, Suite 1380
San Francisco, CA
94105-1535
415/882-3000
Fax 415/882-3199

ICF TECHNOLOGY INCORPORATED

[illegible] 1993

MEMORANDUM

TO: Michael Bellot
Site Assessment Manager
Site Evaluation and Grants Section, H-8-1

THROUGH: Richard Bauer
Environmental Scientist
Quality Assurance Management Section (QAMS), P-3-2

FROM: Margie D. Weiner
Senior Data Review Oversight Chemist
Environmental Services Assistance Team (ESAT)

DATE: November 17, 1993

SUBJECT: Review of Analytical Data

Attached are comments resulting from ESAT Region IX review of the following analytical data:

SITE:	Sobex
EPA SSI NO.:	5U
CERCLIS ID NO.:	CAD982399784
CASE/SAS NO.:	20813 Memo #04
SDG NO.:	YP091
LABORATORY:	Analytical Resources, Inc. (ARI)
ANALYSIS:	RAS Pesticides/PCBs
SAMPLE NO.:	1 Water Sample (YP091)
COLLECTION DATE:	September 27, 1993
REVIEWER:	Margaret L. May ESAT/ICF Technology, Inc.

If there are any questions, please contact Margie D. Weiner (ESAT/ICF) at (415) 882-3061, or Richard Bauer (QAMS/EPA) at (415) 744-1499.

Attachment

cc: Bruce Woods, TPO USEPA Region X

TPO: [X]FYI [ ]Attention [ ]Action

SAMPLING ISSUES: [ ]Yes [X]No

Data Validation Report

Case No.: 20813 Memo #04
Site: Sobex
Laboratory: Analytical Resources, Inc. (ARI)
Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.
Date: November 17, 1993

I. Case Summary

SAMPLE INFORMATION:

PEST Sample Number: YP091
Concentration and Matrix: Low Level Water
Analysis: RAS Pesticides/PCBs
SOW: 3/90
Collection Date: September 27, 1993
Sample Receipt Date: September 28, 1993
Extraction Date: September 30, 1993
Analysis Date: October 11, 1993

FIELD QC:

Trip Blanks (TB): None
Field Blanks (FB): None
Equipment Blanks (EB): YP091
Background Samples (BG): None
Field Duplicates (D1): None

METHOD BLANK AND ASSOCIATED SAMPLES:

PBLK1W: YP091, SB and SBD (*See Additional Comments)

TABLES:

1A: Analytical Results with Qualifications
1B: Data Qualifiers

TPO ACTION:

METHOD NON-COMPLIANCE: None.

SAMPLING ISSUES: None.

OTHER: None.

TPO ATTENTION:

METHOD NON-COMPLIANCE: None.

SAMPLING ISSUES: None.

OTHER: None.

SB - Spike Blank; SBD - Spike Blank Duplicate

ADDITIONAL COMMENTS:

*Since sample YP091 is an equipment blank, it would not be appropriate to perform matrix spike/matrix spike duplicate analysis on this sample. In any case, sufficient volume was not sent to the laboratory. The laboratory performed a blank spike and a blank spike duplicate in order to demonstrate precision and accuracy. Also, a matrix spike and a matrix spike duplicate, YP088MS and YP088MSD, are included for the water samples in Case 20813 Memo #03, SDG YP068.

All method requirements specified in the EPA Contract Laboratory Organics Statement of Work, OLM01.1 - OLM01.9, have been met.

This report was prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990 (6/91 Revision).

II. Validation Summary

	PEST Acceptable/Comment	
HOLDING TIMES	[YES]	[ ]
GC PERFORMANCE	[YES]	[ ]
CALIBRATIONS	[YES]	[ ]
FIELD QC	[YES]	[ ]
LABORATORY BLANKS	[YES]	[ ]
SURROGATES	[YES]	[ ]
SPIKE/DUPLICATES	[YES]	[ ]
INTERNAL STANDARDS	[N/A]	[ ]
COMPOUND IDENTIFICATION	[YES]	[ ]
COMPOUND QUANTITATION	[YES]	[ ]
SYSTEM PERFORMANCE	[YES]	[ ]

N/A = Not Applicable

III. Overall Assessment of Data

All method requirements specified in the EPA Contract Laboratory Organic Statement of Work, OLM01.1 - OLM01.9, have been met.

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #04
Site: Sobex
Lab.: Analytical Resources, Inc. (ARI)
Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.
Date: November 17, 1993

Analysis Type: Low Level Water Sample for RAS Pesticides/PCBs

Concentration in ug/L

Station Location Sample I.D. Date of Collection	MW-12 YPO91 EB 09/27/93			PBLK1W Method Blank			CRQL														
Pesticide/PCB Compound	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**
alpha-BHC	0.05 U			0.05 U			0.05														
beta-BHC	0.05 U			0.05 U			0.05														
delta-BHC	0.05 U			0.05 U			0.05														
gamma-BHC (Lindane)	0.05 U			0.05 U			0.05														
Heptachlor	0.05 U			0.05 U			0.05														
Aldrin	0.05 U			0.05 U			0.05														
Heptachlor epoxide	0.05 U			0.05 U			0.05														
Endosulfan I	0.05 U			0.05 U			0.1														
Dieldrin	0.1 U			0.1 U			0.1														
4,4'-DDE	0.1 U			0.1 U			0.1														
Endrin	0.1 U			0.1 U			0.1														
Endosulfan II	0.1 U			0.1 U			0.1														
4,4'-DDD	0.1 U			0.1 U			0.1														
Endosulfan sulfate	0.1 U			0.1 U			0.1														
4,4'-DDT	0.1 U			0.1 U			0.1														
Methoxychlor	0.5 U			0.5 U			0.5														
Endrin ketone	0.1 U			0.1 U			0.1														
Endrin aldehyde	0.1 U			0.1 U			0.1														
alpha-Chlordane	0.05 U			0.05 U			0.05														
gamma-Chlordane	0.05 U			0.05 U			0.05														
Toxaphene	5 U			5 U			5														
Aroclor-1016	1 U			1 U			1														
Aroclor-1221	2 U			2 U			2														
Aroclor-1232	1 U			1 U			1														
Aroclor-1242	1 U			1 U			1														
Aroclor-1248	1 U			1 U			1														
Aroclor-1254	1 U			1 U			1														
Aroclor-1260	1 U			1 U			1														

Val-Validity Refer to Data Qualifiers in Table 1B
Com-Comments Refer to the Corresponding Section in the Narrative for each letter.
CRQL-Contract Required Quantitation Limits
NA-Not Analyzed

D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank
BG-Background Sample

TABLE 1B
DATA QUALIFIERS

The definitions of the following qualifiers are prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990 (6/91 Revision).

NO QUALIFIERS indicate that the data are acceptable both qualitatively and quantitatively.

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
L	Indicates results which fall below the Contract Required Quantitation Limit. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

TPO: [X]FYI [ ]Attention [ ]Action Region IX

ORGANIC REGIONAL DATA ASSESSMENT

Case No. 20813 Memo #04 LABORATORY ARI

SDG NO. YP091 SITE NAME Sobex

SOW 3/90 REVIEW COMPLETION DATE November 17, 1993

REVIEWER [ ] ESD [X] ESAT REVIEWER'S NAME Margaret L. May

NO. OF SAMPLES 1 WATER ____ SOIL ____ OTHER

	VOA	BNA	PEST	OTHER
1. HOLDING TIMES			0	
2. GC PERFORMANCE			0	
3. INITIAL CALIBRATIONS			0	
4. CONTINUING CALIBRATIONS			0	
5. FIELD QC			0	
6. LABORATORY BLANKS			0	
7. SURROGATES			0	
8. SPIKE/DUPLICATES			0	
9. REGIONAL QC			N/A	
10. INTERNAL STANDARDS			N/A	
11. COMPOUND IDENTIFICATION			0	
12. COMPOUND QUANTITATION			0	
13. SYSTEM PERFORMANCE			0	
14. OVERALL ASSESSMENT			0	

O - No problems or minor problems that affect data quality.
X - No more than about 5% of the data points have limitations on data quality. Samples are either qualified as estimates or rejected.
M - More than about 5% of the data points are qualified as estimates.
Z - More than about 5% of the data points have been rejected.
N/A - Not Applicable

TPO ACTION: None.

TPO ATTENTION: None.

AREAS OF CONCERN: None.

160 Spear Street, Suite 1380
San Francisco, CA
94105-1535
415/882-3000
Fax 415/882-3199

ICF TECHNOLOGY INCORPORATED

NOV 18 1993

MEMORANDUM

TO: Mike Bellot
Site Assessment Manager
Site Evaluation & Grants Section, H-8-1

THROUGH: Richard Bauer RB
Environmental Scientist
Quality Assurance Management Section (QAMS), P-3-2

FROM: Margie D. Weiner MDW
Senior Data Review Oversight Chemist
Environmental Services Assistance Team (ESAT)

DATE: November 16, 1993

SUBJECT: Review of Analytical Data

Attached are comments resulting from ESAT Region IX review of the following analytical data:

SITE:	Sobex
EPA SSI NO.:	5U
CERCLIS I.D. NO.:	CAD982399784
CASE/SAS NO.:	20813 Memo #02
SDG NO.:	MYM454
LABORATORY:	Southwest Labs of Oklahoma (SWOK)
ANALYSIS:	Ras Total Metals
SAMPLE NO.:	17 Soil Samples (See Case Summary)
COLLECTION DATE:	September 21 through 24, 1993
REVIEWER:	Karen Pettit, ESAT/ICF

If there are any questions, please contact Margie D. Weiner (ESAT/ICF) at (415) 882-3061, or Richard Bauer (QAMS/EPA) at (415) 744-1499.

Attachment

cc: Ray Flores, TPO USEPA Region VI
Steve Remaley, USEPA Region IX

TPO: [ ]FYI [X]Attention [X]Action

SAMPLING ISSUES: [X]Yes [ ]No

Data Validation Report

Case No.: 20813 Memo #02
Site: Sobex
Laboratory: Southwest Labs of Oklahoma (SWOK)
Reviewer: Karen Pettit, ESAT/ICF
Date: November 16, 1993

I. Case Summary

SAMPLE INFORMATION:	SAMPLE #:	MYM454 through MYM457 and MYM462 through MYM474
	COLLECTION DATE:	September 21, 23, and 24, 1993
	SAMPLE RECEIPT DATE:	September 23 and 25, 1993
	CONCENTRATION & MATRIX:	17 Low Concentration Soil Samples
FIELD QC:	Field Blanks (FB):	None
	Equipment Blanks (EB):	MYM458* and MYM476* (* See Additional Comments)
	Background Samples (BG):	None
	Duplicates (D1):	MYM462 and MYM463
	(D2):	MYM467 and MYM468
LABORATORY QC:	Matrix Spike:	MYM464
	Duplicates:	MYM464
	ICP Serial Dilution:	MYM464
	ANALYSIS:	Ras Total Metals

Analyte	Sample Preparation and Digestion Date	Analysis Date
ICP Metals	September 29, 1993	September 30 through October 5, 1993
Mercury	September 29, 1993	September 29, 1993
Percent Solids	Not Applicable	September 29, 1993

TPO ACTION:

METHOD NON-COMPLIANCE: A contract required detection limit (CRDL) standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. However, the laboratory did use a standard at the CRDL in the calibration of the instrument.

SAMPLING ISSUES: None.

OTHER: None.

TPO ATTENTION:

METHOD NON-COMPLIANCE: None.

SAMPLING ISSUES: The reported results of 0.27 μg/L (0.14 mg/Kg) in equipment blank sample MYM458 and 0.23 μg/L (0.12 mg/Kg) in equipment blank MYM476 for mercury exceeds the contract required detection limit (CRDL) of 0.20 μg/L (0.10 mg/Kg).

OTHER: There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. The laboratory, when contacted, verified that a Thermo Jarrel Ash ICAP61E Trace Analyzer was used to determine the above analytes.

Although the Statement of Work (SOW) specifies that an Interference Check Sample (ICS) be run and reported by the laboratory for each instrument operated, the interferents (aluminum, calcium, iron, and magnesium) were not reported for the ICP Interference Check Samples (ICS) run on the Trace Analyzer. When the laboratory was questioned about this practice, the validator was told that the laboratory only reports the analytes of interest on Form IV. They assumed that the ICS interferents run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

ADDITIONAL COMMENTS:

Analytical results for equipment blank samples MYM458 and MYM476 can be found in the validation report for Case 20813 Memo #01.

The laboratory analyzed all of the samples for arsenic, lead, selenium, and thallium by Thermo Jarrell Ash ICAP61E Trace Analyzer according to Method 200.7 in the EPA Contract Laboratory Program (CLP) Inorganic Statement Of Work (SOW). The instrument detection limits (IDLs) for arsenic, lead, selenium, and thallium were at or below the RAS contract required detection limits (CRDL) specified for these analytes in the SOW.

In the analysis of the laboratory control sample (LCS), the true value of potassium in the LCS was 50.0 mg/Kg, while the method detection limit (MDL) and CRDL were 159 mg/Kg and 1000 mg/Kg, respectively. Since the true value for potassium in the LCS was less than the MDL, the result obtained for potassium was reported as non-detected.

According to the SOW, the spike sample analysis is designed to provide information about the effect of the sample matrix on the digestion and measurement methodology. The SOW further specifies that samples be spiked at concentrations appropriate to the analytical method used. There have been no spike concentration levels established for the ICAP61E Trace Analyzer. Consequently, the laboratory spiked the QC sample to be analyzed for arsenic, lead, selenium, and thallium at ICP/AA levels. This practice is within the contractual specifications. However, since the IDLs and CRDLs for arsenic, lead, selenium, and thallium as well as the expected analyte concentrations in the samples are low, it is more appropriate to use the lower concentration GFAA spike levels which are consistent with the expected analyte concentration.

The analytical results with qualifications are listed in Table 1A. The definitions of the data qualifiers used in Table 1A are listed in Table 1B. This report was prepared in accordance with the EPA Contract Laboratory Program Inorganic Statement of Work (ILM02.0), and the EPA Draft Document "Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses," October, 1989.

II. Validation Summary

The data were evaluated based on the following parameters:

Parameter	Acceptable	Comment
1. Data Completeness	No	D
2. Sample Preservation and Holding Times	Yes	
3. Calibration	Yes	
a. Initial Calibration Verification		
b. Continuing Calibration Verification		
c. Calibration Blank		
4. Blanks	No	B
a. Laboratory Preparation Blank		
b. Field Blank		
c. Equipment Blank		
5. ICP Interference Check Sample Analysis	Yes	
6. Laboratory Control Sample Analysis	Yes	
7. Spiked Sample Analysis	No	C
8. Laboratory Duplicate Sample Analysis	Yes	
9. Field Duplicate Sample Analysis	No	E
10. GFAA QC Analysis	N/A	
a. Duplicate Injections		
b. Analytical Spikes		
c. Method of Standard Addition		
11. ICP Serial Dilution Analysis	Yes	
12. Sample Quantitation	Yes	A
13. Sample Result Verification	Yes	

N/A - Not Applicable

III. Validity and Comments

A. The following results are estimated and are flagged "J" in Table 1A.

- All results above the method detection limit but below the contract required detection limit (denoted with an "L" qualifier)

Results above the method detection limit (MDL) but below the contract required detection limit (CRDL) are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

B. The following results are estimated because of equipment blank contamination. The results are flagged "J" in Table 1A.

- Mercury in samples MYM454 and MYM455

An equipment blank is reagent water that has been collected as a sample using decontaminated sampling equipment. The intent of an equipment blank is to monitor for contamination introduced by the sampling activity, although any laboratory introduced contamination will also be present.

The reported result of 0.27 μg/L (0.14 mg/Kg) for mercury in equipment blank sample MYM458 exceeds the CRDL of 0.20 μg/L (0.10 mg/Kg). Detected results are considered estimated unless the concentration in the sample exceeds ten times the amount in the associated equipment blank. The results reported for mercury in the samples listed above are considered uncertain due to equipment blank contamination. In addition, the reported result of 0.23 μg/L (0.12 mg/Kg) for mercury in equipment blank MYM476 exceeds the CRDL of 0.20 μg/L (0.10 mg/Kg). However, all of the associated sample results were less than the IDL and were not estimated. Analytical results for equipment blank samples MYM458 and MYM476 can be found in the validation report for Case 20813 Memo #01.

C. The following results are estimated because of matrix spike recovery results outside method QC limits. The results are flagged "J" in Table 1A.

- Antimony, cadmium, chromium, and vanadium in all of the samples

The matrix spike sample analysis provides information about the effect of the sample matrix on the digestion and measurement methodology. The matrix spike recovery results for antimony, cadmium, chromium, and vanadium in QC sample MYM464 did not meet the 75-125% criteria for accuracy. The percent recovery and possible percent bias for each analyte is presented below and is based on an ideal recovery of 100%.

Analyte	MYM464 % Recovery	MYM464 % Bias
Antimony	17.3	-82.7
Cadmium	72.9	-27.1
Chromium	49.5	-50.5
Vanadium	73.8	-26.2

Results above the MDL are considered quantitatively uncertain. The results reported for antimony, cadmium, chromium, and vanadium in all of the samples may be biased low, and where non-detected, false negatives may exist.

According to the SOW (ILM02.0), when the pre-digestion spike recovery results for ICP analytes (except silver) fall outside the control limits of 75-125%, a post-digestion spike must be performed for those elements that do not meet the specified criteria. Post-digestion spike recovery results of 68.1% for antimony, 76.9% for cadmium, 84.7% for chromium, and 75.1% for vanadium were obtained in QC sample MYM464. Since the post-digestion spike recovery for cadmium, chromium, and vanadium was acceptable, the low pre-digestion spike recovery results obtained for cadmium (72.9%), chromium (49.5%), and vanadium (73.8%) may indicate poor laboratory technique, sample nonhomogeneity, or matrix effects which may interfere with accurate analysis, depressing the analytical result. Since both the post and pre-digestion spikes for antimony did not meet the QC criteria, matrix effects may be present in the sample digestate which may depress the analyte signal during analysis.

D. A CRDL standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. According to the SOW (ILM02.0), in order to verify linearity near the CRDL, the laboratory must analyze an AA standard at the CRDL or the IDL, whichever is greater, at the beginning of each sample analysis run, but not before the initial calibration verification (ICV). However, the laboratory did use a standard at the CRDL in the calibration of the instrument.

E. Relative percent differences (RPDs) of 88.4 for arsenic, 43.1 for copper, 46.8 for iron, and 39.5 for nickel were obtained in the analysis of field duplicate pair samples MYM467 and MYM468. The analysis of field duplicate samples is a measure of both field and analytical precision. The results are expected to vary more than laboratory duplicates (35 RPD or ±2xCRDL criteria for precision) since sampling variability is included in the measurement. The imprecision in the results of the analysis of the field duplicate pair may be due to the sample matrix, sample nonhomogeneity, poor sampling or laboratory technique, or method defects. The effect on the quality of the data is not known.

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #02
Site: Sobex
Lab.: Southwest Labs of Oklahoma, Inc. (SWOK)
Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.
Date: November 16, 1993

Analysis Type: Low Concentration Soil Samples for RAS Total Metals

Concentration in mg/Kg

Station Location	SL-1			SL-2			SL-3			SL-4			SL-5.1			SL-10			SL-5.2		
Sample I.D.	MYM454			MYM455			MYM456			MYM457			MYM462 D1			MYM463 D1			MYM464		
Date of Collection	09/21/93			09/21/93			09/21/93			09/21/93			09/23/93			09/23/93			09/23/93		
Parameter	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Aluminum	23300			22400			21100			18100			24100			22300			19700		
Antimony	22.4	J	C	21.0	J	C	23.8	J	C	45.7	J	C	24.7	J	C	25.2	J	C	19.5	J	C
Arsenic	7.1			4.8			5.4			5.4			7.6			7.3			6.9		
Barium	354			303			301			178			220			220			182		
Beryllium	1.4			1.4			0.69 L	J	A	0.52 L	J	A	0.76 L	J	A	0.71 L	J	A	0.62 L	J	A
Cadmium	2.7	J	C	3.4	J	C	0.43 U	J	C	7.8	J	C	0.46 U	J	C	0.45 U	J	C	0.44 U	J	C
Calcium	81700			85300			25300			8670			6130			5300			5400		
Chromium	64.9	J	C	57.1	J	C	84.2	J	C	98.4	J	C	89.2	J	C	88.6	J	C	82.7	J	C
Cobalt	8.3 L	J	A	4.5 L	J	A	14.1			10.7 L	J	A	13.4			13.8			13.1		
Copper	81.6			80.6			51.6			46.0			33.8			33.2			29.3		
Iron	21600			20200			27400			28700			28600			28300			25500		
Lead	822			1110			200			6560			9.0			8.2			6.9		
Magnesium	19600			18600			13300			9420			15100			15200			14300		
Manganese	3490			3090			661			479			473			463			491		
Mercury	0.24	J	BD	0.27	J	BD	0.11 U		D	0.11 U		D	0.11 U		D	0.11 U		D	0.11 U		D
Nickel	34.3			22.9			77.5			66.6			104			105			100		
Potassium	1880			1940			2350			2070			2680			2360			2520		
Selenium	1.1			1.5			0.94 L	J	A	1.7			0.91 U			0.91 U			0.88 U		
Silver	1.0 L	J	A	1.5 L	J	A	0.67 L	J	A	0.67 U			0.68 U			0.68 U			0.66 U		
Sodium	1650			1730			1740			1040 L	J	A	1050 L	J	A	1030 L	J	A	591 L	J	A
Thallium	1.4 U			1.4 U			1.5 U			1.6 U			1.6 U			1.6 U			1.5 U		
Vanadium	40.8	J	C	24.9	J	C	59.2	J	C	51.1	J	C	57.0	J	C	54.4	J	C	50.3	J	C
Zinc	679			731			532			48600			63.1			58.4			53.5		
Percent Solids	99.4 %			99.4 %			92.5 %			89.2 %			87.6 %			88.2 %			91.1 %		

N/A-Not Applicable
Val-Validity Refer to Data Qualifiers in Table 1B
Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.
IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background
CRDL-Contract Required Detection Limit

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #02
Site: Sobex
Lab.: Southwest Labs of Oklahoma, Inc. (SWOK)
Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.
Date: November 16, 1993

Analysis Type: Low Concentration Soil Samples for RAS Total Metals

Concentration in mg/Kg

Station Location	SL-6.1			SL-6.2			SL-12			SL-13			SL-8			SL-9			BS-1.1		
Sample I.D.	MYM465			MYM466			MYM467 D2			MYM468 D2			MYM469			MYM470			MYM471		
Date of Collection	09/23/93			09/23/93			09/24/93			09/24/93			09/23/93			09/23/93			09/23/93		
Parameter	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Aluminum	25800			18600			18600			21900			22700			17400			20000		
Antimony	25.1	J	C	21.6	J	C	24.3	J	C	34.7	J	C	23.9	J	C	23.5	J	C	24.9	J	C
Arsenic	6.4			6.9			3.6		E	9.3		E	5.9			5.0			4.9		
Barium	244			145			191			243			281			274			257		
Beryllium	0.77 L	J	A	0.48 L	J	A	0.69 L	J	A	0.71 L	J	A	0.68 L	J	A	0.56 L	J	A	0.60 L	J	A
Cadmium	0.46 U	J	C	0.50 U	J	C	0.85 L	J	AC	1.6	J	C	0.49 U	J	C	0.49 U	J	C	0.48 U	J	C
Calcium	11100			4670			14300			11600			4920			5220			3410		
Chromium	95.9	J	C	89.6	J	C	80.7	J	C	110	J	C	83.4	J	C	71.9	J	C	78.2	J	C
Cobalt	13.8			11.8 L	J	A	11.3			14.4			21.1			15.1			14.5		
Copper	33.7			29.1			38.0		E	58.9		E	31.0			32.8			27.5		
Iron	29600			26900			22900		E	36900		E	26900			25300			26300		
Lead	9.6			6.4			403			345			8.0			13.0			9.3		
Magnesium	16400			14700			10700			13000			10400			11900			10600		
Manganese	479			501			682			611			566			507			523		
Mercury	0.11 U		D	0.12 U		D	0.11 U		D	0.12		D	0.12 U		D	0.12 U		D	0.12 U		D
Nickel	108			101			62.0		E	92.5		E	94.0			89.4			89.2		
Potassium	2940			2090			2030			2480			1970			1760			1900		
Selenium	0.92 U			1.0 U			0.89 U			1.2			1.7			0.98 U			1.0 L	J	A
Silver	0.69 U			0.75 U			0.67 U			0.74 L	J	A	0.74 U			0.74 U			0.72 U		
Sodium	2030			791 L	J	A	1720			1940			843 L	J	A	1020 L	J	A	2450		
Thallium	1.6 U			1.7 U			1.6 U			1.6 U			1.7 U			1.7 U			1.7 U		
Vanadium	60.9	J	C	48.6	J	C	48.1	J	C	61.3	J	C	57.8	J	C	45.4	J	C	48.7	J	C
Zinc	65.8			53.0			1420			1820			47.7			60.0			50.3		
Percent Solids	87.4 %			80.0 %			89.5 %			89.3 %			81.4 %			81.3 %			83.7 %		

N/A-Not Applicable
Val-Validity Refer to Data Qualifiers in Table 1B
Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.
IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background
CRDL-Contract Required Detection Limit

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #02
Site: Sobex
Lab.: Southwest Labs of Oklahoma, Inc. (SWOK)
Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.
Date: November 16, 1993

Analysis Type: Low Concentration Soil Samples for RAS Total Metals

Concentration in mg/Kg

Station Location Sample I.D. Date of Collection	BS-1.2 MYM472 09/23/93			BS-1.3 MYM473 09/23/93			BS-1.4 MYM474 09/23/93			Lab Blank			MDL			CRDL					
Parameter	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**
Aluminum	24400			17600			14200			6.2 U			6.2			40.0					
Antimony	30.9	J	C	23.7	J	C	24.4	J	C	3.8 U			3.8			12.0					
Arsenic	8.3			7.3			6.3			0.60 U			0.60			2.0					
Barium	310			179			150			1.2 U			1.2			40.0					
Beryllium	0.74 L	J	A	0.53 L	J	A	0.55 L	J	A	0.20 U			0.20			1.0					
Cadmium	0.46 U	J	C	0.46 U	J	C	0.46 U	J	C	0.40 U			0.40			1.0					
Calcium	12500			8340			8350			40.0 U			40.0			1000					
Chromium	93.6	J	C	74.9	J	C	64.7	J	C	0.80 U			0.80			2.0					
Cobalt	14.8			13.3			12.5			1.0 U			1.0			10.0					
Copper	35.0			33.1			31.8			1.8 L	J	A	0.60			5.0					
Iron	30300			26800			25600			1.6 U			1.6			20.0					
Lead	9.1			8.1			8.1			0.60 U			0.60			0.60					
Magnesium	20100			14300			13100			22.8 U			22.8			1000					
Manganese	463			457			401			0.40 U			0.40			3.0					
Mercury	0.12 U		D	0.11 U		D	0.12 U		D	0.10 U			0.10			0.10					
Nickel	104			100			92.7			4.2 U			4.2			8.0					
Potassium	2560			1890			1470			159 U			159			1000					
Selenium	0.92 U			0.91 U			0.92 U			0.80 U			0.80			1.0					
Silver	0.69 U			0.69 U			0.69 U			0.60 U			0.60			2.0					
Sodium	2660			630 L	J	A	437 L	J	A	36.6 U			36.6			1000					
Thallium	1.6 U			1.6 U			1.6 U			1.4 U			1.4			2.0					
Vanadium	58.6	J	C	43.8	J	C	36.5	J	C	1.2 U			1.2			10.0					
Zinc	57.9			56.1			55.3			1.4 U			1.4			4.0					
Percent Solids	86.7 %			87.5 %			86.9 %			N/A			N/A			N/A					

N/A-Not Applicable
Val-Validity Refer to Data Qualifiers in Table 1B
Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.
IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background
CRDL-Contract Required Detection Limit

TABLE 1B

DATA QUALIFIER DEFINITIONS FOR INORGANIC DATA REVIEW

The definitions of the following qualifiers are prepared in accordance with the EPA draft document, "Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses," October, 1989.

NO QUALIFIER indicates that the data are acceptable both qualitatively and quantitatively.

U	The analyte was analyzed for but was not detected above the level of the reported value. The reported value is the Instrument Detection Limit (IDL) for waters and the Method Detection Limit (MDL) for soils for all the analytes except Cyanide (CN) and Mercury (Hg). For CN and Hg, the reported value is the Contract Required Detection Limit (CRDL).
L	The analyte was analyzed for but results fell between the IDL for waters or the MDL for soils and the CRDL. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
J	The analyte was analyzed for and was positively identified, but the reported numerical value may not be consistent with the amount actually present in the environmental sample.
R	The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Resampling and reanalysis are necessary to confirm or deny the presence of the analyte.
UJ	A combination of the "U" and the "J" qualifier. The analyte was analyzed for but was not detected above the reported value. The reported value may not accurately or precisely represent the sample IDL or MDL.

TPO: [ ]FYI [X]Attention [X]Action Region IX

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 20813 Memo #02 LABORATORY SWOK

SDG NO. MYM454 SITE NAME Sobex

SOW NO. ILM02.0 REVIEW COMPLETION DATE November 16, 1993

REVIEWER [ ] ESD [X] ESAT REVIEWER'S NAME Karen Pettit

NO. OF SAMPLES ____ WATER 17 SOIL ____ OTHER

	ICP	GFAA	Hg	Cyanide
1. PRESERVATION AND HOLDING TIMES	O		O	
2. CALIBRATION	O		O	
3. BLANKS	O		M	
4. ICP INTERFERENCE CHECK SAMPLE (ICS)	O			
5. LABORATORY CONTROL SAMPLE (LCS)	O		O	
6. DUPLICATE ANALYSIS	O		O	
7. MATRIX SPIKE ANALYSIS	M		O	
8. METHOD OF STANDARD ADDITION (MSA)				
9. ICP SERIAL DILUTION	O			
10. SAMPLE QUANTITATION	O		O	
11. SAMPLE VERIFICATION	O		O	
12. GFAA ANALYTICAL SPIKE				
13. OVERALL ASSESSMENT	M		M	

O - No problems or minor problems that affect data quality.
X - No more than about 5% of the data points have limitations on data quality. Data points are either qualified as estimates or rejected.
M - More than about 5% of the data points are qualified as estimates.
Z - More than about 5% of the data points have been rejected.
N/A - Not Applicable.

TPO: [ ]FYI [X]Attention [X]Action Region IX

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 20813 Memo #02 LABORATORY SWOK

SDG NO. MYM454 SITE NAME Sobex

SOW NO. ILM02.0 REVIEW COMPLETION DATE November 16, 1993

REVIEWER [ ] ESD [X] ESAT REVIEWER'S NAME Karen Pettit

NO. OF SAMPLES ____ WATER 17 SOIL ____ OTHER

TPO ACTION: A contract required detection limit (CRDL) standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. However, the laboratory did use a standard at the CRDL in the calibration of the instrument.

TPO ATTENTION: There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. The laboratory, when contacted, verified that a Thermo Jarrel Ash ICAP61E Trace Analyzer was used to determine the above analytes.

The reported results of 0.27 μg/L (0.14 mg/Kg) in equipment blank sample MYM458 and 0.23 μg/L (0.12 mg/Kg) in equipment blank MYM476 for mercury exceeds the CRDL of 0.20 μg/L (0.10 mg/Kg).

Although the Statement of Work (SOW) specifies that an Interference Check Sample (ICS) be run and reported for each instrument operated, the interferents (aluminum, calcium, iron, and magnesium) were not reported by the laboratory for the ICP Interference Check Samples (ICS) run on the Trace Analyzer. When the laboratory was questioned about this practice, the validator was told that the laboratory only reports the analytes of interest on Form IV. They assumed that the ICS interferents run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

AREAS OF CONCERN: According to the SOW, the spike sample analysis is designed to provide information about the effect of the sample matrix on the digestion and measurement methodology. The SOW further specifies that samples be spiked at concentrations appropriate to the analytical method used. There have been no spike concentration levels established for the ICAP61E Trace Analyzer. Consequently, the laboratory spiked the QC sample to be analyzed for arsenic, lead, selenium, and thallium at ICP/AA levels. This practice is within the contractual specifications. However, since the MDLs and CRDLs for arsenic, lead, selenium, and thallium as well as the expected analyte concentrations in the samples are low, it is more appropriate to use the lower concentration GFAA spike levels which are consistent with the expected analyte concentration.

In Reference to Case No(s).:
20813 Memo #01 and Memo #02

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM

Telephone Record Log

Date of Call: November 3 and 4, 1993

Laboratory Name: SWOK

Lab Contact: Jason Ruckman

Region: IX

Regional Contact: Karen Pettit

Call Initiated By: ____ Laboratory X Region

In reference to data for the following sample number(s):
SDG MYM458 and SDG MYM454

Summary of Questions/Issues Discussed:

1. There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. Please verify the type of ICP instrument used to analyze arsenic, lead, selenium and thallium.

2. Why were the interferents not reported for the Interference Check Samples (ICS) run on the Trace Analyzer?

Summary of Resolution:

1. A Thermo Jarrel Ash ICAP61E Trace Analyzer was used.

2. The laboratory only reports the analytes of interest on Form IV. They assumed that the ICS interferents run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

Karen Pettit
Signature

11/15/93
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

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94105-1535
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ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: Michael Bellot
Site Assessment Manager
Site Evaluation and Grants Section, H-8-1

THROUGH: Richard Bauer
Environmental Scientist
Quality Assurance Management Section (QAMS), P-3-2

FROM: Margie D. Weiner
Senior Data Review Oversight Chemist
Environmental Services Assistance Team (ESAT)

DATE: November 17, 1993

SUBJECT: Review of Analytical Data

Attached are comments resulting from ESAT Region IX review of the following analytical data:

SITE: Sobex
EPA SSI NO.: 5U
CERCLIS ID NO.: CAD982399784
CASE/SAS NO.: 20813 Memo #03
SDG NO.: YP068

LABORATORY: Analytical Resources, Inc. (ARI)
ANALYSIS: RAS Volatiles and RAS Pesticides/PCBs

SAMPLE NO.: 11 Soil and 9 Water Samples (see Case Summary)

COLLECTION DATE: September 21, 23, 24, and 27, 1993

REVIEWER: Adriane G.L. Scheele and Margaret L. May
ESAT/ICF Technology, Inc.

If there are any questions, please contact Margie D. Weiner (ESAT/ICF) at (415) 882-3061, or Richard Bauer (QAMS/EPA) at (415) 744-1499.

Attachment

cc: Bruce Woods, TPO USEPA Region X
Steve Remaley, USEPA Region IX

TPO: [ ]FYI [X]Attention [ ]Action

SAMPLING ISSUES: [X]Yes [ ]No

Data Validation Report

Case No.: 20813 Memo #03
Site: Sobex
Laboratory: Analytical Resources, Inc. (ARI)
Reviewer: Adriane G.L. Scheele and Margaret L. May,
ESAT/ICF Technology, Inc.
Date: November 17, 1993

I. Case Summary

SAMPLE INFORMATION:

VOA Sample Numbers: Soil: YP073, YP074, YP075, YP076, YP077, YP083, and YP084
Water: YP086
PEST Sample Numbers: Soil: YP068, YP073 through YP077, and YP080 through YP084
Water: YP069 through YP072 and YP086 through YP090
Concentration and Matrix: Low Level Soil and Water
Analysis: RAS Volatiles and RAS Pesticides/PCBs
SOW: 3/90
Collection Date: September 21, 23, 24, and 27, 1993
Sample Receipt Date: September 22, 24, 25, and 28, 1993
Extraction Date: September 24 and 28 and October 3, 1993
Analysis Date: September 27 and 30 and October 8, 9, 12, and 13, 1993

FIELD QC:

Trip Blanks (TB): None
Field Blanks (FB): None
Equipment Blanks (EB): YP069, YP086, and YP089
Background Samples (BG): None
Field Duplicates (D1): YP070 and YP071
(D2): YP073 and YP074

METHOD BLANKS AND ASSOCIATED SAMPLES:

VBLK1: YP073, YP074, YP075, YP075MS, YP075MSD, YP076, YP077, YP083, and YP084
VBLK2: YP086, YP086MS, and YP086MSD
PBLK1W: YP069 and YP072
PBLK2W: YP070, YP071, YP086, YP087, YP088, YP088MS, YP088MSD, YP089, and YP090
PBLK1S: YP068, YP073, YP074, YP075, YP075MS, YP075MSD, YP076, YP077, and YP080 through YP084

TABLES:

1A: Analytical Results with Qualifications
1B: Data Qualifiers

MS - Matrix Spike; MSD - Matrix Spike Duplicate

TPO ACTION:

METHOD NON-COMPLIANCE: None.

SAMPLING ISSUES: None.

OTHER: None.

TPO ATTENTION:

METHOD NON-COMPLIANCE: Sample YP068 was received at the laboratory on September 22, 1993 and extracted 11 days later on October 3, 1993. The extraction exceeded the 10 day contractual holding time by 1 day.

SAMPLING ISSUES: Although the bottles were labelled correctly, the sampler misidentified sample YP087 as YP078 on the Organic Traffic Report/Chain of Custody.

OTHER: The quantitation limits for two volatile target analytes were qualified as estimated due to calibration problems.

ADDITIONAL COMMENTS:

In the volatiles analyses, no Tentatively Identified Compounds (TICs) were detected in any of the samples analyzed.

This report was prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990 (6/91 Revision).

II. Validation Summary

	VOA Acceptable	VOA Comment	PEST Acceptable	PEST Comment
HOLDING TIMES	[YES]	[ ]	[YES]	[ ]
GC/MS TUNE/GC PERFORMANCE	[YES]	[ ]	[YES]	[ ]
CALIBRATIONS	[NO]	[B]	[YES]	[ ]
FIELD QC	[YES]	[ ]	[YES]	[ ]
LABORATORY BLANKS	[YES]	[ ]	[YES]	[ ]
SURROGATES	[YES]	[ ]	[YES]	[ ]
MATRIX SPIKE/DUPLICATES	[YES]	[ ]	[YES]	[ ]
INTERNAL STANDARDS	[YES]	[ ]	[N/A]	[ ]
COMPOUND IDENTIFICATION	[YES]	[ ]	[YES]	[ ]
COMPOUND QUANTITATION	[YES]	[ ]	[YES]	[A,C]
SYSTEM PERFORMANCE	[YES]	[ ]	[YES]	[ ]

N/A = Not Applicable

III. Validity and Comments

A. The following results are estimated and flagged "J" in Table 1A:

- All results below the Contract Required Quantitation Limits (denoted with an "L" qualifier)

Results below the Contract Required Quantitation Limits (CRQL) are considered to be qualitatively acceptable, but quantitatively unreliable, due to the uncertainty in analytical precision near the limit of detection.

B. Due to large percent Differences (%Ds) in the volatile Continuing Calibrations, the quantitation limits for the following analytes are estimated (J) (see Table 1A):

- Chloromethane in samples YP073 through YP077, YP083 and YP084 and method blank VBLK1
- Acetone in sample YP086 and method blank VBLK2

The Continuing Calibration checks the instrument performance daily and produces the Relative Response Factors for each target analyte that are used for quantitation.

Percent Differences of 52.1 and 40.9 were observed for chloromethane and acetone, respectively, in the Continuing Calibrations performed September 27 and 30, 1993. These values exceed the <±25% QC advisory validation criterion.

C. Sample YP068 has slightly raised quantitation limits for aldrin and 4,4'-DDE due to interferences from Aroclor-1254 that preclude confident quantitation at lower limits. (See Table 1A.)

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #03
Site: Sobex
Lab.: Analytical Resources, Inc. (ARI)
Reviewer: Adriane G.L. Scheele, ESAT/ICF Technology, Inc.
Date: November 17, 1993

Analysis Type: Low Level Soil Samples for RAS Volatiles

Concentration in ug/Kg

Station Location	SL-5.1			SL-10			SL-5.2			SL-6.1			SL-6.2		
Sample I.D.	YP073 D2			YP074 D2			YP075			YP076			YP077		
Date of Collection	09/23/93			09/23/93			09/23/93			09/23/93			09/23/93		
Volatile Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Chloromethane	11 U	J	B	11 U	J	B	11 U	J	B	11 U	J	B	11 U	J	B
Bromomethane	11 U			11 U			11 U			11 U			11 U		
Vinyl chloride	11 U			11 U			11 U			11 U			11 U		
Chloroethane	11 U			11 U			11 U			11 U			11 U		
Methylene chloride	11 U			11 U			11 U			11 U			11 U		
Acetone	11 U			11 U			11 U			11 U			11 U		
Carbon disulfide	11 U			11 U			11 U			11 U			11 U		
1,1-Dichloroethene	11 U			11 U			11 U			11 U			11 U		
1,1-Dichloroethane	11 U			11 U			11 U			11 U			11 U		
1,2-Dichloroethene (total)	11 U			11 U			11 U			11 U			11 U		
Chloroform	11 U			11 U			11 U			11 U			11 U		
1,2-Dichloroethane	11 U			11 U			11 U			11 U			11 U		
2-Butanone	11 U			11 U			11 U			11 U			11 U		
1,1,1-Trichloroethane	11 U			11 U			11 U			11 U			11 U		
Carbon tetrachloride	11 U			11 U			11 U			11 U			11 U		
Bromodichloromethane	11 U			11 U			11 U			11 U			11 U		
1,2-Dichloropropane	11 U			11 U			11 U			11 U			11 U		
cis-1,3-Dichloropropene	11 U			11 U			11 U			11 U			11 U		
Trichloroethene	11 U			11 U			11 U			11 U			11 U		
Dibromochloromethane	11 U			11 U			11 U			11 U			11 U		
1,1,2-Trichloroethane	11 U			11 U			11 U			11 U			11 U		
Benzene	11 U			11 U			11 U			11 U			11 U		
trans-1,3-Dichloropropene	11 U			11 U			11 U			11 U			11 U		
Bromoform	11 U			11 U			11 U			11 U			11 U		
4-Methyl-2-pentanone	11 U			11 U			11 U			11 U			11 U		
2-Hexanone	11 U			11 U			11 U			11 U			11 U		
Tetrachloroethene	11 U			11 U			11 U			11 U			11 U		
1,1,2,2-Tetrachloroethane	11 U			11 U			11 U			11 U			11 U		
Toluene	14			19			35			74			53		
Chlorobenzene	11 U			11 U			11 U			11 U			11 U		
Ethylbenzene	11 U			11 U			11 U			11 U			11 U		
Styrene	11 U			11 U			11 U			11 U			11 U		
Xylene (total)	11 U			11 U			11 U			11 U			11 U		
Percent Solids	88 %			88 %			89 %			88 %			93 %		

Val-Validity Refer to Data Qualifiers in Table 1B
Com-Comments Refer to the Corresponding Section in the Narrative for each letter.
D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

CRQL-Contract Required Quantitation Limits
N/A-Not Applicable
BG-Background Sample

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #03
Site: Sobex
Lab.: Analytical Resources, Inc. (ARI)
Reviewer: Adriane G.L. Scheele, ESAT/ICF Technology, Inc.
Date: November 17, 1993

Analysis Type: Low Level Soil Samples for RAS Volatiles

Concentration in ug/Kg

Station Location	BS-1.3			BS-1.4			Method Blank								
Sample I.D.	YP083			YP084			VBLK1			CRQL					
Date of Collection	09/23/93			09/23/93											
Volatile Compound	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**
Chloromethane	11 U	J	B	11 U	J	B	10 U	J	B	10					
Bromomethane	11 U			11 U			10 U			10					
Vinyl chloride	11 U			11 U			10 U			10					
Chloroethane	11 U			11 U			10 U			10					
Methylene chloride	11 U			11 U			10 U			10					
Acetone	11 U			11 U			10 U			10					
Carbon disulfide	11 U			11 U			10 U			10					
1,1-Dichloroethene	11 U			11 U			10 U			10					
1,1-Dichloroethane	11 U			11 U			10 U			10					
1,2-Dichloroethene (total)	11 U			11 U			10 U			10					
Chloroform	11 U			11 U			10 U			10					
1,2-Dichloroethane	11 U			11 U			10 U			10					
2-Butanone	11 U			11 U			10 U			10					
1,1,1-Trichloroethane	11 U			11 U			10 U			10					
Carbon tetrachloride	11 U			11 U			10 U			10					
Bromodichloromethane	11 U			11 U			10 U			10					
1,2-Dichloropropane	11 U			11 U			10 U			10					
cis-1,3-Dichloropropene	11 U			11 U			10 U			10					
Trichloroethene	11 U			11 U			10 U			10					
Dibromochloromethane	11 U			11 U			10 U			10					
1,1,2-Trichloroethane	11 U			11 U			10 U			10					
Benzene	11 U			11 U			10 U			10					
trans-1,3-Dichloropropene	11 U			11 U			10 U			10					
Bromoform	11 U			11 U			10 U			10					
4-Methyl-2-pentanone	11 U			11 U			10 U			10					
2-Hexanone	11 U			11 U			10 U			10					
Tetrachloroethene	11 U			11 U			10 U			10					
1,1,2,2-Tetrachloroethane	11 U			11 U			10 U			10					
Toluene	110			90			10 U			10					
Chlorobenzene	11 U			11 U			10 U			10					
Ethylbenzene	11 U			11 U			10 U			10					
Styrene	11 U			11 U			10 U			10					
Xylene (total)	11 U			11 U			10 U			10					
Percent Solids	87 %			86 %			N/A			N/A					

Val-Validity Refer to Data Qualifiers in Table 1B
Com-Comments Refer to the Corresponding Section in the Narrative for each letter.
D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

CRQL-Contract Required Quantitation Limits
N/A-Not Applicable
BG-Background Sample

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #03
Site: Sobex
Lab.: Analytical Resources, Inc. (ARI)
Reviewer: Adriane G.L. Scheele, ESAT/ICF Technology, Inc.
Date: November 17, 1993

Analysis Type: Low Level Water Sample for RAS Volatiles

Concentration in ug/L

Station Location	MW-8			Method Blank											
Sample I.D.	YP086 EB			VBLK2			CRQL								
Date of Collection	09/23/93														
Volatile Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Chloromethane	10 U			10 U			10								
Bromomethane	10 U			10 U			10								
Vinyl chloride	10 U			10 U			10								
Chloroethane	10 U			10 U			10								
Methylene chloride	10 U			10 U			10								
Acetone	10 U	J	B	10 U	J	B	10								
Carbon disulfide	10 U			10 U			10								
1,1-Dichloroethene	10 U			10 U			10								
1,1-Dichloroethane	10 U			10 U			10								
1,2-Dichloroethene (total)	10 U			10 U			10								
Chloroform	10 U			10 U			10								
1,2-Dichloroethane	10 U			10 U			10								
2-Butanone	10 U			10 U			10								
1,1,1-Trichloroethane	10 U			10 U			10								
Carbon tetrachloride	10 U			10 U			10								
Bromodichloromethane	10 U			10 U			10								
1,2-Dichloropropane	10 U			10 U			10								
cis-1,3-Dichloropropene	10 U			10 U			10								
Trichloroethene	10 U			10 U			10								
Dibromochloromethane	10 U			10 U			10								
1,1,2-Trichloroethane	10 U			10 U			10								
Benzene	10 U			10 U			10								
trans-1,3-Dichloropropene	10 U			10 U			10								
Bromoform	10 U			10 U			10								
4-Methyl-2-pentanone	10 U			10 U			10								
2-Hexanone	10 U			10 U			10								
Tetrachloroethene	10 U			10 U			10								
1,1,2,2-Tetrachloroethane	10 U			10 U			10								
Toluene	10 U			10 U			10								
Chlorobenzene	10 U			10 U			10								
Ethylbenzene	10 U			10 U			10								
Styrene	10 U			10 U			10								
Xylene (total)	10 U			10 U			10								

Val-Validity Refer to Data Qualifiers in Table 1B
Com-Comments Refer to the Corresponding Section in the Narrative for each letter.
D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

CRQL-Contract Required Quantitation Limits
N/A-Not Applicable
BG-Background Sample

Case No.: 20813 Memo #03
Site: Sobex
Lab.: Analytical Resources, Inc. (ARI)
Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.
Date: November 17, 1993

ANALYTICA[illegible]SULTS
TABLE 1A

Concentration in ug/Kg

Analysis Type: Low Level Soil Samples for RAS Pesticides/PCBs

Station Location	SL-3			SL-5.1			SL-10			SL-5.2			SL-6.1			SL-6.2			SL-8		
Sample I.D.	YP068			YP073 D2			YP074 D2			YP075			YP076			YP077			YP080		
Date of Collection	09/21/93			09/23/93			09/23/93			09/23/93			09/23/93			09/23/93			09/23/93		
Pesticide/PCB Compound	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**
alpha-BHC	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
beta-BHC	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
delta-BHC	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
gamma-BHC (Lindane)	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Heptachlor	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Aldrin	3 U		C	2 U			2 U			2 U			2 U			2 U			2 U		
Heptachlor epoxide	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Endosulfan I	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Dieldrin	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
4,4'-DDE	4 U		C	3 U			3 U			4 U			4 U			3 U			4 U		
Endrin	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
Endosulfan II	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
4,4'-DDD	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
Endosulfan sulfate	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
4,4'-DDT	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
Methoxychlor	15 U			17 U			16 U			18 U			18 U			17 U			18 U		
Endrin ketone	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
Endrin aldehyde	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
alpha-Chlordane	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
gamma-Chlordane	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Toxaphene	150 U			170 U			160 U			180 U			180 U			170 U			180 U		
Aroclor-1016	30 U			33 U			31 U			35 U			36 U			33 U			35 U		
Aroclor-1221	60 U			66 U			64 U			71 U			73 U			67 U			71 U		
Aroclor-1232	30 U			33 U			31 U			35 U			36 U			33 U			35 U		
Aroclor-1242	30 U			33 U			31 U			35 U			36 U			33 U			35 U		
Aroclor-1248	30 U			33 U			31 U			35 U			36 U			33 U			35 U		
Aroclor-1254	100			33 U			31 U			35 U			12 L	J	A	33 U			35 U		
Aroclor-1260	25 L	J	A	33 U			31 U			35 U			36 U			33 U			35 U		
Percent Solids	92 %			89 %			89 %			91 %			88 %			94 %			81 %		

Val-Validity Refer to Data Qualifiers in Table 1B
Com-Comments Refer to the Corresponding Section in the Narrative for each letter.
CRQL-Contract Required Quantitation Limits
N/A-Not Applicable

D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank
BG-Background Sample

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #03
Site: Sobex
Lab.: Analytical Resources, Inc. (ARI)
Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.
Date: November 17, 1993

Analysis Type: Low Level Soil Samples for RAS Pesticides/PCBs

Concentration in ug/Kg

Station Location	SL-9			BS-1.2			BS-1.3			BS-1.4			Method Blank								
Sample I.D.	YP081			YP082			YP083			YP084			PBLK1S			CRQL					
Date of Collection	09/23/93			09/23/93			09/23/93			09/23/93											
Pesticide/PCB Compound	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**
alpha-BHC	2 U			2 U			2 U			2 U			2 U			2					
beta-BHC	2 U			2 U			2 U			2 U			2 U			2					
delta-BHC	2 U			2 U			2 U			2 U			2 U			2					
gamma-BHC (Lindane)	2 U			2 U			2 U			2 U			2 U			2					
Heptachlor	2 U			2 U			2 U			2 U			2 U			2					
Aldrin	2 U			2 U			2 U			2 U			2 U			2					
Heptachlor epoxide	2 U			2 U			2 U			2 U			2 U			2					
Endosulfan I	2 U			2 U			2 U			2 U			2 U			2					
Dieldrin	3 U			3 U			3 U			3 U			3 U			3					
4,4'-DDE	12			3 U			3 U			3 U			3 U			3					
Endrin	3 U			3 U			3 U			3 U			3 U			3					
Endosulfan II	3 U			3 U			3 U			3 U			3 U			3					
4,4'-DDD	10			3 U			3 U			3 U			3 U			3					
Endosulfan sulfate	3 U			3 U			3 U			3 U			3 U			3					
4,4'-DDT	3 U			3 U			3 U			3 U			3 U			3					
Methoxychlor	17 U			15 U			15 U			17 U			17 U			17					
Endrin ketone	3 U			3 U			3 U			3 U			3 U			3					
Endrin aldehyde	3 U			3 U			3 U			3 U			3 U			3					
alpha-Chlordane	2 U			2 U			2 U			2 U			2 U			2					
gamma-Chlordane	2 U			2 U			2 U			2 U			2 U			2					
Toxaphene	170 U			150 U			150 U			170 U			170 U			170					
Aroclor-1016	34 U			30 U			30 U			34 U			33 U			33					
Aroclor-1221	69 U			61 U			60 U			69 U			67 U			67					
Aroclor-1232	34 U			30 U			30 U			34 U			33 U			33					
Aroclor-1242	34 U			30 U			30 U			34 U			33 U			33					
Aroclor-1248	34 U			30 U			30 U			34 U			33 U			33					
Aroclor-1254	34 U			30 U			30 U			34 U			33 U			33					
Aroclor-1260	34 U			30 U			30 U			34 U			33 U			33					
Percent Solids	77 %			87 %			87 %			87 %			N/A			N/A					

Val-Validity Refer to Data Qualifiers in Table 1B
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CRQL-Contract Required Quantitation Limits
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ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #03
Site: Sobex
Lab.: Analytical Resources, Inc. (ARI)
Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.
Date: November 17, 1993

Analysis Type: Low Level Water Samples for RAS Pesticides/PCBs

Concentration in ug/L

Station Location	SL-2			LF-3			MW-6			LF-4			MW-8			MW-1			LF-2		
Sample I.D.	YP069 EB			YP070 D1			YP071 D1			YP072			YP086 EB			YP087			YP088		
Date of Collection	09/21/93			09/24/93			09/24/93			09/21/93			09/23/93			09/24/93			09/27/93		
Pesticide/PCB Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
alpha-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
beta-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
delta-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
gamma-BHC (Lindane)	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Heptachlor	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Aldrin	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Heptachlor epoxide	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Endosulfan I	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Dieldrin	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
4,4'-DDE	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
Endrin	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
Endosulfan II	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
4,4'-DDD	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
Endosulfan sulfate	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
4,4'-DDT	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
Methoxychlor	0.5 U			0.5 U			0.5 U			0.5 U			0.5 U			0.5 U			0.5 U		
Endrin ketone	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
Endrin aldehyde	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
alpha-Chlordane	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
gamma-Chlordane	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Toxaphene	5 U			5 U			5 U			5 U			5 U			5 U			5 U		
Aroclor-1016	1 U			1 U			1 U			1 U			1 U			1 U			1 U		
Aroclor-1221	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Aroclor-1232	1 U			1 U			1 U			1 U			1 U			1 U			1 U		
Aroclor-1242	1 U			1 U			1 U			1 U			1 U			1 U			1 U		
Aroclor-1248	1 U			1 U			1 U			1 U			1 U			1 U			1 U		
Aroclor-1254	1 U			1 U			1 U			1 U			1 U			1 U			1 U		
Aroclor-1260	1 U			1 U			1 U			1 U			1 U			1 U			1 U		

Val-Validity Refer to Data Qualifiers in Table 1B
Com-Comments Refer to the Corresponding Section in the Narrative for each letter.
CRQL-Contract Required Quantitation Limits
N/A-Not Applicable

D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank
BG-Background Sample

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #03
Site: Sobex
Lab.: Analytical Resources, Inc. (ARI)
Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.
Date: November 17, 1993

Concentration in ug/L

Analysis Type: Low Level Water Samples
for RAS Pesticides/PCBs

Station Location	MW-11			MW-5			Method Blank			Method Blank											
Sample I.D.	YP089 EB			YP090			PBLK1W			PBLK2W			CRQL								
Date of Collection	09/24/93			09/27/93																	
Pesticide/PCB Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
alpha-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05								
beta-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05								
delta-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05								
gamma-BHC (Lindane)	0.05 U			0.05 U			0.05 U			0.05 U			0.05								
Heptachlor	0.05 U			0.05 U			0.05 U			0.05 U			0.05								
Aldrin	0.05 U			0.05 U			0.05 U			0.05 U			0.05								
Heptachlor epoxide	0.05 U			0.05 U			0.05 U			0.05 U			0.05								
Endosulfan I	0.05 U			0.05 U			0.05 U			0.05 U			0.05								
Dieldrin	0.1 U			0.1 U			0.1 U			0.1 U			0.1								
4,4'-DDE	0.1 U			0.1 U			0.1 U			0.1 U			0.1								
Endrin	0.1 U			0.1 U			0.1 U			0.1 U			0.1								
Endosulfan II	0.1 U			0.1 U			0.1 U			0.1 U			0.1								
4,4'-DDD	0.1 U			0.1 U			0.1 U			0.1 U			0.1								
Endosulfan sulfate	0.1 U			0.1 U			0.1 U			0.1 U			0.1								
4,4'-DDT	0.1 U			0.1 U			0.1 U			0.1 U			0.1								
Methoxychlor	0.5 U			0.5 U			0.5 U			0.5 U			0.5								
Endrin ketone	0.1 U			0.1 U			0.1 U			0.1 U			0.1								
Endrin aldehyde	0.1 U			0.1 U			0.1 U			0.1 U			0.1								
alpha-Chlordane	0.05 U			0.05 U			0.05 U			0.05 U			0.05								
gamma-Chlordane	0.05 U			0.05 U			0.05 U			0.05 U			0.05								
Toxaphene	5 U			5 U			5 U			5 U			5								
Aroclor-1016	1 U			1 U			1 U			1 U			1								
Aroclor-1221	2 U			2 U			2 U			2 U			2								
Aroclor-1232	1 U			1 U			1 U			1 U			1								
Aroclor-1242	1 U			1 U			1 U			1 U			1								
Aroclor-1248	1 U			1 U			1 U			1 U			1								
Aroclor-1254	1 U			1 U			1 U			1 U			1								
Aroclor-1260	1 U			1 U			1 U			1 U			1								

Val-Validity Refer to Data Qualifiers in Table 1B
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N/A-Not Applicable

D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank
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TABLE 1B
DATA QUALIFIERS

The definitions of the following qualifiers are prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990 (6/91 Revision).

NO QUALIFIERS indicate that the data are acceptable both qualitatively and quantitatively.

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
L	Indicates results which fall below the Contract Required Quantitation Limit. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

TPO: [ ]FYI [X]Attention [ ]Action Region IX

ORGANIC REGIONAL DATA ASSESSMENT

Case No. 20813 Memo #03 LABORATORY ARI

SDG NO. YP068 SITE NAME Sobex

SOW 3/90 REVIEW COMPLETION DATE November 17, 1993

REVIEWER [ ] ESD [X] ESAT REVIEWERS' NAMES Adriane G.L. Scheele and Margaret L. May

NO. OF SAMPLES 9 WATER 11 SOIL ______ OTHER

	VOA	BNA	PEST	OTHER
1. HOLDING TIMES	0		0	
2. GC-MS TUNE/GC PERFORMANCE	0		0	
3. INITIAL CALIBRATIONS	0		0	
4. CONTINUING CALIBRATIONS	X		0	
5. FIELD QC	0		0	
6. LABORATORY BLANKS	0		0	
7. SURROGATES	0		0	
8. MATRIX SPIKE/DUPLICATES	0		0	
9. REGIONAL QC	N/A		N/A	
10. INTERNAL STANDARDS	0		N/A	
11. COMPOUND IDENTIFICATION	0		0	
12. COMPOUND QUANTITATION	0		0	
13. SYSTEM PERFORMANCE	0		0	
14. OVERALL ASSESSMENT	X		0	

O = No problems or minor problems that affect data quality.
X = No more than about 5% of the data points have limitations on data quality. Data points are either qualified as estimates or rejected.
M = More than about 5% of the data points are qualified as estimates.
Z = More than about 5% of the data points have been rejected.
N/A = Not Applicable

TPO: [ ]FYI [X]Attention [ ]Action Region IX

ORGANIC REGIONAL DATA ASSESSMENT

Case No. 20813 Memo #03 LABORATORY ARI

SDG NO. YP068 SITE NAME Sobex

SOW 3/90 REVIEW COMPLETION DATE November 17, 1993

REVIEWER [ ] ESD [X] ESAT REVIEWERS' NAMES Adriane G.L. Scheele and Margaret L. May

NO. OF SAMPLES 9 WATER 11 SOIL ________ OTHER

TPO ACTION: None.

TPO ATTENTION: (1) Sample YP068 was received at the laboratory on September 22, 1993 and extracted 11 days later on October 3, 1993. The extraction exceeded the 10 day contractual holding time by 1 day. (2) Although the bottles were labelled correctly, the sampler misidentified sample YP087 as YP078 on the Organic Traffic Report/Chain of Custody. (3) The quantitation limits for two volatile target analytes were qualified as estimated due to calibration problems.

AREAS OF CONCERN: None.

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903 0031

ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: Mike Bellot
Site Assessment Manager
Site Evaluation & Grants Section, H-8-1

THROUGH: Richard Bauer
Environmental Scientist
Quality Assurance Management Section (QAMS), P-3-2

FROM: Margie D. Weiner
Senior Data Review Oversight Chemist
Environmental Services Assistance Team (ESAT)

DATE: November 8, 1993

SUBJECT: Review of Analytical Data

Attached are comments resulting from ESAT Region IX review of the following analytical data:

SITE: Sobex
EPA SSI NO.: 5U
CERCLIS I.D. NO.: CAD982399784
CASE/SAS NO.: 20813 Memo #01
SDG NO.: MYM458

LABORATORY: Southwest Labs of Oklahoma (SWOK)
ANALYSIS: RAS Total Metals

SAMPLE NO.: 16 Water Samples (See Case Summary)

COLLECTION DATE: September 21 through 27, 1993

REVIEWER: Karen Pettit, ESAT/ICF

If there are any questions, please contact Margie D. Weiner (ESAT/ICF) at (415) 882-3061, or Richard Bauer (QAMS/EPA) at (415) 744-1499.

Attachment

cc: Ray Flores, TPO USEPA Region VI
Steve Remaley, USEPA Region IX

TPO: [ ]FYI [X]Attention [X]Action

SAMPLING ISSUES: [X]Yes [ ]No

Data Validation Report

Case No.: 20813 Memo #01
Site: Sobex
Laboratory: Southwest Labs of Oklahoma (SWOK)
Reviewer: Karen Pettit, ESAT/ICF
Date: November 8, 1993

I. Case Summary

SAMPLE INFORMATION:	SAMPLE #:	MYM458 through MYM461 and MYM476 through MYM487
	COLLECTION DATE:	September 21 through 27, 1993
	SAMPLE RECEIPT DATE:	September 23 through 28, 1993
	CONCENTRATION & MATRIX:	13 Low Concentration Groundwater and 3 Low Concentration Rinsate Samples
FIELD QC:	Field Blanks (FB):	None
	Equipment Blanks (EB):	MYM458*, MYM476*, and MYM482 (See Additional Comments)
	Background Samples (BG):	None
	Duplicates (D1):	MYM459 and MYM460
	(D2):	MYM483 and MYM484
LABORATORY QC:	Matrix Spike:	MYM481
	Duplicates:	MYM480
	ICP Serial Dilution:	MYM480
	ANALYSIS:	RAS Total Metals

Analyte	Sample Preparation and Digestion Date	Analysis Date
ICP Metals	October 2, 1993	October 4 and 5, 1993
Mercury	October 5, 1993	October 5, 1993

TPO ACTION:

METHOD NON-COMPLIANCE: A contract required detection limit (CRDL) standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. However, the laboratory did use a standard at the CRDL in the calibration of the instrument.

SAMPLING ISSUES: None.

OTHER: The results for silver in all of the samples are rejected because of matrix spike recovery results outside method QC limits. The results reported for silver in all of the samples were below the instrument detection limit (IDL) and are considered unacceptable as less than 30% of the matrix spike was recovered.

TPO ATTENTION:

METHOD NON-COMPLIANCE: None.

SAMPLING ISSUES: An equipment blank is reagent water that has been collected as a sample using decontaminated sampling equipment. The purpose of an equipment blank is to monitor for contamination introduced by the sampling activity. The reported result of 0.27 μg/L for mercury in equipment blank sample MYM458 and 0.23 μg/L for mercury in equipment blank sample MYM476 exceeds the contract required detection limit (CRDL) of 0.20 μg/L. Samples associated with equipment blanks MYM458 and MYM476 in Case 20813 Memo #02 may be affected.

OTHER: There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. The laboratory, when contacted, verified that a Thermo Jarrel Ash ICAP61E Trace Analyzer was used.

Although the Statement of Work (SOW) specifies that an Interference Check Sample (ICS) be run and reported for each instrument operated, the interferents were not reported for the Interference Check Samples (ICS) run on the Trace Analyzer. When the laboratory was questioned about this practice, the validator was told that the laboratory only reports the analytes of interest on Form IV. They assumed that the ICS interferents run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

ADDITIONAL COMMENTS:

For analytical results associated with equipment blank samples MYM458 and MYM476 see the validation report for Case 20813 Memo #02.

The sampler designated two samples for lab QC, MYM480 and MYM481. The laboratory performed the matrix spike on MYM481 and the laboratory duplicate and the ICP serial dilution on the other designated sample, MYM480.

The laboratory analyzed all of the samples for arsenic, lead, selenium, and thallium by Thermo Jarrell Ash ICAP61E Trace Analyzer according to Method 200.7 in the EPA Contract Laboratory Program (CLP) Inorganic Statement Of Work (SOW). The instrument detection limits (IDL) for arsenic, lead, selenium, and thallium were at or below the RAS contract required detection limits (CRDL) specified for these analytes in the Statement of Work (SOW).

According to the SOW, the spike sample analysis is designed to provide information about the effect of the sample matrix on the digestion and measurement methodology. The SOW further specifies that samples be spiked at concentrations appropriate to the analytical method used. There have been no spike concentration levels established for the ICAP61E Trace Analyzer. Consequently, the laboratory spiked the QC sample to be analyzed for arsenic, lead, selenium, and thallium at ICP/AA levels. This practice is within the contractual specifications. However, since the IDLs and CRDLs for arsenic, lead, selenium, and thallium as well as the expected analyte concentrations in the water samples are low, it is more appropriate to use the lower concentration GFAA spike levels which are consistent with the expected analyte concentration.

The analytical results with qualifications are listed in Table 1A. The definitions of the data qualifiers used in Table 1A are listed in Table 1B. This report was prepared in accordance with the EPA Contract Laboratory Program Inorganic Statement of Work (ILM02.1), and the EPA Draft Document "Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses," October, 1989.

II. Validation Summary

The data were evaluated based on the following parameters:

Parameter	Acceptable	Comment
1. Data Completeness	No	C
2. Sample Preservation and Holding Times	Yes	
3. Calibration	Yes	
a. Initial Calibration Verification		
b. Continuing Calibration Verification		
c. Calibration Blank		
4. Blanks	Yes	
a. Laboratory Preparation Blank		
b. Field Blank		
c. Equipment Blank		
5. ICP Interference Check Sample Analysis	Yes	
6. Laboratory Control Sample Analysis	Yes	
7. Spiked Sample Analysis	No	A
8. Laboratory Duplicate Sample Analysis	Yes	
9. Field Duplicate Sample Analysis	No	D
10. GFAA QC Analysis	N/A	
a. Duplicate Injections		
b. Analytical Spikes		
c. Method of Standard Addition		
11. ICP Serial Dilution Analysis	Yes	
12. Sample Quantitation	Yes	B
13. Sample Result Verification	Yes	

N/A = Not Applicable

III. Validity and Comments

A. The following results are rejected because of matrix spike recovery results outside method QC limits. The results are flagged "R" in Table 1A.

- Silver in all of the samples

Matrix spike sample analysis provides information about the effect of the sample matrix on sample preparation and measurement. The matrix spike recovery result for silver in QC sample MYM481 did not meet the 75-125% criteria for accuracy. The percent recovery and possible percent bias for silver is presented below and is based on an ideal recovery of 100%.

Analyte	MYM481 % Recovery	MYM481 % Bias
Silver	28.5	-71.5

The results reported for silver in all of the samples were below the instrument detection limit (IDL) and are considered unacceptable as less than 30% of the matrix spike was recovered. The low matrix spike recovery indicates an analytical deficiency and false negatives may exist.

B. The following results are estimated and are flagged "J" in Table 1A.

- All results above the instrument detection limit but below the contract required detection limit (denoted with an "L" qualifier)

Results above the instrument detection limit (IDL) but below the contract required detection limit (CRDL) are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

C. A contract required detection limit (CRDL) standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. According to the SOW (ILM02.1), in order to verify linearity near the CRDL, the laboratory must analyze an AA standard at the CRDL or the IDL, whichever is greater, at the beginning of each sample analysis run, but not before the initial calibration verification (ICV). However, the laboratory did use a standard at the CRDL in the calibration of the instrument.

D. In the analysis of the field duplicate pairs, the following relative percent differences (RPDs) were obtained for the analytes listed below.

Analyte	MYM459 D1 MYM460 D1 RPD	MYM483 D2 MYM484 D2 RPD
Iron	107	---
Lead	200	200
Thallium	200	---

The analysis of field duplicate samples is a measure of both field and analytical precision. The results are expected to vary more than laboratory duplicates (±20 RPD or ±CRDL criteria for precision) since sampling variability is included in the measurement. The imprecision in the results of the analysis of the field duplicate pair may be due to the sample matrix, high levels of solids in the sample, poor sampling or laboratory technique, or method defects. The effect on the quality of the data is not known.

Lead was present in sample MYM460 at a concentration of 3.7 μg/L and in sample MYM484 at 4.6 μg/L, while in the duplicate analysis, lead was not detected at the IDL of 3.0 μg/L. Thallium was present in sample MYM459 at a concentration of 10.2 μg/L, while in the duplicate analysis, thallium was not detected at the IDL of 7.0 μg/L.

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #01
Site: Sobex
Lab.: Southwest Labs of Oklahoma (SWOK)
Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.
Date: November 8, 1993

Analysis Type: Low Concentration Water Samples for RAS Total Metals

Concentration in ug/L

Station Location	SL-2			LF-3			MW-6			LF-4			MW-8			LF-4F			MW-1		
Sample I.D.	MYM458 EB			MYM459 D1			MYM460 D1			MYM461			MYM476 EB			MYM477			MYM478		
Date of Collection	09/21/93			09/24/93			09/24/93			09/24/93			09/23/93			09/24/93			09/24/93		
Parameter	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**
Aluminum	57.3 L	J	B	46.6 L	J	B	35.0 U			5240			69.6 L	J	B	35.0 U			35.0 U		
Antimony	19.0 U			19.0 U			19.0 U			19.0 U			19.0 U			19.0 U			19.0 U		
Arsenic	3.0 U			302			286			11.6			3.0 U			3.0 U			3.8 L	J	B
Barium	6.0 U			376			338			392			6.0 U			83.1 L	J	B	246		
Beryllium	1.0 U			1.0 U			1.0 U			1.0 U			1.0 U			1.0 U			1.0 U		
Cadmium	2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U		
Calcium	220 L	J	B	115000			121000			130000			191 L	J	B	103000			94800		
Chromium	3.0 U			3.0 U			3.0 U			15.5			3.0 U			3.0 U			3.3 L	J	B
Cobalt	5.0 U			5.0 U			5.0 U			29.3 L	J	B	5.0 U			5.0 U			5.0 U		
Copper	2.0 U			2.0 U			2.0 U			52.4			2.0 U			2.0 U			2.0 U		
Iron	13.4 L	J	B	3320		D	1010		D	9610			15.8 L	J	B	39.1 L	J	B	72.1 L	J	B
Lead	3.0 U			3.0 U		D	3.7		D	19.0			3.0 U			3.0 U			3.0 U		
Magnesium	94.0 U			72000			76100			65500			94.0 U			59400			78300		
Manganese	1.0 U			7520			7520			2610			2.3 L	J	B	506			127		
Mercury	0.27		C	0.20 U		C	0.20 U		C	0.20 U		C	0.23		C	0.20 U		C	0.30		C
Nickel	11.0 U			22.2 L	J	B	11.0 U			67.8			11.0 U			12.3 L	J	B	11.0 U		
Potassium	427 U			1590 L	J	B	1550 L	J	B	2210 L	J	B	427 U			1660 L	J	B	1890 L	J	B
Selenium	4.0 U			4.0 U			4.0 U			7.3			4.0 U			5.2			4.0 U		
Silver	2.0 U	R	A	2.0 U	R	A	2.0 U	R	A	2.0 U	R	A	2.0 U	R	A	2.0 U	R	A	2.0 U	R	A
Sodium	687 L	J	B	153000			144000			112000			764 L	J	B	115000			146000		
Thallium	7.0 U			10.2		D	7.0 U		D	7.2 L	J	B	7.0 U			7.0 U			7.0 U		
Vanadium	3.0 U			4.6 L	J	B	4.9 L	J	B	33.5 L	J	B	3.0 U			3.0 U			3.0 U		
Zinc	6.1 L	J	B	8.2 L	J	B	9.2 L	J	B	52.5			3.0 U			3.0 U			3.0 U		

Val-Validity Refer to Data Qualifiers in Table 1B
Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.
IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background
CRDL-Contract Required Detection Limit

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #01
Site: Sobex
Lab.: Southwest Labs of Oklahoma (SWOK)
Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.
Date: November 8, 1993

Analysis Type: Low Concentration Water Samples for RAS Total Metals

Concentration in ug/L

Station Location	MW-1F			LF-2			LF-2F			MW-11			LF-3F			MW-6F			MW-5		
Sample I.D.	MYM479			MYM480			MYM481			MYM482 EB			MYM483 D2			MYM484 D2			MYM485		
Date of Collection	09/24/93			09/27/93			09/27/93			09/24/93			09/24/93			09/24/93			09/27/93		
Parameter	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Aluminum	35.0 U			38.6 L	J	B	45.3 L	J	B	77.4 L	J	B	35.0 U			58.6 L	J	B	3320		
Antimony	19.0 U			19.0 U			19.0 U			19.0 U			19.0 U			19.0 U			19.0 U		
Arsenic	4.0 L	J	B	3.0 U			3.0 U			3.0 U			330			392			3.7 L	J	B
Barium	251			80.4 L	J	B	75.7 L	J	B	6.0 U			363			365			105 L	J	B
Beryllium	1.0 U			1.0 U			1.0 U			1.0 U			1.0 U			1.0 U			1.0 U		
Cadmium	2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U		
Calcium	97200			85000			78900			273 L	J	B	113000			115000			68200		
Chromium	3.2 L	J	B	3.0 U			3.0 U			3.0 U			3.0 U			3.0 U			29.3		
Cobalt	5.0 U			5.0 U			5.0 U			5.0 U			5.0 U			5.0 U			5.0 U		
Copper	2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U		
Iron	36.1 L	J	B	137			38.6 L	J	B	8.5 L	J	B	3680			4250			4920		
Lead	3.0 U			3.0 U			3.0 U			3.0 U			3.0 U		D	4.6		D	8.2		
Magnesium	79300			49800			46200			94.0 U			71000			72400			45500		
Manganese	87.9			773			683			1.0 U			7670			8450			396		
Mercury	0.29		C	0.20 U		C	0.20 U		C	0.20 U		C	0.20 U		C	0.20 U		C	0.20 U		C
Nickel	11.0 U			11.0 U			11.0 U			11.0 U			19.3 L	J	B	20.1 L	J	B	31.7 L	J	B
Potassium	1720 L	J	B	1790 L	J	B	1760 L	J	B	427 U			1350 L	J	B	1020 L	J	B	2280 L	J	B
Selenium	4.0 U			4.0 U			4.0 U			4.0 U			4.0 U			4.0 U			9.7		
Silver	2.0 U	R	A	2.0 U	R	A	2.0 U	R	A	2.0 U	R	A	2.0 U	R	A	2.0 U	R	A	2.0 U	R	A
Sodium	145000			132000			129000			954 L	J	B	150000			140000			81100		
Thallium	7.0 U			7.0 U			7.0 U			7.0 U			7.0 U			7.1 L	J	B	7.0 U		
Vanadium	3.9 L	J	B	3.0 U			3.3 L	J	B	3.0 U			3.0 U			3.0 U			13.2 L	J	B
Zinc	3.0 U			3.0 U			3.0 U			3.4 L	J	B	3.0 U			8.3 L	J	B	20.7		

Val-Validity Refer to Data Qualifiers in Table 1B
Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.
IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background
CRDL-Contract Required Detection Limit

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #01
Site: Sobex
Lab.: Southwest Labs of Oklahoma (SWOK)
Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.
Date: November 8, 1993

Analysis Type: Low Concentration Water Samples for RAS Total Metals

Concentration in ug/L

Station Location	MW-5F			MW-12			Lab Blank			IDL			CRDL								
Sample I.D.	MYM486			MYM487																	
Date of Collection	09/27/93			09/27/93																	
Parameter	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Aluminum	73.8 L	J	B	108 L	J	B	35.0 U			35.0			200								
Antimony	19.0 U			19.0 U			19.0 U			19.0			60.0								
Arsenic	3.0 U			3.0 U			3.0 U			3.0			10.0								
Barium	41.9 L	J	B	6.0 U			6.0 U			6.0			200								
Beryllium	1.0 U			1.0 U			1.0 U			1.0			5.0								
Cadmium	2.0 U			2.0 U			2.0 U			2.0			5.0								
Calcium	50400			351 L	J	B	154 U			154			5000								
Chromium	16.2			3.0 U			3.0 U			3.0			10.0								
Cobalt	5.0 U			5.0 U			5.0 U			5.0			50.0								
Copper	2.0 U			2.0 U			2.0 U			2.0			25.0								
Iron	51.0 L	J	B	15.8 L	J	B	5.0 U			5.0			100								
Lead	3.0 U			3.0 U			3.0 U			3.0			3.0								
Magnesium	39700			94.0 U			94.0 U			94.0			5000								
Manganese	82.1			2.0 L	J	B	1.0 U			1.0			15.0								
Mercury	0.34		C	0.20 U		C	0.20 U			0.20			0.20								
Nickel	11.0 U			11.0 U			11.0 U			11.0			40.0								
Potassium	2090 L	J	B	427 U			427 U			427			5000								
Selenium	8.2			4.0 U			4.0 U			4.0			5.0								
Silver	2.0 U	R	A	2.0 U	R	A	2.0 U			2.0			10.0								
Sodium	75500			1240 L	J	B	216 U			216			5000								
Thallium	7.0 U			7.0 U			7.0 U			7.0			10.0								
Vanadium	3.0 U			3.0 U			3.0 U			3.0			50.0								
Zinc	3.0 U			3.0 U			3.0 U			3.0			20.0								

Val-Validity Refer to Data Qualifiers in Table 1B
Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.
IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background
CRDL-Contract Required Detection Limit

TABLE 1B

DATA QUALIFIER DEFINITIONS FOR INORGANIC DATA REVIEW

The definitions of the following qualifiers are prepared in accordance with the EPA draft document, "Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses," October, 1989.

NO QUALIFIER indicates that the data are acceptable both qualitatively and quantitatively.

U	The analyte was analyzed for but was not detected above the level of the reported value. The reported value is the Instrument Detection Limit (IDL) for waters and the Method Detection Limit (MDL) for soils for all the analytes except Cyanide (CN) and Mercury (Hg). For CN and Hg, the reported value is the Contract Required Detection Limit (CRDL).
L	The analyte was analyzed for but results fell between the IDL for waters or the MDL for soils and the CRDL. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
J	The analyte was analyzed for and was positively identified, but the reported numerical value may not be consistent with the amount actually present in the environmental sample.
R	The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Resampling and reanalysis are necessary to confirm or deny the presence of the analyte.
UJ	A combination of the "U" and the "J" qualifier. The analyte was analyzed for but was not detected above the reported value. The reported value may not accurately or precisely represent the sample IDL or MDL.

TPO: [ ]FYI [X]Attention [X]Action Region IX

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 20813 Memo #01 LABORATORY SWOK

SDG NO. MYM458 SITE NAME Sobex

SOW NO. ILM02.1 REVIEW COMPLETION DATE November 8, 1993

REVIEWER [ ] ESD [X] ESAT REVIEWER'S NAME Karen Pettit

NO. OF SAMPLES 16 WATER ____ SOIL ____ OTHER

	ICP	GFAA	Hg	Cyanide
1. PRESERVATION AND HOLDING TIMES	O		O	
2. CALIBRATION	O		O	
3. BLANKS	O		O	
4. ICP INTERFERENCE CHECK SAMPLE (ICS)	O			
5. LABORATORY CONTROL SAMPLE (LCS)	O		O	
6. DUPLICATE ANALYSIS	O		O	
7. MATRIX SPIKE ANALYSIS	Z		O	
8. METHOD OF STANDARD ADDITION (MSA)				
9. ICP SERIAL DILUTION	O			
10. SAMPLE QUANTITATION	O		O	
11. SAMPLE VERIFICATION	O		O	
12. GFAA ANALYTICAL SPIKE				
13. OVERALL ASSESSMENT	Z		O	

O - No problems or minor problems that affect data quality.
X - No more than about 5% of the data points have limitations on data quality. Data points are either qualified as estimates or rejected.
M - More than about 5% of the data points are qualified as estimates.
Z - More than about 5% of the data points have been rejected.
N/A - Not Applicable.

TPO: [ ]FYI [X]Attention [X]Action Region IX

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 20813 Memo #01 LABORATORY SWOK

SDG NO. MYM458 SITE NAME Sobex

SOW NO. ILM02.1 REVIEW COMPLETION DATE November 8, 1993

REVIEWER [ ] ESD [X] ESAT REVIEWER'S NAME Karen Pettit

NO. OF SAMPLES 16 WATER ____ SOIL ____ OTHER

TPO ACTION: A contract required detection limit (CRDL) standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. However, the laboratory did use a standard at the CRDL in the calibration of the instrument.

The results for silver in all of the samples are rejected because of matrix spike recovery results outside method QC limits. The results reported for silver in all of the samples were below the instrument detection limit (IDL) and are considered unacceptable as less than 30% of the matrix spike was recovered.

TPO ATTENTION: An equipment blank is reagent water that has been collected as a sample using decontaminated sampling equipment. The purpose of an equipment blank is to monitor for contamination introduced by the sampling activity. The reported result of 0.27 μg/L for mercury in equipment blank sample MYM458 and 0.23 μg/L for mercury in equipment blank sample MYM476 exceeds the contract required detection limit (CRDL) of 0.20 μg/L. The samples associated with MYM458 and MYM476 in Case 20813 Memo #02 may be affected.

There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. The laboratory, when contacted, verified that a Thermo Jarrel Ash ICAP61E Trace Analyzer was used.

Although the Statement of Work (SOW) specifies that an Interference Check Sample (ICS) be run and reported for each instrument operated, the interferents were not reported for the Interference Check Samples (ICS) run on the Trace Analyzer. When the laboratory was questioned about this practice, the validator was told that the laboratory only reports the results for the analytes of interest on Form IV. They assumed that the ICS interferents run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

AREAS OF CONCERN: An initial CRI standard recovery of 108.8% and a high final CRI standard recovery of 152.8% for lead were reported for the analyses in this SDG. While there are no criteria established for CRDL standard recoveries, high recoveries may indicate high bias for sample results near the CRDL.

TPO: [ ]FYI [X]Attention [X]Action Region IX

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 20813 Memo #01 LABORATORY SWOK

SDG NO. MYM458 SITE NAME Sobex

SOW NO. ILM02.1 REVIEW COMPLETION DATE November 8, 1993

REVIEWER [ ] ESD [X] ESAT REVIEWER'S NAME Karen Pettit

NO. OF SAMPLES 16 WATER _____ SOIL _____ OTHER

AREAS OF CONCERN: (cont.) According to the Inorganic Statement of Work (SOW), an Interference Check Sample (ICS) is run for each ICP instrument used. The check sample is run to verify interelement and background correction factors for each element analyzed. An ICS analysis consists of consecutively analyzing an interferent solution (A) and a solution (AB) containing interferents plus analytes for all wavelengths to be analyzed. The results for lead were reported on Form IV for the October 5, 1993 analytical run, but no results for the interferents were reported from that run.

According to the SOW, the spike sample analysis is designed to provide information about the effect of the sample matrix on the digestion and measurement methodology. The SOW further specifies that samples be spiked at concentrations appropriate to the analytical method used. There have been no spike concentration levels established for the ICAP61E Trace Analyzer. Consequently, the laboratory spiked the QC sample to be analyzed for arsenic, lead, selenium, and thallium at ICP/AA levels. This practice is within the contractual specifications. However, since the IDLs and CRDLs for arsenic, lead, selenium, and thallium as well as the expected analyte concentrations in the water samples are low, it is more appropriate to use the lower concentration GFAA spike levels which are consistent with the expected analyte content.

In Reference to Case No(s).:
20813 Memo #01

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM

Telephone Record Log

Date of Call: November 3 and 4, 1993

Laboratory Name: SWOK

Lab Contact: Jason Ruckman

Region: IX

Regional Contact: Karen Pettit

Call Initiated By: ____ Laboratory X Region

In reference to data for the following sample number(s):
MYM458 through MYM461 and MYM476 through MYM487

Summary of Questions/Issues Discussed:

1. There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. Please verify the type of ICP instrument used to analyze arsenic, lead, selenium and thallium.

2. Why were the interferents not reported for the Interference Check Samples (ICS) run on the Trace Analyzer?

Summary of Resolution:

1. A Thermo Jarrel Ash ICAP61E Trace Analyzer was used.

2. The laboratory only reports the analytes of interest on Form IV. They assumed that the ICS interferents run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

Karen L. Pettit
Signature

11/8/93
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

SOBEX, INC.
INTEGRATED ASSESSMENT
APPENDIX C

Human Health and Ecological Concerns Form

HUMAN HEALTH AND ECOLOGICAL CONCERNS FORM

This form is designed for use during Task 1, Preliminary Data Collection and Analysis, of the SACM Pilot Study. Information collection efforts will, therefore, be limited to readily available information. The form will be submitted to the Site Assessment Manager for distribution to appropriate EPA staff.

Information collection efforts may include making observations and taking photographs during the site visit, interviewing public agency personnel and the facility owner(s), reviewing public agency and facility files, obtaining consultant reports, reviewing hydrogeologic and other relevant scientific literature, examining USGS topographic and Thomas Bros. maps, and accessing the Graphical Exposure Modeling System (GEMS) for population data and the Natural Diversity Data Base (NDDB) for ecologic receptor information.

If public agencies are contacted regarding human health and ecological concerns, a Contact Report will be included that documents the name of the person contacted, name of the agency, telephone number, date of contact, and summary of information obtained during the discussion.

1.0 SITE DESCRIPTION

1.1 Location

1. **Site's name, street address, city, state, zip code, and county:**

Sobex, Inc.
6000 Stevenson Blvd.
Fremont, Calif. 94538
Alameda County

2. **Latitude/longitude:** 37° 30' 59.5" N / 121° 59' 06.0" W

3. **EPA ID No.:** CAD 982399784

4. **Attach a Site Location Map indicating the location of the site with a hand-drawn arrow on the appropriate USGS topographic quadrangle.**

1.2 Description

1. **Size of site:** Approximately 42 acres

2. **Slope of site:** 0.4 percent

3. **Site's setting (e.g., urban, suburban, or rural):** Urban

4. **Adjacent land uses (e.g., agricultural, residential, commercial, light or heavy industrial):**

The surrounding area is retail/commercial and light industrial. The nearest residences are approximately 0.25 mile from the site.

5. **Access (e.g., fenced with a locked gate):**

The site is accessible from the north side of the property.

6. **Operational history and hazardous waste management practices:**

The Sobex site property has been developed since 1963. Several historical site operations and activities generated or used hazardous substances.

From 1978 to 1979, buildings 1 and 2 were leased to Polymir Industries, which manufactured polyurethane foam insulation board and various other foam products. Polymir Industries entered into voluntary bankruptcy in September 1978, and an auction was held, and materials and equipment were removed by the Federal Bankruptcy Court. A 1979 aerial photograph of the site indicates the presence of drums, tanks, and chemical processing equipment at several locations near the southern portion of the Building 1 loading dock, the end of the railroad tracks, and the Building 1 alcove. These areas are paved with concrete and appear to be stained. From 1978 to 1983, the Golden Gate Auto Auction leased Building 1a and the area of the southeast corner of the site for an auto auction yard, where 2,000 to 4,000 cars were parked prior to sale. During this time, Golden Gate Auto Auction installed an underground gasoline storage tank. The tank was subsequently removed in 1985 by Exceltech, Inc. The 1979 aerial photograph of the site shows visible evidence of stains just southeast of Building 3. This area may have used by Golden Gate Auto Auction as a steam cleaning area for cars. California Oil Recyclers leased Building 4 from 1978 through 1981. The building has since been demolished. California Oil Recyclers reclaimed oil from gasoline stations and stored it in 12,000-gallon aboveground storage tanks. These reclaimed products were then sold in bulk for various fuel oil uses. The 1979 aerial photograph of the site indicates an area of heavily stained soil east of Building 4. It also shows aboveground tanks and drum storage areas adjacent to Building 4. Sobex, Inc., a chemical consulting firm, leased Building 3 from 1980 to 1984, when the business was dissolved and operations were ceased on the property. The building has since been demolished. Operations of this company, which was polyurethane foam manufacturing, were similar to Polymir Industries. Aerial photographs taken in 1981 and 1984 showed drum storage areas on the north side of Building 3.

In the mid-1980s, buildings 3 and 4 were demolished. Construction debris and soil from the demolished buildings were moved to the undeveloped area on the east side of the site. Some of the contaminated soil may have also originated during the excavation and construction of the Building 8 loading dock. As of September 1993, the debris and soil were present in two uncontained piles consisting of approximately 5,600 cubic yards of material. The Clark & Witham work plan, prepared for the site owner in 1993, indicated that bioremediation activities of the soil pile had occurred. Activities included tilling, aeration, and water sprinkling from March 1, 1992 to September 3, 1992.

Foundry sand was brought to the site in 1985-1986 by American Brass & Iron Foundry (ABI) of Oakland, Calif., to be used as fill to level areas for future development. Subsequently, the foundry sand was analyzed by Levine-Fricke and found to be contaminated with priority pollutant metals. The foundry sands were subsequently removed from the site. The removal was not overseen by any agency.

7. **Sources of contamination:**

Analytical results of soil samples collected in the former foundry sands area, soil pile and construction debris showed elevated concentrations of several metals and PCB (aroclor 1254). As of September 1993, the construction debris and soil pile were present in two uncontained piles consisting of approximately 5,600 cubic yards of material. The foundry sands have been removed from the site.

8. **Are there stacks associated with any of the onsite facilities that could be releasing emissions to the air? If yes, from what processes might these emissions originate, are the emissions permitted, and do they go through air pollution control equipment prior to release?**

No

9. **Were odors detected at any time, and at any onsite location, during the site visit?**

No

10. **Estimate the percentage of the site's surface that is:**

exposed soil	15
covered by pavement	50
covered by buildings	25
covered by vegetation	10

11. **If all or a portion of the site's surface is exposed soil, answer the following three questions, based on observations made during the site visit:**

a) **Was the exposed soil wet, moist, dry, cracked, and/or crusted over?**

The soil on site was dry.

b) **What was the texture of the exposed soil?**

Surface soil was generally medium- to course-textured. Subsurface soils were generally fine-textured.

c) **Is vehicular traffic possible in any of the areas of exposed soil?**

Yes, vehicular traffic is possible on nearly all areas of exposed soil, except in the construction debris area.

12. **Was there evidence of blowing dust or other particles during the site visit?**

Yes, winds were occasionally strong, and moderate amounts dust and other particles were airborne.

13. **If all or a portion of the site is covered with vegetation, describe the potential for the vegetation to provide protective cover, food, and/or nesting for birds and animals. To do this, describe the location, density, height, width, and vegetative types (i.e., tree canopy, understory shrubs, grass, and ground cover) associated with each vegetative community. Identify dominant plant species, if known. Also identify roads, trails, and other features that mark the transition from one vegetative community to another. (e.g., "The site is divided in half by a dirt road that runs north/south. The portion of the site to the west of the road is occupied by a corn field and the portion to the east is occupied by a native oak grassland. The grasses are approximately 1 foot high and densely cover the entire eastern portion of the site. There is one group of three oak trees in the northeast corner of the site. These 30-foot-tall trees form a moderately dense canopy that covers an area approximately 900 square feet."):**

Aside from landscaped areas in the Home Depot parking lot, vegetation is restricted to the unpaved, southeast portion of the site. The vegetation consisted of foot-high grasses and shrubs.

14. **Identify any surface water bodies on or in the immediate vicinity of the site (e.g., ocean, river, creek, slough, pond, lake, or standing water). Describe approximate depth, acreage, inflow, outflow, and bottom and bank characteristics. Describe the slopes of the banks. If there is vegetation associated with the surface water body or its banks, describe the potential for the vegetation to provide protective cover, food, and/or nesting for birds and animals (e.g., a 5-acre muddy pond that is 16 feet deep, with 20 percent of its surface being covered with dense aquatic vegetation; or a 20-foot-wide slough with a muddy bottom and steep banks that are stabilized by a 40-foot-wide strip of cottonwood trees and tobacco understory shrubs):**

The nearest surface water downslope of the site is an unnamed intermittent stream about 70 feet to the south of the site boundary. A raised railroad track is located between the southeast site boundary and the unnamed intermittent stream. The railroad track appears to prevent runoff from the site from entering the intermittent stream. Other than sparse foot-high grasses, there is no vegetation associated with the stream.

15. **Attach a hand-sketched Site Layout Map indicating the site boundary; fences; adjacent land uses; locations of past and present onsite structures and sources of contamination; characteristics of the site's surface including paved areas and vegetative communities; and surface water bodies.**

2.0 ECOLOGIC RECEPTORS

Ecologic receptors, for the purposes of this form, are any plant or animal species, or habitat, on or in the vicinity of the site, that may be adversely affected by sources of contamination. Ecologic receptors include general wildlife; federal and state proposed/listed, threatened/endangered species; wetlands; national parks; spawning grounds; and rookeries.

2.1 Aquatic Ecologic Receptors

1. **Based on observations made during the site visit, information from the NDDB, and information from discussions with local agencies, describe aquatic ecologic receptors associated with surface water bodies on or in the vicinity of the site (e.g., a 12-foot by 12-foot area of wetlands is located in the northeast corner of the site; or 12 brown pelicans were observed in a lagoon adjacent to the site during the site visit):**

   There are no aquatic ecologic receptors associated with the site.

2. **Indicate the locations of any aquatic ecologic receptors on the Site Layout Map.**

2.2 Terrestrial Ecologic Receptors

1. **Based on observations made during the site visit, information from the NDDB, and information from discussions with local agencies, describe terrestrial ecologic receptors on or in the vicinity of the site (e.g., raccoon tracks were observed in the southwest corner of the site during the site visit; or four red-tail hawks were observed flying overhead during the site visit):**

   The San Francisco Bay National Wildlife Refuge lies about 8,000 feet southwest of the site. According to the Natural Diversity Data Base (NDDB), there are two known federally and/or state-listed endangered species in the area of the San Francisco Bay National Wildlife Refuge. They are the salt marsh harvest mouse *(Reithrodontomys Raviventris)* and the California clapper rail *(Rallus Longirostris Obsoletus)*. According to the NDDB, there are no known federally and/or state-listed endangered species within 1 mile of the site.

   During the 1991 BEI site visit, the following animals were observed onsite: a fox in the construction debris, a rabbit among the automobiles, and a squirrel on the west edge of the property.

2. **Indicate the locations of any terrestrial ecologic receptors on the Site Layout Map.**

3.0 HUMAN RECEPTORS

1. **Identify the nearest hydraulically downgradient drinking-water well, within 4 miles of the site, and describe its distance from the site, population served, and sampling results, if any:**

   Groundwater in the Fremont area is used by the Alameda County Water District (ACWD) as a drinking-water supply source. The ACWD operates a blended water supply system that serves approximately 275,000 people. Surface water from Hetch Hetchy Reservoir and the South Bay Aqueduct contribute 44 percent of the total water supply, and the remaining 56 percent is obtained from 19 municipal wells operated by the ACWD. The 19 municipal wells are within 4 miles of the site. The nearest active municipal well is approximately 2.9 miles north of the site.

2. **Identify the nearest surface drinking-water intake within 15 miles downstream of the site, and describe its distance from the site, population served, and sampling results, if any:**

   The nearest surface water downslope of the site is an unnamed intermittent stream about 70 feet to the south of the site boundary. This stream discharges into Mowry Slough and finally into San Francisco Bay National Wildlife Refuge, which lies about 8,000 feet southwest of the site. There are no surface water intakes within 15 miles downstream of the site.

3. **Are there any residences on the site? If so, describe the location of the residence(s) and the number of occupants:**

   There are no residences on site.

4. **Indicate the location(s) of any onsite residences on the Site Layout Map.**

5. **Are there any residences adjacent to the site? If so, describe the location of the residence(s) and the number of occupants:**

   There are no residences adjacent to the site.

6. **Indicate the location(s) of any residences that are adjacent to the site on the Site Layout Map.**

7. **Based on information from GEMS, provide the number of residents within 0.5 mile of the site by filling out the following table. If the site is in a rural area for which GEMS data is not available, use other sources to estimate population:**

Miles from site based on GEMS	Total number of residents in the distance ring
On site	0
0 to 0.25	0
0.25 to 0.5	21

8. **Are there any workers on or adjacent to the site? If so, describe the location of their workplace(s) and the number of workers:**

There are approximately 150 people working on site. Furthermore, there are an undetermined amount of people working adjacent to the site.

9. **Based on observations made at the site visit and examination of a Thomas Bros. map, answer the following three questions:**

- **Are there any hospitals on or within 0.5 mile of the site? If so, describe the location(s):**

There are no hospitals on or within 0.5 mile of the site.

- **Are there any schools or daycare centers on or within 0.5 mile of the site? If so, describe the location(s):**

There are no schools or daycare centers on or within 0.5 mile of the site.

- **Are there any known recreational uses on or within 0.5 mile of the site (e.g., park, campground, fishing area, hiking trails, picnic area, or baseball diamond)? If so, describe the location(s):**

Marshall Park is located within 0.5 mile north of the site.

10. **List signs of human presence on the site, as observed during the site visit (e.g., footprints, paths, litter, vandalism, or tracks made by bikes, cars, or trucks):**

The site was active at the time of the site visit. Approximately 150 people work at the Sobex site, and an undetermined number of retail customers visit the site daily.

11. **Describe areas of the site, as observed during the site visit, that might be attractive specifically to children for playing (e.g., mounds, piles, pits, holes, depressions, or water holes):**

The soil pile and construction debris might be attractive to children for playing and riding bicycles.

4.0 SIGNIFICANT HAZARD RANKING SYSTEM (HRS) FACTORS

Identify the HRS pathway(s) that are responsible for yielding a site score of equal to or greater than 28.50. For each of these pathways, describe the individual factors that are driving the score:

The Groundwater Pathway is responsible for yielding a site score greater than 28.5. The factors driving this score include:

1. Results of an onsite soil and groundwater sampling effort indicate the presence of lead in soil and groundwater onsite.
2. In the Fremont area, there are localized areas of interconnection between the unconfined and the Newark aquifers, which is a concern of the ACWD and the Regional Water Quality Control Board because of the potential for contaminant migration. The deeper aquifers are important sources of municipal and domestic water supplies.
3. Groundwater in the Fremont area is used by the Alameda County Water District (ACWD) as a drinking-water supply source. The ACWD operates a blended water supply system that serves approximately 275,000 people. Surface water from Hetch Hetchy Reservoir and the South Bay Aqueduct contribute 44 percent of the total water supply, and the remaining 56 percent is obtained from 19 municipal wells operated by the ACWD. The 19 municipal wells are within 4 miles of the site. The nearest active municipal well is approximately 2.9 miles north of the site.

SOBEX, INC.

INTEGRATED ASSESSMENT

APPENDIX D

Contact Log, Contact Reports, Site Reconnaissance Interview and Observations Report, and Photographic Documentation

APPENDIX C

CONTACT LOG

Site: Sobex, Inc.

EPA ID: CAD 982399784

Name	Affiliation	Phone	Date	Information
Dana Blake	EPA, Region IX	(415) 744-1483	7/30/91	Ms. Blake reviewed RCRA database file for a Sobex listing and forwarded EPA records showing Sobex as a one-time waste generator.
Richard Hiett	California Regional Water Quality Control Board, (RWQCB) Region 2	(510) 464-4359	8/2/91	Set date with R. Hiett to review Sobex files on 8/6.
Dale W. Sobek	Sobex, Inc. (Owner)	(510) 657-7633	8/14/91	First discussion about EPA PA/SI work. Basic questions/set up visitation date, week of 8/26.
Richard Hiett	RWQCB	(510) 464-4359	8/15/91	See Contact Report by James E.F. Davidson, Bechtel Environmental, Inc. (BEI)
Judy Martin	City of Fremont, Public Works Dept., Haz. Mat. Div.	(510) 791-4271	8/15/91	See Contact Report by James E.F. Davidson, BEI.
Doris Cruz	City of Fremont, Public Works Dept., Haz. Mat. Div.	(510) 540-3748 [FAX (510) 540-3738]	8/15/91	See Contact Report by James E.F. Davidson, BEI.

CONTACT LOG (Cont'd)

Site: Sobex, Inc.

Name	Affiliation	Phone	Date	Information
Dale W. Sobek	Sobex, Inc. (Owner)	(510) 657-7633	8/20/91	Set 8/30 as site visitation date. Mr. Sobek was concerned about the volume of information requested because he wouldn't be able to provide it all. He also said much of it was available in published reports. I told him that I would review available reports and inform him of information still required.
Judy Martin	City of Fremont, Public Works Dept., Haz. Mat. Div.	(510) 791-4271	8/20/91	Met Judy Martin and reviewed Sobex files in Fremont.
Dale W. Sobek	Sobex, Inc. (Owner)	(510) 657-7633	8/21/91	See Contact Report by James E.F. Davidson, BEI.
Judy Martin	City of Fremont, Public Works Dept., Haz. Mat. Div.	(510) 791-4271	8/21/91	See Contact Report by James E.F. Davidson, BEI.
G. (Jill) F. Duerig	Alameda County Water District (ACWD), Groundwater Resources	(510) 659-1970, x440 [FAX (510) 770-1793]	8/21/91	See Contact Report by James E.F. Davidson, BEI.
Kathy Gates	Alameda County Dept. of Envir. Health, Div. of Haz. Mat.	(510) 271-4320 [FAX (510) 568-3706]	8/21/91	No information available for the Sobex site.
Scott Seery	Alameda County Dept. of Envir. Health, Div. of Haz. Mat.	(510) 271-4320	8/21/91	Currently involved with District Attorney on foundry sand issue only. Awaiting detailed work plan, due 8/23. ACWD best info source.

CONTACT LOG (Cont'd)

Site: Sobex, Inc.

Name	Affiliation	Phone	Date	Information
G. (Jill) F. Duerig	ACWD	(510) 659-1970, x440 [FAX (510) 770-1793]	8/21/91	Left message regarding both EPA and Bechtel's involvement.
Doris Cruz	DTSC	(510) 540-3748 [FAX (510) 540-3738]	8/26/91	Sobex file ready for review. Scheduled to review files on 8/27.
Doris Cruz	DTSC	(510) 540-3748 [FAX (510) 540-3738]	8/27/91	Reviewed files at DHS. Called Legal Beagle to make copies of relevant file sections for use in SI report.
Judy Martin	City of Fremont, Public Works Dept., Haz. Mat. Div.	(510) 791-4271	8/27/91	Copies of Sobex files ready to pick up-$85.75 due in copy charges. Will pick up 8/30/91.
Tom Peacock	Alameda County Dept. of Envir. Health, Div. of Haz. Mat.,	(510) 271-4320	8/29/91	Wants to know if he can and needs to attend site visit. Told him he could, but not necessary. Mr. Peacock decided not to join us.
Dale W. Sobek	Sobex, Inc. (Owner)	(510) 657-7633	8/30/91	See Site Reconnaissance Report.
Judy Martin	City of Fremont, Public Works Dept., Haz. Mat. Div.	(510) 791-4271	8/30/91	Went to Fremont and picked up copied files.
G. (Jill) F. Duerig	ACWD	(510) 659-1970, x440 [FAX (510) 770-1793]	9/03/91	Discussed with Ms. Duerig general status of Sobex work plans. Asked if the Alameda County Water District was in a wellhead protection area – her response was negative.

CONTACT LOG (Cont'd)

Site: Sobex, Inc.

Name	Affiliation	Phone	Date	Information
Scott Seery	Alameda County Dept. of Envir. Health, Div. of Haz. Mat.	(510) 271-4320	9/03/91	Discussed Mr. Sobek's delay in submittal of foundry sands sample plan. The District Attorney's Office will be pursuing submittal of this document with Mr. Sobek.
Richard Hiett	RWQCB	(510) 464-4359	9/03/91	The RWQCB is acting as an advisor to the ACWD concerning groundwater and soil contamination issues at the Sobex site. The RWQCB is not currently concerned about PCB contamination as detected in an earlier sampling event.
Elizabeth Stowe	City of Fremont, Public Works Dept., Haz. Mat. Div.	(510) 791-4271	9/03/91	Left message that I wanted to discuss general Sobex site issues.
Mark Willian	DTSC	(510) 540-2122	9/03/91	Left message wishing to discuss previous PA report on Sobex site.
Linda Vrabel	City of Fremont, Public Works Dept., Haz. Mat. Div.	(510) 791-4271	9/03/91	Ms. Vrabel returned call for E. Stowe. She informed me that drums/tanks were removed satisfactorily from site, Building 1 cleanup was complete, groundwater monitoring was yet to be implemented. The City of Fremont is delaying further development of Building 1 until foundry sands and contaminated soils pile issued are addressed.
Linda Spencer	RWQCB	(510) 464-1255	9/03/91	New RWQCB representative for Sobex (replacing R. Hiatt)

CONTACT LOG (Cont'd)

Site: Sobex, Inc.

Name	Affiliation	Phone	Date	Information
Linda Spencer	RWQCB	(510) 464-1255	9/04/91	Received FAX concerning interconnection of aquifers in Fremont area.
Elizabeth Stowe	City of Fremont, Public Works Dept., Haz. Mat. Div.	(510) 791-4271	9/10/91	E. Stowe informed me that Sobex, Inc. missed their submittal date for sample plan of foundry sands and she wanted to know the status of the SI report. I told her it was proceeding and the final is scheduled to be issued in November.
Paul La Courreye	EPA, Region IX	(415) 744-2345	9/13/91	Conducted scoping session with EPA.
Mr. Harris	Alameda County District Attorney's Office (ACDA)	(510) 569-9289	9/16/91 9/17/91 9/18/91	Left messages concerning authority issues regarding Sobex site. Mr. Harris referred me to Gil Jensen or Britt Johnson of the ACDA.
Gilbert A. Jensen	ACDA Consumer & Envir. Protection Div.	(510) 569-9281	9/17/91	See Contact Report by Susan Naughton, BEI.
Britt Johnson	ACDA Consumer & Envir. Protection Div.	(510) 569-9281	9/17/91	See Contact Report by Susan Naughton, BEI.
Scott Seery	Alameda County Dept. of Envir. Health, Div. of Haz. Mat.	(510) 271-4320	9/17/91	See Contact Report by Susan Naughton, BEI.
G. (Jill) F. Duerig	ACWD	(510) 659-1970, x440 [FAX (510) 770-1793]	9/19/91	See Contact Report by James E.F. Davidson, BEI.
Linda Vrabel	City of Fremont, Public Works Dept., Haz. Mat. Div.	(510) 791-4271	9/19/91	Confirmed authority issues regarding ACDA, ACWD, and City of Fremont.

CONTACT LOG (Cont'd)

Site: Sobex, Inc.

Name	Affiliation	Phone	Date	Information
Scott Seery	Alameda County Dept. of Envir. Health, Div. of Haz. Mat.,	(510) 271-4320	9/19/91	Picked up foundry sands sample plan
Jill Duerig	ACWD	(510) 659-1970	6/8/92	Jill said that the groundwater monitoring plan for the site has been basically abandoned due to lack of people and funds to implement it. She is going on another assignment; Jim Ingle at ACWD will be a good contact for information regarding wells in the Fremont area.
Jim Cutera	City of Fremont, Public Works Dept., Haz. Mat. Div.	(510) 791-4271	6/8/92	Linda Vrable is no longer with the agency. Jim Cutera is the new contact for the City of Fremont.
Eddy So	RWQCB	(510) 286-1332	6/8/92	Mr. So recently received the lead for the site and doesn't have any information regarding upgradient and downgradient wells, contamination, or sources in the area. We can go to the file room any time to look for needed information. He said that he would look into gathering well information for the area.
Dale Sobek	6000 S Corporation	(510) 657-7633	6/9/92	I explained to Mr. Sobek that BEI would be conducting a presampling site visit. Mr. Sobek said we are not allowed on site and he would not speak to us anymore. If we needed information we are to call Sobek's lawyer, Laurence Lulofs, at 510-444-5521

CONTACT LOG (Cont'd)

Site: Sobex, Inc.

Name	Affiliation	Phone	Date	Information
Jim Ingle	ACWD	(510) 659-1970	6/10/92	Asked Jim Ingle about groundwater wells in and around the Sobex site. He said that many of the wells in that area have been destroyed. He thinks I will have a hard time locating wells in that area. He has been working on the Bordin site. There are several monitoring wells on that site (0.5 mile south of Sobex). He advised me to review well data sheet at the RWQCB and ACWD.
Eddy So	RWQCB	(510) 286-1332	6/10/92	I scheduled an appointment with Eddy So to review files at the RWQCB on June 16 at 2 p.m.
Jill Duerig	ACWD	(510) 659-1970	6/12/92	I scheduled an appointment to review well logs at the ACWD on June 17 at 10 a.m. She said that Steven Inn would be taking over the ACWD lead for the site.
Steven Inn	ACWD	(510) 659-1970	6/12/92	I scheduled a meeting to discuss the strategy for dealing with Sobex. The meeting is scheduled for June 22 at 10:00 a.m. at the RWQCB in Oakland. The meeting will be attended by Tom Genolio and Susan Naughton of BEI, Steven Inn of ACWD, and Eddy So of the RWQCB.
Eddy So	RWQCB	(510) 286-1332	6/12/92	I scheduled the June 22 meeting to discuss the strategy for dealing with Sobex.

CONTACT LOG (Cont'd)

Site: Sobex, Inc.

Name	Affiliation	Phone	Date	Information
Paul La Courreye	EPA, Region IX	(415) 744-2345	6/12/92	I scheduled the June 22 meeting to discuss the strategy for dealing with Sobex.
Scott Seery	Alameda County Dept. of Envir. Health, Div. of Haz. Mat.,	(510) 271-4320	6/12/92	Scott Seery was also invited to the meeting at the RWQCB. He will not be able to attend.
Barbara Ettlinger	U.S. EPA, Region IX	(510) 744-1383	1/12/93	I am sending Ms. Ettlinger a copy of the Sobex Request for Access Letter. I've made some editorial comments on the draft copy. She will review it and get back to me.
Kenneth Henneman	Private Water Resources Consulting Engineer	(510) 846-4450	2/12/93	The groundwater hydrology in the vicinity of the Sobex site is considered bathtub hydrology. Because the topography of the area is flat, there generally is little movement of shallow groundwater. Generally, the gradient is towards the S.F. Bay (southwest). There have been documented instances of groundwater gradient change due to precipitation and tidal influences. There has been evidence of interconnection between shallow groundwater zones and the Newark aquifer within 2 miles of the site.

CONTACT LOG (Cont'd)

Site: **Sobex, Inc.**

Name	Affiliation	Phone	Date	Information
Mike Halliwell	ACWD	(510) 659-1970	9/10/93	Mr. Halliwell reviewed the application for a drilling permit and the site hazard information form for sampling activities at the Sobex site. He told me that any borings made at the site in excess of 5 feet deep are required to be filled with # 1 or # 2 portland cement. He also said that all decontamination fluids generated during the sampling event are required to be contained in 55-gallon drums.
Mike Halliwell	ACWD	(510) 659-1970	2/3/94	See Contact Report.
Eddy So	RWQCB	(510) 286-4366	2/3/94	See Contact Report.

CONTACT REPORT

AGENCY/AFFILIATION: Regional Water Quality Control Board - S.F. Bay Region		
DEPARTMENT:		
ADDRESS: 2101 Webster St., Suite 500	CITY: Oakland	
COUNTY: Alameda	STATE: CA	ZIP: 94612

CONTACT(S)	TITLE	PHONE
Richard Hiett		510-464-4359

BEI PERSON MAKING CONTACT: James E.F. Davidson	DATE: 15 Aug. 91
SUBJECT: Background information search	
SITE NAME: Sobex, Inc.	EPA ID#: CAD982399784

DISCUSSION: RWQCB currently not actively involved with site. Reviewed Sobex file; partial listing as follows:

1. CA-DHS Mar. '88 - PA
2. Earth Metrics, Inc. Jan. '88 - Site Cont. Charact. History
3. Ensco Environ. Services, Inc. Jan. '90 - Pre. Environ. Ass.
4. EIR for City of Fremont
5. Varians letters from COF/ACWD/ACDA/ACHCS
6. Letters from RWQCB, PCB issue Mar. '82 & Request for add. info Jan. '90

8/15/91: Compare files to DHS files. DHS more complete. Request copy of DHS files.

CONTACT REPORT

AGENCY/AFFILIATION: City of Fremont		
DEPARTMENT: Hazardous Materials Division		
ADDRESS: 39572 Stevenson Blvd.	CITY: Fremont	
COUNTY: Alameda	STATE: CA	ZIP: 94539

CONTACT(S)	TITLE	PHONE
Judy Martin	files clerk	415-791-4271
Elizabeth Stowe	Haz. Mat. Spec.	415-791-4271

BEI PERSON MAKING CONTACT: James E. F. Davidson	DATE: 8/15/91
SUBJECT: Background information search	
SITE NAME: Sobex, Inc.	EPA ID#: CAD982399784

DISCUSSION: Discussed basic nature of EPA PA/SI work and inquired what info might be available in their files. Was told their files are quite extensive and we could set up the Aug. 20 to review the files. There would be a copy charge but no file review fee for another public agency. Also stated I would fax our agency request letter to confirm our conversation.

CONTACT REPORT

AGENCY/AFFILIATION: City of Fremont

DEPARTMENT: Haz. Mat. Division

ADDRESS: 39572 Stevenson Blvd	CITY: Fremont	
COUNTY: Alameda	STATE: CA	ZIP: 94539

CONTACT(S)	TITLE	PHONE
Doris Cruz		

BEI PERSON MAKING CONTACT: James E. F. Davidson

DATE: 8/15/91

SUBJECT: Background information search

SITE NAME: Sobex, Inc.

EPA ID#: CAD982399784

DISCUSSION: Discussed basic nature of EPA PA/SI work and was requesting what info might be available in their files. Was told their files are quite extensive and we could set up the Aug. 20 to review the files. There would be a copy charge but no file review fee for another public agency. Also stated I would fax our agency request letter to confirm our conversation.

However, Ms. Cruz would review the files requested and get back with me latter to set a date for file review.

CONTACT REPORT

AGENCY/AFFILIATION: Sobex, Incorporated			
DEPARTMENT:			
ADDRESS:6000 Stevenson Boulevard		CITY:Fremont	
COUNTY: Alameda		STATE: CA	ZIP: 94538
CONTACT(S)	TITLE	PHONE	
Dale Sobek	Owner	415-657-7633	
BEI PERSON MAKING CONTACT: James E. F. Davidson			DATE: 21 August 91
SUBJECT: Site Visit			
SITE NAME: 6000 Stevenson Boulevard		EPA ID#: CAD982399784	

DISCUSSION: Discussed with Mr. Sobek the upcoming site visitation date. Mr. Sobek wishes for his attorney to attend this meeting due to recent developments and stated he would not be able to get a hold of him until Monday the 26th. Mr. Sobek also stated he was concerned about how long it would take him to gather the information that I requested in my letter. I stated I understood his concern and would appreciate it that he would contact me as soon as he can schedule his attorney to be present onsite. As far as the information, I told Mr. Sobek a large percentage of it I already had and I would appreciate his verification of the information I already had and that any other information could be provided as available, within reason. The meeting scheduled for the 30th of August is currently on hold.

CONTACT REPORT

AGENCY/AFFILIATION: City of Fremont		
DEPARTMENT: Hazardous Material Division		
ADDRESS: 39572 Stevenson Boulevard	CITY:Fremont	
COUNTY: Alameda	STATE: CA	ZIP: 94539-3075
CONTACT(S)	TITLE	PHONE
Judy Martin	Files Clerk	415-791-4279
BEI PERSON MAKING CONTACT: James E. F. Davidson		DATE: 21 August 91
SUBJECT: File review		
SITE NAME: 6000 Stevenson Boulevard	EPA ID#: CAD982399784	

DISCUSSION: Ms. Martin called to inform me that the cost of the files I requested to have copied would be $85.75 and payable upon receipt and would probably be ready by the 28th of August. I told her that was fine and would be planning to pick up the files on the 30th during my site visit to the Sobex property.

203 00028
203 00040

CONTACT REPORT

AGENCY/AFFILIATION: Alameda County Water District		
DEPARTMENT: Groundwater Resources		
ADDRESS: 43885 South Grimmer Boulevard	CITY: Fremont	
COUNTY: Alameda	STATE: CA	ZIP: 94537
CONTACT(S)	TITLE	PHONE
Jill Duerig	Division Engineer	510-659-1970 x440
BEI PERSON MAKING CONTACT: James E. F. Davidson		DATE: 21 August 91
SUBJECT: General information on water system and well closures at Sobex property		
SITE NAME: 6000S Stevenson Boulevard		EPA ID#: CAD982399784

DISCUSSION: Ms. Duerig stated as far as ACWD was concerned the wells closed @ the Sobex site had been closed properly. No extensive analysis of ground water was required and nothing was detected for parameters tested. ACWD was primarily concerned about leaving a pathway for further contamination to penetrate into the lower aquifer; this is why the wells w~~h~~ere requested to be abandoned.

Ms. Duerig also stated that there was a concern on the part of the ACWD & the RWQCB that there was still a pathway for contamination because of natural interconnections between the ~~upper~~ Shallow and ~~lower~~ Newark aquifers (which has been stated in several cleanup orders in Newark ie FMC, Romic, Jones.) The salt-water intrusion program is also concerned with interconnections since extraction is conducted in the ~~upper~~ Newark aquifer ~~to keep saltwater out of the lower aquifer.~~ which might increase vertical components of gradients

Contact Concurrence: ______________ Date: 11/16/91

CONTACT REPORT

AGENCY/AFFILIATION: Alameda County District Attorney's Office

DEPARTMENT: Consumer and Environmental Protection Division

ADDRESS: 2440 S Amador Street
CITY: Hayward

COUNTY: Alameda
STATE: CA
ZIP: 94539

CONTACT(S)	TITLE	PHONE
Gil Jensen		510-569-9281

BEI PERSON MAKING CONTACT: Susan Naughton
DATE: Sept 17, 91

SUBJECT: County Enforcement Authority at Sobex

SITE NAME: Sobex
EPA ID#: CAD 982399784

DISCUSSION: Gil Jensen returned my call. We discussed BEI current activities at the Sobex site; that to verify our analysis under the HRS that we needed some additional samples; and we we needed to know from him the County DA enforcement authority and status of site involvement. I summarized my discussions with Britt Johnson (County DA) and Scott Seery (County DHS).

Jensen stated that the County DA is, at this time, only involved with the foundry sands. During the next phase (no date as yet) it will deal with groundwater. He is litigating against Mr. Sobex under the State Hazardous Waste Control Act. He may not have legal jurisdiction to request that Mr. Sobek sample for our samples. He would review our sampling recommendations with Seery and decide. Technically, if its fine with Seery, its fine with him. His only concern is that we not request extensive, long-term sampling. He requested that we call Seery and request the Foundry Sands sample plan. Any comments we can provide to Seery would be greatly appreciated

Contact Concurrence: ____________________ Date: 9-27-91

202 00034

CONTACT REPORT

AGENCY/AFFILIATION: Alameda County District Attorney's Office

DEPARTMENT: Consumer and Environmental Protection Division

ADDRESS: 24~~40 S Amador Street~~ [illegible] | CITY: ~~Hayward~~ [illegible]

COUNTY: Alameda | STATE: CA | ZIP: ~~94539~~ [illegible]

CONTACT(S)	TITLE	PHONE
Britt Johnson	Legal Technician	510-569-9281

BEI PERSON MAKING CONTACT: Susan Naughton SN | DATE: sept 17, 91

SUBJECT: County Enforcement Authority at Sobex

SITE NAME: Sobex | EPA ID#: CAD 982399784

DISCUSSION: Mr. Johnson called at the request of Gil Jensen. WHO WAS CALLED [illegible] I discussed the PA/SI process and that we recently conducted a site visit at Sobex, Inc in Fremont. Based on the site visit and information collected to date, we need additional sampling data to verify our HRS analyses of the potential contamination from the foundry sands, construction debris pile, contaminated soils pile undergoing bioremediation, and to ground water. Prior to further involvement at the site, EPA asked us to discuss the enforcement authority of the County DA with the DA staff and the potential schedule for completion of sampling/remediation actions at the Sobex site. If County DA has enforcement jurisdiction and the site would move forward in a timely manner, EPA would like to request that the County DA request that Mr. Sobek sample for a number of EPA-specified chemical components at specific locations.

Johnson reviewed the numerous laws giving the County DA Office enforcement authority. Summary - its authority stems from CA State laws and it often [illegible] works ~~hand in hand~~ with ~~the~~ State ~~Attorney General on cases.~~ AND FEDERAL ENVIRONMENTAL AGENCIES.

Johnson is not sure of present DA Office involvement at Sobex. He has talked with Scott Seery (Hazardous Material Specialist, 271-4320) Seery told him that a meeting is planned for next month to discuss site status "to move it forward". I told him we would call Seery to discuss Sobex, and that maybe it would be beneficial for the EPA to attend the meeting when its held so the sampling needs of all agencies can be discussed.

Contact Concurrence: Britt J[illegible] Date: 9-27-91

202 00035

CONTACT REPORT

AGENCY/AFFILIATION: Alameda County Department of Environmental Health

DEPARTMENT: Hazardous Materials Division

ADDRESS: 80 Swan Way, Room 200 CITY: Oakland

COUNTY: Alameda STATE: CA ZIP: 94621

CONTACT(S)	TITLE	PHONE
Scott Seery	Hazardous Materials Spec	510-271-4320

BEI PERSON MAKING CONTACT: Susan Naughton SN DATE: Sept 17, 91

SUBJECT: County Enforcement Authority and Activities at Sobex

SITE NAME: Sobe~~x~~k EPA ID#: CAD 982399784

DISCUSSION: Scott Seery returned my call. We discussed County enforcement authority. Summary - Since approx 1985, the County has had a Memorandum of Understanding with the State. The County operates for State in implementation and enforcement of CAL-EPA (CA DHS) laws/regulations (Chp. 6.5, HSC; Title 22, CCR) relating to hazardous waste within its jurisdiction.

Seery's present actions at Sobe~~x~~k relate to foundry sands only.

~~He~~ Seery stated there are volumes of data and correspondence within the different agencies relating to activities at Sobe~~x~~k. I said we had collected lots of it. We have talked with numerous agencies, conducted data review and site visit and still need a few additional parameters sampled for to be able to verify our analysis under HRS. I said that Jim Davidson, Site Leader, would contact him to discuss our findings and our sampling needs and rationale. We were in process of submitting a letter to EPA outlining our sample needs. EPA would then request County to request Mr. Sobek to add these samples. ~~He~~ Seery said County (he) should not have a problem with this.

~~He~~ Seery said because of his ~~experience in remediation at foundry,~~ research and prior experience with a NPL site associated with foundry sand disposal, he requested that foundry sands be sampled for certain Title 22 metals, dioxins/furans, and PNAs.

Mr. Sobek submitted sample plan recently. DA requested that Seery review by end of first week of October. Seery would appreciate our input if we can prior to that time.

Contact Concurrence: Date: 10-3-91

CONTACT REPORT

AGENCY/AFFILIATION: Alameda County Water District (ACWD)		
DEPARTMENT: Groundwater Resources		
ADDRESS: 43885 South Grimmer Boulevard	CITY: Fremont	
COUNTY: Alameda	STATE: CA	ZIP: 94537
CONTACT(S)	TITLE	PHONE
Jill Duerig	Division Engineer	415-659-1970 x440
BEI PERSON MAKING CONTACT: James E. F. Davidson	DATE:19 Sept 91	
SUBJECT: General information on water system and authority at Sobex property		
SITE NAME: Sobex, Inc	EPA ID#: CAD982399784	

DISCUSSION: Asked Ms. Duerig some basic questions regarding the Alameda County water distribution system and other site issues, these are summarized as follows:

- Water supply sources: Hetch Hetchy and South Bay Aqueduct directly supply 45% of the systems water the remaining 55% is supplied by groundwater wells (a total of 19 wells); some SBA water is used for artificial recharge.
- Other wells of concern are the salinity barrier wells which draw the water toward the bay to reclaim ~~reservoir~~ aquifer capacity. This effort is on hold due to the potential of drawing contaminants across the ~~reservoir.~~ aqufer
- Number of people served approximately 250,000 (160,000 resident population from 1990 census information). ? in cities of Fremont, Newark and Un Ci
- The ACWD does have jurisdiction to enforce but has chosen not to be the primary complainant. Currently when th~~eir~~ere is a problem of discharge to the groundwater the ACWD works with the San Francisco Regional Water Quality Control Board (RWQCB) or other appropriate agency(s) to address the situation. With the Sobex site the ACWD ~~has addressed their concern to the~~ is coordinating with RWQCB (Linda Spencer) and they are establishing a schedule to address potential groundwater problems within the next year.
- The ACWD is currently working on the contaminated soil under current bioremediation with the Alameda County District Attorney Office. The ACWD current wish is for this material to be disposed offsite and that this remediation effort is only to reduce its contamination for disposal.

Contact Concurrence: ____________ Date: 11/16/91

CONTACT REPORT

AGENCY/AFFILIATION: Alameda County Water District (ACWD)		CODE:
DEPARTMENT: Groundwater Resources		
ADDRESS: 43885 South Grimmer Blvd.	CITY: Fremont	
COUNTY: Alameda	STATE: CA	ZIP: 94538
CONTACT(S) Mike Halliwell	TITLE Hydrogeological Engineer	PHONE (510) 659-1970 x412
BEI PERSON MAKING CONTACT: Tom Genolio		DATE: 2/3/94
SUBJECT: ACWD municipal groundwater supply		
SITE NAME: Sobex, Inc.		EPA ID: CAD 982399784

DISCUSSION:

Mr. Halliwell explained that the ACWD operates 19 active municipal groundwater wells in the Fremont area. Eight of these wells are located north of (above) the Hayward fault (between 3 and 4 miles north of the site) and 11 are located in a cluster south of (below) the Hayward fault (approximately 2.9 miles north of the site). The ACWD uses a blended municipal water supply system. Sources of municipal water include Hetch Hetchy Reservoir, the South Bay Aqueduct and groundwater wells. No single well or surface water source intake supplies greater than 40 percent of the total water supply. No groundwater wells within 4 miles of the site have been shut down due to contamination. Several private groundwater wells within 4 miles of the site appear to be used for irrigation of commercial food crops.

CONTACT CONCURRENCE: ______________________ **DATE:** ____________

~~903 0037~~
903 0038

CONTACT REPORT

AGENCY/AFFILIATION: California Regional Water Quality Control Board (RWQCB)		CODE:
DEPARTMENT: San Francisco Bay Region		
ADDRESS: 2101 Webster Street, Suite 500	CITY: Oakland	
COUNTY: Alameda	STATE: CA	ZIP: 94612
CONTACT(S) Eddy So	TITLE Associate Water Resources Control Engineer	PHONE (510) 286-4366
BEI PERSON MAKING CONTACT: Thomas Genolio TG		DATE: February 3, 1994
SUBJECT: Current regulatory activities at the site		
SITE NAME: Sobex, Inc.	EPA ID: CAD 982399784	

DISCUSSION:

In accordance with RWQCB directives and with ~~technical and regulatory~~ assistance from the Alameda County Water District (ACWD), a soil and groundwater characterization work plan was prepared in 1993 by consultants to the site owner. The work plan indicated that quarterly monitoring of shallow groundwater at the site would be conducted. Soil and groundwater sampling and analyses were conducted by the site owner in April 1993; however, continuous quarterly groundwater monitoring at the site has not occurred. ~~The RWQCB sent a letter to the site owner in January 1994 reiterating the quarterly groundwater monitoring requirements. The RWQCB is considering enforcement actions at the site.~~ A lett[illegible] sent to the site owner in January 1994 reiterating the quarterly GW monitor requirements.

In accordance with ACWD directives, a work plan was prepared to modified determine the effect of foundry sands storage at the site on groundwater beneath the site. A Waste Extraction Test (WET) using extraction solution adjusted to simulate local rainwater pH ~~and Toxicity Characteristic Leaching Procedure (TCLP)~~ were performed in the former foundry sands area by the site owner in late 1993. Test results indicated that storage of foundry sands did not present a threat to ~~have a significant affect on~~ groundwater beneath the site. The ACWD, with technical assistance from the RWQCB, reviewed the test results and indicated that the foundry sands issue has been satisfactorily addressed.

CONTACT CONCURRENCE: ______________ **DATE:** 2/9/94

Site Reconnaissance Interview and Observation Report

Site Name:	Sobex, Inc. 6000 Stevenson Boulevard Fremont, CA
EPA ID#:	CAD982399784
Site Visit Date:	August 30, 1991
Observations made by:	James Davidson Susan Naughton Gary Yao
Facility Representative(s) and Title(s):	Dale W. Sobek, owner of property Larry Lulofs of Morton, Lulofs and Allen, law firm for Mr. Sobek

Initially the site was owned by Pullman Trailmobile, as stated in the Earth Metrics, Inc. report of January 1988. Mr. Dale Sobek purchased the 42 acre site in 1978 and still owns it. Mr. Sobek stated that the Earth Metric's report presents maps detailing the site history as well as past agency involvement.

In 1988, Mr. Sobek requested a rezoning of his property from industrial to commercial. Prior to rezoning, the City of Fremont required that an Environmental Impact Report be prepared. This report identified site-specific issues that needed to be addressed prior to additional property development and rezoning. Some of these issues related to site contamination. Based on this report, local agencies have been requesting that Mr. Sobek provide site contamination data. Mr. Sobek has attempted to respond to these requests but has found it frustrating because the requesters do not specify what they want. He feels he is being hampered in his development of Building 1, the last building to be renovated for commercial use.

Two issues are being pursued by Mr. Lulofs on behalf of Mr. Sobek:

- Oil Contaminated Soils: California Oil Recyclers abandoned the site in 1982 leaving behind contaminated soils and materials. Mr. Lulof is working to resolve the contamination issue with the company
- Foundry Sands: Foundry sands were purchased in 1985 from American Brass and Iron Co. to be used as fill. Mr. Sobek was led to believe that these sands were "clean". He has been requested by the Alameda County Department of Health to submit a Sampling Plan to characterize the sands prior to their use as fill or removal.

There are no chemicals and/or drums presently on site.

Two of the three abandoned production wells where used for air conditioning and irrigation purposes.

Based on information from the Regional Water Quality Control Board, PCBs were detected in stagnant rainwater on site. We asked if additional analysis had been conducted for PCBs; he said yes and the results were "non-detect". (This was confirmed by E. Stowe from the City of Fremont, but documentation is not available due to non-payment for services).

Remaining unresolved issues with the county agencies are as follows:

- Foundry Sands: sample plan to be submitted to Alameda County Department of Health prior to use as fill or removal by American Brass and Foundry
- Contaminated Soils Pile: being bioremediated by ETIC. Pile is on 10 millimeter thickness visqueen and is regularly watered, tiled, and fertilized. End of October, ETIC will conduct final testing for disposal/deposition. Alameda County Water District has requested a monitoring plan.
- Alameda County Water District and Regional Water Quality Control Board are evaluating the need for a ground-water monitoring plan to assess potential contamination of shallow aquifer

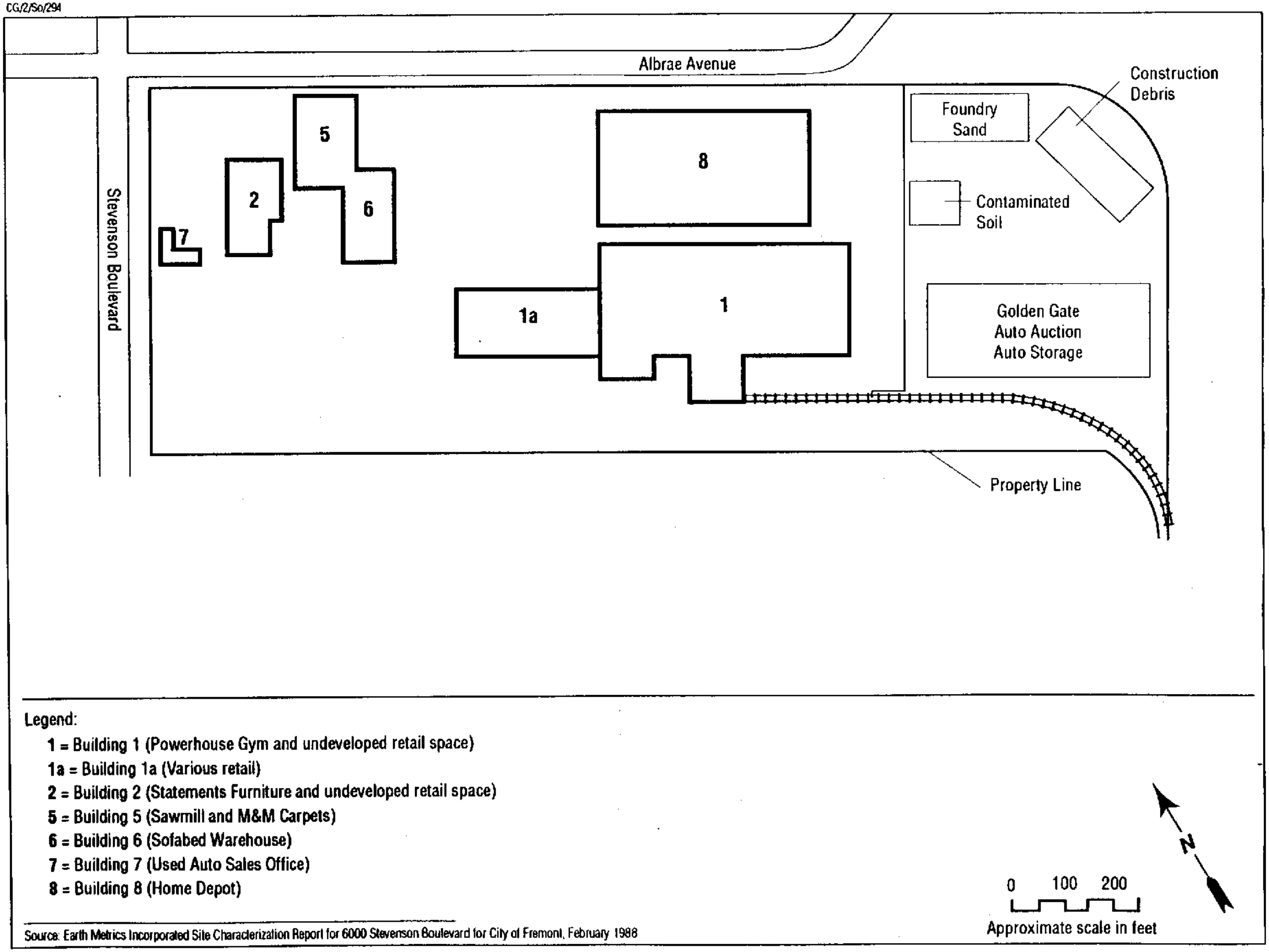
Site Observations

Within the property boundary the site is developed with retail/commercial outlets and parking facilities, as shown on Figure D-1. Building 1 is presently under renovation. Some of the other buildings are unoccupied. The area south of Buildings 1 and 8 is undeveloped. In this area are the piles of contaminated soil, foundry sand, and construction debris. These sources of contamination can be reached from the adjacent back parking lot. The undeveloped area is fenced on the remaining three sides. During the visit, the following animals were observed: a fox in the construction debris, a rabbit among the automobiles, and a squirrel on the west edge of the property.

Surrounding Developments

As shown on Figure D-2, the area around the Sobex, Inc. site is a combination of light industrial, commercial, and retail businesses, and multi-residential complexes. Along the south edge of the property lies a railroad spur and an unnamed intermittent stream. Further to the south is the Pacific Business Park. To the west is the Stevenson Business Park that houses Gold's Gym, a florist wholesaler, an autoparts warehouse distribution, GTE service center and various other office space. Further to the west is Comstock Roofing Materials and Borden Packaging. To the north is a small multi-residential complex, retail outlets, motel, and auto dealerships. To the east are additional retail outlets and Interstate-880.

CG/2/So/294



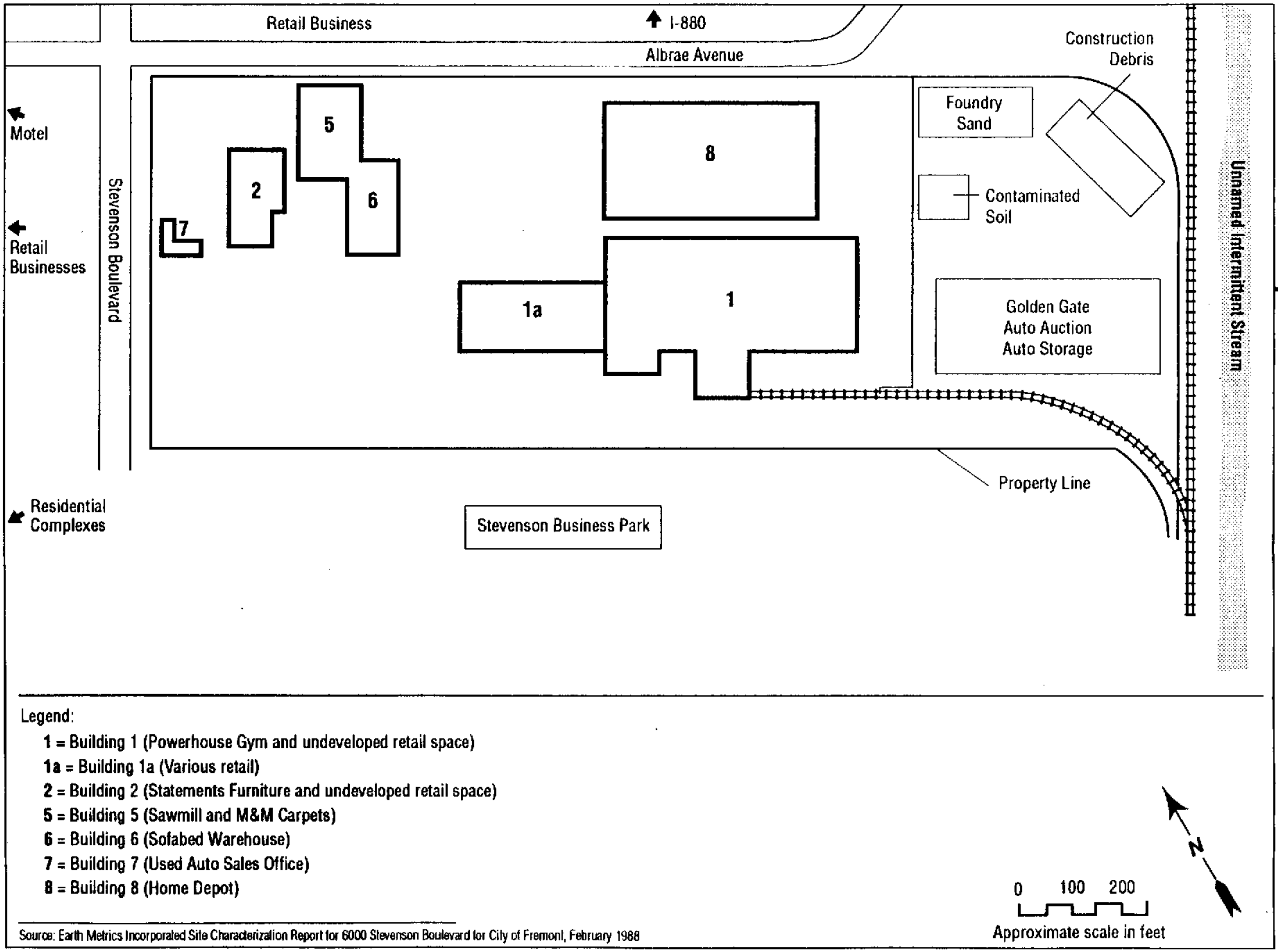
Legend:

1 = Building 1 (Powerhouse Gym and undeveloped retail space)
1a = Building 1a (Various retail)
2 = Building 2 (Statements Furniture and undeveloped retail space)
5 = Building 5 (Sawmill and M&M Carpets)
6 = Building 6 (Sofabed Warehouse)
7 = Building 7 (Used Auto Sales Office)
8 = Building 8 (Home Depot)

Source: Earth Metrics Incorporated Site Characterization Report for 6000 Stevenson Boulevard for City of Fremont, February 1988

Figure D-1 Site Map

CG/2/So/294



Legend:

- **1** = Building 1 (Powerhouse Gym and undeveloped retail space)
- **1a** = Building 1a (Various retail)
- **2** = Building 2 (Statements Furniture and undeveloped retail space)
- **5** = Building 5 (Sawmill and M&M Carpets)
- **6** = Building 6 (Sofabed Warehouse)
- **7** = Building 7 (Used Auto Sales Office)
- **8** = Building 8 (Home Depot)

Source: Earth Metrics Incorporated Site Characterization Report for 6000 Stevenson Boulevard for City of Fremont, February 1988

Figure D-2 Vicinity Map

Printed on 50% recycled paper.

APPENDIX D
Photographic Documentation

1. Soil sampling location SL-3 (note red flag) in construction debris area (facing north).

2. Groundwater sampling location LF-4 at rear of van (facing south).

Soil sampling location SL-6 in former buildings 3 and 4 area, in foreground (facing south).

4. Groundwater sampling location LF-3 (facing southeast).