Treadwell&Rollo

20 October, 2000
Project 2953.01

Mr. Glenn Leong
SOMA Corporation
1412 62nd Street
Emeryville, California 94608

Subject: Engineering Evaluation and Cost Analysis (EE/CA)
Horton Street Extension
Emeryville, California

Dear Mr. Leong:

Treadwell & Rollo, Inc. is pleased to present this Engineering Evaluation and Cost Analysis (EE/CA) of the Horton Street extension project in Emeryville, California. We have also forwarded (via Federal Express) copies of this EE/CA to:

Mr. Ignacio Dayrit – City of Emeryville (4 copies)
Mr. Geoff Sears – Wareham Development (1 copy)
Ms. Susan Colman – (1 copy)
Ms. Susan Hugo – Alameda County Health Agency (1 copy)

Thank you for the opportunity to provide you with our services in preparing this EE/CA. We look forward to working with you in the future. If you have any questions or comments, please contact me at 510/874-4500, ext. 527.

Sincerely yours,
TREADWELL & ROLLO, INC.

Michael P. McGuire, P.E
Associate Engineer

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ENGINEERING EVALUATION / COST ANALYSIS
HORTON STREET EXTENSION
6121 Hollis Street
Emeryville, California

Prepared for
Wareham Development
San Rafael, California

20 October 2000
Project No. 2953.01

Treadwell&Rollo
Environmental and Geotechnical Consultants

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The apparent source of the PCB site contamination is previous industrial activity at this site and adjacent properties dating back to before 1950. Some soil remediation in the site area has already occurred including installation of a continuous subsurface slurry wall (35 feet deep) and covering the surface soil with an engineered cap to reduce water infiltration and erosion.

Based on existing data, contamination in the soil has been detected from 0.5 and 6 feet below ground surface (bgs) with the highest concentrations within the upper 1 foot. Elevated concentrations of PCBs significantly decreases with depth as observed in sampling intervals at 0.5, 3.5 to 4.0, and 6.0 feet bgs. PCBs were not detected in soil samples collected at 9.0 feet bgs. Shallow groundwater samples have been collected and analyzed. Minor concentrations of PCBs were detected in initial groundwater samples collected in 1983 prior to installing the slurry wall. Since the slurry wall was installed in 1985, PCBs detected in groundwater samples have decreased in frequency and concentration.

Two removal action alternatives were evaluated for the preparation of this EE/CA: 1) a No Action Alternative, and 2) the Excavation, Offsite Disposal or Reuse, and Capping Alternative. Because of the limited treatment technologies available for PCB-contaminated soil (disposal at an EPA-approved facility or incineration) and because of the small property size and short duration of this project (approximately 2 months), offsite soil disposal was presumed to be the

most cost-effective method to treat the PCB-contaminated soil. The alternative that consists of limited soil excavation, offsite disposal or reuse, and capping was selected as the preferred removal alternative. The selected alternative meets each of the project objectives and can be completed in a cost effective and timely manner.

This Engineering Evaluation and Cost Assessment (EE/CA) report has been prepared in general conformance with EPA Publication 9360.0-32, Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA.

ENGINEERING EVALUATION / COSTS ANALYSIS
HORTON STREET EXTENSION
6121 Hollis Street
Emeryville, California

1.0 INTRODUCTION

Remedial soil activities at 6121 Hollis Street in Emeryville, California (the Site) will be conducted in association with redevelopment activities (by Wareham Development) in the adjacent properties. As part of the construction project, Wareham Development is coordinating the installation of subsurface utilities at the Site and the construction of a street extension (the continuation of Horton Street to 62nd Street). A *"Work Plan for Characterization and Remediation of PCB-Impacted Soils Beneath the Horton Street Right-of-Way Extension Between 59th and 62nd Streets, Emeryville, California"*, was prepared by SOMA Environmental Engineering on behalf of the property owners, VIACOM/CBS.

Prior activities by others at the Site and adjacent areas resulted in shallow soils (e.g., less than six feet below ground surface) affected by polychlorinated biphenyls (PCBs). To complete the planned installation of utilities and street construction, soils (some containing elevated concentrations of PCBs) will be encountered. Soil with elevated PCB concentrations outside of the excavation limits required for this new street construction or subsurface utility installation will not be included in this remedial action.

1.1 Purpose

The purpose of the Engineering Evaluation and Cost Estimate (EE/CA) is to identify and evaluate alternatives for remediating PCB-contaminated soil during a planned construction activity at the Site. The PCB-contaminated soil is the result of activities by others and the excavation and remediation of soil discussed in this EE/CA is not the result of, nor required by a regulatory enforcement action or other administrative order.

1.2 Limiting Conditions and Methodology

This evaluation is solely based on information provided in previous site investigations, and as such, no additional site-specific data were collected for the preparation of this EE/CA.

Although the planned remedial actions for this site are not regulated by CERCLA, this EE/CA generally follows the methodology and format for Engineering Evaluations and Cost Estimates as described in the U.S. Environmental Protection Agency Publication 9360.0-32, *Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA*. This methodology was chosen as an appropriate and efficient approach to evaluate and select a remedial alternative for the PCB-contaminated soil at this site. However, use of this methodology for this removal action does not imply that future site activities will be conducted under CERCLA guidance.

2.0 SITE CHARACTERIZATION

This section provides a site description and discusses relevant available information regarding the site and adjoining properties.

2.1 Site Description and Background

The project site is located on property immediately north of the former Westinghouse Electric Corporation (Westinghouse) property at 5815 Peladeau Street in Emeryville, California. The property presently consists of an office building on much of the eastern portion of the Site, and an U.S. Post Office building on a portion of the western portion of the site (Figure 1). The remaining area of the Site consists of a paved parking area used by occupants of the office building and the U.S. Post Office.

2.2 Local Geology and Hydrogeology

Local Geology

The site is located along the eastern San Francisco Bay margin (approximately 0.5 miles east of the existing bay shoreline). The elevation of this area is very near sea level (between 12 and 14 feet above mean sea level) and has been frequently inundated by the San Francisco Bay during deposition and formation of the native subsurface materials at the site. The uplands (Berkeley Hills) approximately 3 miles to the east are most likely the source of the geologic material (alluvium and colluvium) presently found at the site. The uplands to the east are the result of local uplift along the Hayward Fault.

Limited subsurface geological investigations have been performed at this site. Based on information from those studies and information from nearby sites and general geological studies performed by the United States Geological Survey (USGS), the shallow subsurface (upper 30 to 40 feet) is comprised of interbedded, unconsolidated, layers of fine-grain material such as sand, silt and clay (referred to as "Bay Mud). This site is located within a heavily developed area, and several feet of artificial fill material is present overlying the native soil. Previous site investigations report that 2 to 4 feet of artificial fill (sandy clay) exist at the Site. Under the artificial fill is approximately 6 feet of black, soft, highly compressible silty clay which is underlain by 30 to 40 feet of gray to brown silty to sandy clay.

Hydrogeology

Several limited hydrogeological investigations have been conducted at the site. In general, the local groundwater flow at the site is to the west, from the Berkeley Hills towards the San Francisco Bay with a gradient of approximately 0.01 feet/foot (SOMA 1996). However, site-specific conditions, such as the 35-feet deep slurry wall, buried stream channels, fill material, or deep utility corridors locally influence the groundwater flow immediately beneath, and adjacent to the site. Additionally, the site is located approximately 0.5 miles from the San Francisco Bay margin, and the shallow groundwater flow direction and gradient may be influenced by tidal fluctuation.

Based on the previous groundwater sampling activities, shallow groundwater at the site can be anticipated at depths of between 2 and 6 feet below the ground surface. A deeper groundwater zone at the Site was identified at approximately 20 feet below the groundsurface. Previous site investigations have included installing groundwater monitoring wells in the shallow and deeper groundwater zones.

2.3 Previous Studies

Several soil investigations have been performed at this site to evaluate the presence and distribution of PCB-contaminated soil. Those investigations are:

- February 1981 California Department of Health Services (DHS)
- June 1981 ITT Grinnell Corporation (by CH2M HILL)
- August 1990 U.S. Postal Service (by Harding Lawson Associates)
- August 2000 Viacom, Inc. (by SOMA Environmental Engineering, Inc.)

Those investigations have provided analytical data used to delineate the lateral and vertical extent in PCBs in soil at the site. Analytical results of these investigations are discussed below and copies of the investigation reports prepared by SOMA Environmental Engineering, Inc., (2000) and Harding Lawson Associates (1990) are included in this EE/CA as Appendix A.

2.4 Removal Actions at Adjacent Site

The U.S. EPA Region 9 issued a Consent Agreement and Final Order dated October 30, 1984. Additionally, a Cleanup and Abatement Order (CAO No. 85-006) was issued in 1985 by the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) for the Westinghouse property south of the site. The CAO was issued stating that Westinghouse took "inadequate action to prevent the movement of PCB-contaminated soil offsite." To address the EPA Region 9 Order, Westinghouse constructed a continuous 35-foot-deep slurry wall surrounding PCB-contaminated soils along their property boundary. Contaminated soil

(concentrations greater than 50 parts per million) from outside the wall and from various areas along the northern and eastern portions of the site was excavated and placed within the slurry wall containment area. That PCB-contaminated soil was later sealed with an erosion-resistant engineered cap designed to reduce surface water infiltration and to prevent further migration and exposure of PCB-contaminated soil. The cap consists of 12 inches of compacted imported clay overlain by 6 inches of aggregate base and capped with 3 inches of asphalt (SOMA 1996). The U.S. EPA maintains jurisdiction of the slurry wall and capped area. The portion of the site outside of the slurry wall containment area and cap is presently under the jurisdiction of Alameda County Environmental Health Services (ACEHS). The RWQCB has also been providing technical assistance for this site.

2.5 Source, Nature, and Extent of Contamination

The detected soil contaminants at the Site consist of polychlorinated biphenyls (PCBs). The source of this site contamination is apparently from previous industrial activities at this Site or from adjacent properties dating back to before 1950. Some soil remediation has occurred, which includes the installation of a continuous subsurface slurry wall (at the adjacent are) and covering the surface soil with an engineered cap to reduce water infiltration and erosion.

Based on existing data, contamination in the soil has been detected from 0.5 and 6 feet below ground surface (bgs) with the highest concentrations within the upper 1.0 foot of the surface. Elevated concentrations of PCBs significantly decreases with depth as observed in sampling intervals at 0.5, 3.5 to 4.0, and 6.0 feet bgs. PCBs were not detected in soil samples collected at 9.0 feet bgs.

Several soil and groundwater investigations have been performed at this site since 1981. These investigations have included collecting numerous soil samples for analytical testing and installing temporary groundwater wells to monitor water levels and to collect samples for analytical testing. Groundwater samples from monitoring wells have been tested for PCBs, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs). PCBs

have been detected at relatively low concentrations in groundwater samples from several wells. In groundwater samples collected from wells in March 1983, the detected PCB concentrations ranged from 1 to 71 micrograms (µg) per liter (parts per billion). Since 1983, PCBs detected in groundwater samples has decreased in frequency and concentration. Typical PCB concentrations in groundwater have decreased to less than 10 µg.

PCB-contaminated soil is present beneath a majority of the site; however, the PCB-contaminated soil is covered with the engineered cap or pavement. The investigation and report prepared by SOMA Environmental Engineering (2000) defines the lateral and vertical extent of PCB-contaminated soil within the proposed project area (see Appendix A).

2.6 Analytical Data

Table 1 summarizes the analytical data collected from the investigation report prepared by SOMA Environmental Engineering, Inc., (2000). That report, included in Appendix A, shows the sample collection locations and includes the laboratory data sheets.

Samples from the most recent investigation (SOMA Environmental Engineering) were collected at five discrete depths: 0.5, 1.5, 3.5, 6.5, and 9 feet below ground surface. This investigation provides the data to determine the extent of contamination, and the data that provides the widest range of PCB values detected. The highest PCB concentrations detected at each of these sampling depths are: 3,300 parts per million (ppm) at 0.5 feet, 34.5 ppm at 1.5 feet, 1,990 ppm at 3.5 feet, 21 ppm at 6.5 feet, and <0.05 ppm at 9 feet. Six sample locations at the 0.5 feet interval reported PCB concentrations above 1,000 ppm. However, the samples collected at 3.5 feet below ground surface at those same locations contained PCB concentrations 2 to 3 orders of magnitude lower. Most of the samples collected at or below 1.5 feet below ground surface contained less than 50 ppm of PCBs.

The highest PCB concentration in soil within the Horton Street extension easement was 1,990 ppm detected at 1.5 feet below ground surface.

2.7 Streamlined Risk Evaluation

This risk evaluation is based on the interrelationship between contaminant source, exposure pathway, and potential receptors. By removing any one of these elements, the risks associated with contamination significantly reduce the potential for adverse effects on receptors.

2.7.1 Source

The source of the PCB-contamination is from previous industrial site activities. Historical aerial photos indicate stockpiles of unidentified material and ground discoloration at the Site between 1931 and 1950. In November 1950, ITT Grinnell Company (ITT) acquired the Heritage Square property. Between 1950 through 1959, ITT paved over the discolored soil.

2.7.2 Exposure Pathway

Because of the chemical and physical properties of PCBs, direct contact is required to complete the exposure pathway. Therefore, exposure pathways include inhalation of fugitive dust, incidental ingestion of soil and dermal contact with soil. Based on existing data, contamination in the soil has been detected within the planned construction zone between from 0.5 and 6 feet below ground surface (bgs); and therefore, a potential complete exposure pathway for construction workers. Elevated concentrations of PCBs significantly decreases with depth as observed in sampling intervals at 0.5, 3.5 to 4.0, and 6 feet bgs. PCBs were not detected in soil samples collected at 9 feet bgs.

2.7.3 Potential Receptors

Potential receptors include only future utility maintenance workers involved in installing or repairing the utilities beneath the paved site, construction workers during street construction, or other workers handling PCB-affected soils. Exposure to commercial/industrial workers or patrons passing by is precluded because the soil will be covered by pavement and the chemical/physical properties of PCBs require direct contact to complete the exposure pathway.

Therefore, complete exposure pathways for utility workers or construction workers include incidental ingestion of soil, inhalation of fugitive dust emissions, and dermal contact with soil.

2.7.4 Hazardous Constituents

Elevated concentration of PCBs (i.e., greater than 50 mg/kg) were detected at 0.5 feet bgs beneath the paved site. At about 3.5 to 4.0 feet bgs, the concentration of PCBs in soil decreased to significantly lower or non-detect concentrations, with only 6 out of 47 soil samples having elevated concentrations. In the samples tested, there were no elevated PCB concentrations detected at 9 feet bgs.

3.0 IDENTIFICATION OF REMOVAL ACTION OBJECTIVES

3.1 Statutory Limits on Removal Actions

The excavation and remediation of PCB-contaminated soil discussed in this EE/CA is being evaluated as part of a construction project being performed in association with redevelopment activities, and is not the result of, or required by a regulatory agency or other administrative order. Therefore, there are no statutory limits establishing or guiding the remediation extent of the planned street construction. The project cleanup objectives are based on health-based risk objectives designed to protect construction workers for this redevelopment activity and to protect future utility workers.

Soil within the project area will contain detectable concentrations of PCBs. Disposal of soil (solid material) containing PCBs is regulated by the Toxic Substances Control Act of 1976 (TSCA) and by the Hazardous Waste Management Act of 1986 (HWMA). Soil with less than 50 ppm PCBs is not regulated by HWMA and typically can be reused or left in place; whereas, soil having PCB concentrations above 50 ppm is to be disposed at an offsite, EPA-approved (TSCA) land disposal facility (Class I in California), or incinerated.

3.2 Determination of Removal Scope

Because there are no regulatory orders for this removal action, the extent of soil being remediated has been determined by project design specifications and negotiations with the Regional Water Quality Control Board (RWQCB) and the City of Emeryville. Based on those discussions, the following criteria for the extent of soil remediation was established for this project:

- Minimum of one foot of clean soil below the planned sewer line
- Minimum of one foot of clean soil below PG&E's utility trench
- Minimum of two feet of clean soil beneath the entire width of the new street (including beneath sidewalks)
- Two to 2.5 feet of clean soil below the street level within a corridor for future utilities.

The RWQCB has previously agreed on a cleanup concentration level of 59.3 ppm for this project (SOMA Environmental Engineering, 1996). This value is protective to future construction/utility workers. An additional cleanup level for PCB-contaminated soil was also agreed upon. That value, 2.85 ppm, is the cleanup level for soil less than 2 feet deep (below ground surface).

3.3 Determination of Removal Schedule

In order to complete this project before the heavy seasonal rains begin in the San Francisco Bay area, this redevelopment and construction project is on an accelerated schedule. Delays in this project will require additional site control measures to reduce erosion and to prohibit surface runoff. The estimated duration for this road construction project is two months. The soil excavation and subsequent disposal will occur within the first month of construction.

4.0 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES

This section describes the Removal Action Alternatives evaluated for this construction project. As discussed above, the objectives of this Removal Action are:

1. Protect construction workers during road construction
2. Protect future utility workers
3. Protect the existing soil cover (soil cap/paved parking lot).

4.1 Removal Action Alternatives

Two Removal Action Alternatives were evaluated for the preparation of this EE/CA: 1) No Action , and 2) Limited Excavation, Offsite Disposal or Reuse, and Capping . Because of the limited treatment technologies available for PCB-contaminated soil (disposal at an EPA-approved facility or incineration) and because of the small property size and short duration of this project (approximately 2 months), offsite soil disposal was presumed to be the most cost-effective method to manage the PCB-contaminated soil. Soil treatment consisting of incineration was presumed not financially cost effective because of the long distance hauling (outside of California) to a licensed facility and subsequent treatment and disposal costs; therefore, that treatment option was not evaluated.

4.1.1 Alternative 1: No Action

Typically No Action Alternatives evaluated for the EE/CA process would define No Action as "not proceeding with the removal project" However, because the construction of this road is beneficial to the public and because the City of Emeryville has accepted the Horton Street extension as part of the local redevelopment project; for the purpose of this EE/CA, the No Action Alternative is "proceeding with the road construction, but without disturbing the existing PCB-contaminated soil."

The No Action Alternative would require significant design modifications and complexity to provide for road construction on or above the existing surface grade, and to redirect subsurface utilities around the PCB-contaminated soil.

4.1.2 Alternative 2: Limited Excavation, Offsite Disposal or Reuse, and Capping

This Removal Action Alternative includes the limited excavation of soil beneath the planned construction area required to prepare the road base, installation of subsurface utilities, and construction of a road as a cap. Excavation and offsite disposal consists of the physical removal of the soil from the property and hauling the soil to either a landfill for disposal or treatment facility. For this project, excavated soil will be transported to either a Class I or Class II landfill, depending on the concentrations of PCBs in the soil.

A portion of the soil excavated in preparing the site for construction may have non-detect or low concentrations of PCB that would not require offsite disposal at a licensed facility. Where possible, this soil will be reused as backfill material to reduce the need for soil hauling and disposal. During excavation, soil suitable (chemically and physically) for reuse will be segregated and stockpiled onsite separate from soil requiring offsite disposal.

Because PCB-affected soil will remain in the subsurface at the site, the completed roadway will provide a competent surface cap reducing the potential for surface water infiltration and preventing surface soil erosion. The road will consist of 18 inches of Class II AB base rock overlain by 5.5 inches of AC paving. The roadway will be sloped from the center to the sides at a 2 percent grade. Concrete gutters and curbs will be located along both sides of the street to drain surface water away from the road surface and into storm drains to minimize infiltration into the underlying soil. Concrete 4-inch thick sidewalks, underlain by 6 inches of Class II AB base rock will be located on both sides of the completed street.

In general, the area beneath the planned roadway will be initially excavated to a depth of approximately 2 feet below the existing grade. The roadway easement is 46 feet wide; however,

additional area on either side of the roadway will be excavated to allow for the construction of sidewalks. Based on the analytical data collected, this upper two feet of excavated soil will contain the highest PCB concentrations, particularly in the southern portion of the project site (see Site Plan). The excavated soil will be analyzed in the field at the time of excavation (using a soil screening technique) so that the soil can be placed in stockpiles according to PCB concentrations. Two stockpiles will be constructed: one for soil with less than 50 ppm of PCBs and one stockpile for soil with more than 50 ppm of PCBs. This planned soil segregation is required because of the soil disposal options. Soil with >50ppm PCBs that requires offsite disposal will be disposed of at the TSCA facility in Kettleman, California. Soil with PCB concentrations of <50 ppm will be reused onsite, as appropriate, or disposed offsite at the Altamont Class II landfill facility.

Following the initial soil excavation, additional trenches will be excavated in areas planned for subsurface utilities. Planned sewer and storm drains will require the deepest excavations. Those utility excavations will extend to a maximum of 6 to 7 feet below grade. Some over-excavation in the utility trenches may be required to comply with the RWQCB's request that PCB concentrations of <50 ppm in soil remain at a minimum thickness of one foot beneath utility corridors. Therefore, soil excavated for remediation purposes may extend to, but not more than, 8 feet below surface grade. If over-excavation is required, backfill meeting the cleanup objectives will be placed and compacted.

Following excavation and analytical characterization testing, the excavated soil that cannot be reused on site will be disposed offsite at either a Class I or Class II landfill facility.

4.2 Effectiveness

4.2.1 Alternative 1: No Action

The No Action Alternative would effectively reduce the potential for worker exposure to the existing PCB-contaminated soil by eliminating the need to disturb that soil and maintaining the existing surface cap. This alternative will not provide any reduced future risk at this Site by

eliminating the existing soil contamination. Therefore, the long-term health risks of leaving contaminated soil in place would remain unchanged from current conditions.

4.2.2 Alternative 2: Limited Excavation, Offsite Disposal or Reuse, and Capping

The limited excavation, offsite disposal or reuse, and capping alternative provides effective methods and procedures to control risks for current and future utility worker exposure and to provide long-term restricted access (surface cap) to contaminated soils left in place. This alternative also reduces the amount of contamination in the project area by relocating that material to a landfill specifically designed to hold and contain hazardous wastes. The excavated contaminated soil will be isolated in a hazardous waste landfill designed to protect human health and the environment. Therefore, the long-term health risks at the Site will be reduced by the removal of some contaminants. The new road surface will provide an effective cap in restricting surface water infiltration through the contaminated soil and will prevent surface exposure and erosion of contaminated soil.

4.3 Implementability

4.3.1 Alternative 1: No Action

Alternative 1 may not be readily implementable. Although constructing a roadway on top of the existing grade is most likely technically feasible, it may not be practical or appropriate in that area of Emeryville. Additionally, relocating the subsurface utilities to avoid the PCB-contaminated soil may not be feasible based on requirements for gravity flows and available tie-ins to existing utilities. Required design modifications would prevent this project from being completed within the Removal Action schedule.

4.3.2 Alternative 2: Excavation, Offsite Disposal or Reuse, and Capping

Alternative 2 is readily implementable and can be completed within the planned schedule. This alternative does not require additional or specialized excavation or construction equipment. Many certified contractors that have standard operating procedures for excavating, handling,

testing, transporting, and disposing of hazardous materials are readily available to conduct this work cost effectively and safely. The Class I and Class II landfills where this soil would be disposed of are presently accepting wastes from construction and remediation projects.

4.4 Cost

4.4.1 Alternative 1: No Action

Costs associated with the No Action Alternative would include at a minimum significant design modifications to allow for the road construction above the existing grade, increased road construction costs, and increased cost to redirect subsurface utilities. Because this Removal Action Alternative does not appear feasible or appropriate, the higher associated costs would not be the deciding factor to selecting this Removal Action Alternative. Therefore, a detailed cost estimate was not prepared for this alternative. The presumed cost increase associated with this alternative would be significantly greater than excavation and offsite disposal of PCB-contaminated soil.

4.4.2 Alternative 2: Excavation, Offsite Disposal or Reuse, and Capping

Costs associated with the excavation, offsite disposal or reuse, and capping alternative will include excavation equipment, soil hauling charges, disposal charges (including State disposal taxes), backfilling costs, and road construction costs to provide a competent surface cap. Assuming the PCB concentrations in excavated soil will be between 50 and 1,000 ppm, the cost per cubic yard to haul and dispose of the PCB-contaminated soil, excluding excavation and backfilling, would be approximately $110 (for disposal at the Class I facility in Kettleman, CA). The disposal costs of soil containing PCB concentrations in excess of 1,000 ppm will be significantly higher. The hauling and disposal costs for soil taken to the Altamont Class II facility would be less than those costs of Class I disposal. However, for this evaluation, it was assumed that all soil requiring offsite disposal would be taken to the Class I facility in Kettleman, CA. Based on analytical results from previous investigations by others,

approximately 1500 cubic yards of soil may require Class I disposal. Using this estimate, the transportation and soil disposal cost for this project are approximately $165,000.

The construction of the road as a competent surface cap will include preparing the site for construction (compaction and regrading), importing fill material and construction base rock, constructing the road and sidewalks, and completing the finishing work, such as striping and signs. The estimated cost for constructing the road cap is $210,000.

Additional project costs for implementing Alternative 2 will be incurred. These additional costs are the incremental project increases typically associated with working with and handling hazardous materials, and are not directly related to the volume of soil excavated. These costs include at a minimum: preparing hazardous waste health and safety plans and waste sampling and analysis plans, permitting, additional site controls (i.e., to prevent public access and surface water runoff during construction), additional chemical analyses for waste profiling and confirmation, field screening to segregate reusable excavated soil, using certified hazardous waste professionals and contractors, manifesting, and reporting. These additional costs are estimated at approximately $35,000 for a project of this scope.

Therefore, the estimated cost for constructing the road to cap PCB-affected soil remaining in place is $245,000, excluding soil disposal costs as described above.

The duration of this project will be less than one year, so present net worth cost analyses are not necessary for this EE/CA.

5.0 COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES

Alternative 2 is the best Removal Action Alternative available to meet the removal action objectives and to complete the proposed construction project in a timely manner. This alternative provides the most effective, easily implemented, and lowest cost alternative to remove, handle, and dispose of the PCB-contaminated soil. This alternative is protective of

current and future construction workers and the general public. The excavation will reduce the amount of contamination in the soil at the project site, and provide for the permanent isolation and containment of that material excavated.

6.0 RECOMMENDED REMOVAL ACTION ALTERNATIVE

Alternative 2 is selected and recommended as the preferred Removal Action Alternative. The scope of this selected alternative is summarized below:

- The area beneath the planned roadway will be initially excavated to a depth of approximately 2 to 3 feet below the existing grade. The roadway easement is 46 feet wide; however, additional area on either side of the roadway will be excavated to allow for the construction of sidewalks.

- The excavated soil will be analyzed in the field at the time of excavation so that the soil can be placed in stockpiles according to PCB concentrations. Two stockpiles will be constructed: one for soil with less than 50 ppm of PCBs and one stockpile for soil with more than 50 ppm of PCBs. This planned soil segregation is necessary because of the soil disposal options. Soil with >50ppm PCBs that requires offsite disposal will be disposed of at the TSCA Class I landfill facility in Kettleman, California. Soil with PCB concentrations of <50 ppm will be reused onsite, as appropriate, or disposed offsite at the Altamont Class II landfill facility.

- Trenches beneath the Horton Street extension will be excavated in areas planned for subsurface utilities. Planned sewer and storm drains will require the deepest excavations. Those utility excavations will extend to a maximum of 6 to 7 feet below grade. Some over-excavation in the utility trenches may be required to comply with the request that PCB concentrations of <50 ppm in soil remain at a minimum thickness of one foot beneath utility corridors. Therefore, soil excavated for remediation purposes may extend to, but not more than, 8 feet below surface grade. If over-excavation is required, backfill meeting the cleanup objectives will be placed and compacted.

- Following excavation and analytical characterization testing, the excavated soil that cannot be reused on site will be disposed offsite at either a Class I or Class II landfill facility.

- The Horton Street extension will be constructed providing a cap for the PCB-contaminated soil remaining beneath the roadway easement. Areas of the existing pavement that were removed or damaged during construction will be repaired or replaced to provide a continuous cap. The road will consist of 18 inches of Class II AB base rock overlain by 5.5 inches of AC paving. The roadway will be sloped from the center to the sides at a 2 percent grade. Concrete gutters and curbs will be located along both sides of the street to drain surface water away from the road surface and into storm drains to minimize infiltration into the underlying soil. Concrete 4-inch thick sidewalks, underlain by 6 inches of Class II AB base rock will be located on both sides of the completed street.

7.0 REFERENCES

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SOMA Environmental Engineering, Inc. 8 August 2000. *Delineation of the Extent of PCBs Contamination at the Heritage Square Property Located at 6121 Hollis Street, Emeryville, California.*

United States Environmental Protection Agency (EPA). *Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA*. EPA/540-R-93-057, Publication 9360.0-32, August 1993.

United States Geological Survey. 1957. *Areal and Engineering Geology of the Oakland West Quadrangle, California.* Miscellaneous Geologic Investigations, Map I-239.

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TABLE 1
Summary of PCB Concentrations Detected in Soil
Horton Street Extension EE/CA
Emeryville, California

Sample ID	Depth (bgs)	PCB Concentrations (ppm) 0.5 feet	1.5 feet	3.5 feet	6.5 feet	9 feet
B-4					<0.05	<0.05
B-5					<0.05	<0.05
B-6					<0.05	<0.05
B-9					21.00	<0.05
B-10						<0.05
PO-10		2.10	2.00			
PO-14		0.41	0.36	<0.028		
PO-15		0.03	34.50			
PO-16		0.10	<0.028	<0.028		
PO-17		<0.028	<0.028	<0.028		
SB-1		**220.00**		2.60		
SB-2		14.00		0.03		
SB-3		1.20		<0.02		
SB-4		31.00		1.20		
SB-5 *		**663.00**		**1990.00**		
SB-6 *		**974.00**		**1260.00**		
SB-7		**661.00**		15.90		
SB-8		**1870.00**		**50.90**		
SB-9		22.70		1.10		
SB-10		**2020.00**		39.00		
SB-11		1.60		**849.00**		
SB-12		**179.00**		2.80		
SB-13		**393.00**		**91.40**		
SB-14		**2760.00**		**89.00**		
SB-15		**510.00**		0.47		
SB-16 *		**1500.00**		16.00		
SB-17		**284.00**		0.80		
SB-18		**558.00**		0.60		
SB-19		**67.10**		0.19		
SB-20 *		**657.00**		2.30		
SB-21		5.21		0.10		
SB-22		**254.00**		2.61		
SB-23		**2390.00**		0.11		
SB-24		**234.00**		0.22		
SB-25		**491.00**		39.20		
SB-26		<0.20		<0.20		
SB-27		35.40		5.50		
SB-28		28.40		1.40		
SB-29		<0.02		<0.20		
SB-30		**3300.00**		<0.20		
SB-31		<0.20		<0.20		
SB-32 *		**320.00**		<0.20		
SB-33		0.64		<0.20		

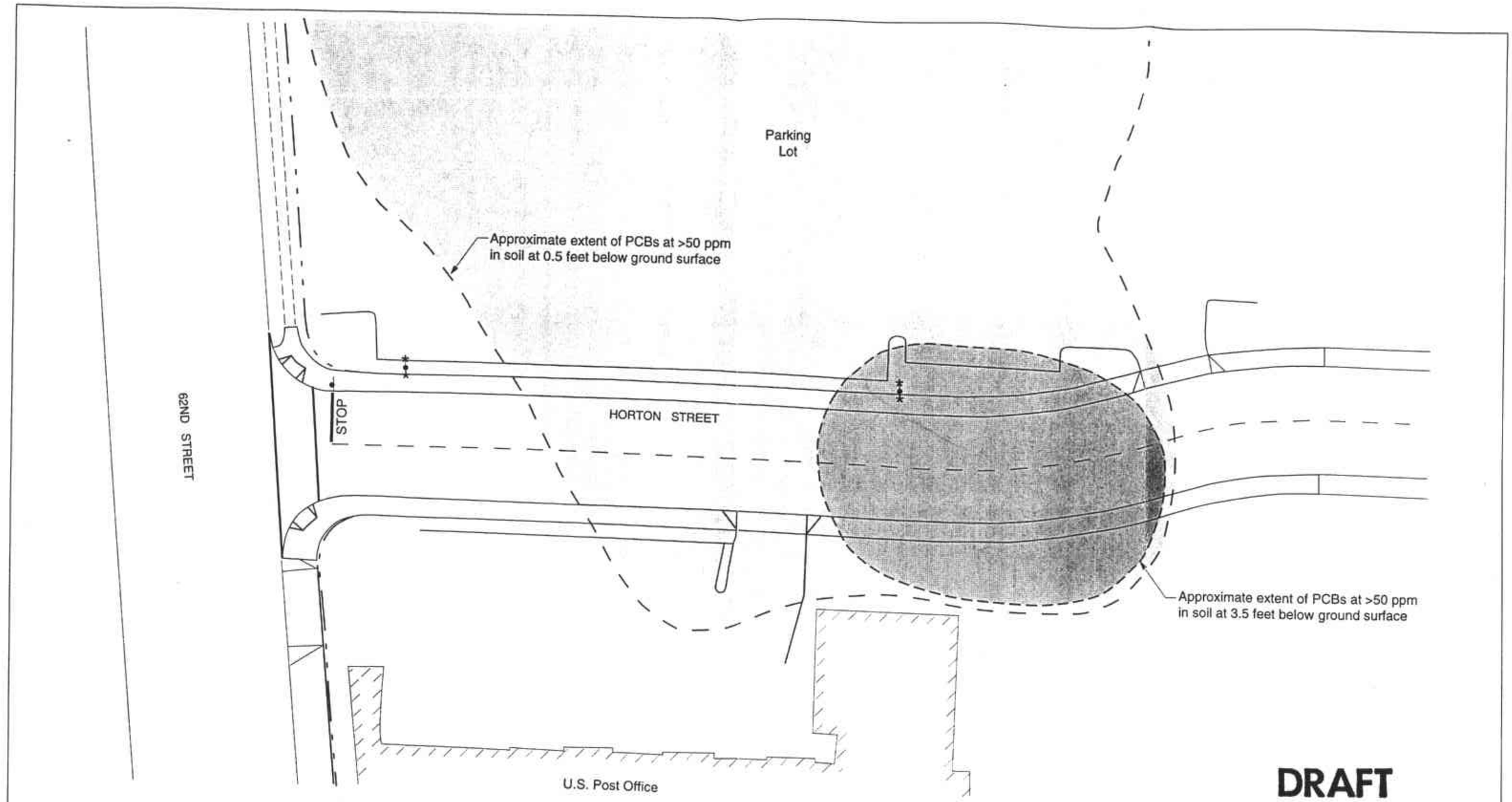
Sample ID	Depth (bgs)	PCB Concentrations (ppm) 0.5 feet	1.5 feet	3.5 feet	6.5 feet	9 feet
SB-34		<0.20		<0.20		
SB-35		<0.20		<0.20		
SB-36		3.12		<0.20		
SB-37		<0.20		<0.20		
SB-38		2.71		0.35		
SB-39		8.20		0.22		
SB-40		<0.20	<0.20	<0.20		
SB-41		<0.20	<0.20	<0.20		
SB-42		**83.20**		1.32		
SB-43		**2440.00**		0.26		
SB-44		19.70		<0.20		
SB-45		1.20		<0.20		
SB-46		<0.20		<0.20		
SB-47		<0.20		<0.20		
SB-A		0.84		0.98		
SB-B		6.80		2.00		
SB-C		0.33		38.00		
SB-D		26.00		0.01		
SB-E		80.00		0.29		
SB-F		105.00		0.08		
SB-G		0.27		92.00		
SB-H		1.80		0.04		

Data table reproduced from SOMA, 2000

"B" are samples by Harding Lawson Associates collected January 1992
"PO" are samples by Harding Lawson Associates collected August 1990
"SB" are samples by SOMA Environmental Engineers collected April and June 2000

Samples with >50 ppm are shown in "bold type"

= Sample locations within the planned Horton Street extension easement.



DRAFT

HORTON STREET Emeryville, California		
SITE PLAN		
Date 10/4/00	Project No. 2953.01	Figure

Treadwell&Rollo

TESTING OF SITE

ENVIRONMENTAL ENGINEERING, INC
2680 Bishop Drive, Suite 203, San Ramon, CA 94583
TEL (925) 244-6600 • FAX (925) 244-6601

August 8, 2000

Delineation of the Extent of PCBs Contamination at the Heritage Square Property Located at 6121 Hollis Street, Emeryville, California

INTRODUCTION

This document has been prepared by SOMA Environmental Engineering, Inc. (SOMA) on behalf of Viacom inc. (Viacom), successor by corporate name change to CBS Corporation formerly known as Westinghouse Electric Corporation. This report summarizes the results of the current field investigations for further site characterization and delineation of polychlorinated biphenyls (PCB) impacted soils at the Heritage Square property, at 6121 Hollis Street, Emeryville, California (the "Property"). The Property is located immediately north of the former Westinghouse Electric Corporation's site at 5815 Peladeau Street Emeryville, California (see Figure 1). This report has been prepared based on the approved workplans dated December 23, 1999 and June 20, 2000 (verbal approval) by the Alameda County Environmental Health Services (ACEHS).

Review of the historical aerial photos indicated stockpiles of unidentified material and ground discoloration at the Heritage Square site during 1931 through 1950. In November 1950, ITT Grinnell Company (ITT) acquired the Heritage Square property. ITT, sometime between 1950 and 1959, paved over the soil discoloration area.

The scope of the first workplan was to drill 25 shallow soil borings (up to four feet), and collect soil samples at 0.5 and 4-foot depths in order to delineate the extent of PCB-impacted soils at the Property. Upon the execution of the first workplan, elevated levels of PCBs were detected beneath the Site. However, in

order to completely delineate the extent of PCBs in the shallow soils beneath the Site, additional soil borings were needed.

On May 10, 2000, the recommendation for conducting additional investigation in our report entitled "Interim Report on the Delineation of the Extent of PCBs Contamination and Workplan for Further Investigation at the Heritage Square Property Located at 6121 Hollis Street, Emeryville, California" was submitted to ACEHS. On June 20, 2000, ACEHS approved SOMA's Workplan for conducting additional investigation at the Site. The current report addresses the distribution of PCBs under the Site based on the results of previous and current investigations approved by ACEHS.

The results of the previous investigation have indicated elevated levels of PCBs at the western boundary of the site adjacent to U.S. Post office property. For complete delineation of the PCB-impacted soils, SOMA has utilized the results of the soil investigation conducted by Harding Lawson Associates (HLA) in 1990.

Field Activities

The initial field investigations were conducted on January 29, 2000. However, on January 29, 2000 due to heavy rain only 4 soil borings were drilled and sampled. On February 6, 2000, an additional 21 soil borings were drilled and sampled. The soil boring locations were based on the review of historical aerial photos from 1931 through 1981. Additional field investigation was conducted on June 24, 2000 for delineation of PCB-impacted soil at the Site. During this period 22 additional soil borings (SB-26 through SB-47) were drilled and sampled.

Figure-2 shows the location of the soil borings. The borings were drilled by the hollow stem auger to a total depth of 4-feet below the ground surface (bgs). Two soil samples were collected from each soil boring. One sample was collected immediately below the asphalt pavement, while the other was collected at 3.5-4

feet bgs. The drilling and sampling operation was conducted by Enviro Soil Tech Consultants under the supervision of SOMA's Senior Field Engineer. To avoid cross contamination, the sampling tools were decontaminated after drilling and sampling of each soil boring. A total of 50 soil samples were collected during this investigation.

The soil samples were delivered to DELTA Environmental Laboratories immediately for analysis. The soil samples were analyzed for PCBs using U.S. EPA Method 8082.

Analytical Results

The results of the most recent laboratory analyses on soil samples revealed elevated levels of PCB concentrations beneath the Site. As the analytical results indicated, the PCB concentration at 0.5-foot depth ranged between non-detect (ND) and 3,300 mg/kg, see Table-1. The concentration of PCB at 3.5-4-foot depth ranged between non-detect (ND) and 5.5 mg/kg. Appendix A shows the laboratory reports and chain of custody forms.

To delineate the extent of PCB contamination, SOMA utilized the results of the soil investigation conducted by the U.S. Post Office site, located to the west of the Site. The depth of the soil samples collected at the U.S. Post Office site ranged between 0.5 to 9 feet. In the early 1990s, the soil samples were collected by Harding Lawson Associates (HLA) and Lowney Associates from the U.S. Post Office site. The concentration of soil samples collected at the U.S. Post Office site ranged between ND and 52 mg/kg. The maximum concentration of PCB at 52 mg/kg was encountered at 1.2-2 feet bgs at PO-15. However, the results of the laboratory analysis on a duplicate soil sample collected from PO-15 showed only 17 mg/kg PCB at this location, see Table-1.

Figure-3 shows the PCB concentrations at 0.5-foot depth using the results of the current site investigation by SOMA and the previous soil investigation results conducted by HLA and Lowney Associates in the early 1990s. Figure-4 shows the PCB concentrations at a 4-foot depth. A three-dimensional representation of PCB concentration beneath the Property has been shown on Figure 5. At the western boundary of the Property next to the U.S. Post Office, elevated levels of PCB were also detected at 0.5 and 4-foot depths. However, as the data indicate no significant PCB concentration was detected at the U.S. Post Office site.

The results of the current investigation by SOMA indicate that the presence of PCBs beneath 62nd Street is very limited to non-existent. One significant concentration of PCBs at the 0.5-foot depth was detected in SB-43 at the northern boundary of the property next to 62nd Street. Figure-3 shows the horizontal extent of PCB contamination at 0.5 ft. below ground surface.

As Figure-6 shows, in general, concentration of PCB significantly decreases by depth. The PCB concentrations were detected in limited areas at a 4-foot depth. For instance, the high concentration of PCB at a 3.5-4-foot depth was only detected at three soil-boring locations of SB-11, SB-5 and SB-6. The SB-11 is located toward the eastern side of the Property, while SB-5 and SB-6 are located at the western Property boundary adjacent to the U.S. Post Office site.

Conclusion

The results of the current investigation revealed the lateral extent of PCB contamination at 0.5 and 3.5-4 feet bgs beneath the property. As the data indicate, the vertical extent of PCB contamination is quite limited. At about 3.5-4 feet bgs the concentration of PCBs drastically reduces to non-detect levels.

As the data indicate, the majority of near surface soils (0.5 foot depth, just below asphalt) have been impacted heavily by PCBs. For instance 23 out of 47 soil

samples collected from 0.5-depth interval contains more than 50 mg/kg PCBs. However, only 6 out of 47 soil samples collected from 3.5-4-depth contained elevated levels of PCBs (more than 50 mg/kg). As the results of the previous soil investigations revealed, no significant levels of PCBs were present at the U.S Post Office Site. PCB concentrations beneath 62nd Street are very limited to non-existent based upon the most recent sampling along the northern boundary of the property. It appears the majority of the PCB mass beneath the Heritage Square Site has been accumulated in the central portion of where the historical aerial photos showed liquid ponding/white soil discoloration at this location.

FIGURES

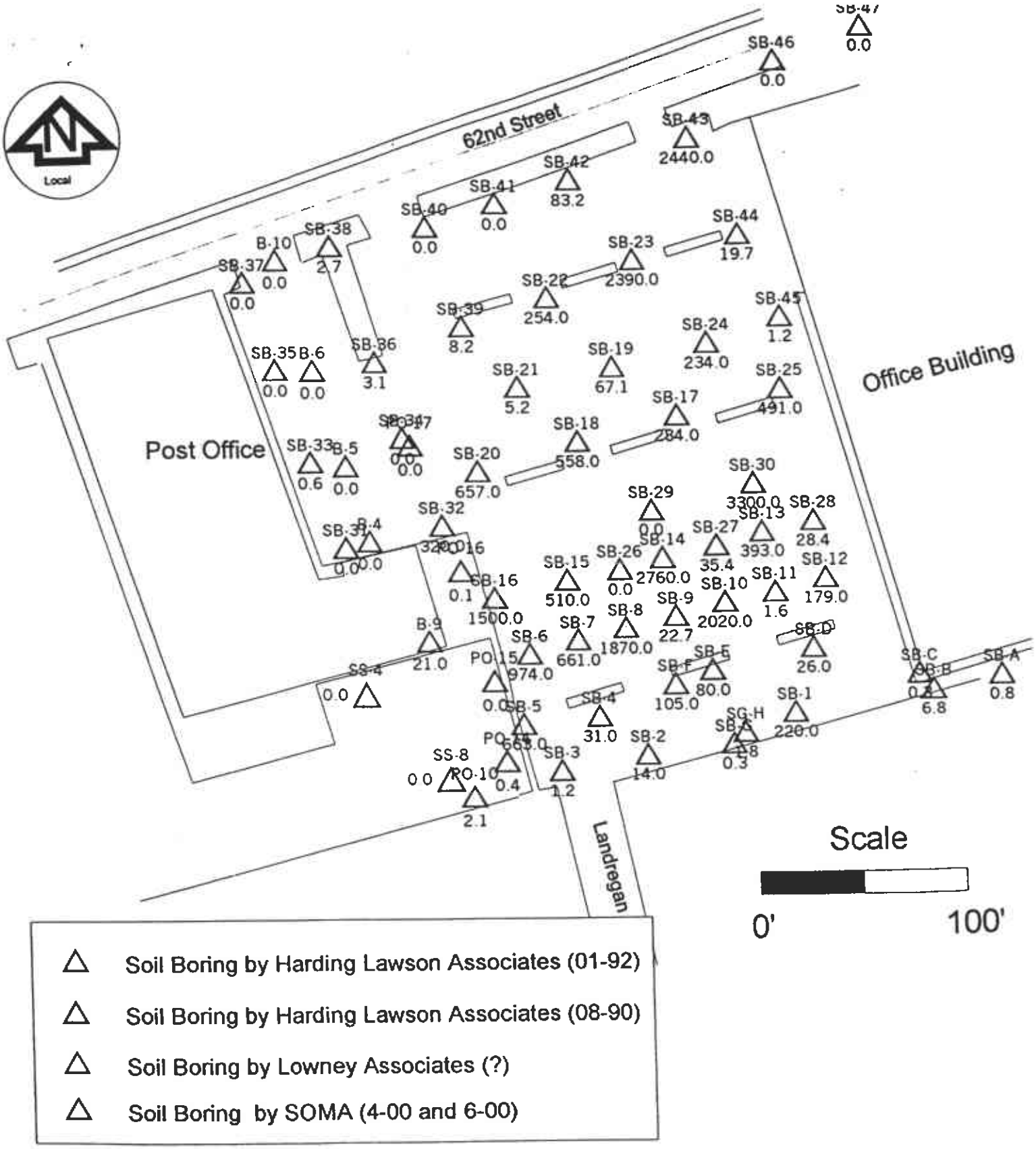


Figure 1: Soil Boring Data from Previous Contractors

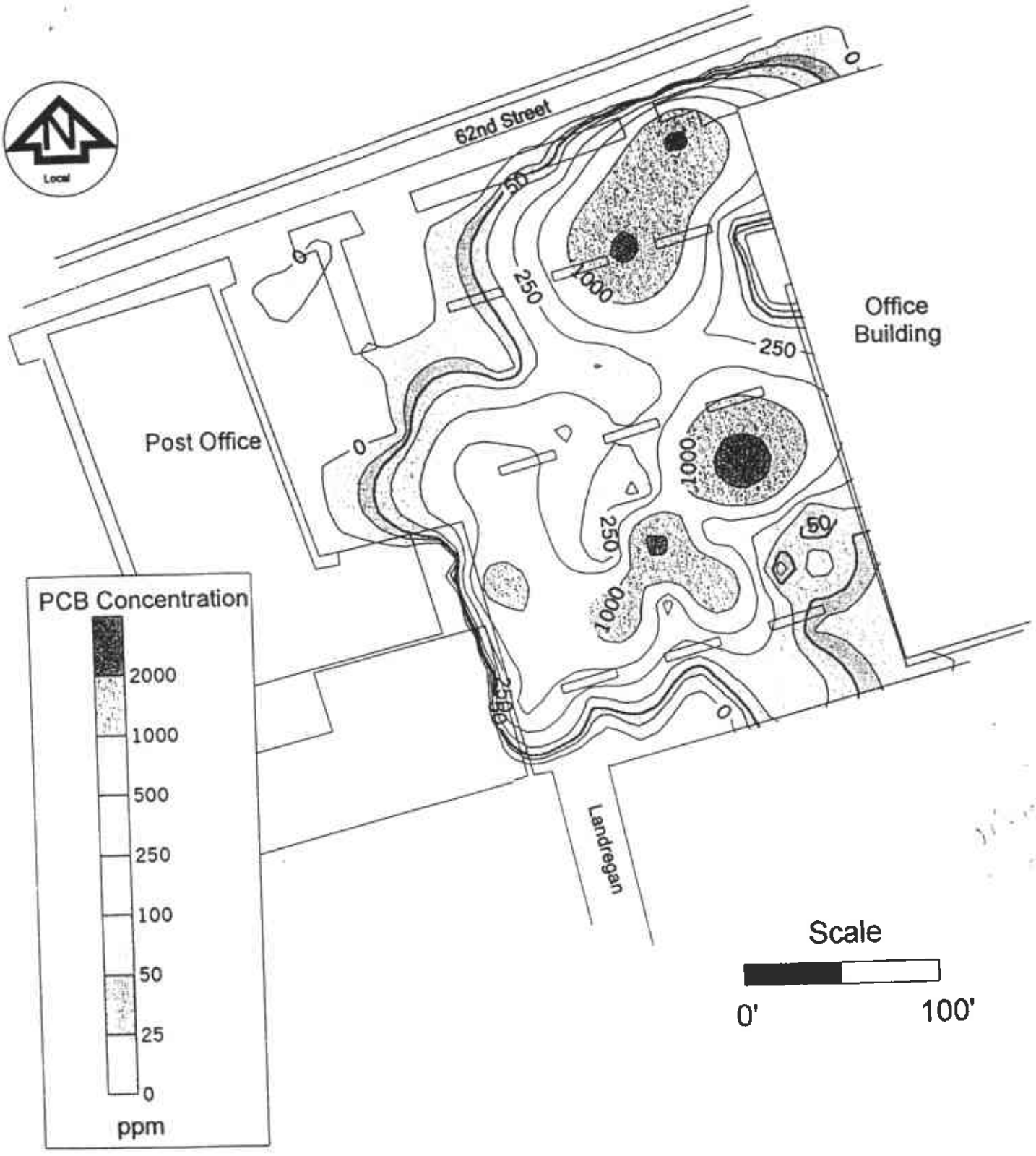


Figure 2: Contour Map of PCB Concentrations (ppm) at 0.5' Depth

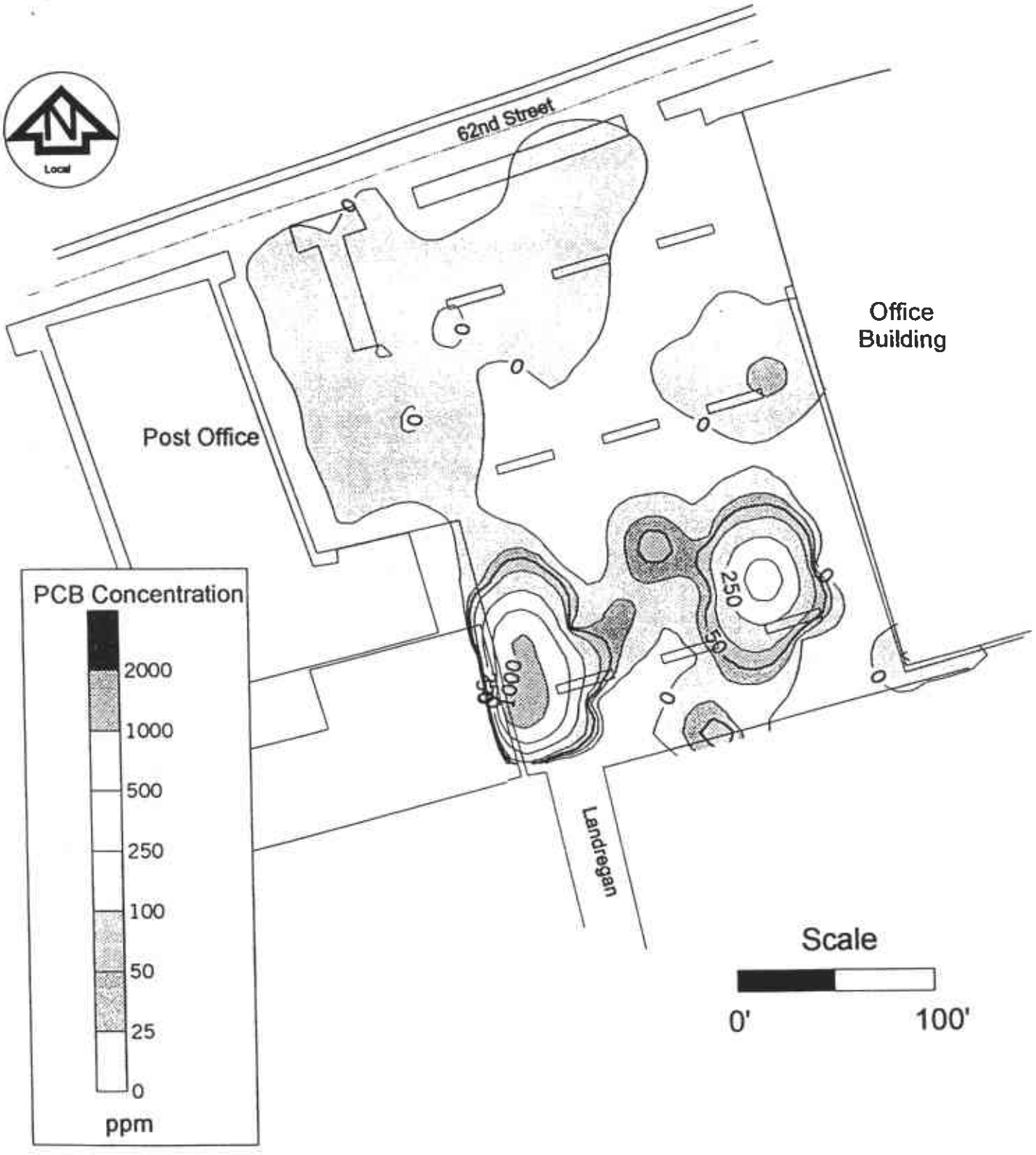


Figure 3: Contour Map of PCB Concentrations (ppm) at 3.5' Depth

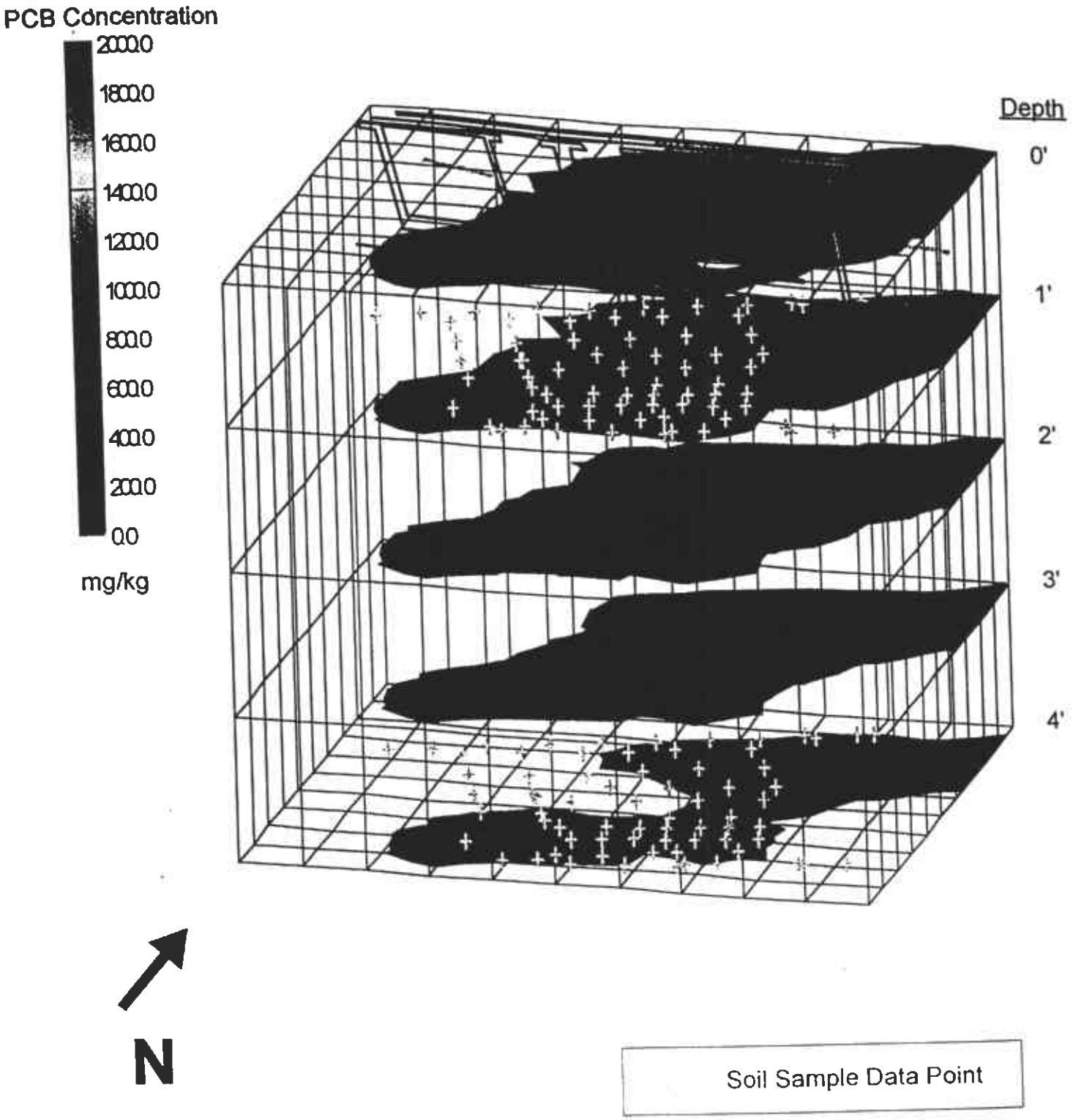


Figure 4: Three-Dimensional Contour Map of PCB Concentrations

TABLES

Table 1

PCB Concentration Detected in Soils Samples Collected From Heritage Square and U.S. Post Office Site, Emeryville, California

Boring	PCB Concentration in ppm				
	0.5 ft depth	1.5 ft depth	3.5 ft depth	6.5 ft depth	9 ft depth
B-4				<.05	<.05
B-5				<.05	<.05
B-6				<.05	<.05
B-9				21.00	<.05
B-10					<.05
PO-10	2.10	2.00			
PO-14	0.41	0.36	<.028		
PO-15	0.03	34.50			
PO-16	0.10	<.028	<.028		
PO-17	<.028	<.028	<.028		
SB-1	220.00		2.60		
SB-2	14.00		0.03		
SB-3	1.20		<.02		
SB-4	31.00		1.20		
SB-5	663.00		1,990.00		
SB-6	974.00		1,260.00		
SB-7	661.00		15.90		
SB-8	1,870.00		50.90		
SB-9	22.70		1.10		
SB-10	2,020.00		39.00		
SB-11	1.60		849.00		
SB-12	179.00		2.80		
SB-13	393.00		91.40		
SB-14	2,760.00		89.00		
SB-15	510.00		0.47		
SB-16	1,500.00		16.00		
SB-17	284.00		0.80		
SB-18	558.00		0.60		
SB-19	67.10		0.19		
SB-20	657.00		2.30		
SB-21	5.21		0.10		
SB-22	254.00		2.61		
SB-23	2,390.00		0.11		
SB-24	234.00		0.22		
SB-25	491.00		39.20		
SB-26	<.20		<.20		
SB-27	35.40		5.50		
SB-28	28.40		1.40		
SB-29	<.20		<.20		
SB-30	3,300.00		<.20		
SB-31	<.20		<.20		
SB-32	320.00		<.20		
SB-33	0.64		<.20		
SB-34	<.20		<.20		

Table 1

PCB Concentration Detected in Soils Samples Collected From Heritage Square and U.S. Post Office Site, Emeryville, California

Boring	PCB Concentration in ppm				
	0.5 ft depth	1.5 ft depth	3.5 ft depth	6.5 ft depth	9 ft depth
SB-35	<.20		<.20		
SB-36	3.12		<.20		
SB-37	<.20		<.20		
SB-38	2.71		0.35		
SB-39	8.20		0.22		
SB-40	<.20	<.20	<.20		
SB-41	<.20	<.20	<.20		
SB-42	83.20		1.32		
SB-43	2,440.00		0.26		
SB-44	19.70		<.20		
SB-45	1.20		<.20		
SB-46	<.20		<.20		
SB-47	<.20		<.20		
SB-A	0.84		0.98		
SB-B	6.80		2.00		
SB-C	0.33		38.00		
SB-D	26.00		0.01		
SB-E	80.00		0.29		
SB-F	105.00		0.08		
SB-G	0.27		92.00		
SG-H	1.80		0.04		

B are samples by Harding Lawson Associates collected January, 1992, see Appendix A.
PO are samples by Harding Lawson Associates collected August, 1990, see Appendix A.
SB are samples by SOMA environmental collected April and June, 2000.

APPENDIX A

LABORATORY REPORTS

AND CHAIN OF CUSTODY FORMS

WATER • WASTE WATER • HAZARDOUS WASTE • FUEL • AIR • SOIL

DELTA ENVIRONMENTAL LABORATORIES, Ltd

Client:
Soma Environmental Eng. Inc
2680 Bishop Dr., Suite 203
San Ramon, CA 94583

Attention: Dr. Sepehr

Client Project ID:
2176
Off-site CBC
Investigation
Emeryville, CA

Ref: R5071_pcb_1
Method: 8080
Sampled: 6/24/00
Received: 6/24/00
Matrix: Soil
Analyzed: 7/1-7/00
Reported: 7/10/00
Units: mg/kg

Analytical Results for PCBs
EPA 8080

Analyte	Unit	Results						
		Analytes						
	mg/kg	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260
Detection Limit	mg/kg	0.20	0.80	0.20	0.20	0.20	0.20	0.20
Sample Name								
26-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
26-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
27-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	36.4
27-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	5.50
28-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	28.4
28-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	1.4
29-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
29-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
30-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	3300
30-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
31-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
31-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
32-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	320
32-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
33-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	0.64
33-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
34-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
34-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
35-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
35-0.35'	mg/kg	ND	ND	ND	ND	ND	ND	ND
36-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	3.12
36-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
37-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
37-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND

ND:Not Detected(< MDL)

Hossein Khosh Khoo, Ph.D.
Laboratory Director/President

WATER • WASTE WATER • HAZARDOUS WASTE • FUEL • AIR • SOIL

DELTA ENVIRONMENTAL LABORATORIES, Ltd

Client:
Soma Environmental Eng. Inc
2680 Bishop Dr., Suite 203
San Ramon, CA 94583

Attention: Dr. Sepehr

Client Project ID:
2176
Off-site CBC
Investigation
Emeryville, CA

Ref: R5071_pcb_2
Method: 8080
Sampled: 6/24/00
Received: 6/24/00
Matrix: Soil
Analyzed: 7/1-7/00
Reported: 7/10/00
Units: mg/kg

Analytical Results for PCBs
EPA 8080

Analyte	Unit	Results						
		Analytes						
	mg/kg	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260
Detection Limit	mg/kg	0.20	0.80	0.20	0.20	0.20	0.20	0.20
Sasmple Name								
38-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	2.71
38-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	0.35
39-0..5'	mg/kg	ND	ND	ND	ND	ND	ND	8.2
39-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	0.22
40-0..5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
40-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
41-0..5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
41-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
42-0..5'	mg/kg	ND	ND	ND	ND	ND	ND	83.2
42-3..5'	mg/kg	ND	ND	ND	ND	ND	ND	1.32
43-0..5'	mg/kg	ND	ND	ND	ND	ND	ND	2440
43-3..5'	mg/kg	ND	ND	ND	ND	ND	ND	0.26
44-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	19.7
44-3..5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
45-0..5'	mg/kg	ND	ND	ND	ND	ND	ND	1.20
45-3..5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
46-0..5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
46-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
47-0.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND
47-3.5'	mg/kg	ND	ND	ND	ND	ND	ND	ND

ND:Not Detected(<MDL)

Hossein Khosh Khoo, Ph.D.
Laboratory Director/President

Chain of Custody (COC) Form

685 Stone Road #11 & 12
Benicia, Ca. 94510
(707) 747-6081, 800-747-6082 FAX (707) 747-6082

Results to: Naser Parkiou
Client Name SOMA Env. Eng.
Address
City
Telephone 925 2446600 Fax: 925 2446601
SAMPLER (signature) Naser Parkiou
Turnaround Time Standard

Project Name CBS OPP. S.D
Proj. 2176
LAB ID
Ref # Emeryville CA.

5071 (1/5)

Special Instructions::

Analysis Requested: No. of containers | pH | Temperature | PCBs

#	Sample ID	Date	Time	Matrix	No. of containers	pH	Temperature	PCBs	Comments
1	26-0.5'	6/24		Soil	1			✓	
2	26-3.5'	"		"	1			✓	
3	27-0.5'	"		"	1			✓	
4	27-3.5'	"		"	1			✓	
5	28-0.5'	"		"	1			✓	
6	28-3.5'	"		"	1			✓	
7	29-0.5'	"		"	1			✓	
8	29-3.5'	"		"	1			✓	
9	30-0.5'	"		"	1			✓	
10	30-3.5'	"		"	1			✓	

Relinquished by:	Date 6/28/00	1) Have all samples received been stored on ice?
Received By:	Date 6/28/00	2) Did any VOA samples received have any head space?
Relinquished by:	Date	3) Were samples in appropriate containers and packaged properly?
Received By:	Date	4) Were samples received in good condition?

For Lab Use Only:

685 [redacted]
Benicia, Ca, 94510
(707) 747-6081, 800-747-6082 FAX (707) 747-6082

Project Name: CBS off-site Proj 2176 Emeryville CA

Issue to: Nabil Pakiu

Client Name: SOMA Env. Eng

Address

City

Telephone: 925 244 6600 Fax: 925 244 6601

SAMPLER (signature)

Turnaround Time: Standard

LAB ID

Ref #

5071 (2/5)

Analysis Requested

Special Instructions:

#	Sample ID	Date	Time	Matrix	No. of containers	Temperature	PCBs	Comments
11	31 0.5'	6/24		Soil	1			
12	31 3.5'	"		"	1			
13	32 3.5'	"		"	1			
14	32 0.5'	"		"	1			
15	33 0.5'	"		"	1			
16	33 3.5	"		"	1			
17	34 0.5	"		"	1			
18	34 3.5	"		"	1			
19	35 0.5	"		"	1			
20	35 3.5	"		"	1			

Relinquished by:	Date 6/26	1) Have all samples received been stored on ice?
Received By:	Date	2) Did any VOA samples received have any head space?
Relinquished by:	Date	3) Were samples in appropriate containers and packaged properly?
Received by:	Date	4) Were samples received in good condition?

For Lab Use Only:

Delta Environmental Laboratories

Chain of Custody (COC) Form

685 Stone Road #11 & 12
Benicia, Ca. 94510
(707) 747-6081, 800-747-6082 FAX (707) 747-6082

3/5

Results to:	Naser Pakravan
Client Name	SoMA
Address	
City	
Telephone	(925) 244-6600 Fax: (925) 244-6601
SAMPLER (signature)	Naser Pakravan
Turnaround Time	Standard

Project Name #2176

CBS offsite

LAB ID Emeryville Ca

Ref #

5071

3/5

Special Instructions::

#	Sample ID	Date	Time	Matrix	No. of containers	pH	Temperature	PCBs	Comments
21	36 0.5'	6/24		S:1	1			✓	
22	36 3.5'				1			✓	
23	~~35~~ 37 0.5'				1			✓	
24	37 3.5'				1			✓	
25	38 0.5'				1			✓	
26	38 3.5'				1			✓	
27	39 0.5'				1			✓	
28	39 3.5'				1			✓	
29	40 0.5'				1			✓	
30	40 3.5'	6/24		S:1	1			✓	

Relinquished by:	Date 6/26	1)	Have all samples received been stored on ice? ____
Received By:	Date 6/26	2)	Did any VOA samples received have any head space? ____
Relinquished by:	Date	3)	Were samples in appropriate containers and packaged properly? ____
Received By:	Date	4)	Were samples received in good condition? ____

For Lab Use Only:

Sonoma, Ca. 95476
(707) 747-6081, 800-747-6082 FAX (707) 747-6082

Results to: Naser Pakrou
Client Name SoMA Env. Eng.
Address
City 925 2446600
Telephone Fax 925 2446601
SAMPLER (signature) Naser Pakrou
Turnaround Time Standard

Project Name CBS OFFSITE
Proj. 2176
LAB ID Emeryville CA.
Ref #

5071 (415)

Analysis Requested

Special Instructions:

#	Sample ID	Date	Time	Matrix	No. of containers	pH	Temperature	PCB's	Comments
31	41 0.5'	6/24		Soi	1				
32	41 3.5'	"			1				
33	42 0.5	"			1				
34	42 3.5	"			1				
35	43 0.5	"			1				
36	43 3.5	"			1				
37	44 3.5	"			1				
38	44 0.5	"			1				
39	45 0.5	"			1				
40	45 3.5	"			1				

Relinquished by:	Date 6/26	1) Have all samples received been stored on ice? ___
Received By:	Date	2) Did any VOA samples received have any head space? ___
Relinquished by:	Date	3) Were samples in appropriate containers and packaged properly? ___
Received By:	Date	4) Were samples received in good condition?

For Lab Use Only:

Harding Lawson Associates

Transmittal/Memorandum

91 OCT 32 8111:49

STID 4498

To: Susan Hugo
Alameda County Department of Health
80 Swan Way
Room 200
Oakland, California

From: Melissa Wann MLW
Date: October 30, 1991
Subject: USPS Site - Emeryville
Job No.: 05525,072.02

Remarks: Enclosed please find a copy of the Shallow Soils Investigation Report dated September 20, ~~1991~~ 1990 for the property located at 6121 Hollis Street for your review.

As per our telephone conversation of October 28, 1991, HLA and Mr. Ray Jones of the USPS would like to meet with you on November 5, 1991 at 1:30 pm to discuss additional sampling activities, construction of the Postal Service Station, and remedial activities, if appropriate.

If there is a conflict regarding the meeting, please call me at (415) 899-7344.

Harding Lawson Associates
A Subsidiary of Harding Associates

J. Bruce Schelbach
Senior Associate Hydrogeologist

Engineering and Environmental Services

7655 Redwood Blvd., P.O. Box 578
Novato, California 94948
415/899-7319 / 415/892-0821
Telecopy: 415/892-1586

Harding Lawson Associates
A Subsidiary of Harding Associates

Melissa L. Wann
Project Geologist

Engineering and Environmental Services

7655 Redwood Blvd., P.O. Box 578
Novato, California 94948
415/899-7344 / 415/892-0821
Telecopy: 415/892-1586

MLW/jc20633-misc

Harding Lawson Associates

September 20, 1990

05525,072.02

United States Postal Service
San Bruno Facility Service Center
850 Cherry Street
San Bruno, California 94099

Attention: Mr. Ray Jones
Design and Construction Branch

Gentlemen:

Shallow Soils Investigation
6121 Hollis Street
Emeryville, California

This report presents the results of a shallow soils investigation conducted by Harding Lawson Associates (HLA) at 6121 Hollis Street, Emeryville, California, for the U.S. Postal Service (USPS). The purpose of this investigation was to assess whether polychlorinated biphenyls (PCBs) are present in shallow onsite soils, and if PCBs were detected, to provide information on cleanup requirements.

SITE DESCRIPTION

The U.S. Postal Service property in Emeryville is situated east of Interstate 80/580, approximately 1 mile north of the Bay Bridge (Plate 1). The site is currently a vacant lot approximately 255 feet by 290 feet. The northern property line is contiguous with 62nd Street. A Southern Pacific Railroad spur is adjacent to the western site border. PCB contamination has been remediated on the property south of the site, which is owned by Westinghouse.

BACKGROUND

Several soil samples collected in the vicinity of the southern site boundary were analyzed for PCBs by the California Department of Health Services (DHS) in February 1981. These samples contained elevated PCB concentrations. This finding prompted ITT Grinnell Corporation, the former owner of the property, to retain CH2M HILL to conduct additional soil sampling and analysis. CH2M HILL's June 1981 report confirmed PCBs to be present in the shallow soil along the southwestern property boundary adjacent to a railroad spur. The sampling locations were not well defined spatially in the DHS or CH2M HILL reports; therefore, the analytical results could not be used to characterize the site.

In 1985, the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) issued Cleanup and Abatement Order No. 85-006 for the Westinghouse property south of the site asserting that Westinghouse took inadequate action to prevent the movement of PCB-contaminated soil offsite. Following negotiations with state and federal regulatory agencies, a continuous 35-foot-deep slurry wall surrounding PCB-contaminated soils was constructed. Soil outside the wall from certain areas along the northern and eastern boundaries of the site having significant (greater than 50 parts per million [ppm]) PCB contamination was excavated and moved within the wall. These soils were later covered with an engineered cap to reduce surface-water infiltration and erosion of the soil.

SOILS INVESTIGATION

On August 2 and 3, 1990, 17 shallow soil borings were drilled at the USPS site using a hand auger. Boring locations are shown on Plate 2. Eleven soil borings (1, 2, 5, 6, 7, 9, 11, 12, 14, 16, and 17) were drilled to a depth of 3.5 feet. Soil samples from these borings were collected at intervals from 0.0 to 1.0, 1.2 to 2.0, and 3.0 to 3.5 feet. Five borings (4, 8, 10, 13, and 15) were drilled to a depth of 2 feet or less because rocky soil or concrete was encountered which prohibited further hand augering. One or two soil samples were collected from each of these borings. Boring 3 was abandoned after drilling through asphalt into concrete.

The soil samples collected were submitted under chain of custody to Curtis & Tompkins Analytical Laboratories, Berkeley, for PCB analysis using EPA Test Method 8080. Six soil samples were also analyzed for total petroleum hydrocarbons (TPH) in addition to PCBs because hydrocarbon odors were detected when the boring was completed.

PCB analytical results are presented in Table 1. Table 2 summarizes analytical results for total petroleum hydrocarbons. Laboratory reports for all of the chemical analyses are presented in Appendix A and the field investigation daily reports are presented in Appendix B.

Of the 41 soil samples analyzed for PCBs, only the sample from Boring 15 at a depth between 1.2 and 2.0 feet contained PCBs at a concentration at or above 5,000 micrograms per kilogram (µg/kg) (5 ppm). This sample contained 52,000 µg/kg (52 ppm) PCB. The laboratory was contacted to confirm the concentration reported. A second soil sample from the same sample tube was analyzed; 17,000 µg/kg (17 ppm) of PCBs were detected. The two analyses indicate that PCBs are present; however, the concentrations are not uniform.

The concentrations of PCBs in soil samples collected in the 0- to 1-foot interval are presented on Plate 3. The highest PCB concentration for this depth was 2,100 µg/kg (2.1 ppm) in Boring 10. Plate 4 shows the PCB concentration detected between 1.2 to 2.0 feet below ground surface (bgs); Boring 15 contains the highest level of PCBs

measured onsite, 52,000 µg/kg (52 ppm). Of the 11 soil samples collected from 3.0 to 3.5 feet bgs, only 2 had detectable levels of PCBs (Plate 5).

Three of the six soil samples analyzed for petroleum hydrocarbons had values above the level of detection (Table 2). The 3.0- to 3.5-foot sample from Boring 5 contained 430 milligrams per kilogram (mg/kg, equivalent to ppm) diesel and 51 mg/kg gasoline; the sample from the same depth in Boring 6 contained 260 mg/kg kerosene and 1.2 mg/kg gasoline. The soil sample from Boring 14 at a depth of 0.5 to 1.0 foot had a diesel concentration of 43 mg/kg.

DISPOSAL AND CLEANUP STANDARDS

California and the United States have issued disposal standards for PCBs; and the federal government has also issued cleanup standards for PCB spills.

Disposal Standards

Disposal of wastes containing PCBs is regulated by the federal government under the Toxic Substances Control Act of 1976 (TSCA) and the California government under the Hazardous Waste Management Act of 1986 (HWMA). Nonliquid material contaminated with less than 50 parts per million (ppm) PCBs are not regulated by HWMA; such materials having concentrations above 50 ppm are to be disposed at an EPA-approved land disposal facility, or incinerated.

Cleanup Standards

Federal cleanup standards for PCB spills are presented in 40 CFR 761. The regulatory policy in 40 CFR 761.120(a) establishes criteria the United States Environmental Protection Agency (EPA) is to use to determine the adequacy of the cleanup of a spill resulting from the release of materials containing PCBs at concentrations of 50 ppm or greater. The policy applies to spills that occur after May 4, 1987. Spills that occurred prior to this date are excluded from the scope of this policy for two reasons: 1) this policy is not intended to require additional cleanup where a party has already cleaned a spill in accordance with requirements imposed by EPA through its regional offices; and 2) EPA recognizes that old spills discovered after the effective date of the policy will require site-by-site evaluation because of the likelihood that the site involves more pervasive PCB contamination than fresh spills and because old spills are more difficult to clean up than fresh spills. Therefore, spills that occurred before the effective date of this policy are to be cleaned up to requirements established at the discretion of EPA, usually through its regional offices.

Cleanup standards for outdoor electrical substations are described in 40 CFR 761.125(c)(2); 40 CFR761.125(c)(2)(ii) states that soil contaminated by the spill in an outdoor electrical substation will be cleaned to 25 ppm PCBs by weight, or to 50 ppm PCBs by weight provided that a label or notice is visibly placed in the area. Specific standards for areas with unrestricted access, which include substations that are

converted to another use, are described in 40 CFR 761.125(c)(4), in accordance with 40 CFR 761.125(c)(4)(v). Soils that will remain in place following removal of electrical equipment are to be decontaminated to 10 ppm PCBs by weight provided that the soil is excavated to a minimum depth of 10 inches. The excavation can then be filled with clean soil and restored.

It is believed that the USPS site would be considered an old spill site and would therefore be exempt from the requirements listed in 40 CFR 761.125; however, whether any cleanup is required, or to what level the soil must be cleaned, will require negotiations with the EPA.

TOTAL PETROLEUM HYDROCARBONS

Petroleum odors were detected in three soil borings (5, 6, and 14, Plate 2) and TPH analyses were requested for samples from these borings (Table 2). The laboratory reported that soil samples analyzed from Borings 5 and 6 did have concentrations of TPH as diesel and kerosene in excess of 100 mg/kg. Typically, if soil is found to contain TPH above 100 mg/kg, the regulatory agencies require remediation of the soil. For the USPS site, this would require excavation and disposal of the soil at a Class II landfill or treatment to reduce the concentration below 100 mg/kg, which would allow disposal at a Class III landfill.

Additional subsurface information was obtained from a recent geotechnical investigation conducted by Subsurface Consultants (SC). SC drilled 7 borings, 4 of which were completed to a depth of approximately 25 feet below ground surface to obtain information on the required foundation for the structure to be built. Cuttings from three of these borings were reportedly screened by SC using an organic vapor meter; results indicated that volatile compounds were present in the subsurface. It is known that in this general area of Emeryville there are a considerable number of soil and groundwater contamination problems. The shallow soil samples collected by HLA and the data obtained by Subsurface Consultants, indicates that there is soil contamination present and that groundwater beneath the site may contain volatile organic compounds. Further definition of the identified soil contamination and assessment of the possible groundwater contamination will have to be addressed under another work authorization.

RECOMMENDATIONS

The data obtained from shallow soil sampling conducted by HLA indicates that PCBs are present in the soils at the facility, principally in the southern half of the property and generally at concentrations below 5,000 µg/kg (5 ppm). At this concentration the site would be suitable for nonrestricted use, assuming the areas where PCBs were detected are covered with asphalt or the proposed postal facility building. One soil sample analyzed from Boring 15 did indicate that PCBs were present at 52 ppm at a depth of 1.5 to 2.0 feet. Soil at this high concentration may require excavation and

disposal at an offsite landfill. The EPA will need to be contacted to obtain guidance to assess whether any action needs to be taken for this one area.

The TPH detected in the soil will require some form of remediation. Again the local regulatory agencies will need to be contacted and a negotiated disposition of the soil will be required.

The above mentioned environmental problems must be addressed prior to construction of the U.S. Postal Service facility planned for the site. If you have any questions, please feel free to contact Bruce Scheibach at 899-7319.

Yours very truly,

HARDING LAWSON ASSOCIATES

Robert W. Hull
Senior Associate Hydrogeologist

R. Bruce Scheibach
Senior Associate Hydrogeologist

EGH/RBS/bag/J13333-H

Attachments:

	Table 1	Analytical Results for Polychlorinated Biphenyls
	Table 2	Analytical Results for Total Petroleum Hydrocarbons
	Plate 1	Site Location Map
	Plate 2	Boring Location Map
	Plate 3	PCB Concentrations Between 0.0 and 1.0 foot bgs
	Plate 4	PCB Concentrations Between 1.2 and 2.0 feet bgs
	Plate 5	PCB Concentrations Between 3.0 and 3.5 feet bgs
	Appendix A	Analytical Results
	Appendix B	Field Investigation Daily Reports

Table 1. Analytical Results for Polychlorinated Biphenyls Analyses (EPA Method 8080)

Boring Number	Depth of Sample (ft bgs)[1]	PCB[2] Concentration (µg/kg) µg/b
1	0.5-1.0	[3]ND (<28)
1	1.2-1.7	ND (<28)
1	3.0-3.5	ND (<28)
2	0.0-0.5	320
2	1.5-2.0	ND (<28)
2	3.0-3.5	66
4	0.3-0.8	ND (<28)
4	1.3-1.8	ND (<28)
5	0.4-0.9	ND (<28)
5	1.5-2.0	ND (<28)
5	3.0-3.5	ND (<28)
6	0.0-0.5	120
6	1.5-2.0	ND (<28)
6	3.0-3.5	ND (<28)
7	0.0-0.5	56
7	1.5-2.0	ND (<28)
7	3.0-3.5	ND (<28)
8	0.0-0.5	380
9	0.0-0.5	1,900
9	1.5-2.0	64
9	3.0-3.5	ND (<28)
10	0.0-0.5	2,100
10	1.5-2.0	2,000
11	0.0-0.5	300
11	1.5-2.0	120
11	3.0-3.5	ND (<28)
12	0.0-0.5	68
12	1.5-2.0	ND (<28)
12	3.0-3.5	ND (<28)

[1] ft bgs = feet below ground surface
[2] PCB as Aroclor 1260
[3] ND = Not detected at or above reporting limits, shown in parentheses.

Table 1. Analytical Results for Polychlorinated Biphenyls Analyses (EPA Method 8080) (Continued)

Boring Number	Depth of Sample (ft bgs)	PCB Concentration (µg/kg)
13	0.0-0.5	290
14	0.5-1.0	410
14	1.5-2.0	360
14	3.0-3.5	ND (<28)
15	0.3-0.8	29
15	1.5-2.0	52,000/17,000*
16	0.3-0.8	100
16	1.5-2.0	ND (<28)
16	3.0-3.5	ND (<28)
17	0.3-0.8	ND (<28)
17	1.5-2.0	24**
17	3.0-3.5	21**

* Split Sample
** Concentration reported is below the reporting limit

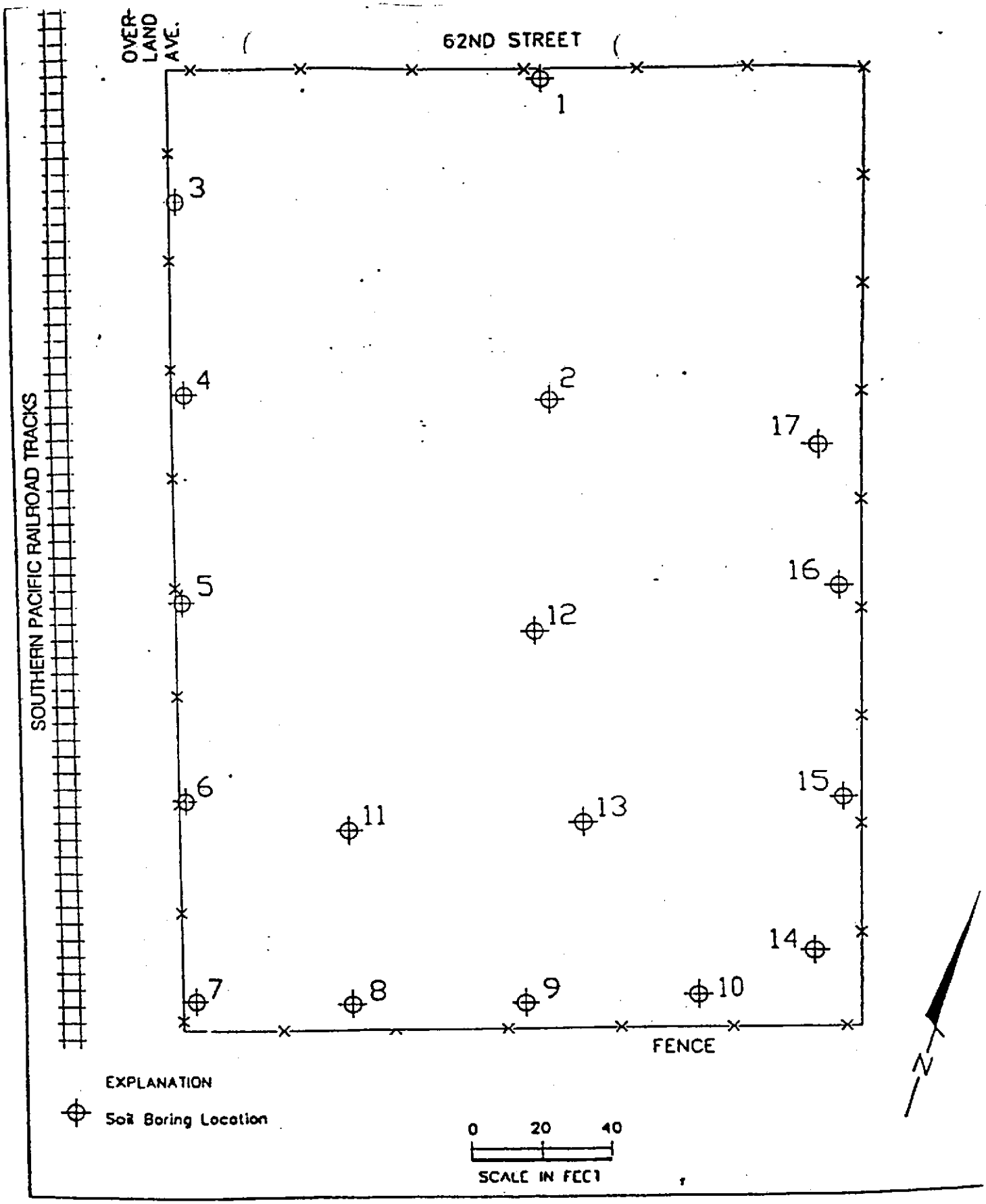
BS:lb/BS-1/4-A

Fridg. / Lair

Table 2. Analytical Results for Total Petroleum Hydrocarbons (CA DHS Method)

Boring Number	Depth of Sample (ft bgs)[1]	TPH[2] as kerosene (mg/kg)[3]	TPH as Diesel (mg/kg)	TPH as Gasoline (mg/kg)
5	1.5-2.0	ND [4]	ND	ND
5	3.0-3.5	ND	430	51
6	3.0-3.5	260	ND	1.2
14	0.5-1.0	ND	43	ND
14	1.5-2.0	ND	ND	ND
14	3.0-3.5	ND	ND	ND

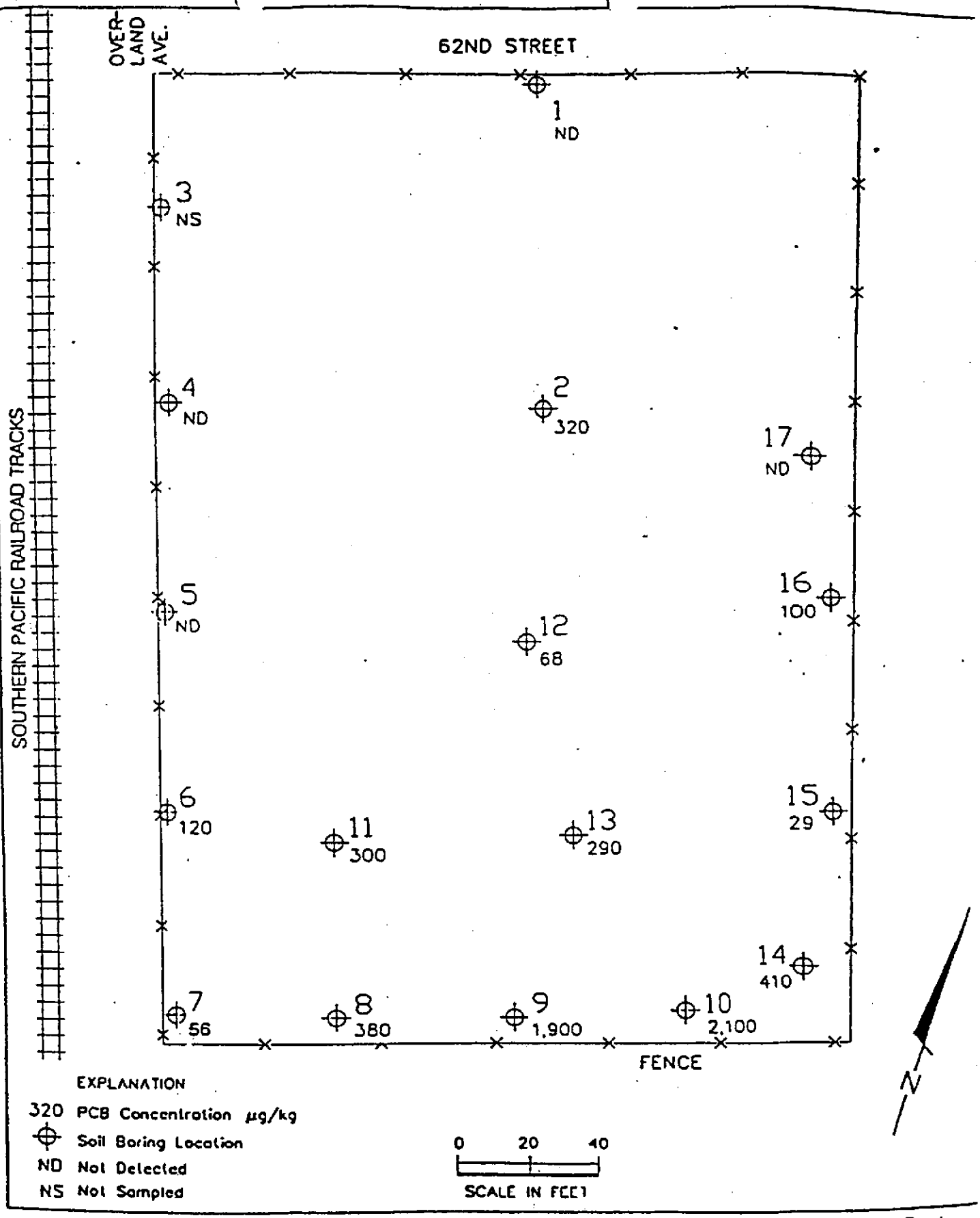
1 ft bgs feet below ground surface
2 TPH total petroleum hydrocarbons
3 mg/kg milligrams per kilogram is equivalent to parts per million
4 ND not detected at or above the reporting limit



Harding Lawson Associates
Engineering and Environmental Services

Site Map
U.S. Postal Service
Emeryville, California

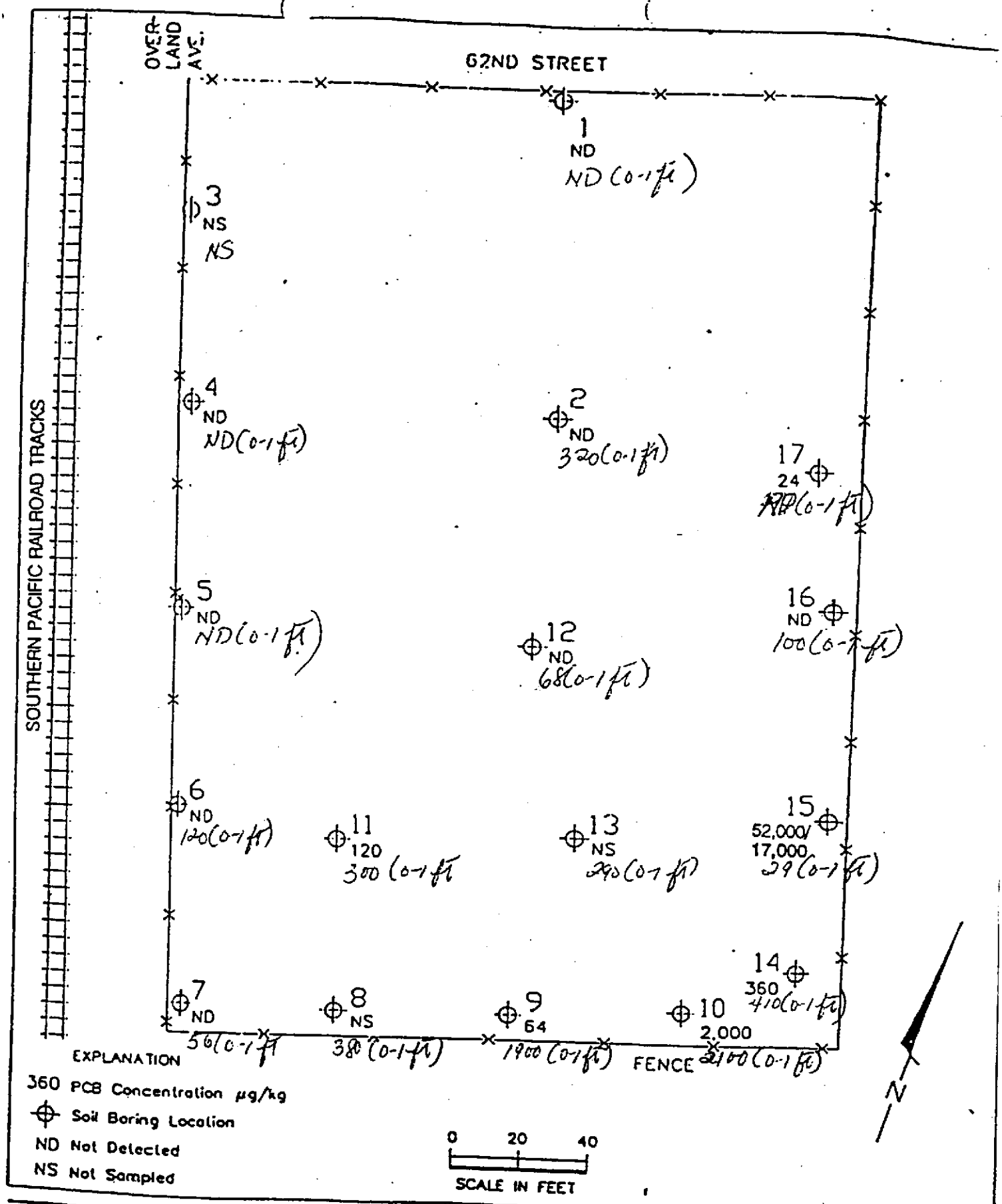
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED
LZ	5525,072.02	RBB	8/90	



Harding Lawson Associates
Engineering and Environmental Services

PCB Concentrations Between 0-1 Feet Below Ground Surface
U.S. Postal Service
Emeryville, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED
LZ	5525,072.02		8/90	

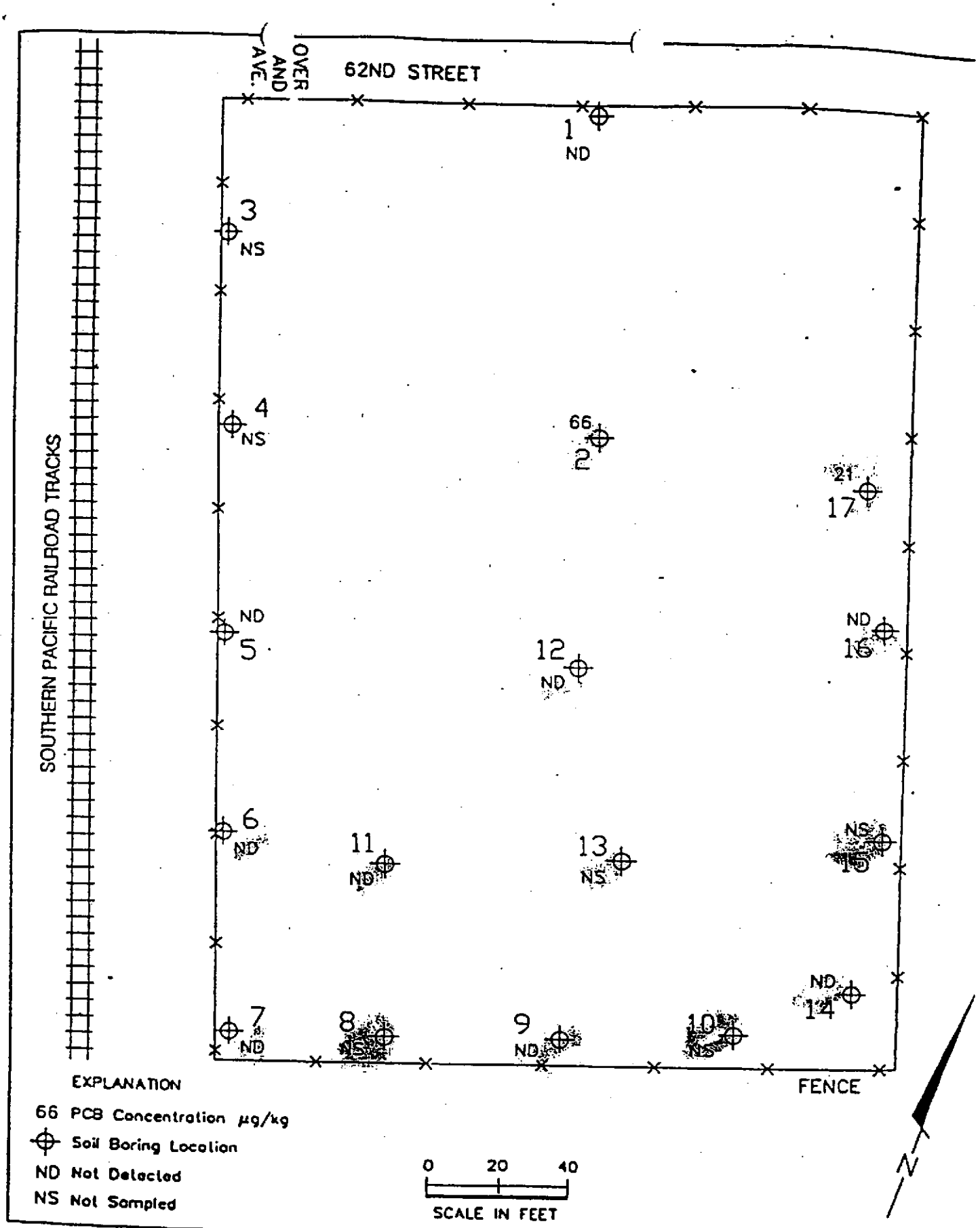


Harding Lawson Associates
Engineering and Environmental Services

PCB Concentration Between 1.2-2.0 Feet Below Ground Surface
U.S. Postal Service
Emeryville, California

4

LZ | 5525.072.02 | 8/90



Harding Lawson Associates
Engineering and
Environmental Services

PCB Concentrations Between 3.0-3.5 Feet
Below Ground Surface
U.S. Postal Service
Emeryville, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED
LZ	5525,072.02	RBB	8/90	