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June 1, 2006

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By lopprojectop at 11:53 am, Jun 02, 2006

Mr. Barney Chan
Hazardous Materials Specialist
Alameda County Health Care Services Agency (ACHCSA)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: **Subsurface Investigation Work Plan**
Chevron Station 9-0121
3026 Lakeshore Avenue
Oakland, California
Cambria Project No. 31J-1973
ACHCSA RO# 0000284

Dear Mr. Chan:

Cambria Environmental Technology, Inc. (Cambria) has prepared this *Subsurface Investigation Work Plan* on behalf of Chevron Environmental Management Company (Chevron) for the site referenced above. The objective of this investigation is to determine the extent of petroleum hydrocarbons in soil and groundwater by advancing four soil borings west and northwest of the site. The site background and Cambria's proposed scope of work are described below.

SITE SETTING AND HISTORY

The site is located on the southern corner of the intersection of Lakeshore Avenue and Macarthur Boulevard in Oakland, California and is an active Chevron service station (Figure 1). Onsite facilities include an island marketer, six dispenser islands, a storage/restroom building, three gasoline underground storage tanks (USTs) and one diesel UST sharing a common pit at the northern corner of the site (Figure 2). Chevron owns the property and began service station operations at this site in the 1950s.

The site is located at the western edge of the Piedmont Hills, approximately 800 feet northeast of Lake Meritt. The site topography is relatively flat. Surrounding property uses include primarily residential, recreational and some commercial.

Sediments in the vicinity consist of Holocene age estuarine deposits comprised of unconsolidated, water-saturated, dark, plastic clay and silty clay rich in organic material (Bay Mud) overlying Holocene age alluvial deposits of unconsolidated, moderately sorted, permeable sand and silt and Pleistocene alluvial deposits of weakly consolidated, poorly sorted, irregular interbedded clay, silt,

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sand, and gravel. Boring logs indicate that the site is underlain by clays interbedded with silt, silty sand, and fine sand layers to the total explored depth of 35 fbg. A cross section illustrating interpreted lithology is presented as Figure 3.

Groundwater typically flows to the southwest beneath the northwestern portion of the site and flows to the southeast beneath the eastern portion of the site. A vapor barrier between the site and an adjacent building influences groundwater flow beneath the site, causing groundwater mounding in the western portion of the site. The depth to groundwater typically fluctuates seasonally between approximately 3 to 9 fbg, except in well MW-5 where depth to water fluctuates between 9 and 12 fbg because the elevation of the top-of-casing is higher than the other wells..

Environmental/Remediation History

In 1967, a 2,000-gallon inventory loss was discovered. Soon after, the adjacent property owner (3014 Lakeshore Avenue) complained of petroleum odors in the basement. The steel USTs were removed and replaced with new USTs double wrapped in asphalt. A 32-inch long gash was observed in one of the removed tanks.

In 1980, a tenant in the adjacent building complained of a gasoline odor possibly emanating from the air conditioning system operated from the basement. A tank tightness test indicated that one of the USTs may have had a slight leak and was subsequently replaced with a fiberglass UST. Six recovery wells were also installed at this time to recover non aqueous-phase liquid hydrocarbons (NAPL) discovered in the UST pit. An undocumented quantity of soil was removed from the site during UST replacement. A plastic impermeable barrier extending to approximately 14-16 fbg was installed along the southwestern property line, against the basement wall of the adjacent building, to inhibit groundwater flow and mitigate potential vapor intrusion issues.

In May 1981, NAPL was discovered while performing maintenance on the recovery wells. Four additional observation wells were installed. A 24-inch diameter extraction well was also installed near the UST pit area, but it is presumed that the system was not operated for any significant period of time. A pumping test performed in February 1982 indicated that groundwater could not be drawn down at normal water production rates. No documentation of recovery well locations or amount of recovered product was located.

In 1984, during aboveground facility renovations, two USTs were discovered beneath the sidewalk and were abandoned in place by filling them with grout. Approximately 741 cubic yards of soil was also overexcavated and disposed of. However, it is not documented whether this soil was removed due to hydrocarbon impact or not.

In 1984 the tenants of the building on the adjacent property again complained of petroleum odors in the building. No odor or sheen was noted in an inspection of their basement sump pump. A letter was sent to the property owner by Chevron stating that Chevron had been inspecting the basement of the building for odor or product during the two previous years (1982 and 1983) and did not find any evidence of hydrocarbons.

A water sample collected in March 1985 from the basement of the adjacent building was analyzed and found to contain aromatic compounds typical of gasoline products. No information regarding further actions as a result of this investigation was located.

In 1990, a hole created by repetitive tank volume gauging with a stick was discovered in the unleaded gasoline UST. The hole was repaired and the UST was put back in service. In April 1991, the existing recovery wells onsite were located and sampled, however it was observed that most of the wells were damaged beyond repair. All of these wells were destroyed in July 1991, except for the 24-inch extraction well, which was destroyed in September 1996.

Onsite monitoring wells MW-1 through MW-4 were constructed onsite using ¾- inch diameter casing in August 1991.

In 1992, offsite monitoring wells MW-5 through MW-8 were installed (two-inch diameter). A drive-off occurred in 1993, releasing an unknown quantity of product into the pea gravel beneath a dispenser.

The product lines and dispensers were replaced in 1996. Soil samples collected beneath the piping and dispensers indicated that hydrocarbon impact to soil had occurred.

Between June 1995 and March 1999, a total of 0.0364 gallons of NAPL was bailed out of well MW-2.

In April 1999, onsite monitoring well MW-9 was installed, and ¾ -inch diameter wells MW-2 through MW-4 were replaced (MW-2A through MW-4A) using two-inch diameter casing.

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In October 2001, Delta Environmental Consultants, Inc. completed a site conceptual model and recommended a further delineation of hydrocarbon migration with additional monitoring wells to the southeast of the site.

PROPOSED SCOPE OF WORK

The objective of this investigation is to determine the extent of hydrocarbons to the northwest of the site. To meet this objective, we propose to hand auger four borings to eight fbg. Cambria proposes to advance SB-1 through SB-4 along Lakeshore Avenue. Proposed boring locations are illustrated in Figure 2. At a minimum, Cambria will complete the following tasks upon approval of this work plan:

Underground Utility Location: Cambria will contact Underground Services Alert (USA), an underground utility locating service, to identify utility locations at the proposed boring locations.

Site Health and Safety Plan: Cambria will prepare a site safety plan to protect site workers. The plan will be kept on site at all times, reviewed and signed by all site workers and visitors.

Permits: Cambria will obtain soil boring permits from the Alameda County Department of Public Works and an encroachment permit from the City of Oakland prior to beginning field operations.

Soil Borings: Cambria will hand auger four 3-inch soil borings to eight fbg and collect soil and grab groundwater samples. The borings will be logged using the unified soil classification system. Cambria's standard field procedures for hand auger soil borings are presented as Attachment A.

Soil and Groundwater Sampling: For each boring location, disturbed soil samples will be collected at approximately 2-foot intervals with clean brass tubes. Field screening of petroleum hydrocarbons will include visual and/or photo-ionization detector readings. At least one soil interval will be used for analysis from each boring based on field observations. Additional soil samples may be collected at the capillary fringe or obvious changes in soil lithology. Each soil sample will be labeled, capped with Teflon® tape, placed on ice, and transported to a Chevron-approved laboratory under proper chain of custody. Grab groundwater samples will be collected from the four boreholes using bailers. Upon completion, all soil borings will be grouted with neat cement to match the pre-drilling grade.

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Chemical Analyses: Soil and groundwater samples will be analyzed for the following constituents:

- Total petroleum hydrocarbons as gasoline (TPHg), TPH as diesel (TPHd), and TPH as motor oil (TPHmo) by EPA Method 8015M.

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl tertiary butyl ether (MTBE), by EPA Method 8260B.

Soil and Water Disposal: Soil cuttings will be placed in DOT-approved drums onsite, characterized, and transported to a Chevron-approved landfill.

Reporting: An investigation report will be prepared and will include the following:

- A summary of the site background and history.
- Descriptions of the boring and sampling methods.
- A figure illustrating the boring locations.
- Lithologic boring logs.
- Tabulated soil and groundwater analytic results.
- A discussion of petroleum hydrocarbon distribution in soil and groundwater.
- Analytic reports, chain-of-custody forms, and
- A discussion of the findings, conclusions and recommendations, as appropriate.

SCHEDULE

Cambria will proceed with the proposed scope of work upon receiving written approval from the Alameda County Environmental Health Services. We will submit a report documenting our results approximately 60 days after completion of field activities.

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CLOSING

We appreciate this opportunity to provide you with environmental consulting services. Please contact Laura Genin at (510) 420-3367 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.

Lelia Pascale
Staff Geologist

Robert Foss, P.G.
Senior Project Geologist

PROFESSIONAL GEOLOGIST ROBERT C. FOSS No. 7445 exp 08/06 STATE OF CALIFORNIA

Figures: 1 – Vicinity Map
2 – Site Plan with Proposed Soil Boring Locations
3 – Cross section A-A'

Attachments: A – Standard Field Procedures for Soil Borings

cc: Mr. Mark Inglis, Chevron, P.O. Box 6012, San Ramon, CA 94583 (STRATA)

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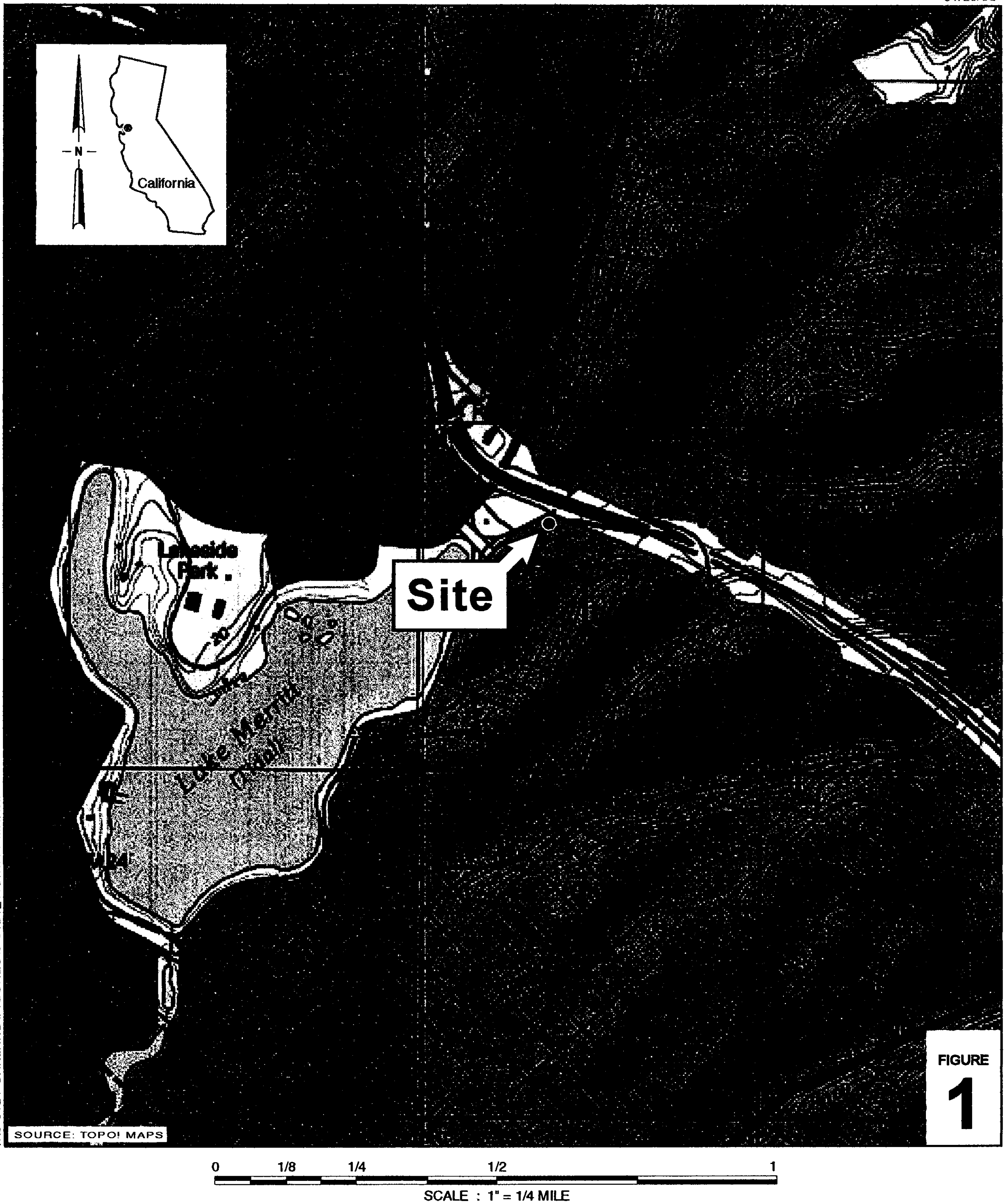

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Oakland, California

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Vicinity Map

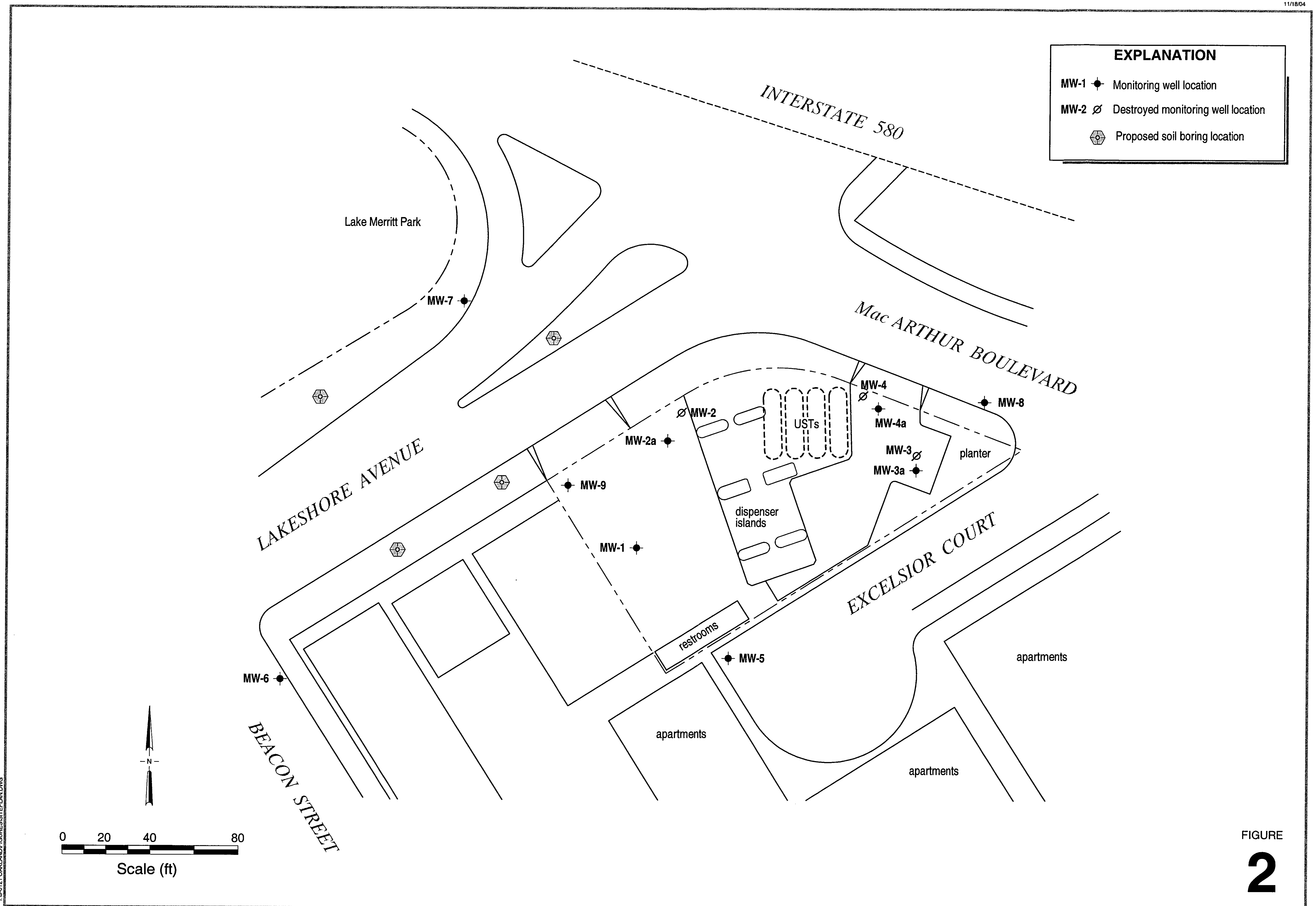

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FIGURE
2

Site Plan

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Oakland, California

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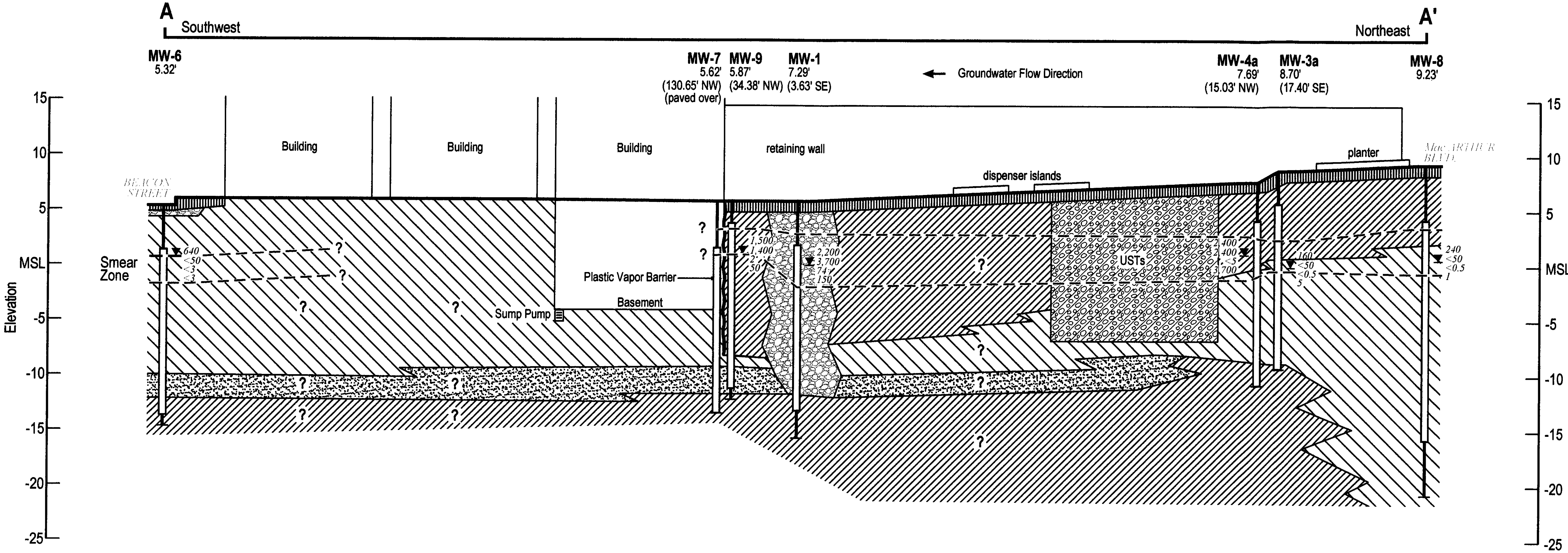
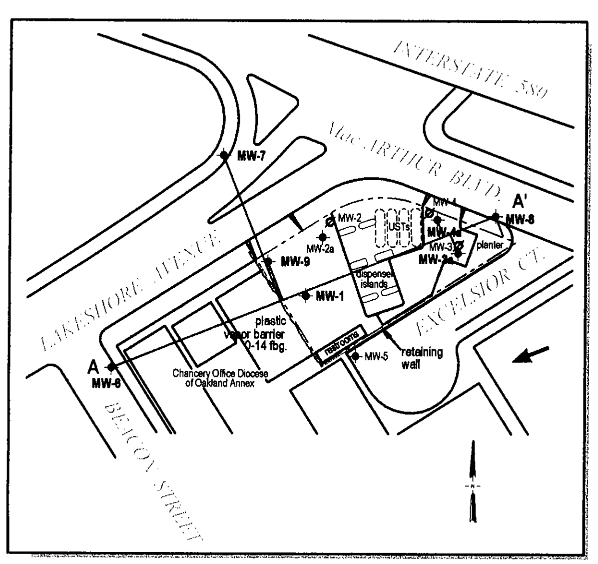
Geologic Cross Section A-A'





EXPLANATION

= Low Permeability Soils

= Moderate Permeability Soils

= High Permeability Soils

= Fill (Road Base)

= Fill (Tank Pit)

= Concrete / Asphalt

Well ID — Well Designation

Elev. (offset) — Top of Casing Elevation

— Groundwater Monitoring Well

— Well Screen Interval

— Bottom of boring

▼ Depth of Groundwater - 09/16/05 (unless otherwise noted)

TPHg TPHd Benzene MTBE Hydrocarbon concentrations in Groundwater, in parts per billion (09/16/05 by Gettler-Ryan)

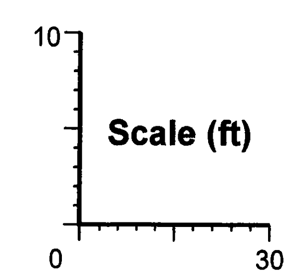


FIGURE **3**

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ATTACHMENT A

Standard Operating Procedures for Hand Auger Soil Borings

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STANDARD FIELD PROCEDURES FOR HAND-AUGER SOIL BORINGS

This document describes Cambria Environmental Technology's standard field methods for drilling and sampling soil borings using a hand-auger. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Professional Geologist (PG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e. sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Boring and Sampling

Hand-auger borings are typically drilled using a hand-held bucket auger to remove soil to the desired sampling depth. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the augered hole. The vertical location of each soil sample is determined using a tape measure. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Augering and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are collected from the open borehole using bailers. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

Blind duplicate water samples are collected usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory QA/QC blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

The borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55-gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

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