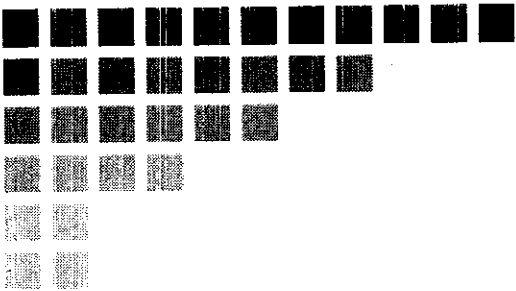


■ Subsurface Consultants, Inc.



James P. Bowers, PE  
R. William Rudolph, Jr., PE

ALCO  
HAZMAT

94 APR 18 PM 1:07

LETTER OF TRANSMITTAL

TO: Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room #200  
Oakland, CA 94621

DATE: April 15, 1994  
PROJECT: 13th & Jefferson Streets/Contamination/Closure  
SCI JOB NUMBER: 430.013

WE ARE SENDING YOU:

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|---|--|
| <input checked="" type="checkbox"/> 1 copies              | <input checked="" type="checkbox"/> if you have any questions, please call |
| <input checked="" type="checkbox"/> of our final report   | <input type="checkbox"/> for your review and comment                       |
| <input type="checkbox"/> a draft of our report            | <input type="checkbox"/> please return an executed copy                    |
| <input type="checkbox"/> a Service Agreement              | <input type="checkbox"/> for geotechnical services                         |
| <input type="checkbox"/> a proposed scope of services     | <input type="checkbox"/> with our comments                                 |
| <input type="checkbox"/> specifications                   | <input type="checkbox"/> with Chain of Custody documents                   |
| <input type="checkbox"/> grading/foundation plans         | <input checked="" type="checkbox"/> for your use                           |
| <input type="checkbox"/> soil samples/groundwater samples | <input type="checkbox"/> _____   |
| <input type="checkbox"/> an executed contract             | <input type="checkbox"/> _____   |
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REMARKS:

- COPIES TO:
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  - (1) Mr. Andrew Clark-Clough, City of Oakland, Environmental Affairs, 1333 Broadway, #800, Oakland, CA 94612
  - (1) Mr. Eddy So. RWQCB, 2101 Webster St., #500, Oakland, CA 94612
  - (1) Mr. Donnell Choy, Office of City Attorney, 905 - 14th Street, 12th Fl., Oakland, CA 94612

BY: Mark Kawakami  
Mark Kawakami

■ Subsurface Consultants, Inc.

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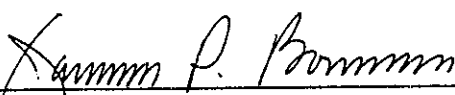
**REQUEST FOR SITE CLOSURE  
HYDROCARBON AND LEAD CONTAMINATION SITES  
13TH AND JEFFERSON STREETS  
OAKLAND, CALIFORNIA  
SCI 430.013**

Prepared for:

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

By:

  
\_\_\_\_\_  
Mark Kawakami  
Project Engineer

  
\_\_\_\_\_  
James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/96)



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April 15, 1994

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## I INTRODUCTION

This report presents a request for site closure for several contamination problems that have been remediated on the block bounded by 13th and 14th Streets, Martin Luther King Jr. Way and Jefferson Street in Oakland, California. All of the contamination areas are situated near the intersection of 13th and Jefferson Streets. The location of the site and the areas of contamination are shown on Plate 1. ✓ Subsurface Consultants, Inc. (SCI) has investigated and provided oversight for the remediation of contamination on the property on behalf of the Oakland Redevelopment Agency, the property owner. The results of our services are recorded in numerous reports and letters. A summary of the pertinent documents is presented in Table 1. ✓

The site is presently vacant of structures, except for a basement (approximately 115 by 165 feet in plan) that occupies the southwest portion of the site and a soil and groundwater treatment facility located in the northwest corner. → Several environmental concerns were identified near the intersection of 13th and Jefferson Streets during a preliminary environmental assessment of the site (report dated September 14, 1988). They included: (1) gasoline contaminated soils, (2) polynuclear aromatic hydrocarbon (PAH) and lead contaminated surface soils, (3) a concrete sump filled with oily sludge, and (4) a 215 feet deep water well. During the remediation of the gasoline contaminated soils, three underground fuel tanks and two additional water wells were



discovered. The locations of these items are shown on Plate 1. A summary of site investigation and remediation activities are presented subsequently.

In brief, the sources of contamination were identified and the lateral and vertical extent of soil contamination were defined. The contaminated soils were subsequently removed, remediated on-site where practical, and disposed of at appropriate off-site disposal facilities. Monitoring wells were installed to evaluate impacts to groundwater quality. Over the past four years, analytical data has demonstrated that there are no longer any impacts to groundwater quality. In our opinion, the environmental concerns have been satisfactorily remediated and no further remedial actions are appropriate. At this time, we request site closure.

Releases from a gasoline tank near the intersection of 14th Street and Martin Luther King, Jr. Way have impacted soil and groundwater in the area. The tank was removed in 1988. The on-site contaminated soils were remediated by excavation and on-site aeration. However, gasoline contaminated soil and groundwater remain beneath Martin Luther King, Jr. Way, near its intersection with 14th Street. SCI is presently conducting remedial actions in this area. For this reason, this request for site closure excludes this area of contamination.

## II SITE HISTORY

Prior to the 1920s, the block was occupied by numerous residential dwellings, small retail/service oriented stores, and the Hotel Metropole. The Hotel Metropole was located at the southeast corner of 13th and Jefferson Streets. It burned down in 1918. In the 1920s and 1930s, the use of the block changed, being occupied primarily by commercial businesses, including the Twentieth Century Market and garage, warehouses and an ice skating rink.

In the 1940s, much of the property was purchased by the City of Oakland. Firehouse No. 1 and the associated garage/repair facility was constructed on the western half of the block. Similarly, the Oakland Police Department (OPD) garage occupied the southeast corner of the site, at 13th and Jefferson Streets.

The OPD garage property was previously occupied by the Twentieth Century garage, a vehicle garage and service station. Discussions with individuals having lived in the area confirmed that the facility dispensed gasoline, prior to the property being converted to the OPD garage. Information regarding the location of the gasoline tanks was unavailable. The OPD garage was used to service and fuel City vehicles. Discussions with past City employees confirm the presence of gasoline storage and dispensing facilities. However, specific details regarding tank locations and capacities are unavailable. Excavations made during site remediation activities revealed pipelines extending from the

southeast corner of the site into Jefferson and 13th Streets. The pipelines were typical of those used to dispense gasoline from underground tanks.

### III SOURCES OF CONTAMINATION AND SOIL REMEDIATION

As previously stated, several environmental concerns were identified on the site. They included (1) PAH and lead contamination, (2) a concrete floor drain sump, (3) gasoline contaminated soils, (4) underground fuel tanks and (5) three water wells. Each of these concerns and details regarding remediation efforts are presented below.

#### A. PAH and Lead Contaminated Soil

The extent of the PAH and lead contamination was defined by excavating test pits and drilling test borings. Test pit and boring locations are shown on Plate 2. Soil samples obtained from the borings and test pits were analyzed for:

1. Polynuclear aromatic hydrocarbons (EPA Method 8100),
2. Total lead, and
3. Soluble lead.

The analytical results are summarized in Tables 2 and 3.

The analytical data indicated that the PAH and lead contamination was limited to the upper 4 feet of fill blanketing the southeast corner of the site. A concrete slab, which was

encountered below the fill over most of the area, defined the lower limits of contamination. The approximate extent of the contamination, as defined by the analytical data, is shown on Plate 2. ✓ The fill contained abundant brick fragments and fire related debris. In our opinion, the PAH and lead contamination was associated with the Hotel Metropole fire debris left on-site in 1918. The fire debris fill had been placed in the 4-foot deep basement of the previous hotel.

Soil remediation was performed by Hazardous Substance Removal, Inc. (HSR), a California State licensed contractor. Soil remediation consisted of excavating and removing the contaminated materials from the site. The excavation was deepened and expanded until confirmation samples obtained from the excavation sidewalls and bottom indicated that (1) the PAH concentrations were below the analytical reporting limits, and (2) lead concentrations were generally less than 10 mg/kg. *some hot spots (up to 260ppm)* The limits of the final excavation and the locations of the confirmation samples are shown on Plate 3. ✓

Confirmation samples from the bottom and sidewalls of the excavation were analyzed for:

1. Polynuclear aromatic hydrocarbons (EPA Method 8100), and
2. Total lead (EPA Method 7420).

The samples were transported to the analytical laboratory under Chain-of-Custody records. The sampling was observed by Ms. Katherine Chesick of the Alameda County Health Care Services Agency

(ACHCSA). Confirmation sample analytical results are summarized in Table 4.

A total of 2,384 tons of contaminated soil was removed under manifest from the site and transported by STAMCO, a California registered hazardous waste trucking company, to the United States Pollution Control, Inc. (USPCI) facility in Knolls, Utah. USPCI is an EPA registered Class 1 hazardous waste disposal facility.

**B. Concrete Floor Drain Sump**

During the removal of the concrete sump, soil stained a gray/green color was observed directly beneath the sump. Subsequent remediation services were provided by HSR with oversight by SCI. Remediation activities were recorded in a report dated September 24, 1990. Previous sampling of the sump contents indicated the presence of oil and grease, and very low concentrations of heavy metals, methylene chloride and PCBs. The sump, its contents and the soils within about 4 feet of the sump bottom were removed and disposed of at the USPCI Facility as a Class 1 waste. Following sump removal, the excavation was deepened to approximately 14 feet. A soil sample obtained from the bottom of the excavation was analyzed for the following:

1. Oil and grease (SMWW 503E),
2. Total extractable hydrocarbons (EPA 3550/8015),
3. Volatile organic compounds (EPA 8240),
4. Title 22 Metals, and
5. Organochlorine pesticides and polychlorinated biphenyls, PCBs, (EPA 8080).

The analytical data indicated that oil and grease, and extractable hydrocarbons quantified predominately as kerosene remained in the soil below the excavation bottom. The analytical results are presented in Table 5. ✓

The excavation was subsequently widened and deepened until all contaminated soils were removed. The final excavation was approximately 15 by 15 feet in plan and extended to a depth of about 28 feet, approximately 1 foot below groundwater. The limits of the excavation are shown on Plate 4.

Confirmation samples were obtained from the bottom and sidewalls of the excavation at the locations shown on Plate 4. The samples were analyzed for:

1. Total extractable hydrocarbons (EPA 3550/8015), and
2. Oil and grease (Method SMWW 503E).

The analytical results are presented in Table 6. ✓ The analytical data indicated that the contaminated soils had been removed. ✓

The contaminated soils that were removed from the excavation were aerated/land farmed on-site in accordance with the requirements of the Bay Area Air Quality Management District (BAAQMD) and disposed of at the West Contra Costa County Sanitary Landfill in Richmond. The excavation was backfilled with compacted clean fill.

### C. Gasoline Contamination

Gasoline contaminated soils were initially detected near the corner of 13th and Jefferson Streets. Numerous test borings, ranging up to 35 feet deep, were drilled at the locations shown on Plate 5 to define the extent of gasoline contamination. Initially, selected soil samples from the borings were analyzed for:

1. Total volatile hydrocarbons, TVH (EPA 5030/8015 modified),
2. Benzene, toluene, ethylbenzene and xylene, BTEX (EPA 8020),
3. Total extractable hydrocarbons (EPA 3550/8015),
4. Oil and grease (Method SMWW 503E),
5. Tetraethyl lead, and
6. Ethyl dibromide (EPA 8010).

The analytical results indicated that only gasoline and BTEX were present in the soil; the other contaminants were not detected at concentrations above the reporting limits. Subsequently, soil samples were analyzed for TVH and BTEX only. The analytical results are summarized in Tables 7 and 8. ✓ Gasoline concentrations are presented graphically on Plate 5. ✓

Gasoline had impacted an area on-site and extending off-site beneath 13th and Jefferson Streets. The contaminated soils generally existed between depths of 20 and 30 feet. The highest concentrations of gasoline were encountered beneath the sidewalk along Jefferson Street, near its intersection with 13th Street.

The source of the gasoline contamination was judged to be release(s) from one or more underground storage tanks that were likely situated below the sidewalk. The tanks had been removed previously.

A plan to remediate the gasoline contaminated soils, dated August 28, 1989, and modified October 26, 1989, was submitted to and approved by the ACHCSA. Soil remediation services were provided to the City of Oakland by HSR. Approximately 19,000 cubic yards of clean and contaminated soil were subsequently excavated. Non-contaminated soils were stockpiled separately from the contaminated materials. The excavation varied from approximately 28 to 34 feet deep and extended over the area shown on Plate 6. The excavation extended eastward beneath Jefferson Street, as far as underground utilities would permit.

Upon completion of excavation, 35 confirmation samples were obtained from the bottom and sidewalls of the excavation at the locations shown on Plate 7. Sample locations were selected in consultation with Ms. Katherine Chesick of the ACHCSA. The confirmation samples were analyzed for:

1. Total volatile hydrocarbons (EPA 5030/8015), and
2. Benzene, toluene, xylene and ethylbenzene (EPA 8020).

The analytical results are summarized in Table 9 and graphically presented on Plate 7.



The analytical data indicated that the soil exposed at the bottom of the excavation contained no detectable concentrations of gasoline; only very low concentrations of BTEX were detected at isolated locations. The sidewall samples also contained no TVH or BTEX concentrations above the analytical detection limits, except along the east wall. Along this side of the excavation, very low concentrations of BTEX were detected.

The contaminated soil was aerated on-site in accordance with rates specified by the BAAQMD. Once TVH levels were reduced to acceptable concentrations, the soil was removed from the site and disposed of at the Redwood Sanitary Landfill in Novato, California.

Clean soils that were excavated were stockpiled on-site, sampled and analyzed for TVH and BTEX. The analytical results are summarized in Table 10. Once the analytical data indicated that the soils contained no hydrocarbons at concentrations above detection limits, they were used to backfill the lower portion of the excavation. Imported clean fill was used to backfill the remainder of the excavation. Laboratory compaction tests were conducted in accordance with the ASTM D1557-78 test procedure to evaluate the optimum moisture content and the maximum dry density of the fill materials. Field-density tests were performed to check fill compaction using nuclear methods, in accordance with the ASTM D2922-71 method. The test results indicated that the fill was compacted to at least 90 percent relative compaction.

D. Underground Fuel Tanks

Three underground fuel tanks (identified as Tanks T1, T2 and T3) were encountered during remediation of the gasoline contaminated soils. They were situated beneath the sidewalk and street, at the locations shown on Plate 7. The tank descriptions are presented below.

<u>Tank Designation</u>	<u>Tank Contents</u>	<u>Estimated Capacity (gallons)</u>	<u>Diameter (feet)</u>	<u>Length (feet)</u>	<u>Type</u>
T1	Water and Oil	1750	5	15	Steel
T2	Water and Oil	650	3	12	Steel
T3	Gasoline	275	3.5	4	Steel

Prior to tank removal, SCI obtained the necessary tank removal permits from the City of Oakland and the ACHCSA. Liquid in the tanks were removed by a vacuum truck and transported to a recycling facility by H&H Ship Service Company. Dry ice was then added to purge the tanks of vapors.

The tanks were subsequently removed under the observation of the Oakland Fire Department and the ACHCSA. No holes were observed in the tanks. Tanks T1 and T2 were full of water containing a small quantity of oil. Tank T3 was essentially empty, containing only a few gallons of gasoline.

Following tank removal, soil samples were obtained from the excavations at locations specified by Ms. Katherine Chesick of the ACHCSA. Two samples were taken beneath Tank T1 and one sample was taken beneath Tanks T2 and T3. Sample locations are shown on Plate

8. ✓ Tanks T1 and T2 contained oil and water and therefore were judged to be waste oil tanks. Tank T3 contained gasoline. Accordingly, samples from below Tanks T1 and T2 were analyzed for:

1. Total extractable hydrocarbons (EPA 3550/8015),
2. Oil and Grease (SMWW 503E),
3. Title 26 Metals,
4. Volatile organic compounds (EPA 8240), and
5. Semi-volatile organic compounds (EPA 8270).

The sample from beneath Tank T3 was analyzed for:

1. Total volatile hydrocarbons (EPA 5030/8015), and
2. Benzene, toluene, xylene and ethylbenzene (EPA 8020).

The analytical results indicated that (1) contamination was present below Tanks T1 and T2, and (2) gasoline contamination was not present below Tank T3. This data was consistent with our observations during tank removal. The soil below Tank T1 contained low concentrations, i.e., 67 to 73 mg/kg, of oil and grease. The soil beneath Tank T2 contained relatively high concentrations of diesel (22,000 mg/kg) and zinc (3200 mg/kg) and relatively low concentrations of several PAHs. The analytical results are summarized in Table 11. ✓ We judge that the high concentrations of zinc were likely associated with the galvanized surface of the tank.

The area near Tanks T1 and T2 was overexcavated to a depth of 14 feet to remove the contaminated soils. Confirmation samples were obtained from the bottom and sidewalls of the excavation and analyzed for:

1. Total extractable hydrocarbons (EPA 3550/8015 modified), and
2. Polynuclear aromatic hydrocarbons (EPA 8100).

*3. Zinc and what about Zn?*

The analytical results are summarized in Table 12. ✓ Diesel and PAHS were not detected in the confirmation samples at concentrations above the reporting limits. *detected*

The excavated soil (approximately 50 cy) was stockpiled on-site, remediated by aeration and disposed of at the West Contra Costa County Sanitary Landfill in Richmond, California.

#### E. Water Wells

Two water wells, referred to as Wells 1 and 2 and a brick lined well were encountered within the gasoline remediation area. The well locations are shown on Plate 1. The brick lined well was approximately 35 feet deep. It was overexcavated during remediation of the gasoline contaminated soil.

Well 1 consisted of an 8-inch-diameter steel casing approximately 215 feet deep. The casing appeared to be in direct contact with the soil.

Well 2 consisted of an 8-inch-diameter steel casing within a 14-inch-diameter outer steel casing. The 14-inch casing was in direct contact with the native soil and was badly corroded. The

annulus between the casings was filled with sand. The well extended approximately 55 feet below street grade.

Prior to abandoning Wells 1 and 2, water samples from the wells were collected and analyzed for the following. The Well 1 (the deep well) water sample was analyzed for:

1. Volatile organic compounds (EPA 624),
2. Semi-volatile organic compounds (EPA 625), and
3. Heavy metals (CAM 17).

The Well 2 water sample was analyzed for:

1. Oil and grease (Method SMWW 503E),
2. Total extractable hydrocarbons (EPA 3550/8015),
3. Halogenated volatile organic compounds (EPA 601),
4. Aromatic volatile organic compounds (EPA 602), and
5. Polynuclear aromatic hydrocarbons (EPA 8270).

The analytical results are summarized in Table 13. The analytical data indicated that barium, copper and zinc were present in Well 1 at low concentrations. No other contaminants were detected at concentrations above the reporting limits.

Well 2 contained low concentrations of oil and grease (50 mg/l) and benzene (6.0 ug/l). Well 2 was situated in an area where gasoline contamination was present. The benzene was likely the result of this condition.

The wells were abandoned under permit from the Alameda County Flood Control and Water Conservation District Zone 7. Well 1 was abandoned by grouting the casing over its full length. Cement grout was pumped into the casing using tremie methods. The tremie pipe remained below the grout surface until the casing was fully grouted.

Well 2 was abandoned by initially removing the 8-inch casing with a hoisting cable. Next, an 18-inch steel casing was driven into the ground around the outside of the 14-inch well casing. The corroded 14-inch casing was subsequently drilled out using cable-tool drilling equipment. Cement grout was then pumped into the 18-inch casing using tremie methods, displacing the water upwards. The tremie pipe and the 18-inch casing remained below the grout/water interface in order to construct a continuous column of grout. The 18-inch casing was removed after grout placement.

The water and drilling cuttings from Well 2 were placed into a steel waste storage bin. The material was subsequently transported to the Valley Rock Disposal facility in Orland, California by Hydro Tech, Inc. This facility specializes in the disposal of drilling cuttings and fluids.

#### IV SUBSURFACE CONDITIONS

The remediated areas were blanketed by approximately 4 feet of fill. The fill consisted of silty sands and sandy silts. Near the lead and PAH remediation area the fill contained fragments of glass, wood, rubble and brick, as well as significant quantities of ash and other materials. Underlying the fill and extending to the depths explored were naturally deposited alluvial soils consisting of dense clayey and silty sands and stiff sandy clays. Below depths of about 20 feet, the soils contained lesser amounts of silt and clay. Investigation in the area by SCI near MLK Jr. Way and 14th Street suggests a relatively thick, i.e. greater than 10 feet, clay layer exists below the sands. The top of the layer appears to exist at depths of about 45 feet.

#### V GROUNDWATER HYDROLOGY

##### A. Geology

The site is situated within the Northern California Coast Ranges Geomorphic Providence. Locally, the site is mapped as being underlain by the Merritt Sand Formation. This quaternary age deposit consists primarily of fine-grain silty and clayey sands. The Merritt sands overly the Alameda Formation, also deposited in Quaternary time. The Alameda Formation consists of continental and marine sediments deposited in the valley of the San Francisco Bay.

**B. Local Hydrology**

Groundwater at the site exists between depths of about 25 and 27 feet. Groundwater flows in a northwesterly direction, at a gradient of about 0.7 percent. The most recently recorded groundwater surface elevation contours are presented on Plate 1. Seasonal groundwater fluctuations of about 1 foot have been recorded. To our knowledge, the shallow groundwater in the area is currently not used as a source of drinking water.

The Merritt sands beneath the site have a saturated thickness of about 20 feet. Pump tests indicate a transmissivity of about 280 feet<sup>2</sup>/day and a corresponding hydraulic conductivity of about  $5 \times 10^{-3}$  cm/sec.

**C. Existing Wells**

A review of the Alameda County groundwater well inventory indicates that there are 89 recorded wells within a 2000 foot radius of the site. These wells are/were used for groundwater quality monitoring and investigation. There are no recorded domestic or municipal water wells near the site. However, we are aware of one water well at the Pardee House Museum, which is situated on Castro Street, between 11th and 12th Streets. This well is presently used to irrigate museum grounds. Details regarding the well are uncertain. The well is located about 700 feet from the site and hydrologically, is situated "cross gradient" ✓ from the area of previous contamination. For these reasons, it is unlikely that on-site contamination sources could impact water quality in this well. ✓



## VI GROUNDWATER CONTAMINATION AND MONITORING

Following soil remediation, eight monitoring wells (designated as Wells 47 through 49, 51 through 54 and 59) were installed to monitor groundwater quality in the area. The well locations are shown on Plate 1.

Groundwater levels were obtained by measuring the depth to groundwater from the top of the well casings (TOC) using an electronic well sounder. A level survey, using an assumed elevation reference, was performed to determine the TOC elevation of each of the monitoring wells. A steel tape with water and gasoline sensitive pastes were used to check for free product in the wells. The water level data is presented in Table 14. ✓

Groundwater quality was evaluated by sampling and analyzing the monitoring wells on a quarterly basis. The water samples were analyzed for various contaminants, including:

1. Total volatile hydrocarbons (EPA 5030/8015 modified),
2. Benzene, toluene, xylenes and ethylbenzene (EPA 8020), and
3. Volatile organic compounds (EPA 8010).

In addition; samples from monitoring Well MW-48 were analyzed for:

1. Oil and grease (SMWW 17:5520), and
2. Total extractable hydrocarbons (EPA 3550/8015 modified).

Analytical results are presented in Tables 15 and 16. The results indicated that groundwater had been impacted by fuel hydrocarbons and chlorinated organics. Each condition is discussed in the following sections.

A. Floor Drain Sump

The analytical data indicated that groundwater beneath the previous sump had been impacted by diesel weight hydrocarbons, 1,2 dichloroethene (DCE) and 1,2 dichloroethane (DCA). Diesel and DCE were initially detected in Well 48 at concentrations of 110 and 11 ug/L, respectively. However, diesel and DCE concentrations decreased rapidly and have not been detected in Well 48 since 1990. Well 48 is situated immediately down gradient from the previous sump.

*not in MW 48.*

*you mean DCA*

*DCA?*

*yes*

*basely*

The highest DCA concentration (60 ug/L) was also detected in Well 48 following sump remediation. DCA concentrations have steadily decreased with time. DCA has not been detected at concentrations above the reporting limits in the wells analyzed for at least the last four (4) consecutive quarterly monitoring events. The estimated maximum extent of the DCA contaminant plume (in 1991) is shown on Plate 1. Currently, there are no detectable impacts to groundwater quality as a result of releases from the sump.

B. Gasoline Contamination

Gasoline and BTEX were detected in Well 54, which is located adjacent to the area where the highest gasoline concentrations were detected in soil. Gasoline and BTEX were not detected at concentrations above the reporting limits in the other monitoring

wells. ✓ After the two quarterly monitoring events following soil remediation, gasoline and BTXE concentrations decreased to below analytical reporting limits. After at least four consecutive quarterly monitoring events where gasoline and BTXE were not detected above the reporting limits, a request was submitted to the ACHCSA to modify the analytical testing program, eliminating the gasoline and BTXE analyses. The request was granted by the ACHCSA. During subsequent monitoring events, the wells were analyzed only for volatile organic compounds (EPA 8010). ✓

Low levels of chloroform (generally less than 2 ug/L) have been detected in Wells 51 through 54, ✓ which are located within and upgradient of the remediated area. ✓ Since chloroform has been detected in wells upgradient of the remediated area, and there is no apparent source of chloroform in the vicinity, we conclude that the chloroform is from an off-site source and should not be associated with the site. ✓

## VII REQUEST FOR SITE CLOSURE

The analytical data indicates that soil remediation activities have successfully removed the sources of contamination that have impacted soil and in some cases, groundwater. These sources included: (1) the concrete floor drain sump and associated contaminated soils (2) gasoline contaminated soils, (3) PAH and lead contaminated surface soils, and (4) three underground storage tanks and associated contaminated soil. ✓ Only trace levels of BTXE ✓

and PAH's  
(table 12)

were left in place in the gasoline remediation area. In our opinion, the BTXE concentrations that remain are sufficiently low that they do not represent a risk to public health or the environment, nor do they represent a threat to water quality. ✓

The analytical data generated to date indicates that no contaminants associated with the identified sources remain in groundwater at concentrations above the reporting limits.\* The data is consistent for at least the past 4 quarters of monitoring. Since the contamination sources have been remediated, we conclude that the risk of future groundwater quality degradation by an on-site source is very unlikely. For these reasons, we request that the ACHCSA submit this request for site closure to the Regional Water Quality Control Board with a recommendation for approval.

except chloroform in MW-54  
(table 6)

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MK:JPB:sld

**Table 1. SUMMARY OF PERTINENT DOCUMENTS**

**Preliminary Environmental Assessment**

Preliminary Environmental Assessment September 14, 1988

**PAH and Lead Contamination**

PAH and lead Contaminated Soil and Sump Remediation Report January 16, 1989

Closure Report - PAH and Lead Contaminated Soil Remediation November 1, 1989

**Concrete Sump**

Closure Report - Floor Drain Sump September 24, 1990

Quarterly Groundwater Monitoring Reports - Floor Drain Sump

Request to Modify Groundwater Monitoring Program - Floor Drain Sump January 21, 1993

**Gasoline Contamination**

Gasoline Contamination Assessment August 22, 1989

Remediation Plan - Gasoline Contaminated Soils, Excavations and Aeration August 28, 1989

Remediation Plan Modification - Gasoline Contaminated Soils October 26, 1989

Closure Report - Gasoline Contaminated Soil Remediation December 6, 1990

Groundwater Contamination Assessment July 8, 1991

Quarterly Groundwater Monitoring and Request for Reduction in Analytical Testing - Previous Gasoline Release June 24, 1992

Well Destruction Report - Monitoring Well 49 January 11, 1993

**Underground Fuel Storage Tanks**

Site Safety Plan - Tank Removal August 25, 1989

Closure Report - Three Underground Fuel Tanks September 25, 1990

**Water Wells**

Well Destruction Report (Well 1) June 13, 1990

Well Destruction Report (Well 2) July 16, 1990

**Table 2. PAH CONCENTRATIONS IN SOIL PRIOR TO REMEDIATION  
(LEAD AND PAH CONTAMINATED SOIL)**

<u>Boring</u>	<u>Depth (feet)</u>	<u>Chemical/Chemical Analysis</u>	<u>Concentration (mg/kg)<sup>1</sup></u>
32	4.0	EPA Method 8100 Chemicals	ND <sup>2</sup>
32	10.0	EPA Method 8100 Chemicals	ND
33	2.0	EPA Method 8100 Chemicals	
		Naphthalene	110
		Acenaphthylene	190
		Acenaphthene	ND
		Fluorene	34
		Phenanthrene	1,200
		Anthracene	100
		Fluoranthene	1,100
		Pyrene	1,100
		Benzo(a)anthracene	210
		Chrysene	280
		Benzo(b)fluoranthene	330
		Benzo(k)fluoranthene	140
		Benzo(a)pyrene	420
		Indeno(1,2,3-cd)pyrene	370
		Dibenzo(a,h)anthracene	39
		Benzo(g,h,i)perylene	440
33	5.0	EPA Method 8100 Chemicals	ND
33	13.0	EPA Method 8100 Chemicals	ND

<sup>1</sup> mg/kg = milligrams per kilogram or parts per million (ppm)

<sup>2</sup> ND = Not detected at concentrations above the reporting limits

Table 2. PAH CONCENTRATIONS IN SOIL PRIOR TO REMEDIATION (continued)  
(LEAD AND PAH CONTAMINATED SOIL)

<u>Test Pit</u>	<u>Depth (feet)</u>	<u>Chemical/Chemical Analysis</u>	<u>Concentration (mg/kg)<sup>1</sup></u>
1	1.5	EPA Method 8100 Chemicals	ND <sup>2</sup>
10	2.0	EPA Method 8100 Chemicals	ND
10	3.5	EPA Method 8100 Chemicals	ND
11	1.0	EPA Method 8100 Chemicals	ND
		Naphthalene	ND
		Acenaphthylene	7
		Acenaphthene	ND
		Fluorene	ND
		Phenanthrene	30
		Anthracene	5
		Fluoranthene	71
		Pyrene	93
		Benzo(a)anthracene	37
		Chrysene	38
		Benzo(b)fluoranthene	61
		Benzo(k)fluoranthene	20
		Benzo(a)pyrene	69
		Indeno(1,2,3-cd)pyrene	86
		Dibenzo(a,h)anthracene	12
		Benzo(g,h,i)perylene	110
14	2.0	EPA Method 8100 Chemicals	ND
16	1.5	EPA Method 8100 Chemicals	ND

<sup>1</sup> Milligrams per kilogram or parts per million (ppm)

<sup>2</sup> Not detected at concentrations above the reporting limits



Table 3. LEAD CONCENTRATIONS IN SOIL PRIOR TO REMEDIATION  
(LEAD AND PAH CONTAMINATED SOIL)

<u>Test Boring</u>	<u>Sample Depth (ft)</u>	<u>Total Lead<sup>1</sup> (mg/kg)<sup>2</sup></u>	<u>Extractable Lead<sup>3</sup> (mg/L)<sup>4</sup></u>
32	4.0	46	1.4
32	10.0	23	-- <sup>6</sup>
33	2.0	250	15
33	5.0	ND	--
33	13.0	ND	--
 <u>Test Pit</u>			
1	1.5	20	--
10	2.0	1300	28
10	3.5	ND <sup>5</sup>	--
11	1.0	300	8.4
14	2.0	ND	--
16	1.5	400	63

<sup>1</sup> EPA 7420 Method of analysis

<sup>2</sup> milligrams per kilogram or parts per million (ppm)

<sup>3</sup> California WET Extraction 6670, digestion EPA 3050

<sup>4</sup> milligrams per liter or parts per million (ppm)

<sup>5</sup> Not detected, chemicals not present at concentrations above detection limits

<sup>6</sup> Test not requested

Table 4. TOTAL PAH AND LEAD CONCENTRATIONS IN SOIL FOLLOWING REMEDIATION  
(LEAD AND PAH CONTAMINATED SOIL)

<u>Sample Designation</u>	<u>Total PAH Concentrations (ppm)<sup>1</sup></u>	<u>Total Lead Concentrations (ppm)</u>
CB-1	ND <sup>2</sup>	ND
CB-2	ND	ND
CB-3	ND	2.9
CB-4	ND	4.4
CB-5	ND	5.0
CB-6	ND	9.1
CW-1	ND	61
CW-2	ND	2.9
CW-3	ND	4.5
CW-4	ND	6.8
CW-6	ND	7.2
CW-8	ND	16
CW-10	ND	5.3
CW-12	ND	4.6
CW-13	ND	5.6
CW-14	ND	4.4
CW-15	ND	4.5
CW-16	ND	23
CW-5	4050 <sup>3</sup>	13
CW-7	2800 <sup>3</sup>	6.0
CW-9	1720 <sup>3</sup>	260
CW-11	8320 <sup>3</sup>	130

<sup>1</sup> Milligrams per kilogram

<sup>2</sup> ND = Not detected at concentrations above the reporting limits

<sup>3</sup> The excavation was expanded to remove these materials — *resampled?*  
*how bout Pb?*  
*yes*

**Table 5. CONTAMINANT CONCENTRATIONS IN SOIL<sup>3</sup> BELOW SUMP  
(CONCRETE FLOOR DRAIN SUMP)**

<u>Contaminant</u> <u>Metals</u>	<u>Concentration</u> <u>(mg/kg<sup>1</sup>)</u>	STC
Barium	42	100
Cadmium	1.1	1.0
Chromium (total)	45	5
Cobalt	6.8	80
Copper	10	25
Lead	7.0	5
Nickel	25	20
Vanadium	21	24
Zinc	18	250
Other Title 22 Metals	ND <sup>2</sup>	
Ethylbenzene	Trace	
Total Xylenes	11	
Other Volatile Organics (EPA 8240)	ND	
Pesticides and PCBs (EPA 8080)	ND	
Oil and Grease (SMWW 503E)	1,500	
Total Extractable Hydrocarbons (TEH)		
Gasoline	380	
Kerosene	48,000	
Diesel	270	

<sup>1</sup> mg/kg = milligrams per kilogram

<sup>2</sup> ND = None detected at concentrations above detection limits.  
See test reports for detection limits.

<sup>3</sup> Sample Designation: Sump @ 14 feet

**Table 6. HYDROCARBON CONCENTRATIONS IN SOIL FOLLOWING REMEDIATION  
(CONCRETE FLOOR DRAIN SUMP)**

<u>Sample Designation</u>	<u>TEH<sup>1</sup> (mg/kg)</u>	<u>O&amp;G<sup>2</sup> (mg/kg)</u>
Sump @ 14	48,650	1,500
Sump @ 21	ND <sup>4</sup>	150
Sump @ 26		
Bottom	ND	89
North	ND	ND
South	ND	ND
West	ND	58
East	ND	51
Sump @ 28 (Bottom)	ND	ND
N @ 12	ND	
N @ 18	ND	
N @ 24	ND	
S @ 6	ND	
S @ 12	ND	
S @ 18	ND	
S @ 24	34 <sup>6</sup>	
S2 @ 24	ND	
E @ 6	ND	
E @ 12	ND	
E @ 18	ND	
E @ 24	ND	ND
W @ 6	ND	
W @ 12	ND	
W @ 18	ND	
W @ 24	ND	ND

- 
- <sup>1</sup> TEH = Total Extractable Hydrocarbons, EPA 8015/3550  
<sup>2</sup> O&G = Oil and Grease Method SMWW 503E  
<sup>3</sup> BTXE = Benzene, Toluene, Xylene and Ethylbenzene, EPA 8020  
<sup>4</sup> ND = None detected at concentrations above detection limits.  
 See test reports for detection limits.  
<sup>5</sup> mg/kg = milligrams per kilogram  
<sup>6</sup> Additional soil was removed and wall was resampled as S2 @ 24

**Table 7. PETROLEUM HYDROCARBON CONCENTRATIONS IN SOIL  
PRIOR TO REMEDIATION  
(GASOLINE CONTAMINATION)**

<u>Sample<sup>2</sup></u>	<u>Total TVH (mg/kg<sup>3</sup>)</u>	<u>Ethyl- Benzene (mg/kg)</u>	<u>Toluene (mg/kg)</u>	<u>Xylenes (mg/kg)</u>	<u>Benzene (mg/kg)</u>
12 @ 23	ND				
19 @ 27	21				
24 @ 18	ND <sup>4</sup>	ND	ND	ND	ND
24 @ 23	88.3	ND	ND	3.51	1.56
24 @ 27.5	2,310	ND	43.5	167.0	54.7
25 @ 23	19.9	ND	0.16	0.86	0.21
26 @ 23	ND	ND	ND	0.17	ND
27 @ 18	ND	ND	ND	0.11	ND
27 @ 23.5	516	ND	3.59	34.4	11.6
27 @ 28	ND	ND	ND	0.23	0.13
34 @ 21	ND <sup>5</sup>				
34 @ 25	ND				
34 @ 28	ND				
35 @ 16	ND				
35 @ 21	ND				
35 @ 26	ND	ND	ND	ND	ND
36 @ 20.5	ND				
36 @ 25.5	1,800				
36 @ 30	79				
37 @ 20.5	ND				
37 @ 25	Trace				
37 2 27.5	ND				
38 @ 20.5	ND				
38 @ 25.5	190	ND	ND	7.4	3.1
38 @ 28.5	ND				
44 @ 21	Trace	.036	.055	.34	1.2
44 @ 26	590				
44 @ 31	800				
45 @ 26	ND				
46 @ 20.5	83				
46 @ 24	470				
46 @ 27	ND				

**Table 7. PETROLEUM HYDROCARBON CONCENTRATIONS IN SOIL  
PRIOR TO REMEDIATION (Continued)  
(GASOLINE CONTAMINATION)**

<u>Sample<sup>2</sup></u>	<u>TVH (mg/kg<sup>3</sup>)</u>	<u>Benzene (mg/kg)</u>	<u>Toluene (mg/kg)</u>	<u>Total Xylenes (mg/kg)</u>	<u>Ethyl- Benzene (mg/kg)</u>
47 @ 21	ND				
47 @ 25	404				
47 @ 28	12				
47 @ 31	ND				
48 @ 16	ND				
48 @ 21	ND				
48 @ 26	63				
49 @ 21	25				
49 @ 25.5	38				
49 @ 27.5	600				
51 @ 26	ND	ND	ND	ND	ND
52 @ 26	ND	ND	.007	ND	ND
53 @ 26	ND	ND	.015	ND	ND
55 @ 24.5	30	ND	.023	.150	.033
57 @ 25.5	14	ND	.014	.075	.015
59 @ 24	29				
59 @ 26	ND				
60 @ 25.5	ND				
61 @ 24.5	ND				
61 @ 26	Trace	.013	.051	.110	.026
62 @ 26	ND				
63 @ 26	ND				
65 @ 24	Trace				
65 @ 26	17				
66 @ 24.5	21				
66 @ 26	58	ND	.580	1.200	.570
67 @ 22.5	ND				
67 @ 25.5	ND				

**Table 7. PETROLEUM HYDROCARBON CONCENTRATIONS IN SOIL  
PRIOR TO REMEDIATION (Continued)  
(GASOLINE CONTAMINATION)**

<u>Sample<sup>2</sup></u>	<u>TVH (mg/kg<sup>3</sup>)</u>	<u>Benzene (mg/kg)</u>	<u>Toluene (mg/kg)</u>	<u>Total Xylenes (mg/kg)</u>	<u>Ethyl- Benzene (mg/kg)</u>
69 @ 16	ND	ND	ND	ND	ND
69 @ 24	380				
70 @ 26	ND				
71 @ 25.5	ND				
71 @ 25.5	ND				

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<sup>1</sup> TVH = Total Volatile Hydrocarbons, as gasoline

<sup>2</sup> Boring number and sample depth (feet)

<sup>3</sup> mg/kg = milligrams per kilograms or parts per million (ppm)

<sup>4</sup> ND = not detected at concentrations above detection limits;  
see test reports for detection limits

<sup>5</sup> Blank space indicates test not requested

**TABLE 8. EXTRACTABLE HYDROCARBONS<sup>5</sup>, EDB<sup>1</sup> AND TEL<sup>2</sup>  
CONCENTRATIONS IN SOIL PRIOR TO REMEDIATION  
(GASOLINE CONTAMINATION)**

<u>Sample</u>	<u>Gasoline</u>	<u>Kerosene</u>	<u>Diesel</u>	<u>Other</u>	<u>O+G<sup>4</sup></u>
45 @ 16'	ND <sup>3</sup>	ND	ND	ND	ND
45 @ 21'	ND	ND	ND	ND	ND

<u>Sample</u>	<u>Ethylene- Dibromide (mg/kg)</u>	<u>Tetraethyl Lead (mg/kg)</u>
51 @ 26'	ND	ND
52 @ 26'	ND	ND
57 @ 25.5'	ND	ND
61 @ 26'	ND	ND
66 @ 26'	ND	ND

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<sup>1</sup> Ethylene Dibromide

<sup>2</sup> Tetraethyl Lead

<sup>3</sup> Not detected at concentration above reporting limits

<sup>4</sup> Oil and grease (SMWW 503)

<sup>5</sup> EPA 3550/8015 modified



Table 9. HYDROCARBON CONCENTRATIONS IN SOIL FOLLOWING REMEDIATION  
(GASOLINE CONTAMINATION)

<u>Sample Designation</u>	<u>TVH<sup>1</sup> (mg/kg)<sup>2</sup></u>	<u>Ethyl Benzene (ug/kg)<sup>3</sup></u>	<u>Total Toluene (ug/kg)</u>	<u>Benzene (ug/kg)</u>	<u>Xylene (ug/kg)</u>
<i>bottom</i> B 1 @ 26'	ND <sup>4</sup>	ND	ND	ND	ND
B 2 @ 26'	ND	ND	ND	ND	ND
B 3 @ 26'	ND	15	15	ND	13
B 4 @ 26'	ND	ND	ND	ND	8
B 5 @ 34'	ND	ND	ND	ND	ND
B 6 @ 30'	ND	ND	ND	ND	ND
B 7 @ 26'	ND	ND	ND	ND	ND
B 8 @ 30'	ND	ND	ND	ND	8
B 9 @ 30'	ND	ND	ND	ND	ND
B10 @ 26'	ND	ND	ND	ND	ND
B11 @ 30'	ND	ND	ND	ND	ND
B12 @ 30'	ND	ND	ND	ND	ND
B13 @ 30'	ND	ND	ND	ND	ND
B14 @ 30'	ND	ND	ND	ND	ND
B15 @ 30'	ND	ND	ND	ND	ND
<i>N Well</i> NW3 @ 26'	ND	ND	ND	ND	ND
NW4 @ 26'	ND	ND	ND	ND	ND
NW5 @ 26'	ND	ND	ND	ND	ND
<i>S well</i> SW1 @ 25'	ND	ND	10	ND	5
SW2 @ 25'	ND	ND	ND	ND	ND
<i>W Well</i> WW1 @ 25'	ND	ND	ND	ND	ND
WW2 @ 25'	ND	ND	ND	ND	ND
WW3 @ 25'	ND	ND	ND	ND	ND
WW4 @ 26'	ND	ND	ND	ND	ND
WW5 @ 26'	ND	ND	ND	ND	ND
WW6 @ 27'	ND	ND	ND	ND	ND
WW7 @ 28'	ND	ND	ND	ND	ND
EW1 @ 25'	ND	ND	ND	ND	ND
EW2 @ 25'	Trace	18	26	71	63
EW3 @ 25'	ND	ND	ND	20	57
<i>E well</i> EW4 @ 25'	ND	ND	ND	ND	ND
EW5 @ 26'	ND	ND	ND	ND	6.1
EW6 @ 26'	ND	ND	ND	ND	ND

<sup>1</sup> TVH = Total volatile hydrocarbons as gasoline  
<sup>2</sup> mg/kg = milligrams per kilogram or parts per million (ppm)  
<sup>3</sup> ug/kg = micrograms per kilogram or parts per billion (ppb)  
<sup>4</sup> ND = Not detected at concentrations above detection limits, see test reports for detection limits  
<sup>5</sup> Excavation was advanced and resampled

Table 10. HYDROCARBON CONCENTRATIONS IN CLEAN STOCKPILED SOIL  
(GASOLINE CONTAMINATION)

<u>Sample Designation</u>	<u>TVH<sup>1</sup> (ppm)<sup>2</sup></u>	<u>Benzene (ppb)<sup>3</sup></u>	<u>Toluene (ppb)</u>	<u>Ethyl Benzene (ppb)</u>	<u>Total Xylenes (ppb)</u>
CSP-1	ND <sup>4</sup>	ND	ND	ND	ND
CSP-2	ND	ND	ND	ND	ND
CSP-3	ND	ND	ND	ND	ND
CSP-4	ND	ND	ND	ND	ND
CSP-5	ND	ND	ND	ND	ND
CSP-6	ND	ND	ND	ND	ND
CSP-7 @ 17.5	ND	ND	ND	ND	15 <sup>5</sup>
CSP-8 @ 19.5	ND	ND	ND	ND	12 <sup>5</sup>
CSP-9 @ 19	ND	ND	ND	ND	ND
CSP-10 @ 18.5	ND	ND	ND	ND	9 <sup>5</sup>
CSP-11 @ 17.5	ND	ND	ND	ND	15 <sup>5</sup>
CSP-12 @ 16.5	ND	ND	ND	ND	ND
CSP-13 @ 16	ND	ND	ND	ND	9 <sup>5</sup>
CSP-14 @ 15	ND	ND	ND	ND	8 <sup>5</sup>
CSP-15 @ 14	ND	ND	ND	ND	ND
CSP-16	ND	ND	ND	ND	ND
CSP-17	ND	ND	ND	ND	ND
CSP-18	ND	ND	ND	ND	ND

---

<sup>1</sup> TVH = Total volatile hydrocarbons as gasoline

<sup>2</sup> ppm = parts per million = mg/kg

<sup>3</sup> ppb = parts per billion = mg/kg

<sup>4</sup> ND = not detected at concentrations above the detection limits

<sup>5</sup> Soils were aerated and retested, see CSP 16 through 18

Table 11. CONTAMINANT CONCENTRATIONS IN SOIL  
FOLLOWING TANK REMOVAL  
(UNDERGROUND FUEL TANKS)

<u>Contaminant</u> <sup>9</sup>	<u>T-1N</u> <sup>8</sup>	<u>T-1S</u>	<u>T-2</u>	<u>T-3</u>
TEH <sup>1</sup>	ND <sup>7</sup>	ND	22,000	
O&G <sup>2</sup>	67	73	ND	
Cadmium	1.5		4.0	
Lead	ND		28	
Zinc	100		3,200	
EPA 8240 <sup>3</sup> Chemicals	ND		ND	
TVH <sup>5</sup>				ND
BTXE <sup>6</sup>				ND
Polynuclear Aromatic Hydrocarbons (EPA 8270) <sup>4</sup>				
Naphthalene			6.6	
Fluorene			4.3	
Phenanthrene			7.6	
2-Methylnaphthalene			25	
Other EPA 8270 Chemicals	ND		ND	

<sup>1</sup> TEH = Total Extractable Hydrocarbons, as diesel

<sup>2</sup> O&G = Oil and Grease Method SMWW 508

<sup>3</sup> 8249 = Volatile Organics, EPA Test Method 8240

<sup>4</sup> 8270 = Semi-Volatile organics, EPA Test Method 8270

<sup>5</sup> TVH = Total Volatile Hydrocarbons, as gasoline

<sup>6</sup> BTXE = Benzene, Toluene, Xylene, Ethylbenzene, EPA Test Method 8020

<sup>7</sup> ND = None detected at concentrations above detection limits:  
see test reports for detection limits

<sup>8</sup> All samples were take below bottom of tanks.

<sup>9</sup> Concentrations in milligrams per kilogram, mg/kg

Table 12. CONTAMINANT CONCENTRATIONS IN SOIL  
 FOLLOWING SOIL REMEDIATION  
 (UNDERGROUND FUEL TANKS)

<u>Contaminant</u>	<u>T-1N</u> <u>@ 12'</u>	<u>T-1S</u> <u>@ 12'</u>	<u>T-2</u> <u>@ 11'</u>	<u>T-2</u> <u>@ 14'</u>
TEH <sup>2</sup>	ND <sup>4</sup>	ND	ND	ND
O&G <sup>3</sup>	ND	ND		
Zinc			0.46	
Pyrene			0.13	ND
Benzo(b)Fluoranthene			0.11	ND
Indeno(1,2,3 cd)pyrene			0.16	ND
Other PAH's			ND	ND

*one vent +  
re-sampled*

- 
- 1 Concentrations in milligrams per kilogram mg/kg
  - 2 TEH = Total Extractable Hydrocarbons, as diesel
  - 3 O&G = Oil and Grease Method SMWW 508
  - 4 ND = None detected at concentrations above detection limits.  
See analytical reports for detection limits.
  - 5 PAH = Polynuclear Aromatic Hydrocarbons, EPA 8100

Table 13. CONTAMINANT CONCENTRATIONS IN GROUNDWATER  
(WATER WELLS 1 AND 2)

<u>Sample</u>	<u>EPA 624 Chemicals (ug/l)<sup>1</sup></u>	<u>EPA 625 Chemicals (ug/l)</u>	<u>Barium (mg/l)<sup>2</sup></u>	<u>Copper (mg/l)</u>	<u>Zinc (mg/l)</u>	<u>Other CAM 17 Metals (mg/l)</u>
Well 1	ND <sup>3</sup>	ND	0.19	0.02	0.02	ND

*deep well  
215'*

<u>Sample</u>	<u>TEH<sup>4</sup> (mg/l)<sup>5</sup></u>	<u>O&amp;G<sup>5</sup> (mg/l)</u>	<u>Benzene (ug/l)</u>	<u>Other VOCs<sup>6</sup> (ug/l)</u>	<u>PAHs<sup>7</sup> (ug/l)</u>
Well 2	ND <sup>7</sup>	50	6	ND	ND

*55'*

<sup>1</sup> micrograms per liter

<sup>2</sup> milligrams per liter

<sup>3</sup> ND = None detected at concentrations above detection limits.

See analytical test reports for detection limits.

<sup>4</sup> Total Extractable Hydrocarbons, EPA 8015/3550

<sup>5</sup> Oil and Grease, Method SMWW 503E

<sup>6</sup> Volatile Organic Compounds: EPA Methods 601 and 602

<sup>7</sup> Polynuclear Aromatic Hydrocarbons

*date?*

Table 14. GROUNDWATER ELEVATION DATA

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>
MW-47	09/24/90	100.50	27.28	73.22
	10/04/90		27.32	73.18
	12/03/90		27.38	73.12
	01/21/91		27.17	73.33
	03/13/91		26.85	73.65
	04/03/91		26.38	74.12
	06/13/91		28.39	72.11
	09/10/91		27.08	73.42
	12/12/91		27.95	72.55
	04/17/92		26.18	74.32
	07/28/92		26.48	74.02
	11/03/92		26.86	73.64
	02/02/93		24.96	75.54
	05/06/93		25.26	75.24
MW-48	07/18/90	102.40	29.08	73.32
	10/04/90		29.29	73.11
	12/03/90		29.28	73.12
	01/21/91		29.03	73.37
	03/13/91		28.72	73.68
	04/03/91		28.24	74.16
	06/13/91		29.47	72.93
	09/10/91		28.94	73.46
	12/12/91		30.39	72.01
	04/17/92		28.07	74.33
	07/28/92		28.32	74.08
	11/03/92		28.74	73.66
	02/02/93		26.65	75.75
	05/06/93		27.10	75.30
MW-49	12/03/90	101.73	28.44	73.29
	01/21/91		28.20	73.53
	03/13/91		27.79	73.94
	04/03/91		27.28	74.45
	06/13/91		27.66	74.07
	09/10/91		28.04	73.69
	12/12/91		30.45	71.28
	04/17/92		27.26	74.64
	11/03/92		27.84	73.89
	12/18/92	Well Abandoned		
MW-51	10/04/90	102.64	28.57	74.07
	12/03/90		28.57	74.07
	01/21/91		28.44	74.20
	03/13/91		27.76	74.88
	04/03/91		27.32	75.32
	06/13/91		28.82	73.82
	09/10/91	28.00	74.64	
MW-52	10/04/90	102.44	28.41	74.03
	12/03/90		28.38	74.06
	01/21/91		28.24	74.20
	03/13/91		27.57	74.87
	04/03/91		27.16	75.28
	06/13/91		29.41	73.03
	09/10/91		27.85	74.59

Table 14. GROUNDWATER ELEVATION DATA (continued)

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>
MW-53	09/24/90	101.28	27.44	73.84
	10/04/90		27.50	73.78
	12/03/90		27.46	73.82
	01/21/91		28.00	73.28
	03/13/91		27.00	74.28
	06/13/91		27.61	73.67
	08/12/91		Well Abandoned	
	MW-54	09/24/90	100.78	27.01
10/04/90		27.30		73.48
12/03/90		27.01		73.77
01/21/91		101.92 <sup>3</sup>	27.28	74.64
03/13/91			27.40	74.52
06/13/91			28.93	72.99
09/10/91			27.66	74.26
12/12/91			28.88	73.04
04/17/92			26.82	75.10
11/03/92			27.54	74.38
02/02/93			25.54	76.38
05/06/93			25.77	76.15
MW-59			02/12/91	100.37
	03/13/91	27.60	72.77	
	04/03/91	27.36	73.01	
	06/13/91	28.01	72.36	
	09/10/91	28.00	72.37	
	12/12/91	28.53	71.84	
	04/17/92	26.91	73.46	
	07/28/92	27.27	73.10	
	11/03/92	27.56	72.81	
	02/02/93	24.74	75.63	
	05/06/93	25.76	74.61	

<sup>1</sup> Top of Casing

<sup>2</sup> Depth measured below top of casing

<sup>3</sup> Well head damaged and repaired

Assumed datum: The elevation of the PG&E manhole in Martin Luther King, Jr. Way, near the northwest corner of the block, was assumed to have an elevation of 100 feet (see Plate 1)

Table 15. PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUNDWATER

Well	Date	O&G <sup>1</sup> (ug/L)	TVH <sup>2</sup> (ug/L)	TEH <sup>3</sup> (ug/L)	B <sup>4</sup> (ug/L)	T <sup>5</sup> (ug/L)	X <sup>6</sup> (ug/L)	E <sup>7</sup> (ug/L)
MW-47	04/06/90	--	ND <sup>8</sup>	---	ND	ND	ND	ND
	10/04/90	---	---	---	ND	ND	ND	ND
	12/03/90	---	ND	---	ND	ND	ND	ND
	03/13/91	---	ND	---	ND	ND	ND	ND
	06/13/91	---	ND	---	ND	ND	ND	ND
	09/11/91	---	ND	---	ND	ND	ND	ND
	12/12/91	---	ND	---	ND	ND	ND	ND
	04/17/92	---	---	---	ND	ND	ND	ND
MW-48	04/06/90	--	ND	---	ND	ND	ND	ND
	07/18/90	ND	ND	ND	ND	ND	ND	ND
	10/04/90	---	---	110	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND	ND	ND	ND
	04/17/92	ND	---	---	ND	ND	ND	ND
MW-49	04/06/90	--	ND	---	ND	ND	ND	ND
	12/03/90	---	ND	---	ND	ND	ND	ND
	03/13/91	---	ND	---	ND	ND	ND	ND
	06/13/91	---	ND	---	ND	ND	ND	ND
	09/11/91	---	ND	---	ND	ND	ND	ND
	12/12/91	---	ND	---	ND	ND	ND	ND
	04/17/92	---	---	---	ND	ND	ND	ND
	12/18/92	Well Abandoned						
MW-51	04/06/90	---	ND	---	ND	ND	ND	ND
	10/04/90	---	---	---	ND	ND	ND	ND
	12/04/90	---	ND	---	ND	ND	ND	ND
	03/13/91	---	ND	---	ND	ND	ND	ND
	06/13/91	---	ND	---	ND	ND	ND	ND
	09/11/91	---	ND	---	ND	ND	ND	ND
MW-52	04/06/90	---	ND	---	ND	ND	ND	ND
	10/04/90	---	---	---	ND	ND	ND	ND
	12/04/90	---	ND	---	ND	ND	ND	ND
	03/13/91	---	ND	---	ND	ND	ND	ND
	06/13/91	---	ND	---	ND	ND	ND	ND
	09/11/91	---	ND	---	ND	ND	ND	ND
MW-53	09/21/90	---	ND	---	ND	ND	ND	ND
	10/04/90	---	ND	---	ND	ND	ND	ND
	12/04/90	---	ND	---	ND	ND	ND	ND
	03/13/91	---	ND	---	ND	ND	ND	ND
	06/11/91	---	ND	---	ND	ND	ND	ND
	08/12/91	Well Abandoned						



Table 15. PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUNDWATER (continued)

Well	Date	O&G <sup>1</sup> (ug/L)	TVH <sup>2</sup> (ug/L)	TEH <sup>3</sup> (ug/L)	B <sup>4</sup> (ug/L)	T <sup>5</sup> (ug/L)	X <sup>6</sup> (ug/L)	E <sup>7</sup> (ug/L)
MW-54	09/21/90	--	1700	--	ND	1.5	20	1.9
	10/04/90	--	1300	--	ND	0.7	12	28
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-59	03/13/91	--	ND	--	ND	ND	ND	ND

<sup>1</sup> Oil and Grease

<sup>2</sup> Total Volatile Hydrocarbons

<sup>3</sup> Total Extractable Hydrocarbons

<sup>4</sup> Benzene

<sup>5</sup> Toluene

<sup>6</sup> Xylene

<sup>7</sup> Ethylbenzene

<sup>8</sup> ND = Non-detectable, see analytical test reports for detection limits

<sup>9</sup> -- Not tested

Table 16.  
 HALOGENATED VOLATILE ORGANIC CHEMICAL  
 CONCENTRATIONS IN GROUNDWATER

8010s or 6015

Well	Date	1,2 DCA <sup>1</sup> (ug/L) <sup>3</sup>	1,2 DCE <sup>2</sup> (ug/L)	Chloroform (ug/L)	Other EPA 8010 (ug/L)
MW-29	01/04/91	ND <sup>4</sup>	ND	ND	ND
MW-31	01/04/91	ND	ND	10	ND
MW-45	01/04/91	ND	ND	ND	ND
MW-46	01/04/91	ND	ND	ND	ND
MW-47	12/03/90	ND	11	ND	ND
	01/04/91	16	ND	ND	ND
	03/13/91	6.7	ND	ND	ND
	06/13/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
MW-48	10/04/90	60	ND	ND	ND
	12/03/90	31	ND	ND	ND
	01/04/91	15	ND	ND	ND
	03/13/91	30	ND	ND	ND
	06/19/91	6.1	ND	ND	ND
	09/11/91	5.3	ND	ND	ND
	12/12/91	16	ND	ND	ND
	04/17/92	1	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
	02/03/93	ND	ND	ND	ND
	05/06/93	ND	ND	ND	ND
MW-49	12/03/90	ND	ND	ND	ND
	03/03/91	ND	ND	ND	ND
	06/13/91	5.0	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
12/18/92	Well Abandoned				
MW-51	12/04/90	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
MW-52	12/04/90	ND	ND	1.3	ND
	06/13/91	ND	ND	2.0	ND
MW-53	10/04/90	ND	ND	1.2	ND
	12/04/90	ND	ND	1.9	ND
	03/13/91	ND	ND	2.0	ND
	06/13/91	ND	ND	8.0	ND
	08/12/91	Well abandoned			

Table 16. HALOGENATED VOLATILE ORGANIC CHEMICALS  
CONCENTRATIONS IN GROUNDWATER (continued)

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-54	10/04/90	ND	ND	1.6	ND
	12/04/90	ND	ND	1.5	ND
	01/04/91	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
	11/03/92	ND	ND	ND	ND
	02/02/93	ND	ND	1.1	ND
	05/06/93	ND	ND	0.7	ND
	MW-59	03/13/91	ND	ND	ND
04/03/91		ND	ND	ND	ND
09/11/91		ND	ND	ND	ND
12/12/91		ND	ND	ND	ND
04/17/92		ND	ND	ND	ND
07/28/92		ND	ND	ND	ND
11/03/92		ND	ND	ND	ND

<sup>1</sup> 1,2 Dichloroethane

<sup>2</sup> 1,2 Dichloroethene

<sup>3</sup> Micrograms/liter = parts per billion

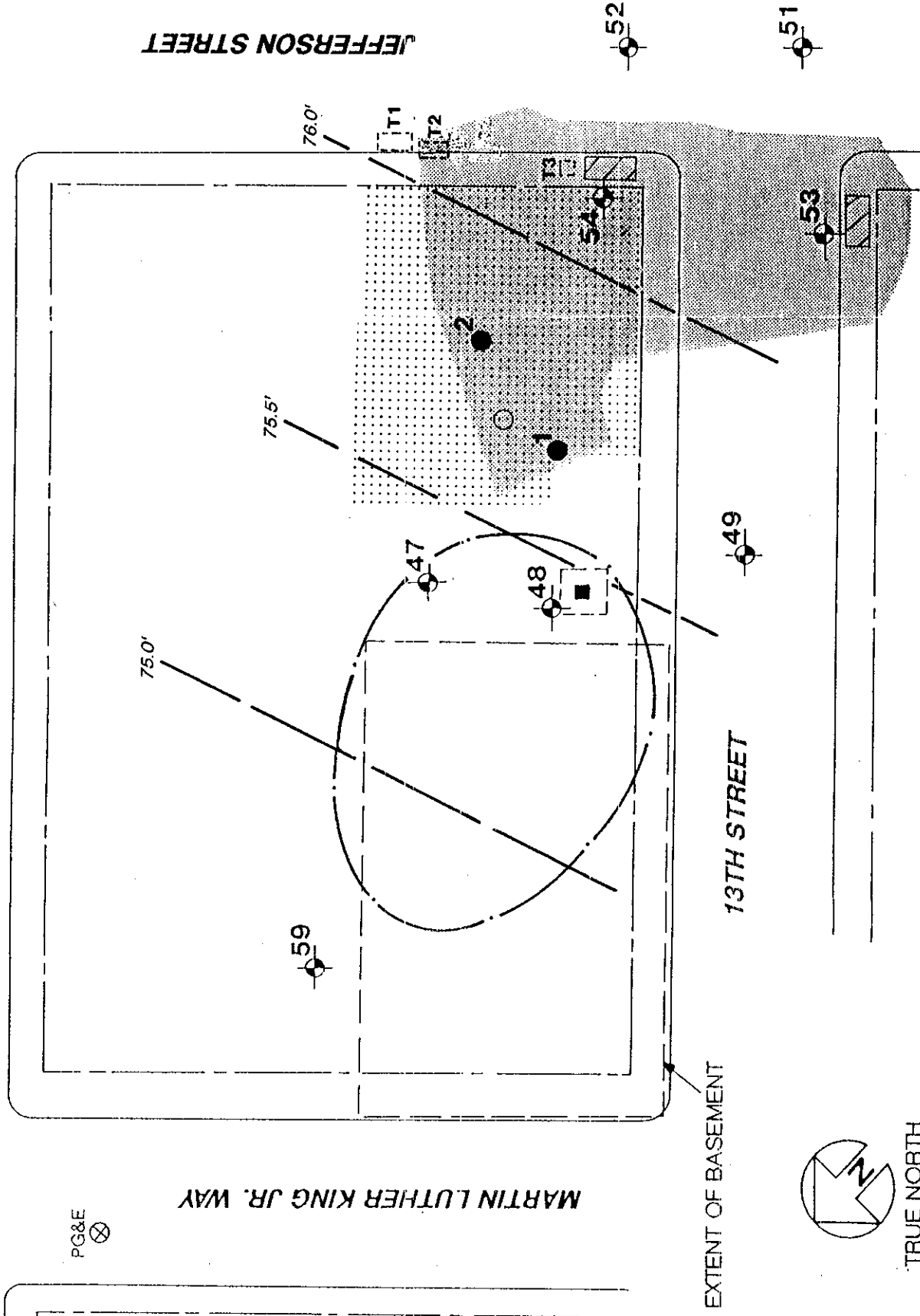
<sup>4</sup> None detected, see test reports for detection limits

14TH STREET

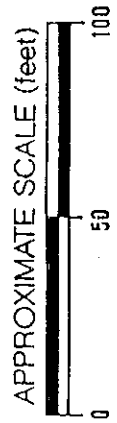
JEFFERSON STREET

MARTIN LUTHER KING JR. WAY

PG&E



SITE PLAN














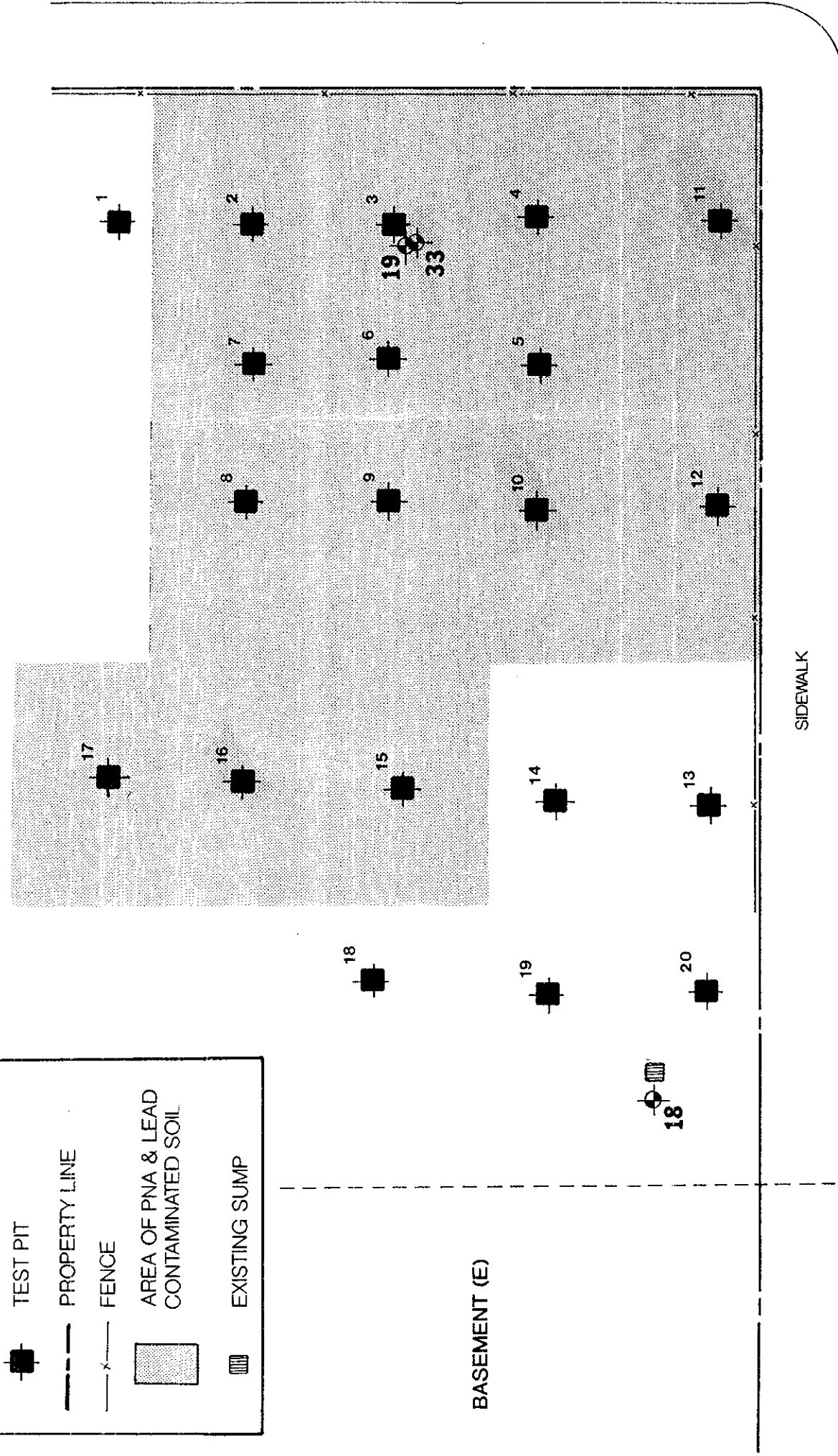
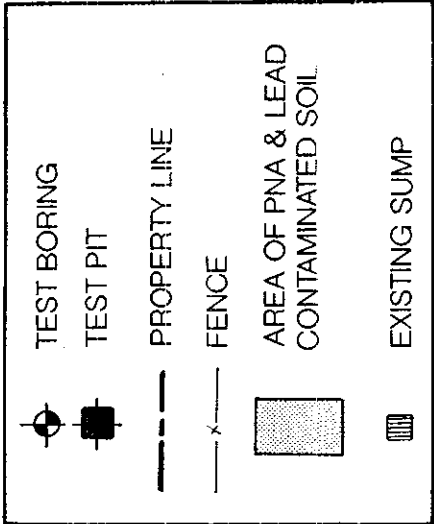
Subsurface Consultants

JOB NUMBER 430.013  
DATE 3/27/91  
APPROVED *hc*

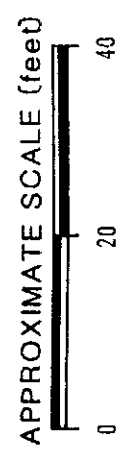
PLATE 1

13TH & JEFFERSON - OAKLAND, CA

-  PROBABLE TANK LOCATION BASED ON OBSERVATIONS DURING SOIL REMEDIATION
-  UNDERGROUND STORAGE TANKS DISCOVERED DURING REMEDIATION
-  TEST BORING/MONITORING WELL
-  PROPERTY LINE
-  APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION
-  PREVIOUS SUMP AND APPROXIMATE EXTENT OF SOIL REMEDIATION
-  PREVIOUS WATER WELL
-  PREVIOUS BRICK-LINED WELL
-  APPROXIMATE EXTENT OF PAH AND LEAD CONTAMINATED SOIL REMEDIATION
-  GROUNDWATER CONTOURS (feet) MAY 6, 1993
-  APPROXIMATE EXTENT OF DCA PLUME (1991)




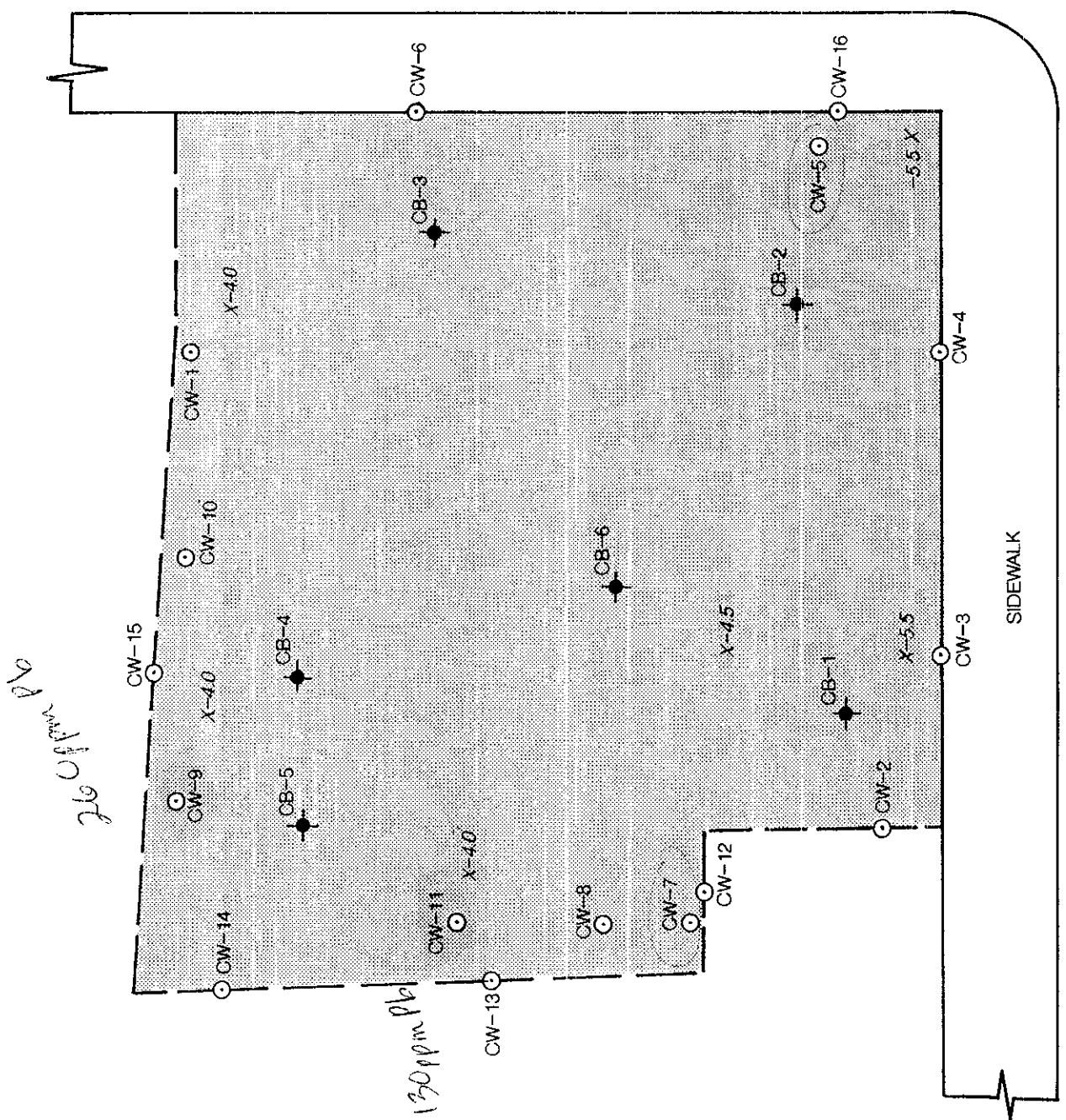
*hot spots in basement area*



Subsurface Consultants

TEST PIT LOCATIONS AND  
ESTIMATED EXTENT OF  
PAH AND LEAD CONTAMINATED SOIL

13th & JEFFERSON ST. - OAKLAND, CA  
JOB NUMBER 430.005  
DATE 10/27/88  
APPROVED   
PLATE 2



JEFFERSON STREET

13TH STREET

SIDEWALK

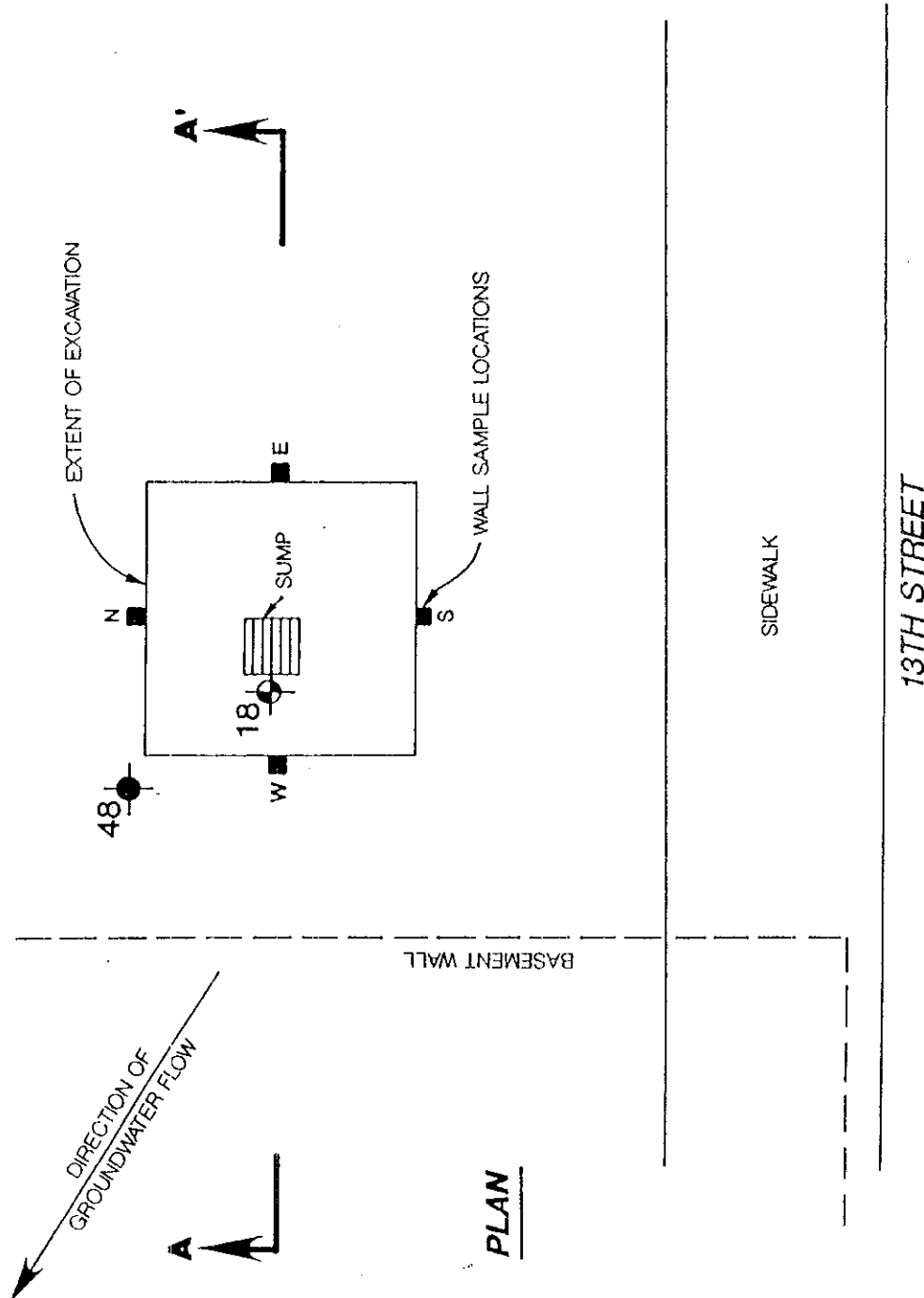
- ◆ CONFIRMATION BOTTOM SAMPLE
- CONFIRMATION WALL SAMPLE
- EXTENT OF EXCAVATION
- X EXCAVATION DEPTH BELOW SIDEWALK (feet)

*not spots left in place*

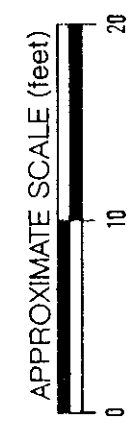


Subsurface Consultants

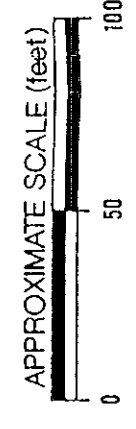
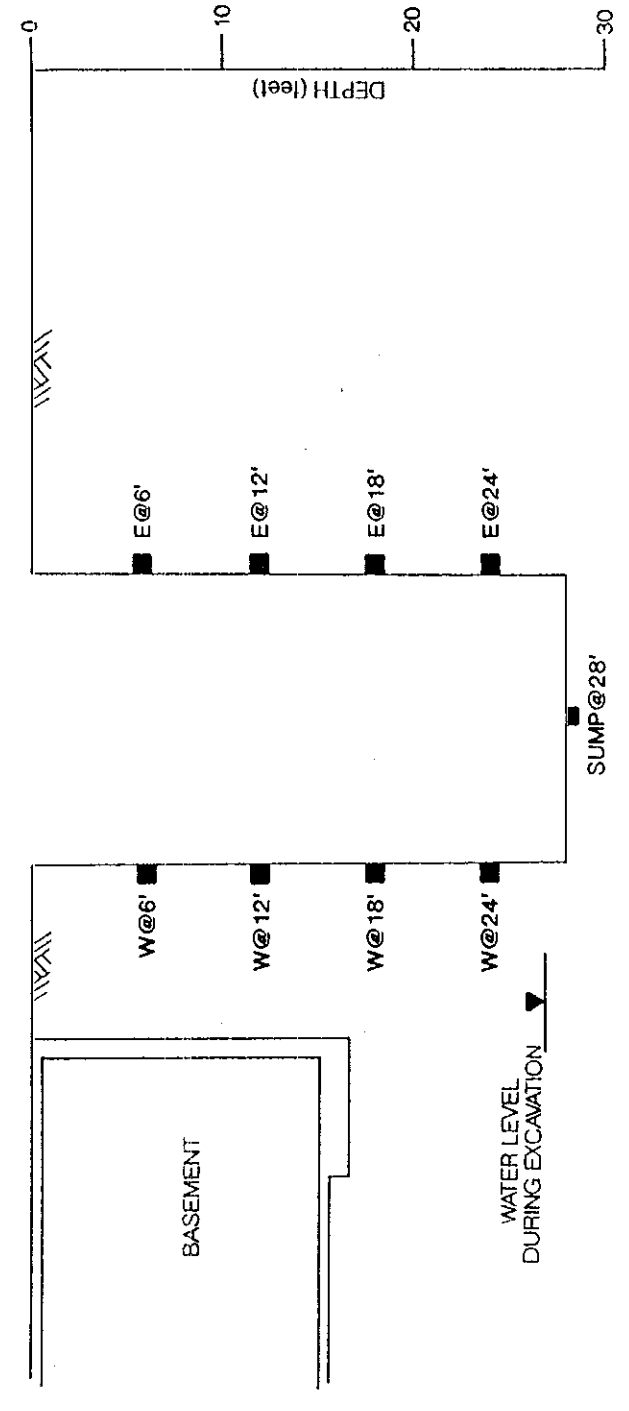
LIMITS OF REMEDIATION PAH AND LEAD CONTAMINATED SOIL		PLATE <b>3</b>
13TH & JEFFERSON - OAKLAND, CA	DATE	APPROVED
JOB NUMBER 430.005	10/23/89	<i>AC</i>



**PLAN**

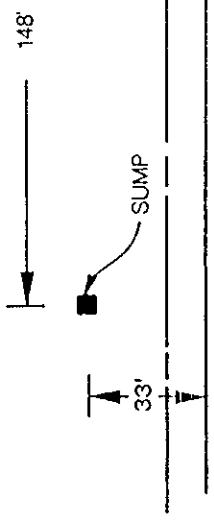


**CROSS SECTION A - A'**



14TH STREET

JEFFERSON STREET



13TH STREET



REFERENCE NORTH



TRUE NORTH

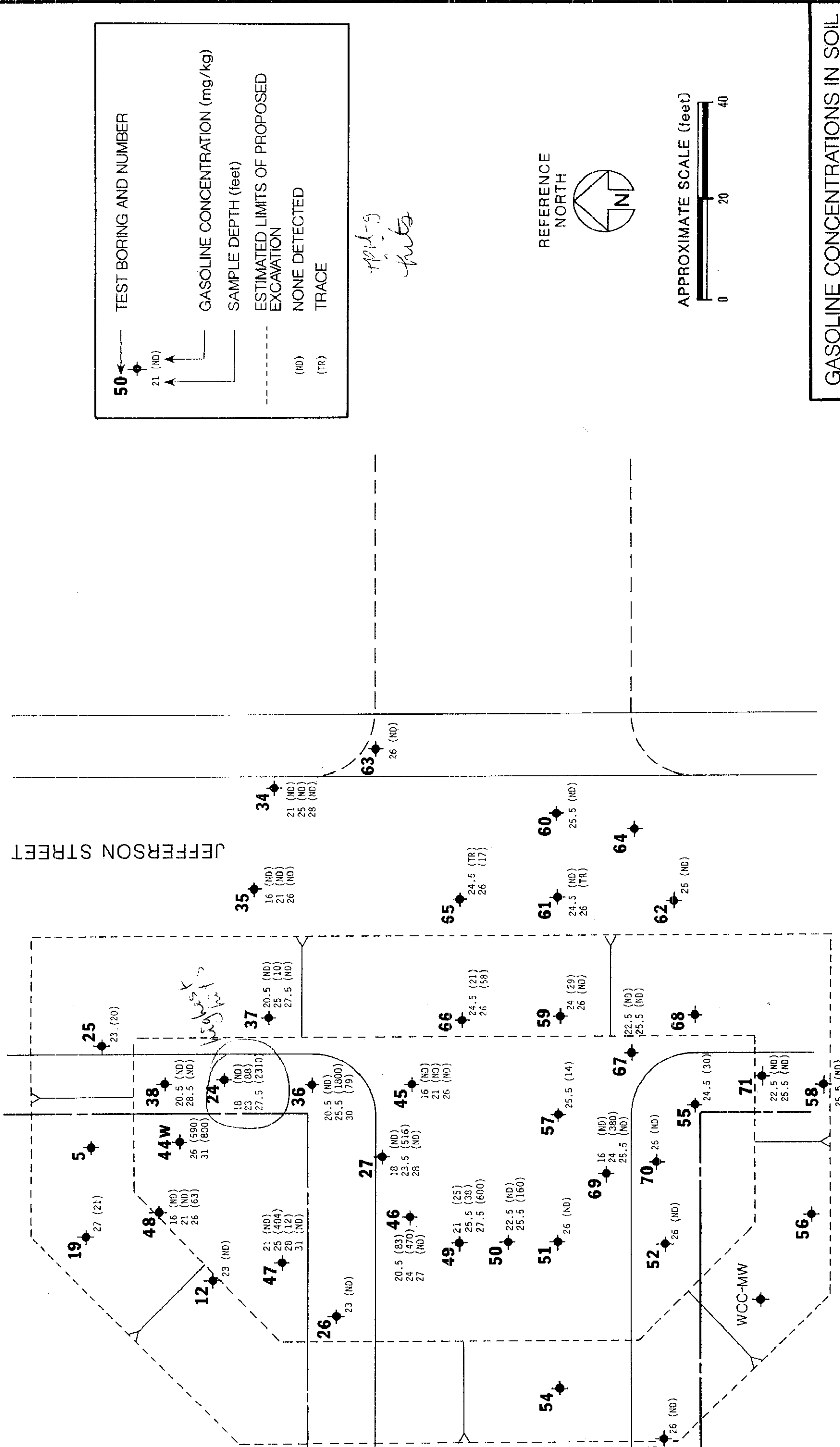
**Subsurface Consultants**

SUMP SITE PLAN & EXTENT  
OF SOIL REMEDIATION

13TH & JEFFERSON - OAKLAND, CA	DATE	8/9/90	APPROVED	
JOB NUMBER	430,006			
				PLATE
				<b>4</b>

JEFFERSON STREET

13th STREET



**TEST BORING AND NUMBER**

**GASOLINE CONCENTRATION (mg/kg)**

**SAMPLE DEPTH (feet)**

**ESTIMATED LIMITS OF PROPOSED EXCAVATION**

**NONE DETECTED**

**TRACE**

50 (ND)  
 21 (ND)  
 25 (ND)  
 28 (ND)

*API-9 cuts*

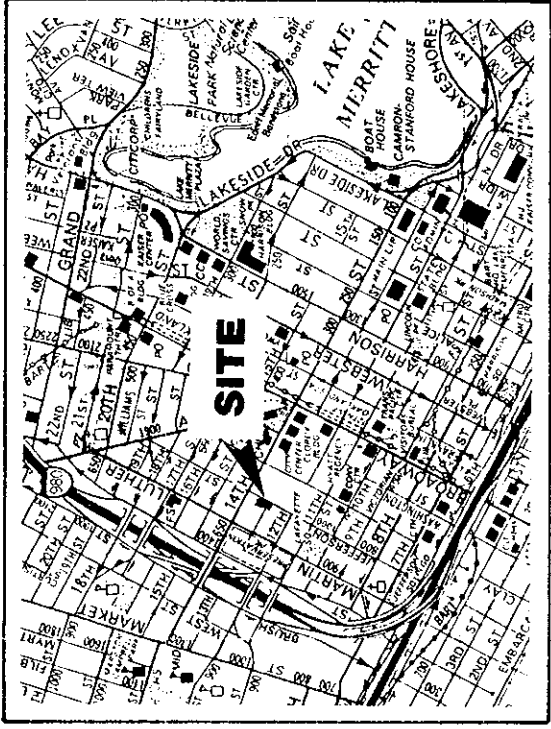


GASOLINE CONCENTRATIONS IN SOIL  
 PRIOR TO REMEDIATION

13th & JEFFERSON ST. - OAKLAND, CA  
 JOB NUMBER 430.003  
 DATE 8/11/89  
 APPROVED *[Signature]*  
 PLATE 5

Subsurface Consultants





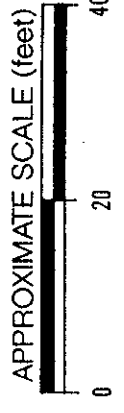
VICINITY MAP



REFERENCE NORTH

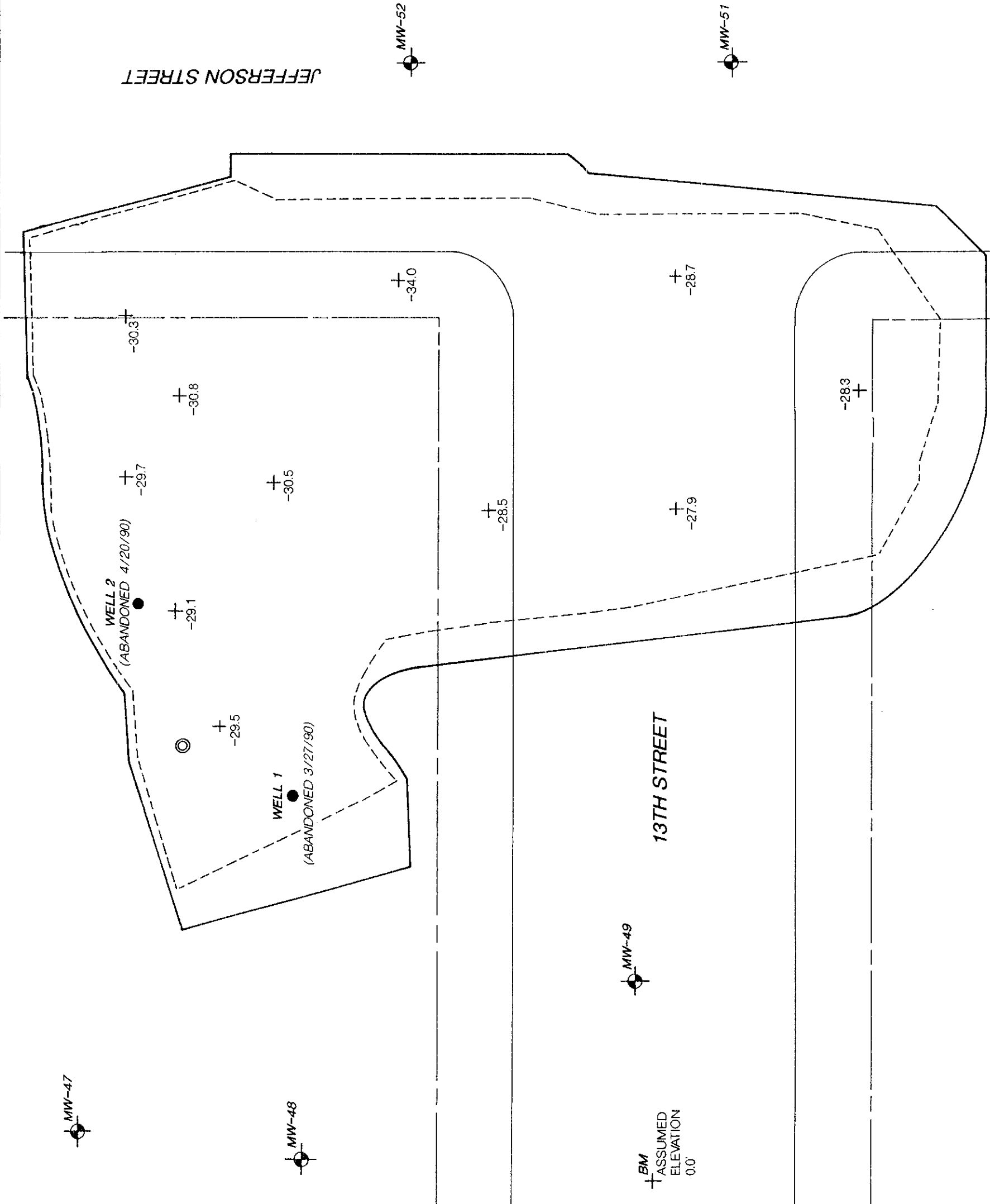


TRUE NORTH



APPROXIMATE SCALE (feet)

- MONITORING WELL
- FUEL TANK LOCATION *not here*
- EXISTING WATER WELL
- BRICK LINED WATER WELL
- DEPTH OF EXCAVATION (feet)  
-27.9



LIMITS OF SOIL REMEDIATION  
GASOLINE COONTAMINATION

13TH & JEFFERSON - OAKLAND, CA

JOB NUMBER 430.003

DATE 5/10/90

APPROVED *MC*

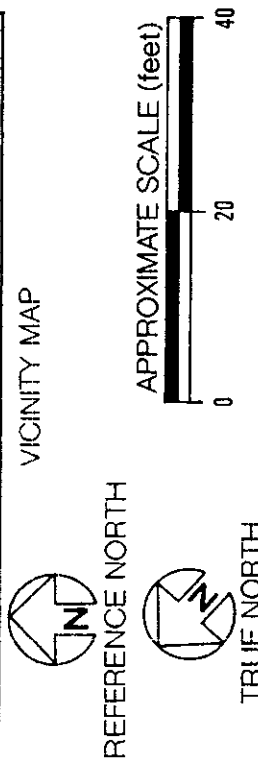
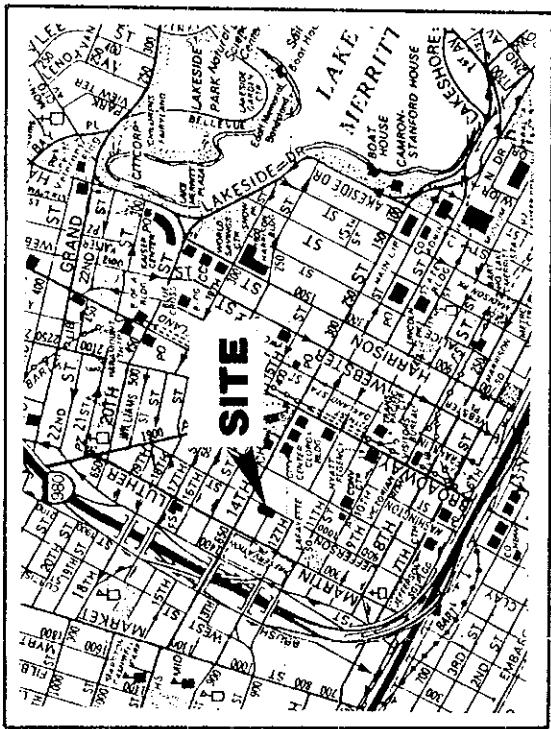
PLATE **6**

Subsurface Consultants

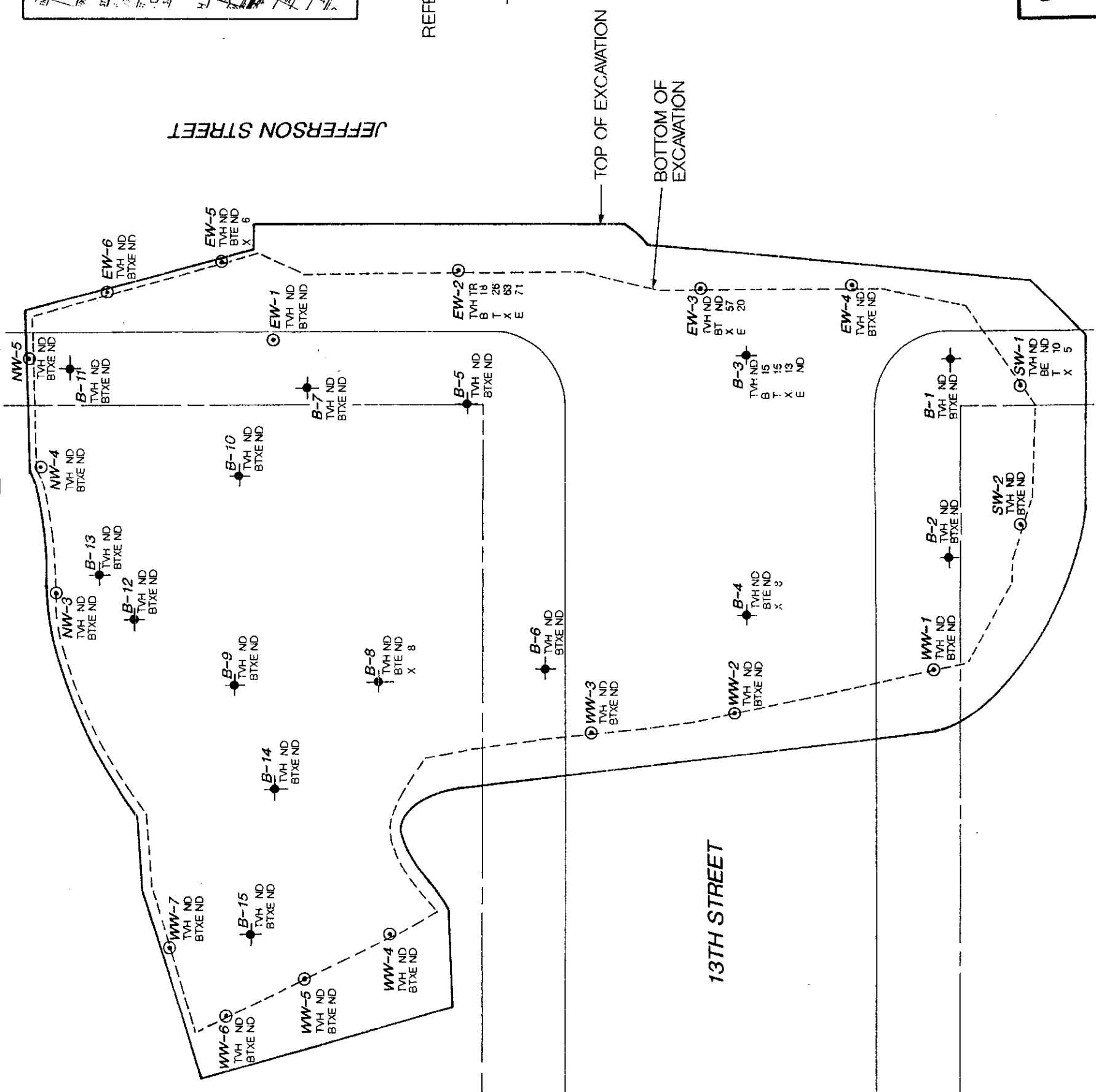
**GASOLINE CONCENTRATIONS IN SOIL  
FOLLOWING REMEDIATION**

13TH & JEFFERSON - OAKLAND, CA  
 JOB NUMBER 430.003  
 DATE 5/10/90  
 APPROVED *UC*  
 PLATE **7**

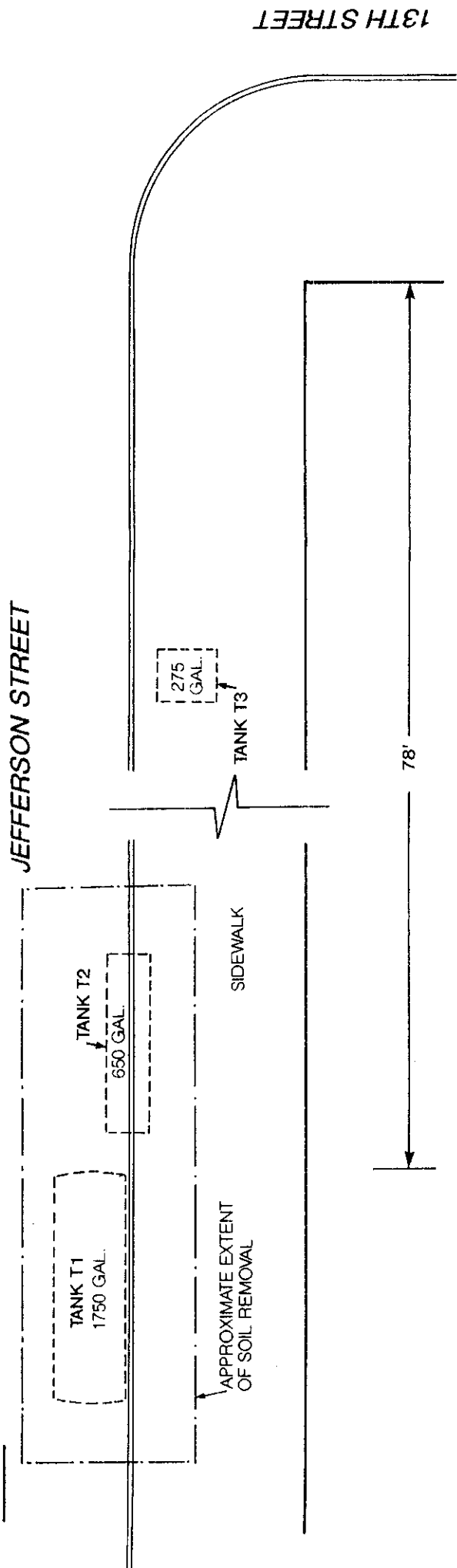
**Subsurface Consultants**



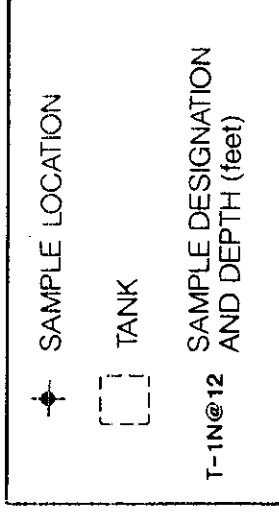
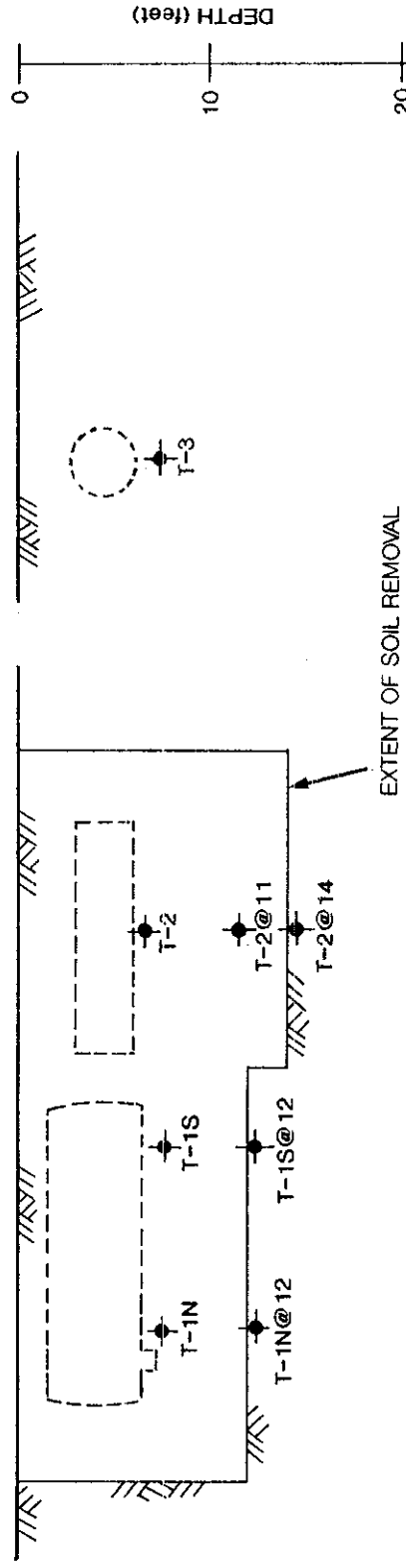
- MONITORING WELL
- BOTTOM SAMPLE
- SIDEWALL SAMPLE
- FUEL TANK LOCATION
- EXISTING WATER WELL
- BRICK LINED WATER WELL
- TVH - TOTAL VOLATILE HYDROCARBONS AS GASOLINE (ppm)
- B - BENZENE (ppb)
- T - TOLUENE (ppb)
- X - TOTAL XYLENES (ppb)
- E - ETHYL BENZENE (ppb)
- ND - NONE DETECTED (ppb)



**PLAN**



**CROSS SECTION**



SITE PLAN  
UNDERGROUND STORAGE TANKS

13TH & JEFFERSON - OAKLAND, CA		PLATE
JOB NUMBER 430.007	DATE 7/18/90	APPROVED <i>[Signature]</i>
		8

Subsurface Consultants

## CONFIRMATION SOIL SAMPLING PROCEDURES

Soil samples from the bottom and sides of the excavation were obtained using the following procedure: Approximately 3 inches of soil was removed from the exposed surface and a pre-cleaned brass sample liner was driven into the soil with a rubber mallet. The liner was removed and the ends were covered with Teflon sheeting, capped, wrapped with tape and labeled. Samples were promptly placed in an ice-filled cooler and transported to the analytical laboratory. Chain-of-Custody records accompanied all samples to the analytical laboratory.

## GROUNDWATER SAMPLING PROCEDURES

Prior to sampling, the wells were purged of at least 4 well volumes of water using a disposable bailer until water pH, conductivity and temperature stabilized. The purged water was disposed of in the existing groundwater treatment plant on-site. A disposable sampling device was used to obtain the water samples.

The water samples were retained in pre-cleaned containers, placed in an iced cooler, and kept refrigerated until delivery to the analytical laboratory. The samples were accompanied by Chain-of-Custody records.

## TEST BORING AND WELL CONSTRUCTION PROCEDURES

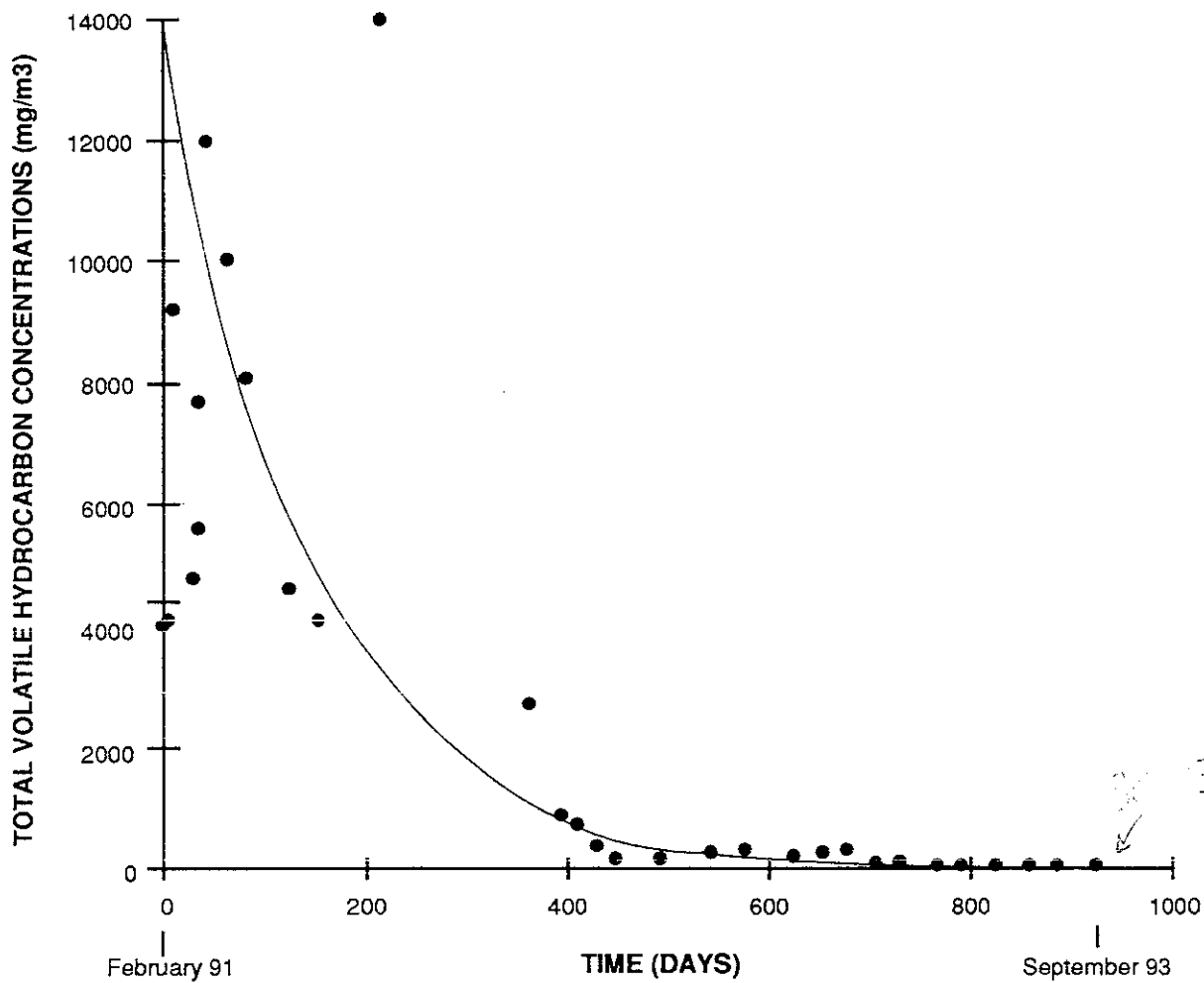
The test borings were drilled using truck-mounted 8-inch-diameter, hollow-stem auger equipment. Boring 54 was drilled using 10-inch-diameter, hollow-stem auger equipment.

A member of our engineering staff observed drilling and sampling operations and prepared detailed logs of the borings. Soil samples were obtained from the borings using a California Drive Sampler having an outside diameter of 2.5 inches and inside diameter of 2.0 inches. The sampler was driven with a 140-pound hammer having a drop of 30 inches. The blow counts required to drive the sampler the final 12 inches of each 18-inch penetration were recorded. Soils were classified in accordance with the Unified Soil Classification system.

Soil samples were retained in brass sample liners. Samples for environmental analysis were capped and sealed with duct tape. Teflon sheeting was placed between the caps and the soil samples. Upon sealing and labeling, the samples were promptly refrigerated on-site in an ice chest. The samples remained under refrigeration until delivery to the analytical laboratory.

All augers, drill rods, samplers, well casing, etc., that were placed in the test borings were steam cleaned prior to their initial use and before each subsequent use to reduce the likelihood of cross contamination between borings.

The groundwater monitoring wells were constructed of 2-inch-diameter, Schedule 40 PVC pipe having flush threaded joints with the exception of Well 54. Well 54 has a 4-inch-diameter casing. The lower portion of the wells consist of machine slotted well screen having 0.020-inch wide slots. The annular space around the screened section was backfilled with Lonestar #3 sand. A bentonite seal, approximately 12 inches thick, was placed above the sand. The annulus above the bentonite seal was backfilled with a cement/bentonite grout. The wells were finished either above grade and secured by a lock and steel cover, or below grade and locked within Christy boxes.



no formal documentation of this data  
 reports to AQMD  
 free product removals status reports ~ 6 mo - 1 yr ago

SOIL VAPOR HYDROCARBON  
 CONCENTRATIONS

Subsurface Consultants

1330 MARTIN LUTHER KING JR. WAY - OAK.

PLATE

JOB NUMBER  
 430.011

DATE  
 10/25/93

APPROVED

BORING NO.	DEPTH (feet)	B (ug/kg)	T (ug/kg)	X (ug/kg)	E (ug/kg)
60	27	155	193	908	121
61	26.5	167	388	36,400	340
62	27	107	170	91,200	529

*they continuously banded  
beings (not 93)  
#100 report*

*40" FP initially (~91)... is all gone. new  
DTW ~~give~~ a 27' bgs*



VICINITY MAP

MARTIN LUTHER KING JR. WAY

14TH STREET

APPROXIMATE EXTENT OF FREE PRODUCT PRIOR TO REMEDIATION

TEST BORING

PREVIOUS TEST BORING/MONITORING WELL

VAPOR EXTRACTION WELL

23(50)

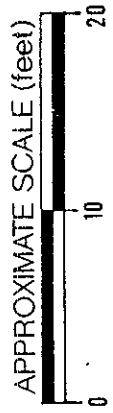
20(75)

TOTAL VOLATILE HYDROCARBON CONCENTRATIONS IN SOIL PRIOR TO REMEDIATION (mg/kg)

SAMPLE DEPTH (feet)

TOTAL VOLATILE HYDROCARBON CONCENTRATIONS IN SOIL FOLLOWING REMEDIATION (mg/kg)

SAMPLE DEPTH (feet)



SITE PLAN

Subsurface Consultants

1330 MARTIN LUTHER KING JR. WAY - OAKLAND  
JOB NUMBER 430.011  
DATE 9/15/93  
APPROVED

PLATE 1

- MONITORING WELL
- BTXE BENZENE, TOLUENE, XYLENE, ETHYLBENZENE
- TVH TOTAL VOLATILE HYDROCARBONS, AS GASOLINE
- ND NOT DETECTED

CONCENTRATIONS IN ug/l

B	120	10
---	-----	----

— MOST RECENT CONCENTRATION

— CONCENTRATION 10/23/90

MONITORING WELL  
 BTXE BENZENE, TOLUENE, XYLENE, ETHYLBENZENE  
 TVH TOTAL VOLATILE HYDROCARBONS, AS GASOLINE  
 ND NOT DETECTED  
 CONCENTRATIONS IN ug/l

29

58

TVH	ND
B	ND
T	ND
X	ND
E	ND

2/16/93

TVH	ND	ND
B	ND	ND
T	ND	ND
X	ND	ND
E	ND	ND

8/18/93

31

TVH	160
B	12
T	6.4
X	5
E	ND

8/18/93

39

TVH	ND	ND
B	ND	ND
T	0.6	ND
X	ND	ND
E	0.5	ND

10/24/91

46

TVH	18,000	4,120
B	2,300	268
T	1,100	ND
X	1,000	323
E	260	377

8/18/93

42

43

TVH	6,300	ND
B	ND	ND
T	ND	ND
X	130	ND
E	9.1	ND

8/18/93

28

30

11

TVH	4,200	ND
B	1,600	ND
T	8.5	ND
X	170	ND
E	28	ND

9/19/93

MARTIN LUTHER KING JR. WAY

TVH	48,000	170
B	7,600	ND
T	8,200	ND
X	5,600	ND
E	150	ND

4/24/91

32

PREVIOUS TANK

GW TREATMENT PLANT

14TH STREET

SITE PLAN

PLATE

1330 MARTIN LUTHER KING JR. WAY - OAK.

APPROVED

DATE 10/25/93

JOB NUMBER 430.010

Subsurface Consultants

EXISTING BUILDING

PARKING

EXISTING BUILDING

REFERENCE NORTH



TRUE NORTH



APPROXIMATE SCALE (feet)

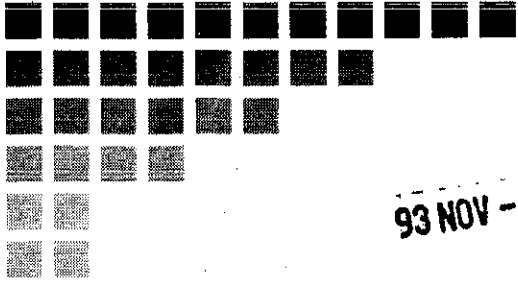


45

TVH	ND	ND
B	0.9	ND
T	1.4	ND
X	1.8	ND
E	ND	ND

2/16/93





James P. Bowers, PE  
R. William Rudolph, Jr., PE

93 NOV -3 PM 4:49

**LETTER OF TRANSMITTAL**

TO: Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
Division of Hazardous Materials  
80 Swan Way, Suite #200  
Oakland, California 94621

DATE: November 2, 1993  
PROJECT: 1330 Martin Luther King, Jr. Way  
SCI JOB NUMBER: 430.010

**WE ARE SENDING YOU:**

1 copies each

- of our final report
- a draft of our report
- a Service Agreement
- a proposed scope of services
- specifications
- grading/foundation plans
- soil samples/groundwater samples
- an executed contract

- if you have any questions, please call
- for your review and comment
- please return an executed copy
- for geotechnical services
- with our comments
- with Chain of Custody documents
- for your use

two site plans (9/15 and 10/25/93) and soil vapor hydrocarbon concentrations

REMARKS:

COPIES TO:

BY: James P. Bowers  
James P. Bowers (Signature)

**Subsurface Consultants, Inc.**

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 510-268-0461 • FAX 510-268-0137

- MONITORING WELL
- BTXE BENZENE, TOLUENE, XYLENE, ETHYLBENZENE
- TVH TOTAL VOLATILE HYDROCARBONS, AS GASOLINE
- ND NOT DETECTED

CONCENTRATIONS IN ug/l *gw CDs*

B	120	10
---	-----	----

MOST RECENT CONCENTRATION *10/23/90*  
 CONCENTRATION 10/23/90

10/24/91

TVH	ND	ND	ND	ND
B	ND	ND	ND	ND
T	0.6	ND	ND	ND
X	ND	ND	ND	ND
E	0.5	ND	ND	ND

29 ●

2/16/93

TVH	ND	ND	ND	ND
B	ND	ND	ND	ND
T	ND	ND	ND	ND
X	ND	ND	ND	ND
E	ND	ND	ND	ND

8/18/93

TVH	160	ND	ND	ND
B	12	ND	ND	ND
T	6.4	ND	ND	ND
X	5	ND	ND	ND
E	ND	ND	ND	ND

39 ●

8/18/93

TVH	18,000	120	ND	ND
B	2,900	268	ND	ND
T	1,100	ND	ND	ND
X	1,000	323	ND	ND
E	260	377	ND	ND

42 ●

30 ●

28 ●

8/18/93

TVH	4,200	ND	ND	ND
B	1,600	ND	ND	ND
T	8.5	ND	ND	ND
X	170	ND	ND	ND
E	28	ND	ND	ND

11 ●

EXISTING BUILDING

PARKING

EXISTING BUILDING



2/16/93

TVH	ND	ND	ND	ND
B	ND	ND	ND	ND
T	1.4	ND	ND	ND
X	1.8	ND	ND	ND
E	ND	ND	ND	ND

45 ●

MARTIN LUTHER KING JR. WAY

14TH STREET

GW TREATMENT PLANT

PREVIOUS TANK

SITE PLAN

1330 MARTIN LUTHER KING JR. WAY - OAK.

JOB NUMBER	430.010
DATE	10/25/93
APPROVED	

Subsurface Consultants

PLATE

4/24/91

TVH	48,000	170	ND	ND
B	7,600	ND	ND	ND
T	8,200	ND	ND	ND
X	5,600	ND	ND	ND
E	150	ND	ND	ND

32 ●

8/18/93

TVH	5,300	ND	ND	ND
B	ND	ND	ND	ND
T	ND	ND	ND	ND
X	130	ND	ND	ND
E	9.1	ND	ND	ND

43 ●

8/18/93

TVH	ND	ND	ND	ND
B	ND	ND	ND	ND
T	ND	ND	ND	ND
X	ND	ND	ND	ND
E	ND	ND	ND	ND

31 ●

BORING NO.	DEPTH (feet)	B (ug/kg)	T (ug/kg)	X (ug/kg)	E (ug/kg)
60	27	155	193	908	121
61	26.5	167	388	36,400	340
62	27	107	170	91,200	529

14TH STREET

MARTIN LUTHER KING JR. WAY

11  
25 (ND)

28  
23 (ND)  
26 (ND)  
29 (ND)

42  
21 (ND)  
24 (ND)  
26 (ND)

14  
19 (ND)  
22 (ND)  
25 (6710)

25.5 (<0.01)  
27 (<100)  
28 (<0.01)

7  
19 (ND)  
24 (ND)  
28.5 (2020)

62  
25 (<0.05)  
27 (<100)  
28 (<0.01)

60  
24 (ND)  
26 (5000)  
27 (23)  
28 (ND)

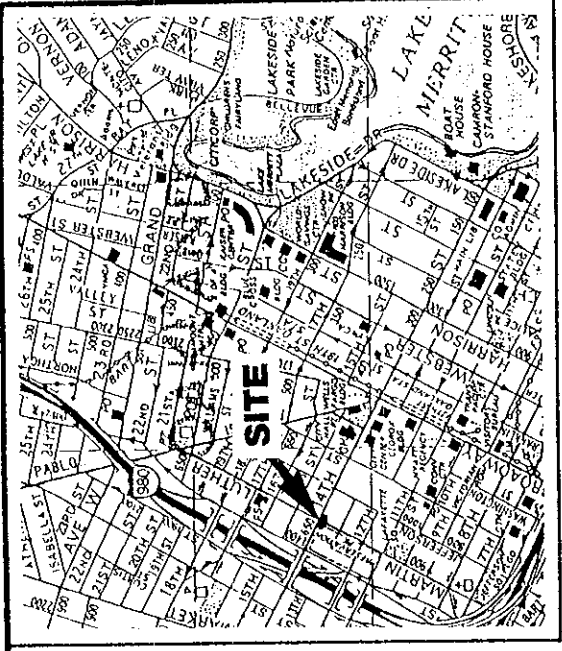
61  
23.5 (<0.01)  
25 (<0.1)  
26.5 (<100)

43  
23 (ND)  
24.5 (1000)  
26 (ND)

4  
18 (54)  
21 (6770)  
26 (ND)

39  
24.5 (ND)  
27 (ND)

*is this a change in DL? where's the lab report? boring logs? DTW? gw elev? consistency w/gwe's?*



VICINITY MAP

APPROXIMATE EXTENT OF FREE PRODUCT PRIOR TO REMEDIATION

TEST BORING *when?*

PREVIOUS TEST BORING/MONITORING WELL

VAPOR EXTRACTION WELL

23(50)

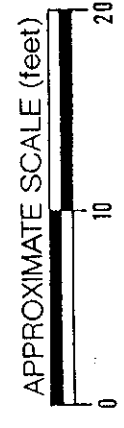
TOTAL VOLATILE HYDROCARBON CONCENTRATIONS IN SOIL PRIOR TO REMEDIATION (mg/kg) *when?*

SAMPLE DEPTH (feet)

20(75)

TOTAL VOLATILE HYDROCARBON CONCENTRATIONS IN SOIL FOLLOWING REMEDIATION (mg/kg) *when?*

SAMPLE DEPTH (feet)



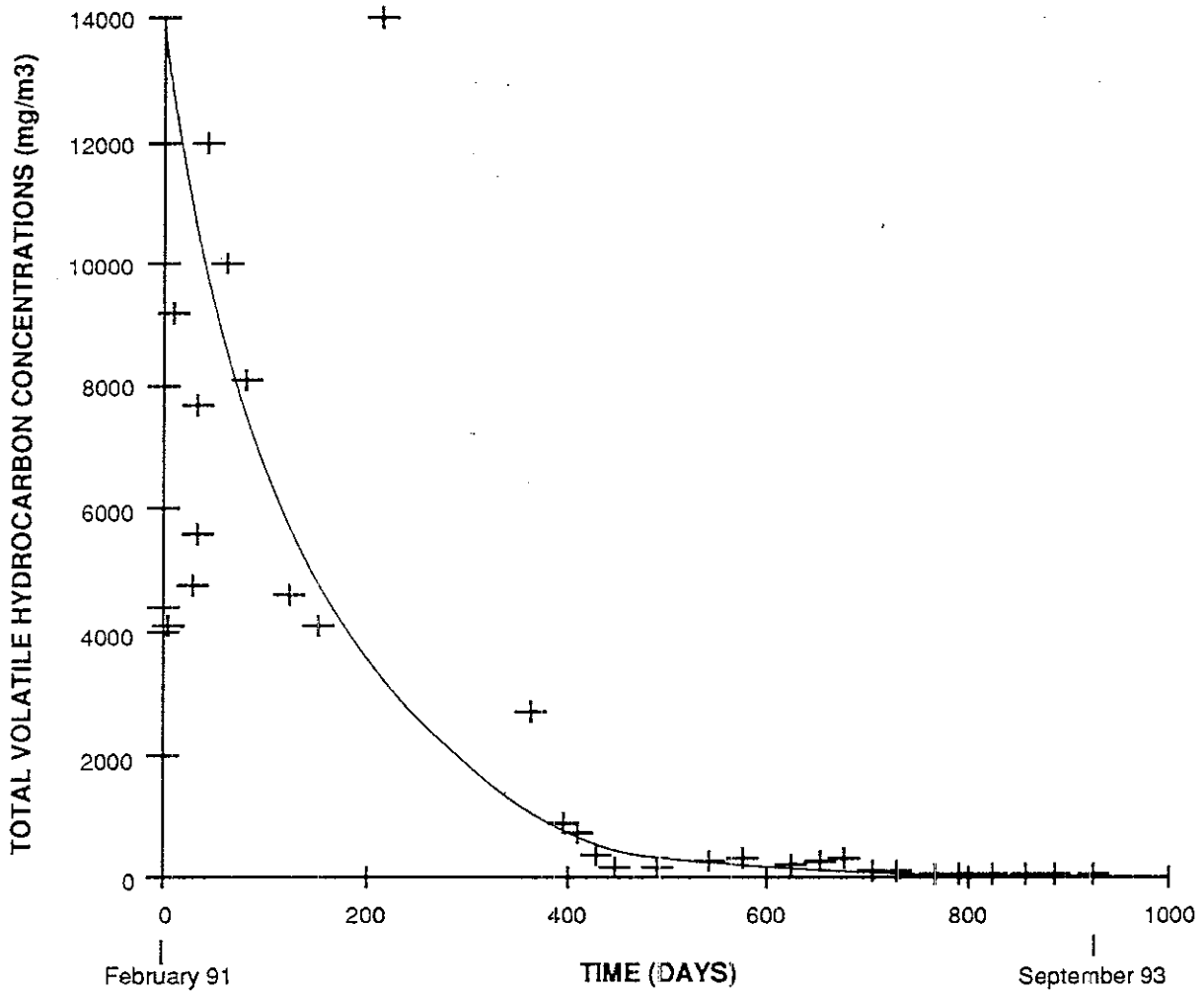
SITE PLAN

Subsurface Consultants

1330 MARTIN LUTHER KING JR. WAY - OAKLAND  
JOB NUMBER 430.011  
DATE 9/15/93  
APPROVED

PLATE 1

*which report?*



*in what boring(s)?*

SOIL VAPOR HYDROCARBON  
CONCENTRATIONS

Subsurface Consultants

1330 MARTIN LUTHER KING JR. WAY - OAK.

JOB NUMBER

DATE

APPROVED

430.011

10/25/93

PLATE

93 OCT 13 AM 8:40

October 8, 1993  
SCI 430.015

Mr. William Meckel  
East Bay Municipal Utility District  
Mail Slot #702  
P.O. Box 24055  
Oakland, California 94623-1055

Quarterly Monitoring Report 14  
Wastewater Discharge Permit Account #502-29091  
1330 Martin Luther King Jr. Way  
Oakland, California

Dear Mr. Meckel:

This letter presents quarterly monitoring results from the groundwater treatment plant at 1330 Martin Luther King Jr. Way. Monitoring of treated effluent has been performed in accordance with criteria specified in the EBMUD wastewater discharge permit account #502-29091, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

During the fourteenth quarter of operation (July 9, 1993 through October 8, 1993) approximately 286,290 gallons of treated water were discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 55 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethylbenzene (BTEX) have been reduced to nondetectable concentrations before discharge into the EBMUD sanitary sewer. No indications of breakthrough have occurred in the primary carbon column. Results of the water quality data generated during the fourteenth quarter are presented in Table 1. During this quarter, Extraction Well #1 (EW-1) was not in operation. For this reason, there is no analytical data presented for EW-1-53, 54, 55. Analytical test reports and Chain-of-Custody documents are attached.

The analytical test results indicate that biologic activity within the primary holding tank is ongoing. During this quarter, hydrocarbon concentrations up to approximately 87 ug/l entered the primary holding tank and no detectable concentrations of hydrocarbons were recorded leaving the tank before passing through the carbon treatment system. Consequently, hydrocarbon loading of the carbon treatment system remains minimal.

■ Subsurface Consultants, Inc.

■ Subsurface Consultants, Inc.

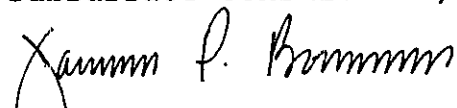
Mr. William Meckel  
East Bay Municipal Utility District  
SCI 430.015  
October 8, 1993  
Page 2

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:sld

Attachments: Table 1 - Contaminant Concentrations in Water  
Analytical Test Reports  
Chain-of-Custody Documents

cc: Mr. David W. Ralph  
Office of Economic Development and Employment

Mr. Joseph Cotten  
Environmental Affairs

✓ Ms. Jennifer Eberle  
ACHCSA

Mr. Eddy So  
RWQCB

Mr. Donnell Choy  
City of Oakland

TABLE 1. CONTAMINANT CONCENTRATIONS IN WATER

<u>Sample</u>	<u>Sampling Date</u>	<u>TVH (ug/L)</u>	<u>Benzene (ug/L)</u>	<u>Toluene (ug/L)</u>	<u>Ethyl-Benzene (ug/L)</u>	<u>Total Xylenes (ug/L)</u>
EW-2-53	7/21/93	29.6	10.5	ND	1.8	2.4
A-53		ND	ND	ND	ND	ND
B-53		ND	ND	ND	ND	ND
SS#1-53		ND	ND	ND	ND	ND
EW-2-54	8/18/93	87.4	4.08	ND	2.02	13.78
A-54		ND	ND	ND	ND	ND
B-54		ND	ND	ND	ND	ND
SS#1-51		ND	ND	ND	ND	ND
EW-2-55	9/16/93	57.7	3.3	0.8	2.5	7.0
A-55		ND	ND	ND	ND	ND
B-55		ND	ND	ND	ND	ND
SS#1-55		ND	ND	ND	ND	ND

---

TVH = Total volatile hydrocarbons, EPA 8015/5030  
 BTEX, Analyses by EPA 8020/5030  
 ug/L = micrograms per liter or parts per billion (ppb)  
 ND = None detected, chemicals not present at concentrations above the detection limits; see test reports for detection limits  
 EW-2 = indicates sample from Extraction Well #2  
 A = influent at primary carbon vessel  
 B = Between carbon vessels  
 SS#1 = side sewer #1, (effluent sample)

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	07/22/1993
PROJECT: MLK-TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	07/23/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9307200-05A	SAMPLE VOL./WT.:	NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

August 5, 1993  
Date



**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	07/21/1993
JOB #: 430.015	DATE RECEIVED:	07/22/1993
PROJECT: MLK-TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	07/23/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9307200-01A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: A-53	DILUTION FACTOR:	1

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

August 5, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	07/21/1993
JOB #: 430.015	DATE RECEIVED:	07/22/1993
PROJECT: MLK-TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	07/23/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9307200-02A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: B-53	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

August 5, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK-TREATMENT PLANT

DATE SAMPLED: 07/21/1993  
DATE RECEIVED: 07/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 07/23/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9307200-03A  
SAMPLE ID: SS#1-53

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

August 5, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK-TREATMENT PLANT

DATE SAMPLED: 07/21/1993  
DATE RECEIVED: 07/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 07/23/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9307200-04A  
SAMPLE ID: EW-53

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	29.6	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C9	

Jeannette Chen  
Chemist

August 5, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	07/22/1993
PROJECT: MLK-TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	07/23/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9307200-07A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: EW-53 MATRIX SPIKE RECOVERY	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
-------------------------------	-------------------------

Gasoline Range	117%
----------------	------

<u>CARBON NO. RANGE</u>	
-------------------------	--

Gasoline Range	-
----------------	---

<u>PEAK CARBON NO.</u>	
------------------------	--

Gasoline Range	-
----------------	---

Jeannette Chen  
Chemist

August 5, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	07/22/1993
PROJECT: MLK-TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	07/23/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
ELI SAMPLE ID: 9307200-08A	REPORT WT.:	NA
SAMPLE ID: EW-53 MATRIX SPIKE RECOVERY	SAMPLE VOL./WT.:	5ml
DUPLICATE	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	115%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

August 5, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	07/22/1993
PROJECT: MLK-TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	07/23/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9307200-09A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	110%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

August 5, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	07/22/1993
PROJECT: MLK-TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	07/23/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9307200-10A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	115%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

August 5, 1993  
Date



**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK-TREATMENT PLANT

DATE SAMPLED: NA  
DATE RECEIVED: 07/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 07/23/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9307200-05A  
SAMPLE ID: METHOD BLANK

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

August 5, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: 07/21/1993	
JOB #: 430.015	DATE RECEIVED: 07/22/1993	
PROJECT: MLK-TREATMENT PLANT	DATE EXTRACTED: NA	
	DATE ANALYZED: 07/23/1993	
	INSTRUMENT ID: VG-4	
	MATRIX: AQUEOUS	
	% MOISTURE: NA	
	REPORT WT.: NA	
ELI SAMPLE ID: 9307200-01A	SAMPLE VOL./WT.: 5ml	
SAMPLE ID: A-53	DILUTION FACTOR: 1	

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

August 5, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: 07/21/1993
JOB #: 430.015	DATE RECEIVED: 07/22/1993
PROJECT: MLK-TREATMENT PLANT	DATE EXTRACTED: NA
	DATE ANALYZED: 07/23/1993
	INSTRUMENT ID: VG-4
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9307200-02A	SAMPLE VOL./WT.: 5ml
SAMPLE ID: B-53	DILUTION FACTOR: 1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

August 5, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK-TREATMENT PLANT

DATE SAMPLED: 07/21/1993  
DATE RECEIVED: 07/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 07/23/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9307200-03A  
SAMPLE ID: SS#1-53

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

August 5, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS JOB #: 430.015 PROJECT: MLK-TREATMENT PLANT  ELI SAMPLE ID: 9307200-04A SAMPLE ID: EW-53	DATE SAMPLED: 07/21/1993 DATE RECEIVED: 07/22/1993 DATE EXTRACTED: NA DATE ANALYZED: 07/23/1993 INSTRUMENT ID: VG-4 MATRIX: AQUEOUS % MOISTURE: NA REPORT WT.: NA SAMPLE VOL./WT.: 5ml DILUTION FACTOR: 1
--	--

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	10.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	1.8	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	2.4	0.5

Note: All positively identified compounds were second column or second detector confirmed.

Huey-Chen Chow  
Chemist

August 5, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK-TREATMENT PLANT

DATE SAMPLED: NA  
DATE RECEIVED: 07/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 07/23/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9307200-07A  
SAMPLE ID: A-53 MATRIX SPIKE RECOVERY

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	87%
V2	Chlorobenzene	98%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	103%
V7	Toluene	98%
V8	Xylenes (Dimethyl benzenes)	101%

Huey-Chen Chow  
Chemist

August 5, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-07-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK-TREATMENT PLANT

DATE SAMPLED: NA  
DATE RECEIVED: 07/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 07/23/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9307200-08A  
SAMPLE ID: A-53 MATRIX SPIKE RECOVERY  
DUPLICATE

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	89%
V2	Chlorobenzene	102%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	107%
V7	Toluene	110%
V8	Xylenes (Dimethyl benzenes)	108%

Huey-Chen Chow  
Chemist

August 5, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-05A	SAMPLE VOL./WT.:	NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

September 1, 1993  
Date



**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT  
          SYSTEM

DATE SAMPLED: 08/18/1993  
DATE RECEIVED: 08/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 08/24/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9308182-01A  
SAMPLE ID: A-54

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

September 1, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/18/1993
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-02A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: B-54	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

September 1, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/18/1993
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-03A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: SS#1-54	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

September 1, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER TREATMENT  
SYSTEM

DATE SAMPLED: 08/18/1993  
DATE RECEIVED: 08/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 08/24/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9308182-04A  
SAMPLE ID: GW2-54 \*

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	87.4	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C9	

\* Unknown peaks have been observed in this sample.

Jeannette Chen  
Chemist

September 1, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-07A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: MATRIX SPIKE RECOVERY *	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	105%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Jeannette Chen  
Chemist

September 1, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-08A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: MATRIX SPIKE RECOVERY DUP. *	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	84%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Jeannette Chen  
Chemist

September 1, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-09A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
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Gasoline Range	89%
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<u>CARBON NO. RANGE</u>	
-------------------------	--

Gasoline Range	-
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<u>PEAK CARBON NO.</u>	
------------------------	--

Gasoline Range	-
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Jeannette Chen  
Chemist

September 1, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-10A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	92%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

September 1, 1993  
Date



**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-05A	SAMPLE VOL./WT.:	NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Sufan Hsin  
Chemist

September 1, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 3020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/18/1993
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-01A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: A-54	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Sufan Hsin  
Chemist

September 1, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/18/1993
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-02A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: B-54	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Sufan Hsin  
Chemist

September 1, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: 08/18/1993
JOB #: 430.015	DATE RECEIVED: 08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED: NA
	DATE ANALYZED: 08/25/1993
	INSTRUMENT ID: VG-4A
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9308182-03A	SAMPLE VOL./WT.: 5ml
SAMPLE ID: SS#1-54	DILUTION FACTOR: 1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Sufan Hsin  
Chemist

September 1, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/18/1993
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-04A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: GW2-54	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	4.08	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	2.02	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	13.78	0.5

Note: All positively identified compounds were second column or second detector confirmed.

Sufan Hsin  
Chemist

September 1, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1155

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-07A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: MATRIX SPIKE RECOVERY *	DILUTION FACTOR:	1

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	87%
V2	Chlorobenzene	93%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	98%
V7	Toluene	95%
V8	Xylenes (Dimethyl benzenes)	97%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Sufan Hsin  
Chemist

September 1, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-08A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: MATRIX SPIKE RECOVERY DUP. *	DILUTION FACTOR:	1

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	123%
V2	Chlorobenzene	99%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	105%
V7	Toluene	102%
V8	Xylenes (Dimethyl benzenes)	103%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Sufan Hsin  
Chemist

September 1, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	09/17/1993
PROJECT: MILK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	09/17/1993
	INSTRUMENT ID:	VG-1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9309140-05A	SAMPLE VOL./WT.:	NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

October 1, 1993  
Date



**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER  
TREATMENT SYSTEM

DATE SAMPLED: 09/16/1993  
DATE RECEIVED: 09/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 09/17/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9309140-01A  
SAMPLE ID: A-55

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

October 1, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	09/16/1993
JOB #: 430.015	DATE RECEIVED:	09/17/1993
PROJECT: MILK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	09/17/1993
	INSTRUMENT ID:	VG-1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9309140-02A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: B-55	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

October 1, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: 09/16/1993
JOB #: 430.015	DATE RECEIVED: 09/17/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED: NA
	DATE ANALYZED: 09/17/1993
	INSTRUMENT ID: VG-1
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9309140-03A	SAMPLE VOL./WT.: 5ml
SAMPLE ID: SS#1-55	DILUTION FACTOR: 1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

October 1, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED: 09/16/1993
JOB #: 430.015	DATE RECEIVED: 09/17/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED: NA
	DATE ANALYZED: 09/17/1993
	INSTRUMENT ID: VG-1
	MATRIX: AQUEOUS
	% MOISTURE: NA
	REPORT WT.: NA
ELI SAMPLE ID: 9309140-04A	SAMPLE VOL./WT.: 5ml
SAMPLE ID: EW2-55	DILUTION FACTOR: 1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	3.3	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	2.5	0.5
V7	Toluene	0.8	0.5
V8	Xylenes (Dimethyl benzenes)	7.0	0.5

Note: All positively identified compounds were second column or second detector confirmed.

Huey-Chen Chow  
Chemist

October 1, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER  
TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 09/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 09/17/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9309140-07A  
SAMPLE ID: A-55 MATRIX SPIKE RECOVERY

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	90%
V2	Chlorobenzene	91%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	97%
V7	Toluene	97%
V8	Xylenes (Dimethyl benzenes)	103%

Huey-Chen Chow  
Chemist

October 1, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER  
TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 09/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 09/17/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9309140-08A  
SAMPLE ID: A-55 MATRIX SPIKE RECOVERY  
DUPLICATE

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	89%
V2	Chlorobenzene	95%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	97%
V7	Toluene	94%
V8	Xylenes (Dimethyl benzenes)	102%

Huey-Chen Chow  
Chemist

October 1, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	09/17/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	09/17/1993
	INSTRUMENT ID:	VG-1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9309140-09A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY	DILUTION FACTOR:	1

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	88%
V2	Chlorobenzene	90%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	--
V5	1,4-Dichlorobenzene	--
V6	Ethyl benzene	96%
V7	Toluene	93%
V8	Xylenes (Dimethyl benzenes)	101%

Huey-Chen Chow  
Chemist

October 1, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	09/17/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	09/17/1993
	INSTRUMENT ID:	VG-1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9309140-10A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.	DILUTION FACTOR:	1

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	94%
V2	Chlorobenzene	95%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	102%
V7	Toluene	98%
V8	Xylenes (Dimethyl benzenes)	107%

Huey-Chen Chow  
Chemist

October 1, 1993  
Date



**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
 6790 Florin-Perkins Road  
 Sacramento, CA 95828  
 (916) 381-7953

Order No.: 93-09-140  
 Hazardous Waste Testing  
 Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	09/17/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	09/17,18/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9309140-05A	SAMPLE VOL./WT.:	NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR:	1

	CONCENTRATION	DETECTION LIMIT
	[ug/L (ppb)]	[ug/L (ppb)]
<u>PETROLEUM HYDROCARBONS</u>		
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
 Chemist

October 1, 1993  
 Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER  
TREATMENT SYSTEM

DATE SAMPLED: 09/16/1993  
DATE RECEIVED: 09/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 09/17,18/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9309140-01A  
SAMPLE ID: A-55

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

October 1, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER  
TREATMENT SYSTEM

DATE SAMPLED: 09/16/1993  
DATE RECEIVED: 09/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 09/17,18/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9309140-02A  
SAMPLE ID: B-55

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

October 1, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	09/16/1993
JOB #: 430.015	DATE RECEIVED:	09/17/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
TREATMENT SYSTEM	DATE ANALYZED:	09/17,18/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9309140-03A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: SS#1-55	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

October 1, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER  
TREATMENT SYSTEM

DATE SAMPLED: 09/16/1993  
DATE RECEIVED: 09/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 09/17,18/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9309140-04A  
SAMPLE ID: EW2-55

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	57.7	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C9	

Jeannette Chen  
Chemist

October 1, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	09/17/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
TREATMENT SYSTEM	DATE ANALYZED:	09/17,18/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9309140-07A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: A-55 MATRIX SPIKE RECOVERY	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
-------------------------------	-------------------------

Gasoline Range	83%
----------------	-----

<u>CARBON NO. RANGE</u>	
-------------------------	--

Gasoline Range	-
----------------	---

<u>PEAK CARBON NO.</u>	
------------------------	--

Gasoline Range	-
----------------	---

Jeannette Chen  
Chemist

October 1, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GROUNDWATER  
TREATMENT SYSTEM  
  
ELI SAMPLE ID: 9309140-08A  
SAMPLE ID: A-55 MATRIX SPIKE RECOVERY  
DUPLICATE

DATE SAMPLED: NA  
DATE RECEIVED: 09/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 09/17,18/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	91%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

October 1, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	09/17/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
TREATMENT SYSTEM	DATE ANALYZED:	09/17,18/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9309140-09A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	68%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

October 1, 1993  
Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-09-140  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	09/17/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
TREATMENT SYSTEM	DATE ANALYZED:	09/17,18/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9309140-10A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	70%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

October 1, 1993  
Date

93-07-200 GCUS/ECV19

**CHAIN OF CUSTODY FORM**

PROJECT NAME: MLK-TREATMENT PLANT LAB: EUREKA LAB  
 JOB NUMBER: 430.015 TURNAROUND: NORMAL  
 PROJECT CONTACT: MARK KAWAKAMI REQUESTED BY: MARK KAWAKAMI  
 SAMPLED BY: FERNANDO JELER

PAGE 1 OF 1

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX			CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES							
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	ICE	NONE	MONTH		DAY	YEAR	TIME				
																				ANALYSIS REQUESTED			
1A	A-53	X				3				X			X			07	21	93		X	TRH (GAS)	X	BTEX
2A	B-53	X				3				X			X							X			
3A	SS#1-53	X				3				X			X							X			
4A	EW-53	X				3				X			X							X			

**CHAIN OF CUSTODY RECORD**

RELEASED BY: (Signature) \_\_\_\_\_ DATE / TIME 7/21/93 2:30  
 RECEIVED BY: (Signature) K. J. JANCOSCHI DATE / TIME 7/21/93 10:30

RELEASED BY: (Signature) \_\_\_\_\_ DATE / TIME \_\_\_\_\_  
 RECEIVED BY: (Signature) \_\_\_\_\_ DATE / TIME \_\_\_\_\_

RELEASED BY: (Signature) \_\_\_\_\_ DATE / TIME \_\_\_\_\_  
 RECEIVED BY: (Signature) \_\_\_\_\_ DATE / TIME \_\_\_\_\_

RELEASED BY: (Signature) \_\_\_\_\_ DATE / TIME \_\_\_\_\_  
 RECEIVED BY: (Signature) \_\_\_\_\_ DATE / TIME \_\_\_\_\_

COMMENTS & NOTES:  
 ALL SAMPLES ARE "GRAB SAMPLES" CONTAINER NOT SEALED "TAMPER PROOF"  
 Paid \$660.00 - ✓ # 10335

**Subsurface Consultants, Inc.**  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137

000

93-08-182 GCV8/GCV19

**CHAIN OF CUSTODY FORM**

PROJECT NAME: Muk groundwater treatment system  
 JOB NUMBER: 430.015 LAB: BIUEKA LABORATORIES  
 PROJECT CONTACT: MARK KAWAKAMI TURNAROUND: NORMAL  
 SAMPLED BY: FERNANDO VELEZ REQUESTED BY: MARK KAWAKAMI

PAGE \_\_\_\_\_ OF \_\_\_\_\_

ANALYSIS REQUESTED	NOTES
	Blue
	X
	X
	X
	X
	X
	X

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES	
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH	DAY		YEAR
1A	A-54	X				X				X			X		08	18	93	
2A	B-54	X				X				X			X					
3A	SS #1-54	X				X				X			X					
4A	EW 2-54	X				X				X			X		08	18	93	

**CHAIN OF CUSTODY RECORD**

RELEASED BY: (Signature) <i>[Signature]</i>	DATE / TIME 8/18/93	RELEASED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME

Rec'd by: *[Signature]* 10/20

**COMMENTS & NOTES:**

All samples are "Gross samples" - CONTAMINATED  
 Not sealed "tamper-proof"

Paul # 1,870-V # 1760

**Subsurface Consultants, Inc.**

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137

# CHAIN OF CUSTODY FORM

137  
 93.09.140 ~~55~~ / GCV8/19

PROJECT NAME: MUK Groundwater Treatment System  
 LAB: EUREKA LABORATORIES  
 JOB NUMBER: 430.015  
 TURNAROUND: NORMAL  
 PROJECT CONTACT: MARK KAWAKAMI  
 REQUESTED BY: MARK KAWAKAMI  
 SAMPLED BY: \_\_\_\_\_

PAGE 1 OF 1  
 ANALYSIS REQUESTED  
WPS. 04820207  
(2402)  
TPH (GASOLINE)  
BTEX

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED			SAMPLING DATE			NOTES			
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH		DAY	YEAR	TIME
1A	A-55	X				X				X		X			09	16	93		X
2A	B-55	X				X				X		X			/				X
3A	55#1-55	X				X				X		X							X
YA	EW7-55	X				X				X		X			09	16	93		X

EXPIRE NOTICE FROM ELS: After 30 days from samples will be disposed or destroyed unless client or owners request that call for special arrangement for long holding period. Charges for sample returns are \$2.00 per sample to cover cost of handling and shipping.

OCT 1 1998

## CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
	9-16-93 2:00 PM		
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
			9/17/93 11:20

### COMMENTS & NOTES:

ALL SAMPLES ARE "GRAB SAMPLES" CONTAINERS NOT SEALED "Tamper Proof"

## Subsurface Consultants, Inc.

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137

ALCO  
HAZMAT  
94 APR 18 PM 12:57

REQUEST TO DISCONTINUE SOIL AND  
GROUNDWATER REMEDIATION  
GASOLINE CONTAMINATION  
1330 MARTIN LUTHER KING, JR. WAY  
OAKLAND, CALIFORNIA  
SCI 430.010

4-15-94

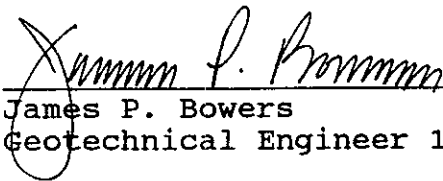
Prepared for:

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

By:



Mark Kawakami  
Project Engineer



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)



Subsurface Consultants, Inc.  
171 - 12th Street, Suite 201  
Oakland, California 94607  
(510) 268-0461

April 15, 1994

James P. Bowers, PE  
R. William Rudolph, Jr., PE

ALCO  
HAZMAT

94 APR 18 PM 12:57

LETTER OF TRANSMITTAL

TO: Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room #200  
Oakland, CA 94621

DATE: April 15, 1994  
PROJECT: 1330 Martin Luther King, Jr. Way/Discontinuance  
SCI JOB NUMBER: 430.010

WE ARE SENDING YOU:

- 1 copies
- |   |  |
|---|--|
| <input checked="" type="checkbox"/> of our final report   | <input checked="" type="checkbox"/> if you have any questions, please call |
| <input type="checkbox"/> a draft of our report            | <input type="checkbox"/> for your review and comment                       |
| <input type="checkbox"/> a Service Agreement              | <input type="checkbox"/> please return an executed copy                    |
| <input type="checkbox"/> a proposed scope of services     | <input type="checkbox"/> for geotechnical services                         |
| <input type="checkbox"/> specifications                   | <input type="checkbox"/> with our comments                                 |
| <input type="checkbox"/> grading/foundation plans         | <input type="checkbox"/> with Chain of Custody documents                   |
| <input type="checkbox"/> soil samples/groundwater samples | <input checked="" type="checkbox"/> for your use                           |
| <input type="checkbox"/> an executed contract             | <input type="checkbox"/>   |
| <input type="checkbox"/>                                  | <input type="checkbox"/>   |

REMARKS:

- COPIES TO: (1) Mr. David Ralph, City of Oakland, OEDE, 1333 Broadway, #900, Oakland CA 94612  
(1) Mr. Eddy So, RWQCB, 2101 Webster St., #500, Oakland, CA 94612  
(1) Mr. Donnell Choy, Office of City Attorney, 905 - 14th St., 12th Fl., Oakland, CA 94612  
(1) Mr. Andrew Clark-Clough, City of Oakland, Environmental Affairs, 1333 Broadway, #800, Oakland, CA 94612

BY: Mark Kawakami  
Mark Kawakami (Circled Signature)

■ Subsurface Consultants, Inc.

## I INTRODUCTION

This report presents a request to discontinue soil and groundwater remediation at the referenced site. Specifically, operation of the soil vapor extraction and groundwater treatment systems will be terminated. Groundwater quality monitoring will continue on a quarterly basis. The basis for our request is presented herein. The site location is shown on the attached Plate 1.

Subsurface Consultants, Inc. (SCI) has investigated and provided oversight for the remediation of gasoline contamination on behalf of the Oakland Redevelopment Agency, the property owner. The results of our services are recorded in numerous reports and letters. A summary of pertinent documents is presented in Table 1.

## II BACKGROUND

In brief, soil and groundwater contamination resulted from a leaking underground gasoline storage tank at the site. The tank was used by the Oakland Fire Department. Significant quantities of free product and contaminated soil existed in the area. The extent of contamination was defined by drilling test borings. The tank and associated piping were removed in June 1988. Contaminated soils that were on-site were removed by excavation beginning in December 1988. The limits of the excavation are shown on Plate 1. Due to physical constraints associated with underground utilities,

1,000 mg/kg  
See Table 3

gasoline contaminated soils with concentrations up to 6770 mg/kg) were left in place beneath Martin Luther King Jr. Way. A soil vapor extraction system (SVES) and a groundwater treatment system were subsequently installed to remediate "off-site" soil and groundwater contamination beneath Martin Luther King Jr. Way. Over the past 3 years, the treatment systems have removed all free product, and significantly reduced the dissolved product plume in groundwater and gasoline concentrations in soil.

### III FIELD INVESTIGATIONS AND ANALYTICAL TESTING

The extent of gasoline contamination adjacent to the tank was defined by drilling test borings. The boring locations are shown on Plate 1. Drilling and sampling protocols are attached. Soil samples obtained from the borings were initially analyzed for:

1. Total petroleum hydrocarbons.

The analytical results indicated that only gasoline was present. Subsequently, soil samples were analyzed for:

2. Total volatile hydrocarbons - EPA 8015/5030, and
3. Benzene, toluene, xylene, and ethylbenzene - EPA 8020.

The analytical results are summarized in Table 2 and on Plate 1.

The analytical data indicated that gasoline had migrated beneath Martin Luther King Jr. Way and 14th Street and extended to a depth of at least 29 feet. High hydrocarbon concentrations were detected near the tank between depths of 20 and 29 feet. Further



from the tank, beneath Martin Luther King, Jr. Way, the contaminated soils existed between depths of 25 and 29 feet. The approximate lateral extent of the gasoline contaminated soil is shown on Plate 1.

#### IV SOIL REMEDIATION

##### A. Tank Removal and On-Site Soil Remediation

On June 17, 1988, the Cleveland Wrecking Company removed the tank. Prior to tank removal, the liquid present in the tank was removed by a vacuum truck and transported and disposed of by H&H Ship Service Company. The tank was then purged of vapors by adding dry ice. Representatives from the Alameda County Health Care Services Agency (ACHCSA) and the Oakland Fire Department (OFD) were on-site to observe tank removal.

Contaminated soils were subsequently excavated to the lateral extent shown on Plate 1 and to depths of approximately 31 feet below street grades. The excavation extended westward beneath Martin Luther King, Jr. Way, as far as underground utilities would permit. Approximately 4000 cubic yards of soil were removed from the excavation. The gasoline-contaminated soils were stockpiled, aerated on-site, and then used to backfill the excavation.

Upon completion of excavation, 11 soil samples were obtained from the excavation bottom and side walls. Sample locations are shown on Plate 2. The soils samples were analyzed for total volatile hydrocarbons (EPA 5030/8015). The analytical results are

summarized in Table 3. The results indicated that the soils exposed at the bottom of the excavation contained no detectable concentrations of gasoline. Gasoline was not detected at concentrations above the reporting limits in sidewall samples, except along the west and northwest walls of the excavation where gasoline concentrations of 1000 and 600 mg/kg were detected, respectively. Contaminated soils were left in-place beyond the limits of excavation because of physical constraints associated with underground utilities and the adjacent streets.

Clean and aerated soils were used to backfill the excavation. Laboratory compaction tests and field check points were conducted in accordance with the ASTM D1557-78 test procedure to evaluate the optimum moisture content and the maximum dry density of fill materials. Field density tests were performed on the backfill using nuclear methods, in accordance with ASTM D2922-71. The test results indicated that the fill had been compacted to at least 90 percent relative compaction.

#### **B. Off-Site Soil Remediation**

The contaminated soil beneath 14th Street and Martin Luther King Jr. Way was remediated by a soil vapor extraction system ((SVES)) which was in operation from (February 1991 to November 1993). During this time, the SVES removed all measurable free product in the area and significantly reduced gasoline and BTXE concentrations in the soil. In brief, the SVES consisted of 25 vapor extraction wells that were connected to a vacuum blower. The vapor stream was

treated by a thermal oxidizer prior to discharge to the atmosphere. Vapor extraction well locations are shown on Plate 4.

Influent vapor samples obtained from the SVES were analyzed periodically for total volatile hydrocarbons (EPA 5030/8015) to evaluate system performance. The TVH concentrations are summarized in Table 4 and are graphically shown on Plate 3. Analytical results indicate that the soil vapor hydrocarbon concentrations were very low, less than 50 mg/m<sup>3</sup> in November 1993.

(On September 8, 1993, three test borings (60 through 62) were drilled within the soil vapor extraction remediation area to obtain soil samples within the area of contamination.) An organic vapor meter (OVM) was used to screen soil samples for hydrocarbon vapors. Based on the OVM readings, selected soil samples from these borings were analyzed for total volatile hydrocarbons (EPA 8015/5030) and benzene, toluene, xylene, and ethylbenzene (EPA 8020). The results of the analyses are summarized in Table 5 and on Plate 4. The boring logs are presented on Plates 5 through 7. ✓ The OVM and analytical data indicate that hydrocarbons which contain benzene, toluene, xylene and ethylbenzene (BTXE) remain in a thin layer, i.e., about 1 foot thick, above the groundwater surface. [The SVES has removed many of the volatile hydrocarbons found in gasoline. The hydrocarbons remaining in the soil no longer resemble gasoline. For this reason, the laboratory has reported that gasoline was not detected at concentrations above the reporting limits.]

SVE  
confirm  
at low  
samples

## V GROUNDWATER INVESTIGATION

The extent of the free and dissolved product plumes were defined by installing monitoring wells at the locations shown on Plate 8. The approximate extent of the plumes prior to remediation are also shown on Plate 8.

Groundwater levels were obtained by measuring the depth to groundwater from the top of the well casings (TOC) using an electronic well sounder. A level survey, using an assumed elevation reference, was performed to determine the TOC elevation of each of the monitoring wells. A steel tape with water and gasoline sensitive pastes were used to measure free product thickness in the wells. The water level data and free product thicknesses are presented in Table 6. ✓ Free product, up to 40 inches thick, was measured in several of the monitoring and vapor wells prior to remediation. ✓

ok  
~~OK~~  
~~OK~~  
~~OK~~

✓ 40 = 3.3'  
in  
MW-3

Initially, groundwater quality was evaluated by sampling and analyzing groundwater from the monitoring wells for the following:

1. Total volatile hydrocarbons - EPA 5030/8015,
2. Benzene, toluene, xylene, and ethylbenzene, EPA - 8020,
3. Total lead,
4. Ethylene dibromide, and
5. Volatile organic compounds - EPA 8010.

A summary of the analytical results is presented in Table 7. The analytical data indicated that groundwater had been impacted by gasoline and BTXE. Additionally, very low levels of ethylene dibromide were present in Wells 11, 28, 32, 39 and 42. Organic lead and volatile organic compounds were not detected at concentrations above the reporting limits in the wells monitored. For these reasons, during subsequent monitoring events the water samples were analyzed only for total volatile hydrocarbons and BTXE.

## VI GROUNDWATER REMEDIATION

Groundwater remediation began on April 30, 1990. It consisted of pumping groundwater from two extraction wells, EW-1 and 28, at the locations shown on Plate 8. The water was treated with granular activated carbon (GAC) and then discharged into the East Bay Municipal Utility District (EBMUD) sanitary sewer system. The treatment system was closely monitored by sampling and analyzing the water at points within the treatment system on a monthly basis. The results of the monitoring program were submitted quarterly to EBMUD. Groundwater extraction has continued on a continuous basis since April 1990. Extraction rates have varied up to about 6 gallons per minute (gpm) from each well.

## VII HYDROLOGY

Groundwater at the site exists between depths of about 25 and 28 feet. Groundwater flows in a northwesterly direction, at a gradient of about 0.7 percent. During groundwater treatment, hydraulic gradients in the area were toward extraction wells 28 and EW-1. Seasonal groundwater fluctuations of about 1 foot have been recorded. To our knowledge, the shallow groundwater in the area is currently not used as a source of drinking water. Additionally, there are no documented water wells in use in downgradient areas.

The Merritt sands beneath the site have a saturated thickness of about 20 feet. Pump tests indicate a transmissivity of about 280 feet<sup>2</sup>/day and a corresponding hydraulic conductivity of about  $5 \times 10^{-3}$  cm/sec.

## VIII QUARTERLY MONITORING

Groundwater quality has been evaluated by sampling and analyzing the monitoring wells on a quarterly basis. The water samples were analyzed for total volatile hydrocarbons (EPA 8015/5030) and benzene, toluene, xylene and ethylbenzene (EPA 8020). The results of the analyses are summarized in Table 7. The August 1993 results are graphically presented on Plate 8. The analytical data indicates that soil and groundwater remediation have removed all free product. In addition, the dissolved product plume has been significantly reduced. TVH and BTXE were detected

in Well 42 only. TVH and BTXE were not detected at concentrations above the reporting limits in the other wells monitored. ✓

**IX REQUEST TO DISCONTINUE REMEDIATION AND MODIFY MONITORING PLAN**

On behalf of the City of Oakland Redevelopment Agency, SCI requests to terminate soil and groundwater remediation at the site. The basis for our request is presented below.

The soil and groundwater contamination remaining beneath Martin Luther King, Jr. Way does not, in our opinion, present a health or safety risk, nor does it represent a risk to the environment. The contaminated soils exist beneath a public street in a 1 foot thick layer, approximately 26 feet below the groundsurface. No wells have been identified in the immediate downgradient direction of the contaminant plume. For this reason, we conclude that it is unlikely that contaminants will impact a drinking water source.

Since hydrocarbons remain in groundwater in a very limited area, a monitoring program will be established and performed on a quarterly basis. We propose to monitor Wells EW-1, 42 and 59 for this purpose.

Operation of the groundwater and soil vapor extraction systems was terminated on November 18, 1993, per your verbal approval.

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**List of Attached Tables**

- Table 1 - Summary of Pertinent Documents
- Table 2 - Hydrocarbon Concentrations in Soil Prior to Remediation
- Table 3 - Hydrocarbon Concentrations in Soil Following Remediation
- Table 4 - Contaminant Concentrations in Soil Following Excavation
- Table 5 - Soil Vapor Hydrocarbons Concentrations
- Table 6 - Groundwater Elevation Data
- Table 7 - Contaminant Concentrations in Groundwater

**List of Attached Plates:**

- Plate 1 - Site Plan
- Plate 2 - Hydrocarbon Concentrations In Soil Following Soil Remediation
- Plates 3 thru 5 - Logs of Test Borings 60 Through 62
- Plate 6 - Extent of On-Site Soil Remediation
- Plate 7 - Soil Vapor Hydrocarbon Concentrations
- Plate 8 - Hydrocarbon Concentrations in Groundwater

**Distribution:**

- 1 copy: Ms. Jennifer Eberle  
Alameda County Health Care  
Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621
- 1 copy: Mr. David Ralph  
City of Oakland  
Office of Economic Development & Employment  
1333 Broadway, Suite 900  
Oakland, California 94612
- 1 copy: Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612
- 1 copy: Mr. Donnell Choy  
City of Oakland  
Office of City Attorney  
905 14th Street, 12th Floor  
Oakland, California 94612
- 1 copy: Mr Andrew Clark-Clough  
City of Oakland  
Environmental Affairs  
1333 Broadway, Suite 800  
Oakland, California 94612

MK:JPB:sld



**Table 1.**  
**Summary of Pertinent Documents**

1. Progress Report 1 - Underground Fuel Tank Leak Assessment, July 29, 1988
2. Progress Report 2 - Off-Site Gasoline Contamination Investigation, November 20, 1989
3. Closure Report - Underground Fuel Storage Tank Removal and Gasoline Contaminated Soil Remediation, December 6, 1990
4. Progress Report 3 - Groundwater Monitoring and Remediation, April 25, 1991
5. Quarterly Groundwater Monitoring Reports

Table 2.  
Hydrocarbon Concentrations in Soil  
Prior to Remediation

<u>Boring</u>	<u>Depth (feet)</u>	<u>TVH<sup>1</sup> (mg/kg)<sup>2</sup></u>	<u>Benzene (ug/kg)<sup>3</sup></u>	<u>Toluene (ug/kg)</u>	<u>Xylene (ug/kg)</u>	<u>Ethyl- Benzene (ug/kg)</u>
1	16	ND <sup>4</sup>	ND	ND	ND	ND
1	21	ND	ND	ND	ND	ND
1	25	ND	ND	ND	ND	ND
1A	16	ND	--- <sup>5</sup>	--	--	---
1A	21	3700	--	--	--	---
2	16	ND	ND	ND	ND	ND
2	21	1810	26.3	42.5	154	24.8
2	25.5	7530	29.5	447	752	87.9
3	16	ND	ND	ND	ND	ND
3	21	2370	15.9	39.2	199	31.0
3	25.5	ND	ND	ND	ND	ND
4	16	54	ND	ND	3.0	0.5
4	21	6770	21.9	158	598	101
4	26	ND	ND	0.2	ND	ND
6	17.5	ND	ND	ND	ND	ND
6	23	ND	ND	ND	ND	ND
6	27	ND	ND	ND	ND	ND
7	19	ND	--	--	--	---
	24	ND	--	--	--	---
	28.5	2020	--	--	--	---
8	16	ND	ND	ND	ND	ND
8	21	ND	ND	ND	ND	ND
8	26	ND	ND	ND	ND	ND
11	25	ND	--	--	--	---
14	19	ND	--	--	--	---
	22	ND	--	--	--	---
	25	6710	--	--	--	---
15	25	ND	ND	ND	ND	ND
16	25	7660	39.3	257	719	117
28	23	ND	--	--	--	---
	26	ND	--	--	--	---
	29	ND	--	--	--	---

Table 2.  
Hydrocarbon Concentrations in Soil  
Prior to Remediation (Cont.)

<u>Boring</u>	<u>Depth (feet)</u>	<u>TVH<sup>1</sup> (mg/kg)<sup>2</sup></u>	<u>Benzene (ug/kg)<sup>3</sup></u>	<u>Toluene (ug/kg)</u>	<u>Xylene (ug/kg)</u>	<u>Ethyl- Benzene (ug/kg)</u>
29	27	ND	ND	ND	ND	ND
29	30	139	ND	ND	ND	ND
29	33	ND	ND	ND	ND	ND
30	25	5350	36.4	120	383	71.4
30	27	ND	0.3	0.3	0.1	ND
31	25	ND	ND	ND	ND	ND
31	27	ND	ND	ND	ND	ND
39	24.5	ND	--	--	--	--
	27	ND	--	--	--	--
40	24	ND	--	--	--	--
40	27	ND	--	--	--	--
41	24	ND	--	--	--	--
	26	5000	--	--	--	--
	27	22	--	--	--	--
	28	ND	--	--	--	--
42	21	ND	--	--	--	--
42	24	ND	--	--	--	--
42	26	TRACE	--	--	--	--
43	23	ND	--	--	--	--
	24.5	1000	--	--	--	--
	26	ND	--	--	--	--
53	26.5	ND	--	--	--	--
54	24	ND	--	--	--	--
	26.5	ND	--	--	--	--
55	24	ND	--	--	--	--
	27	ND	--	--	--	--

<sup>1</sup> Total volatile hydrocarbons, as gasoline

<sup>2</sup> Milligrams per kilogram

<sup>3</sup> Micrograms per kilogram

<sup>4</sup> Test not requested

<sup>5</sup> Not detected at concentrations above the reporting limits

Table 3.  
Contaminant Concentrations in Soil Following Excavation

<u>Sample</u>	<u>Depth (feet)</u>	<u>TVH<sup>1</sup> (mg/kg)<sup>2</sup></u>
NC	26	ND <sup>3</sup>
ND	26	600
SC	26	Trace
WF	31	ND
EF	30	ND
EF1	29	ND
EFC	28	ND
WF2	31	ND
WW	26	1000
EW	26	ND
EW1	26	ND

---

<sup>1</sup> TVH = Total volatile hydrocarbons, as gasoline

<sup>2</sup> milligrams per kilogram

<sup>3</sup> Not detected at concentrations above reporting limits

Table 4.  
Soil Vapor Hydrocarbon Concentrations

*influent*

<u>Vapor Sample</u>	<u>Date</u>	<u>TVH<sup>1</sup></u> <u>(mg/m<sup>3</sup>)<sup>2</sup></u>
V1-1	02/07/91	4,400
V1-2	02/12/91	4,100
V1-3	02/20/91	9,200
V1-4	03/05/91	4,800
V1-5	03/14/91	7,700
V1-6	03/22/91	12,000
V1-7	04/10/91	10,000
V1-8	05/01/91	8,100
V1-9	06/10/91	4,600
V1-10	07/09/91	4,100
V1-11	09/11/91	14,000
V1-14	02/11/92	2,700
V1-15	03/10/92	920
V1-16	03/26/92	720
V1-17	04/14/92	380
V1-18	05/04/92	180
V1-19	05/19/92	160
V1-20	07/09/92	260
V1-21	08/12/92	340
V1-22	09/28/92	220
V1-23	10/29/92	290
V1-24	11/25/92	310
V1-25	12/22/92	120
V1-26	03/17/93	100
V1-27	04/21/93	50
V1-28	05/18/93	60
V1-29	06/22/93	50
V1-30	07/21/93	<50
V1-31	08/23/93	<50
V1-32	09/30/93	57

**Table 5.**  
**Hydrocarbon Concentrations in Soil Following Remediation**

<u>Boring</u>	<u>Depth (feet)</u>	<u>TVH<sup>1</sup> (mg/kg)<sup>2</sup></u>	<u>Benzene (ug/kg)<sup>3</sup></u>	<u>Toluene (ug/kg)</u>	<u>Xylene (ug/kg)</u>	<u>Ethyl- Benzene (ug/kg)</u>
60	25.5	<0.01	--- <sup>4</sup>	--	--	--
	27	<100	155	193	908	121
	28	<0.01	--	--	--	--
61	23.5	<.01	--	--	--	--
	25	<0.1	--	--	--	--
	26.5	<100	167	388	36,400	340
62	25	<0.05	--	--	--	--
	27	<100	107	170	91,200	529
	28	<0.01	--	--	--	--

- 
- <sup>1</sup> Total Volatile Hydrocarbons as Gasoline  
<sup>2</sup> Milligrams per kilogram  
<sup>3</sup> Micrograms per kilogram  
<sup>4</sup> Test not requested

Table 6. Groundwater Elevation Data

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>	
11	99.66	01/19/89	26.82	72.84	--	
		04/03/89	26.35	73.31	--	
		07/05/89	26.95	72.71	--	
		11/09/89	27.28	72.83	--	
		01/24/90	27.40	72.26	--	
		04/30/90	27.56	72.10	--	
		07/03/90	28.89	70.77	--	
		10/23/90	28.93	70.73	--	
		01/21/91	27.75	71.97	--	
		04/24/91	28.14	71.52	--	
		07/24/91	28.78	70.88	--	
		10/24/91	29.09	70.57	--	
		01/23/92	29.85	69.81	--	
		05/01/92	27.44	72.22	--	
		08/07/92	27.86	71.80	--	
		11/16/92	27.84	71.82	--	
		02/16/93	25.94	73.72	--	
		05/12/93	27.13	72.53	--	
08/17/93	27.20	72.46	--			
12/16/93	26.85	72.81	--			
28	98.99	01/19/89	26.16	72.83	--	
		04/03/89	25.70	73.29	--	
		07/05/89	26.26	72.73	--	
		11/08/89	26.59	72.40	--	
		01/24/90	26.81	72.18	--	
		97.79	05/10/90	31.83	65.96	1.22
			07/03/90	31.95	65.84	0.04
			10/23/90	31.25	66.54	1.38
			01/21/91	28.00	69.79	0.00
		10/24/91	27.26	70.53	0.00	
		01/23/92	32.99	64.89	0.00	
		08/07/92	26.95	70.84	-- <sup>2</sup>	
		11/16/92	25.95	71.84	--	
		02/16/93	24.06	73.73	--	
		05/12/93	25.48	72.31	--	
	08/17/93	25.55	72.24	--		
	11/16/93	24.92	72.87	--		
	29	97.95	01/19/89	26.14	71.81	--
04/03/89			25.88	72.07	--	
07/05/89			26.19	71.76	--	
11/09/89			26.51	71.44	--	
01/24/90			26.66	71.29	--	
04/30/90			26.73	71.22	--	
07/03/90			27.22	70.73	--	
10/23/90			27.40	70.55	--	
01/21/91			26.89	71.06	--	

Table 6. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
29		03/28/91	27.04	70.91	--
		10/24/91	27.47	70.48	--
		01/23/92	27.89	70.06	--
		11/16/92	26.78	71.17	--
		02/16/93	25.60	72.35	--
		05/12/93	26.04	71.91	--
		08/17/93	26.25	71.70	--
		11/16/93	26.22	71.73	--
30	99.30	01/19/89	27.50	71.80	1.56
		04/03/89	28.44	70.86	2.56
		07/05/89	28.90	70.40	3.38
		11/09/89	29.52	69.78	3.67
		04/30/90	27.23	72.07	0.29
		07/03/90	29.07	70.23	0.57
		10/23/90	29.07	70.23	1.27
		01/21/91	29.09	70.23	2.27
		04/24/91	27.80	71.50	0.19
		05/31/91	28.08	71.23	0.49
		10/24/91	28.94	70.36	0.00
		11/16/92	27.29	72.01	--
		02/16/93	25.42	73.88	--
		05/12/93	27.10	72.20	--
		08/17/93	27.01	72.29	--
11/16/93	26.30	73.00	--		
31	98.90	01/19/89	26.15	72.75	--
		04/03/89	25.90	73.00	--
		07/05/89	26.28	72.76	--
		11/09/89	26.64	72.26	--
		01/24/90	26.84	72.06	--
		04/30/90	26.87	72.03	--
		07/03/90	27.50	71.40	--
		09/23/90	27.52	71.36	--
		01/21/91	27.09	71.81	--
		04/24/91	27.12	71.78	--
		07/24/91	27.60	71.30	--
		10/24/91	28.81	70.09	--
		01/23/92	28.31	70.59	--
		05/01/92	26.70	72.20	--
		08/07/92	27.00	71.90	--
		11/16/92	27.04	71.86	--
		02/16/93	25.63	73.27	--
		05/12/93	26.20	72.70	--
08/17/93	26.41	72.49	--		
11/16/93	26.25	72.65	--		



Table 6. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
32	98.53	01/24/90	25.64	72.89	---
		04/30/90	25.82	72.71	---
		06/01/90	26.30	72.23	---
		10/23/90	26.70	71.83	---
		01/21/91	26.06	72.47	---
		04/24/91	26.40	72.13	---
		10/24/91	27.05	71.48	---
39	99.00	04/03/89	25.87	73.13	---
		07/05/89	26.38	72.62	---
		11/09/89	26.70	72.30	---
		01/24/90	26.86	72.14	---
		04/30/90	26.97	72.03	---
		07/03/90	28.17	70.83	---
		10/23/90	28.17	70.83	---
		01/21/91	27.15	71.85	---
		03/28/91	27.76	71.24	---
		04/24/91	27.33	71.67	---
		07/24/91	27.91	71.09	---
		10/24/91	28.26	70.74	---
		01/23/92	29.00	70.00	---
		05/01/92	26.82	72.18	---
		08/07/92	27.18	71.82	---
		11/16/92	27.19	71.81	---
		02/16/93	25.53	73.47	---
05/12/93	26.52	72.48	---		
08/17/93	26.65	72.35	---		
11/16/93	26.30	72.70	---		
42	99.12	04/03/89	25.77	73.35	---
		07/05/89	26.30	72.89	---
		11/09/89	26.66	72.46	---
		01/24/90	26.82	72.30	---
		04/18/90	26.94	72.18	---
		07/03/90	28.58	70.54	---
		10/23/90	28.58	70.54	0.08
		07/24/91	28.10	71.02	0.00
		10/24/91	28.24	70.88	---
		01/23/92	29.33	69.79	---
		05/01/92	26.88	72.44	---
		08/07/92	27.10	72.02	---
		11/16/92	26.68	72.44	---
		02/16/93	25.41	73.71	---
		05/12/93	26.74	72.38	---
		08/17/93	26.80	72.32	---
		11/16/93	26.25	72.87	---

Table 6. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
43	98.87	04/03/89	25.32	73.55	0.08
		07/05/89	26.80	72.07	1.34
		11/09/89	28.44	70.43	2.89
		04/30/90	27.05	71.82	0.79
		07/03/90	28.36	70.51	0.70
		10/23/90	28.19	70.68	0.83
		10/24/91	26.30	72.57	0.00
		01/24/92	28.25	70.62	0.02
		05/01/92	25.44	73.43	0.00
		08/07/92	25.11	73.76	--
		11/16/92	26.42	72.45	--
		02/16/93	24.35	74.52	--
		05/12/93	25.90	72.97	--
		08/17/93	25.50	73.37	--
		12/16/93	25.21	73.66	--
		45	100.90	02/16/93	24.35
12/05/89	28.71			72.19	--
04/30/90	28.85			72.05	--
07/03/90	29.45			71.45	--
10/23/90	29.50			71.40	--
01/21/91	29.03			71.87	--
04/24/91	28.87			72.03	--
07/25/91	29.63			71.27	--
10/24/91	29.62			71.28	--
01/23/92	30.45			70.45	--
05/01/92	28.42			72.48	--
08/07/92	28.70			72.20	--
11/16/92	28.84			72.06	--
02/16/93	27.14			73.76	--
05/12/93	28.00			72.90	--
08/17/93	28.35			72.55	--
11/16/93	28.15	72.75	--		
46	98.11	12/19/89	27.40	70.71	--
		04/30/90	27.46	70.63	--
		07/03/90	27.75	70.36	--
		10/23/90	27.86	70.25	--
		01/21/91	27.60	70.51	--
		04/24/91	27.40	70.71	--
		07/24/91	28.73	69.38	--
		10/24/91	27.88	70.23	--
		01/23/92	28.31	69.80	--
		08/07/92	27.28	70.83	--
		11/16/92	27.42	70.69	--
		02/16/93	26.44	71.67	--
		05/12/93	26.78	71.33	--
		08/17/93	27.01	71.10	--
		11/16/93	27.10	71.01	--

Table 6. Groundwater Elevation Data (continued)

Monitoring Well	TOC Elev <sup>1</sup> (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)	Free Product Thickness (feet)
58	98.89	01/30/91	28.25	70.64	--
		03/28/91	27.81	71.08	--
		04/24/91	27.55	71.34	--
		07/24/91	33.42	65.47	--
		10/24/91	28.29	70.60	--
		01/23/92	28.75	70.14	--
		05/01/92	27.10	71.79	--
		08/07/92	27.40	71.49	--
		11/16/92	27.44	71.45	--
		02/16/93	26.10	72.79	--
		05/12/93	26.68	72.21	--
		08/17/93	26.88	72.01	--
	11/16/93	26.77	72.12	--	

<sup>1</sup> Elevation reference: PG&E manhole approximately 30 feet south of 14th Street on Martin Luther King Jr. Way, assumed to be 100.00 feet,

TOC = Top of casing

<sup>2</sup> -- = No free product present

Table 7. Contaminant Concentrations In Groundwater

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
11	07/05/88	10,000	1,800	ND <sup>6</sup>	1,200	ND	-- <sup>7</sup>	--	--
	04/03/89	53,000	7,100	4,000	2,400	380	--	--	--
	07/06/89	22,000	5,300	3,200	2,300	390	ND	26	--
	11/08/89	120,000	18,000	8,000	21,000	4,500	ND	37	--
	07/18/90	26,000	950	19	98	ND	--	--	--
	10/23/90	4,200	1,600	8.5	170	28	--	0.2	--
	01/21/91	1,900	600	6.2	84	60	--	0.15	--
	04/24/91	4,800	1,100	3.5	46	120	--	--	--
	07/24/91	950	330	0.9	1.8	12	--	--	--
	10/24/91	970	350	1.6	1.6	14	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	340	77	0.6	0.6	ND	--	--	--
	08/06/92	220	54	ND	ND	ND	--	--	--
	11/16/92	159	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
	05/12/93	ND	ND	ND	ND	ND	--	--	--
	08/18/93	ND	ND	ND	ND	ND	--	--	--
11/16/93	ND	ND	ND	ND	ND	--	--	--	
28	09/02/88	890	431	75.4	84	ND	ND	9.2	--
	07/06/89	13,000	4,900	1,500	1,300	100	ND	27	--
29	09/02/88	ND	ND	8.1	ND	ND	ND	ND	--
	04/03/89	450	ND	2.0	6.7	2.0	--	--	--
	07/06/89	ND	ND	15	ND	ND	ND	ND	--
	11/08/89	780	ND	14	32	7.9	ND	ND	--
	10/23/90	1,800	1.2	6.5	4.8	2.7	--	--	--
	01/21/91	1,100	ND	3.7	4.9	1.3	--	ND	--
	03/28/91	500	ND	1.6	0.8	ND	--	--	--
31	09/02/88	ND	ND	ND	ND	ND	ND	ND	--
	04/03/89	ND	ND	ND	ND	ND	--	--	--
	07/06/89	ND	ND	ND	ND	ND	ND	ND	--
	11/08/89	ND	ND	ND	ND	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	01/21/91	ND	ND	0.6	2.1	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	43	ND	ND	ND	ND	--	--	--
	12/17/92 <sup>8</sup>	35.3	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
	05/12/93	ND	ND	ND	ND	ND	--	--	--
08/17/93	ND	ND	ND	ND	ND	--	--	--	

Table 7. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
32	10/23/90	48,000	7,600	8,200	5,600	150	--	3.8	--
	01/21/91	96,000	9,600	15,000	16,000	2,000	--	ND	--
	04/24/91	170	ND	ND	ND	ND	--	--	--
39	04/03/89	2,000	250	11	210	ND	--	--	--
	07/06/89	7,900	2,700	1,300	860	97	ND	3.0	--
	11/08/89	9,300	4,500	760	310	150	ND	4.0	36
	07/18/90	ND	4.1	ND	ND	ND	--	--	--
	10/23/90	160	12	6.4	5.0	ND	--	ND	ND
	01/21/90	200	23	0.9	2.0	1.2	--	ND	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	1.4	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
05/12/93	ND	ND	ND	ND	ND	--	--	--	
08/18/93	ND	ND	ND	ND	ND	--	--	--	
11/16/93	ND	ND	ND	ND	ND	--	--	--	
42	07/06/89	13,000	4,500	100	1,000	ND	ND	8.0	--
	10/23/90	8,800	420	580	910	91	--	0.7	--
	07/24/91	21,000	2,200	300	650	180	--	--	--
	10/24/91	18,000	2,300	1,100	1,000	260	--	16	--
	01/23/92	10,000	1,100	280	430	300	--	--	--
	05/01/92	16,000	1,200	330	580	220	--	--	--
	08/07/92	12,000	890	510	1,000	340	--	--	--
	11/16/92	587	1.2	4.3	43	ND	--	--	--
	02/16/93	6730	386	51	411	183	--	--	--
	05/12/93	13400	748	238	777	ND	--	--	--
	08/17/93	4120	268	ND	323	377	--	--	--
11/16/93	8350	143	41	199	133	--	--	--	
43	10/24/91	6,300	ND	ND	130	9.1	--	--	--
	05/01/92	930	ND	ND	3.8	ND	--	--	--
	08/07/92	450	ND	2.4	3.5	1.5	--	--	--
	11/16/92	614	ND	2.0	34.4	1.6	--	--	--
	02/16/93	123	12.5	4.3	60.9	18.6	--	--	--
	05/12/93	96.4	ND	ND	ND	ND	--	--	--
	08/17/93	ND	ND	ND	ND	ND	--	--	--
	11/16/93	ND	ND	ND	ND	ND	--	--	--

Table 7. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
							Lead (ug/L)		
45	12/05/89	ND	ND	ND	ND	ND	ND	ND	--
	10/23/90	ND	0.9	1.4	1.8	ND	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
46	11/30/89	ND	2.1	1.9	2.0	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	10/23/90	ND	ND	0.6	ND	0.5	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
58	01/30/91	ND	ND	ND	ND	ND	--	--	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
59	02/16/93	ND	ND	ND	ND	ND	--	--	--

<sup>1</sup> TVH = Total Volatile Hydrocarbons

<sup>2</sup> BTXE = Benzene, Toluene, Xylene, and Ethylbenzene

<sup>3</sup> EPA 8011, ethylene dibromide

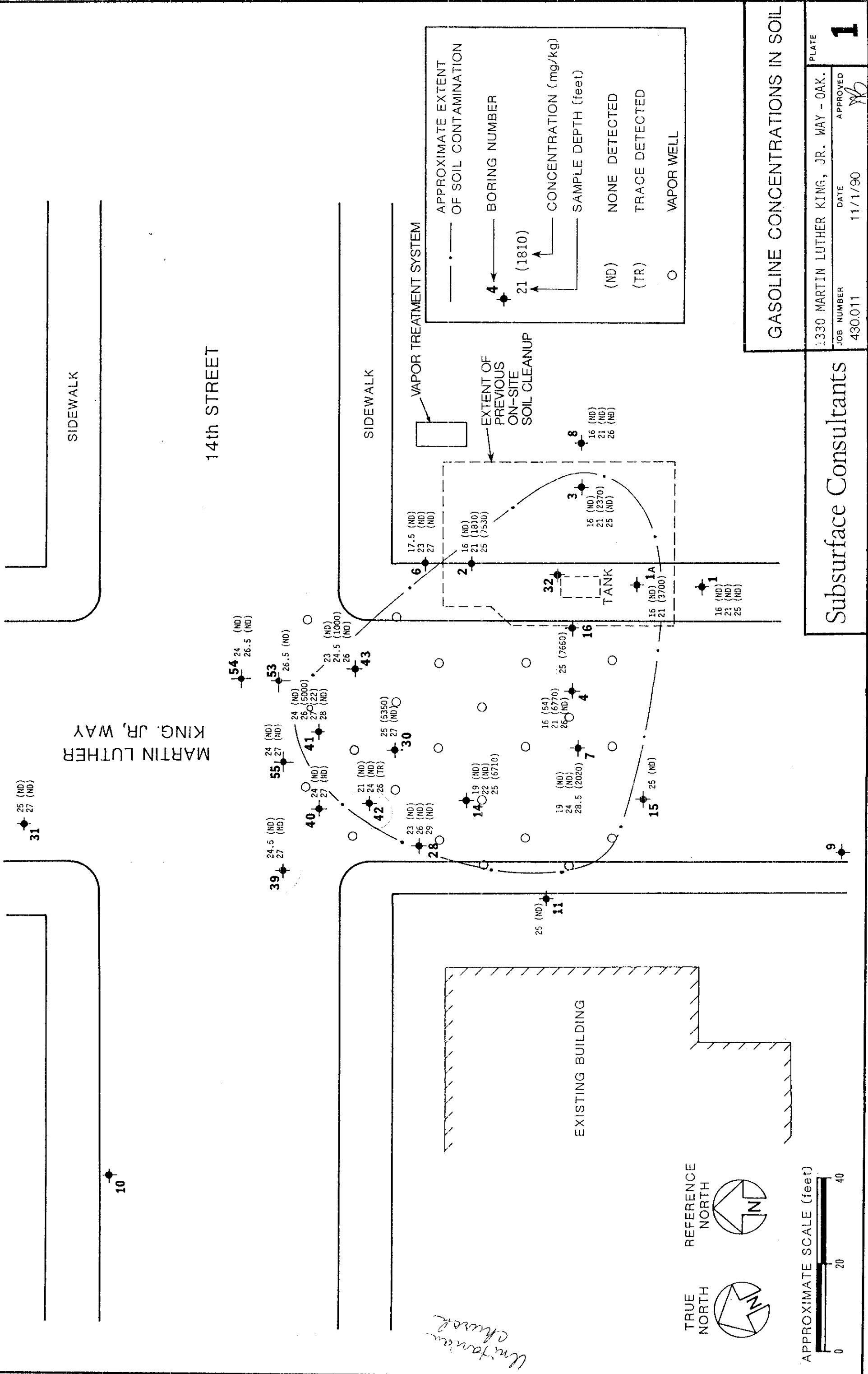
<sup>4</sup> EPA 8010, 1, 2-dichloroethane

<sup>5</sup> ug/L = micrograms per liter

<sup>6</sup> ND = None detected, chemicals not present at concentrations above the detection limits

<sup>7</sup> -- = Test not requested

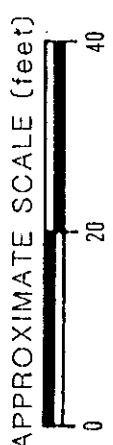
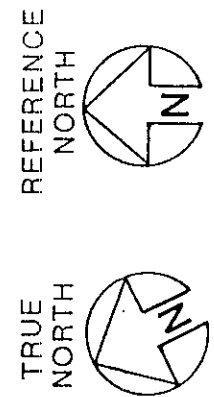
<sup>8</sup> Well resampled



**GASOLINE CONCENTRATIONS IN SOIL**

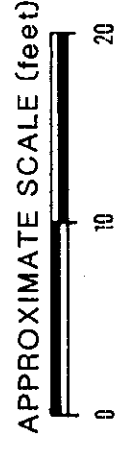
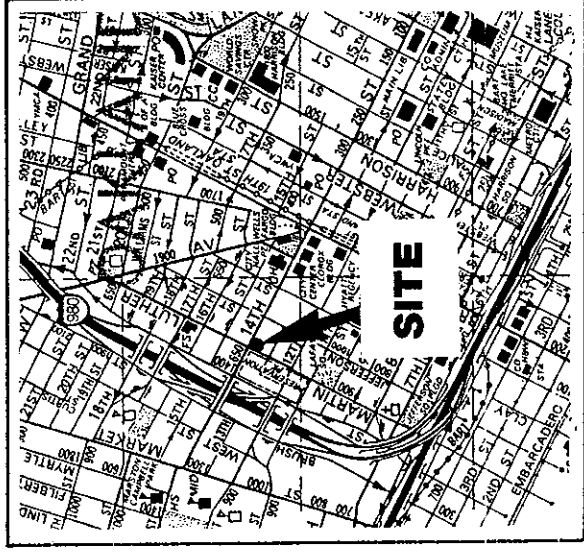
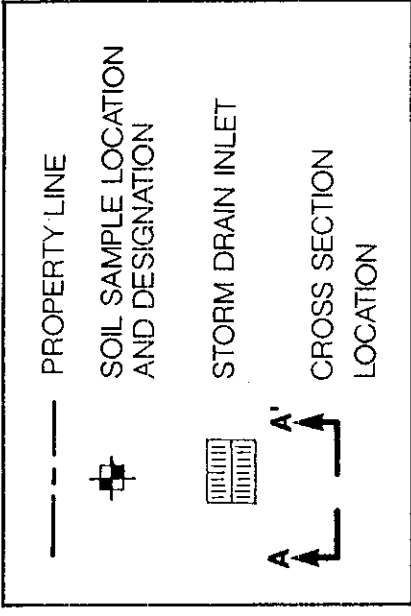
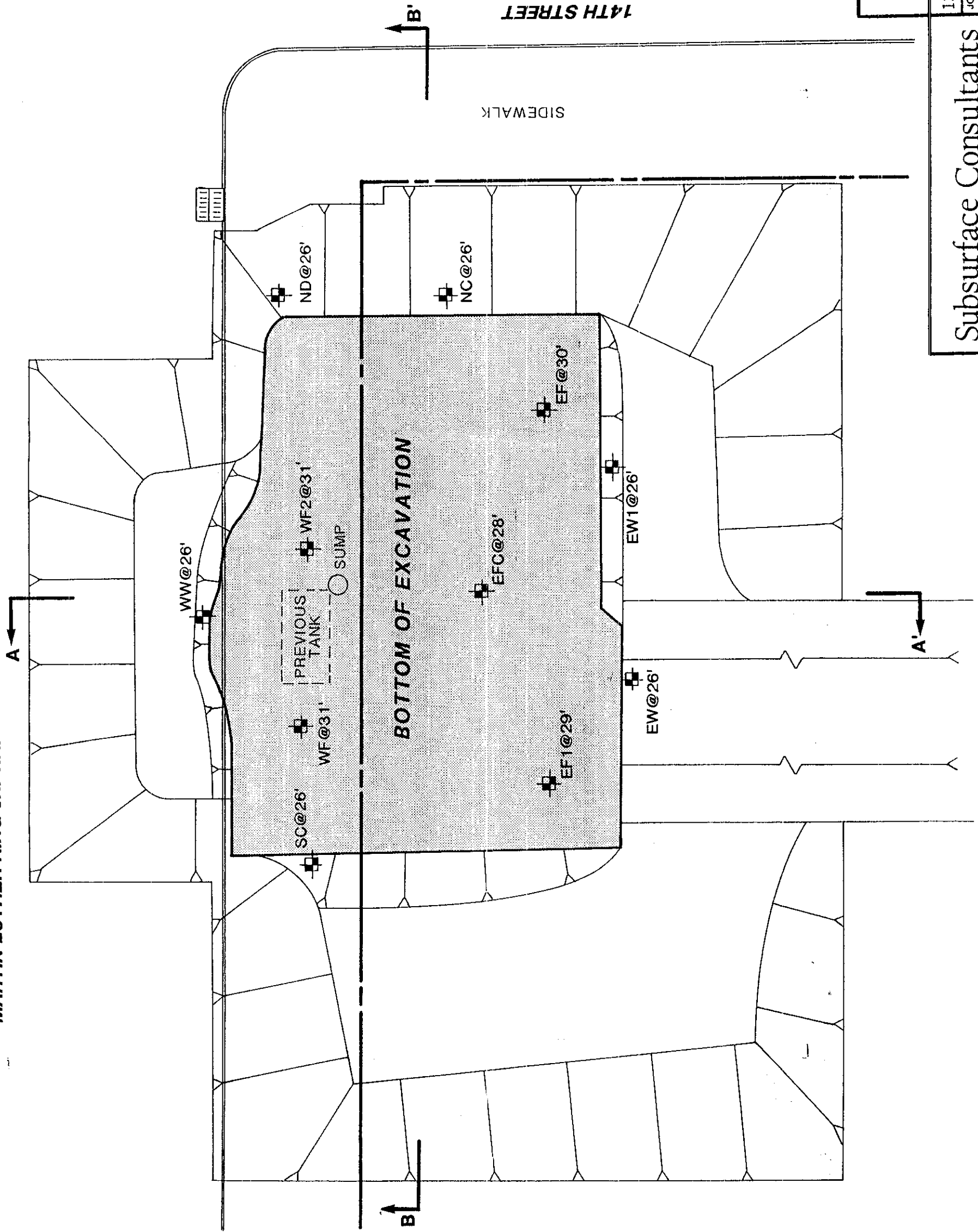
PLATE	<b>1</b>
APPROVED	<i>[Signature]</i>
DATE	11/1/90
JOB NUMBER	430.011
1330 MARTIN LUTHER KING, JR. WAY - OAK.	

Subsurface Consultants



*W. J. ...*

MARTIN LUTHER KING JR. WAY



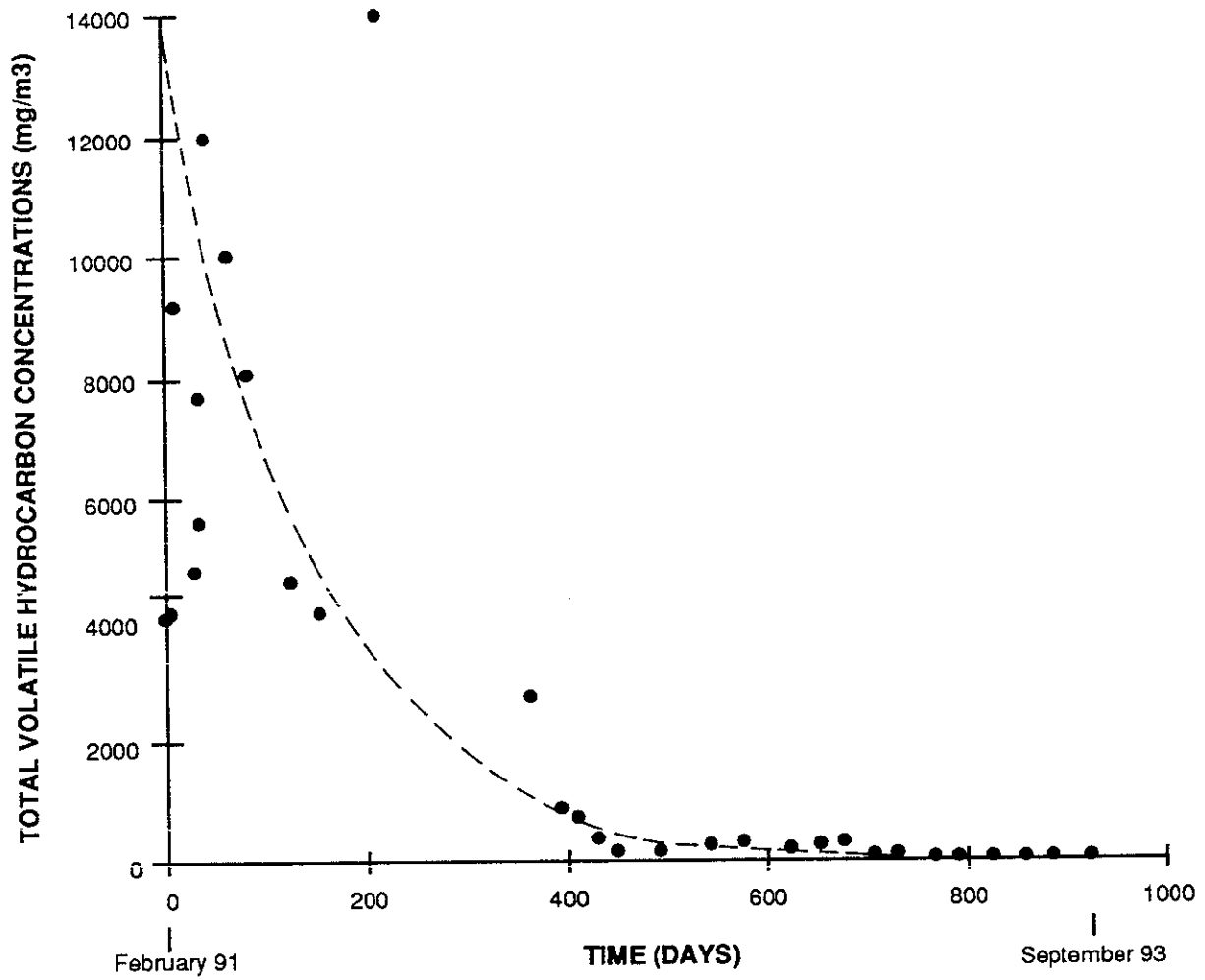
EXTENT OF ON-SITE  
SOIL REMEDIATION

Subsurface Consultants

1330 MARTIN LUTHER KING, Jr. WAY - OAK.  
JOB NUMBER 430.002  
DATE 9/12/89  
APPROVED *[Signature]*

PLATE  
**2**





SOIL VAPOR HYDROCARBON  
CONCENTRATIONS IN SVES INFLUENT

Subsurface Consultants

1330 MARTIN LUTHER KING JR. WAY - OAK.

JOB NUMBER  
430.011

DATE  
10/25/93

APPROVED  
*ML*

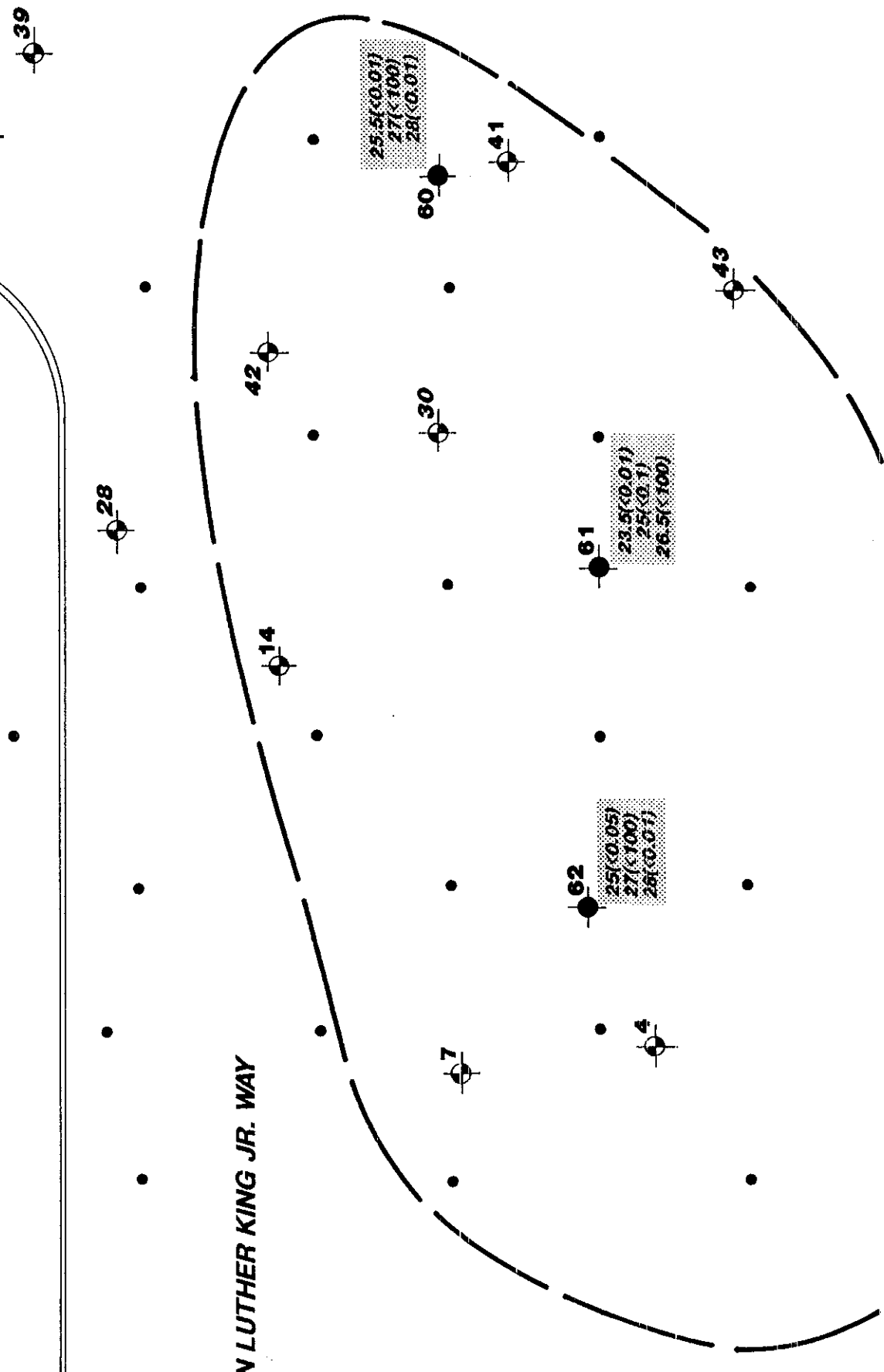
PLATE

**3**

BORING NO.	DEPTH (feet)	B (ug/kg)	T (ug/kg)	X (ug/kg)	E (ug/kg)
60	27	155	193	908	121
61	26.5	167	388	36,400	340
62	27	107	170	91,200	529

14TH STREET

MARTIN LUTHER KING JR. WAY



VICINITY MAP

APPROXIMATE EXTENT OF FREE PRODUCT PRIOR TO REMEDIATION

TEST BORING

PREVIOUS TEST BORING/MONITORING WELL

VAPOR EXTRACTION WELL

20175

TOTAL VOLATILE HYDROCARBON CONCENTRATIONS IN SOIL FOLLOWING REMEDIATION (mg/kg)

SAMPLE DEPTH (feet)



HYDROCARBON CONCENTRATIONS IN SOIL FOLLOWING SOIL REMEDIATION

1330 MARTIN LUTHER KING JR. WAY - OAKLAND  
 JOB NUMBER 430.011  
 DATE 9/15/93  
 APPROVED *MC*  
 PLATE 4

Subsurface Consultants

# LOG OF TEST BORING 60

EQUIPMENT 8" Hollow Stem Auger

DATE DRILLED 9/8/93

ELEVATION - -

LABORATORY TESTS

MOISTURE  
CONTENT (%)

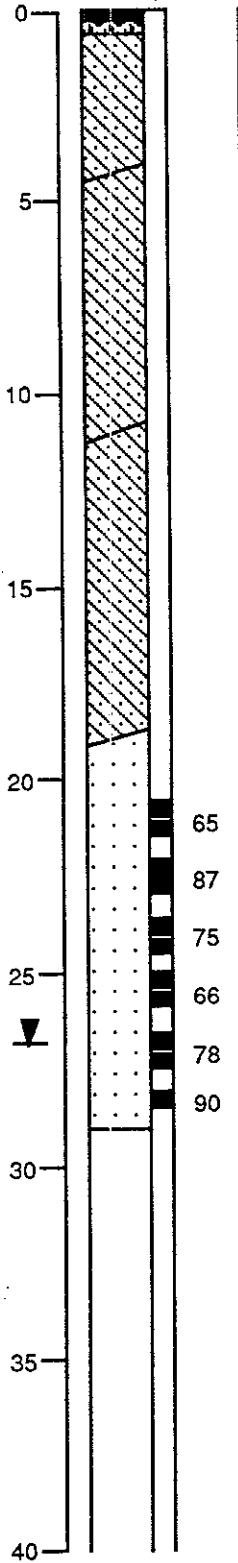
DRY  
DENSITY  
(PCF)

OWM  
(PPM)

DEPTH  
(FEET)

SAMPLE

BLOWS  
PER  
FOOT



ASPHALTIC CONCRETE - 3" thick  
CONCRETE SLAB - 4" thick  
BROWN CLAYEY SAND (SC)  
medium dense, moist

GRAY GREEN CLAYEY SAND (SC)  
medium dense, moist

BROWN CLAYEY SAND (SC)  
medium dense, moist

BROWN SAND (SP)  
dense, moist

GROUNDWATER LEVEL DURING DRILLING

Boring backfilled with cement grout

SAMPLER TYPE:  
CALIFORNIA DRIVE  
O.D.: 2.5 inches  
I.D.: 2.0 inches

HAMMER WEIGHT: 140 pounds  
HAMMER DROP: 30 inches

**Subsurface Consultants**

1330 MARTIN LUTHER KING JR. WAY - OAKLAND

JOB NUMBER

430.011

DATE

9/10/93

APPROVED

*ME*

PLATE

**5**

# LOG OF TEST BORING 61

EQUIPMENT 8" Hollow Stem Auger

DATE DRILLED 9/8/93

ELEVATION - -

LABORATORY TESTS

MOISTURE  
CONTENT (%)

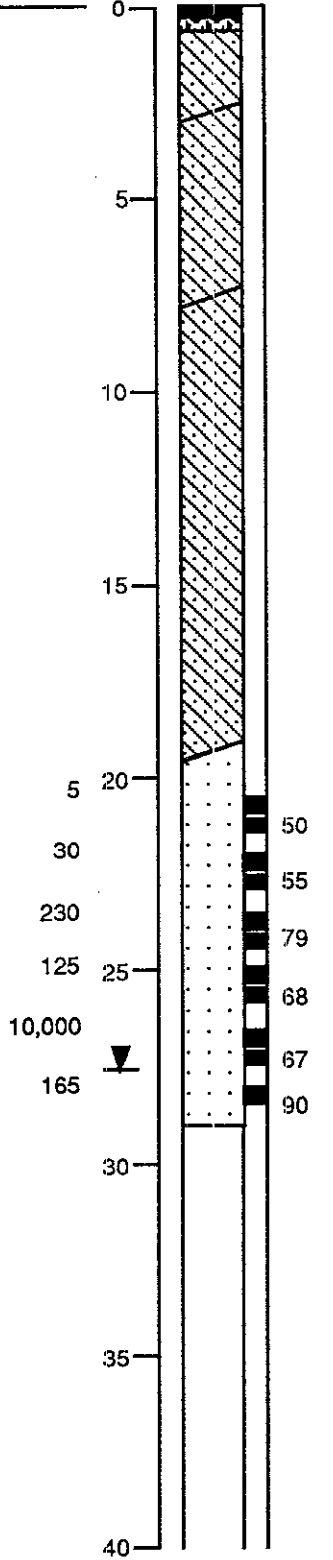
DRY  
DENSITY  
(PCF)

QVM  
(PPM)

DEPTH  
(FEET)

SAMPLE

BLOWS  
PER  
FOOT



ASPHALTIC CONCRETE - 3" thick  
 CONCRETE SLAB - 4" thick  
 BROWN CLAYEY SAND (SC)  
 loose, moist  
 BROWN SANDY CLAY (SC)  
 medium stiff, moist  
  
 BROWN CLAYEY SAND (SC)  
 medium dense, moist  
  
  
 BROWN SAND (SP)  
 dense, moist  
  
 50  
 55  
 79  
 68  
 67  
 90  
 GROUNDWATER LEVEL DURING DRILLING  
 Boring backfilled with cement grout

Subsurface Consultants

1330 MARTIN LUTHER KING JR. WAY - OAKLAND

JOB NUMBER  
430.011

DATE  
9/10/93

APPROVED  
*ME*

PLATE

6

# LOG OF TEST BORING 62

EQUIPMENT 8" Hollow Stem Auger

DATE DRILLED 9/8/93

ELEVATION --

LABORATORY TESTS

MOISTURE  
CONTENT (%)

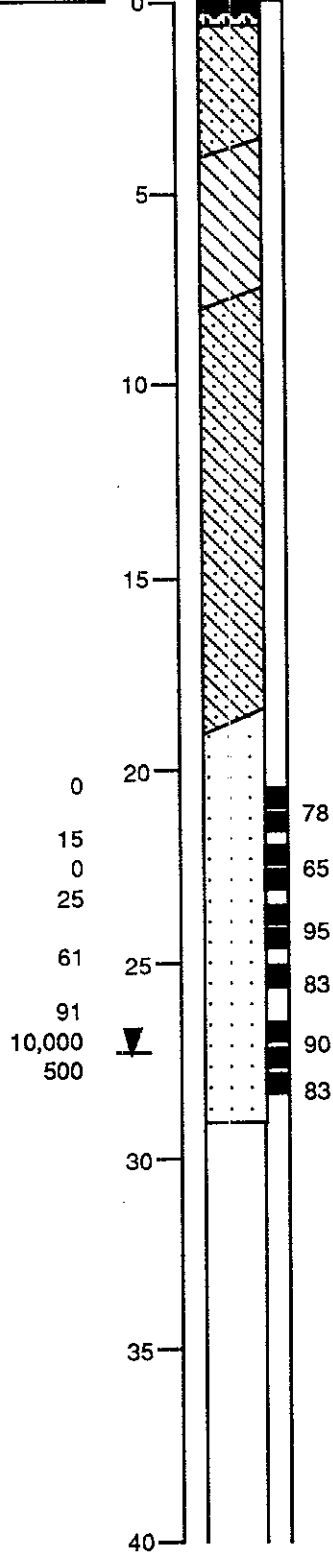
DRY  
DENSITY  
(PCF)

QVM  
(PPM)

DEPTH  
(FEET)

SAMPLE

BLOWS  
PER  
FOOT



ASPHALTIC CONCRETE - 3" thick  
 CONCRETE SLAB - 4" thick  
 DARK BROWN CLAYEY SAND (SC)  
 loose, moist  
 DARK BROWN SANDY CLAY (CL)  
 medium stiff, moist

BROWN CLAYEY SAND (SC)  
 medium dense, moist

BROWN SAND (SP)  
 dense, moist

GROUNDWATER LEVEL DURING DRILLING

Boring backfilled with cement grout

Subsurface Consultants

1330 MARTIN LUTHER KING JR. WAY - OAKLAND

JOB NUMBER  
430.011

DATE  
9/10/93

APPROVED  
*Me*

PLATE

7



BTXE BENZENE, TOLUENE, XYLENE, ETHYLBENZENE  
 TVH TOTAL VOLATILE HYDROCARBONS, AS GASOLINE  
 ND NOT DETECTED  
 CONCENTRATIONS IN ug/l

B	120	10
---	-----	----

— MOST RECENT CONCENTRATION  
 — CONCENTRATION 10/23/90

--- APPROXIMATE EXTENT OF FREE PRODUCT PLUME PRIOR TO REMEDIATION  
 - - - APPROXIMATE EXTENT OF DISSOLVED PRODUCT PLUME PRIOR TO REMEDIATION

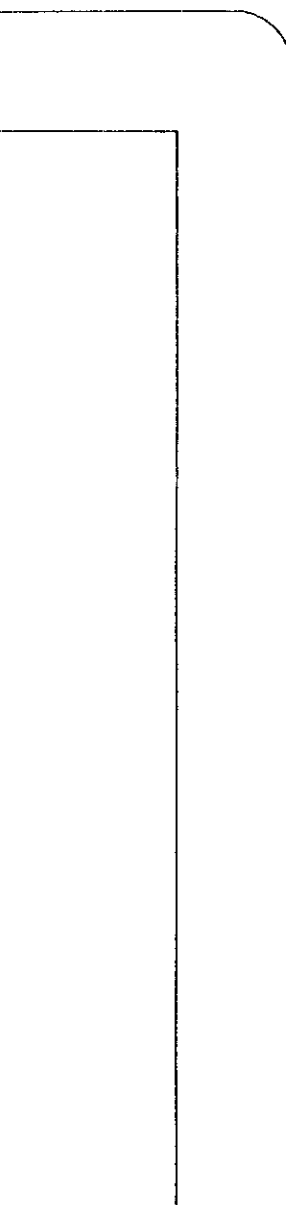
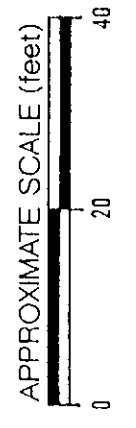
TVH	ND	ND	ND
B	ND	ND	ND
T	0.6	ND	ND
X	ND	ND	ND
E	0.5	ND	ND

46

REFERENCE NORTH



TRUE NORTH



8/18/93	TVH	ND	ND	ND	ND
	B	ND	ND	ND	ND
	T	ND	ND	ND	ND
	X	ND	ND	ND	ND
	E	ND	ND	ND	ND

31

29

58

2/16/93	TVH	ND	ND	ND	ND
	B	ND	ND	ND	ND
	T	ND	ND	ND	ND
	X	ND	ND	ND	ND
	E	ND	ND	ND	ND

8/18/93

TVH	160	ND	ND	ND	ND
B	12	ND	ND	ND	ND
T	6.4	ND	ND	ND	ND
X	5	ND	ND	ND	ND
E	ND	ND	ND	ND	ND

39

8/18/93	TVH	18,000	4,120	ND	ND
	B	2,300	268	ND	ND
	T	1,100	ND	ND	ND
	X	1,000	323	ND	ND
	E	260	377	ND	ND

42

28

30

8/18/93	TVH	6,300	ND	ND	ND
	B	ND	ND	ND	ND
	T	ND	ND	ND	ND
	X	130	ND	ND	ND
	E	9.1	ND	ND	ND

43

EW1

4/24/91	TVH	48,000	170	ND	ND
	B	7,600	ND	ND	ND
	T	8,200	ND	ND	ND
	X	5,600	ND	ND	ND
	E	150	ND	ND	ND

11

8/18/93	TVH	4,200	ND	ND	ND
	B	1,600	ND	ND	ND
	T	8.5	ND	ND	ND
	X	170	ND	ND	ND
	E	28	ND	ND	ND

2/16/93	TVH	ND	ND	ND	ND
	B	0.9	ND	ND	ND
	T	1.4	ND	ND	ND
	X	1.8	ND	ND	ND
	E	ND	ND	ND	ND

45

HYDROCARBON CONCENTRATIONS IN GROUNDWATER

133C MARTIN LUTHER KING JR. WAY - OAK.  
 JOB NUMBER 430,010  
 DATE 10/25/93  
 APPROVED *ML*  
 PLATE 8

Subsurface Consultants

**APPENDIX**  
**FIELD INVESTIGATION AND SAMPLING PROTOCOL**

The test borings were drilled using truck-mounted 8-inch-diameter, hollow-stem auger equipment. A member of our engineering staff observed drilling and sampling operations and prepared detailed logs of the borings. Soil samples were obtained from the borings using a California Drive Sampler having an outside diameter of 2.5 inches and inside diameter of 2.0 inches. The sampler was driven with a 140-pound hammer having a drop of 30 inches. The blow counts required to drive the sampler the final 12 inches of each 18-inch penetration were recorded. Soils were classified in accordance with the Unified Soil Classification system.

Soil samples were retained in brass sampler liners. Samples for environmental analysis were capped and sealed with duct tape. Teflon sheeting was placed between the caps and the soil samples. Upon sealing and labeling, the samples were promptly refrigerated on-site in an ice chest. The samples remained under refrigeration until delivery to the analytical laboratory.

All augers, drill rods, samplers, well casing, etc., that were placed in the test borings were steam cleaned prior to their initial use and before each subsequent use to reduce the likelihood of cross contamination between borings.

The groundwater monitoring wells were constructed of 2-inch-diameter, Schedule 40 PVC pipe having flush threaded joints. The lower portion of the wells consist of machine slotted well screen having 0.020-inch wide slots. The annular space around the screened section was backfilled with Lonestar #3 sand. A bentonite seal, approximately 12 inches thick, was placed above the sand. The annulus above the bentonite seal was backfilled with a cement/bentonite grout. The wells were finished either above grade and secured by a lock and steel cover, or below grade and locked within Christy boxes.

September 14, 1993  
SCI 430.010

93 SEP 21 AM 11:02

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Quarterly Groundwater Monitoring  
Gasoline Contamination**  
1330 Martin Luther King Jr. Way  
Oakland, California

Dear Ms. Eberle:

This letter presents quarterly groundwater monitoring results for the referenced site. Groundwater monitoring has been performed as a result of an underground gasoline tank release. Subsurface Consultants, Inc. (SCI) has been providing consulting services for this project since 1989. The location of the site is presented on Plate 1.

~~Contaminated groundwater from the gasoline tank is presently being remediated.~~ Site remediation consists of (1) vapor extraction, and (2) groundwater extraction and treatment. The vapor extraction system has removed all measurable free product in the area. The groundwater extraction system has significantly lowered dissolved product concentrations and reduced the extent of the dissolved product plume.

During this event, Wells 11, 31, 39, 42 and 43 were sampled. The groundwater monitoring events consist of (1) measuring groundwater levels, (2) purging water from each well until pH, conductivity and temperature have stabilized, and (3) sampling the wells with pre-cleaned disposable samplers. The samples were retained in glass containers and preserved with hydrochloric acid. The containers were placed in an ice filled cooler and remained iced until delivery to the analytical laboratory. Chain-of-custody documents accompanied the samples to the laboratory.

■ **Subsurface Consultants, Inc.**



Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
September 14, 1993  
SCI 430.010  
Page 2

Analytical testing was performed by Eureka Laboratories, Inc., a State of California Department of Health Services certified laboratory for hazardous waste and water testing. The analytical tests included:

1. Total volatile hydrocarbons (TVH), sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8015 modified (gas chromatograph coupled to a flame ionization detector), and
2. Benzene, toluene, xylenes and ethylbenzene (BTXE), sample preparation and analysis using EPA Methods 5030 and 8020 (gas chromatograph coupled to a flame ionization detector).

A summary of the current and previous analytical test results and groundwater elevation data are presented in the attached Tables 1 and 2. Analytical test reports and chain-of-custody documents are also attached.

### Conclusions

The groundwater level data indicate that the regional groundwater flow direction is toward the west-northwest at a gradient of approximately 1 percent. This groundwater flow direction and gradient remain consistent with previous measurements. Locally, however, groundwater is flowing toward the extraction well (EW1) shown on Plate 1.

In general, the analytical results indicate that [REDACTED] hydrocarbons were not detected at concentrations above the reporting limits in the other wells analyzed. We recommend that monitoring continue on a quarterly basis.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:sld

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
September 14, 1993  
SCI 430.010  
Page 3

Attachments: Table 1 - Contaminant Concentrations in Groundwater  
Table 2 - Groundwater Elevation Data  
Plate 1 - Site Plan  
Analytical Test Reports  
Chain-of-Custody Documents

cc: Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612

Mr. David W. Ralph  
Office of Economic Development and Employment  
1333 Broadway, Suite 900  
Oakland, California 94612

Mr. Joseph Cotton  
City of Oakland  
Environmental Affairs  
1333 Broadway, Suite 800  
Oakland, California 94612

Mr. Donnell Choy  
City of Oakland  
905 14th Street, 12th Floor  
Oakland, California 94612

**Table 1. Contaminant Concentrations In Groundwater**

<u>Test Boring</u>	<u>Sample Date</u>	<u>TVH<sup>1</sup></u> <u>(ug/L)<sup>5</sup></u>	<u>B<sup>2</sup></u> <u>(ug/L)</u>	<u>T<sup>2</sup></u> <u>(ug/L)</u>	<u>X<sup>2</sup></u> <u>(ug/L)</u>	<u>E<sup>2</sup></u> <u>(ug/L)</u>	<u>Total Organic Lead</u> <u>(ug/L)</u>	<u>EDB<sup>3</sup></u> <u>(ug/L)</u>	<u>1,2 DCA<sup>4</sup></u> <u>(ug/L)</u>
11	07/05/88	10,000	1,800	ND <sup>6</sup>	1,200	ND	---	--	--
	04/03/89	53,000	7,100	4,000	2,400	380	--	--	--
	07/06/89	22,000	5,300	3,200	2,300	390	ND	26	--
	11/08/89	120,000	18,000	8,000	21,000	4,500	ND	37	--
	07/18/90	26,000	950	19	98	ND	--	--	--
	10/23/90	4,200	1,600	8.5	170	28	--	0.2	--
	01/21/91	1,900	600	6.2	84	60	--	0.15	--
	04/24/91	4,800	1,100	3.5	46	120	--	--	--
	07/24/91	950	330	0.9	1.8	12	--	--	--
	10/24/91	970	350	1.6	1.6	14	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	340	77	0.6	0.6	ND	--	--	--
	08/06/92	220	54	ND	ND	ND	--	--	--
	11/16/92	159	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
	05/12/93	ND	ND	ND	ND	ND	--	--	--
	08/18/93	ND	ND	ND	ND	ND	--	--	--
28	09/02/88	890	431	75.4	84	ND	ND	9.2	--
	07/06/89	13,000	4,900	1,500	1,300	100	ND	27	--
29	09/02/88	ND	ND	8.1	ND	ND	ND	ND	--
	04/03/89	450	ND	2.0	6.7	2.0	--	--	--
	07/06/89	ND	ND	15	ND	ND	ND	ND	--
	11/08/89	780	ND	14	32	7.9	ND	ND	--
	10/23/90	1,800	1.2	6.5	4.8	2.7	--	--	--
	01/21/91	1,100	ND	3.7	4.9	1.3	--	ND	--
03/28/91	500	ND	1.6	0.8	ND	--	--	--	
31	09/02/88	ND	ND	ND	ND	ND	ND	ND	--
	04/03/89	ND	ND	ND	ND	ND	--	--	--
	07/06/89	ND	ND	ND	ND	ND	ND	ND	--
	11/08/89	ND	ND	ND	ND	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	01/21/91	ND	ND	0.6	2.1	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	43	ND	ND	ND	ND	--	--	--
	12/17/92 <sup>8</sup>	35.3	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
05/12/93	ND	ND	ND	ND	ND	--	--	--	
08/18/93	ND	ND	ND	ND	ND	--	--	--	

Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
32	10/23/90	48,000	7,600	8,200	5,600	150	--	3.8	--
	01/21/91	96,000	9,600	15,000	16,000	2,000	--	ND	--
	04/24/91	170	ND	ND	ND	ND	--	--	--
39	04/03/89	2,000	250	11	210	ND	--	--	--
	07/06/89	7,900	2,700	1,300	860	97	ND	3.0	--
	11/08/89	9,300	4,500	760	310	150	ND	4.0	36
	07/18/90	ND	4.1	ND	ND	ND	--	--	--
	10/23/90	160	12	6.4	5.0	ND	--	ND	ND
	01/21/90	200	23	0.9	2.0	1.2	--	ND	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	1.4	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
05/12/93	ND	ND	ND	ND	ND	--	--	--	
42	07/06/89	13,000	4,500	100	1,000	ND	ND	8.0	--
	10/23/90	8,800	420	580	910	91	--	0.7	--
	07/24/91	21,000	2,200	300	650	180	--	--	--
	10/24/91	18,000	2,300	1,100	1,000	260	--	16	--
	01/23/92	10,000	1,100	280	430	300	--	--	--
	05/01/92	16,000	1,200	330	580	220	--	--	--
	08/07/92	12,000	890	510	1,000	340	--	--	--
	11/16/92	587	1.2	4.3	43	ND	--	--	--
	02/16/93	6730	386	51	411	183	--	--	--
	05/12/93	13400	748	238	777	ND	--	--	--
43	10/24/91	6,300	ND	ND	130	9.1	--	--	--
	05/01/92	930	ND	ND	3.8	ND	--	--	--
	08/07/92	450	ND	2.4	3.5	1.5	--	--	--
	11/16/92	614	ND	2.0	34.4	1.6	--	--	--
	02/16/93	123	12.5	4.3	60.9	18.6	--	--	--
	05/12/93	96.4	ND	ND	ND	ND	--	--	--

100 ppm TPHg & .12 - 3.5 ppm benz

Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
45	12/05/89	ND	ND	ND	ND	ND	ND	ND	--
	10/23/90	ND	0.9	1.4	1.8	ND	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
46	11/30/89	ND	2.1	1.9	2.0	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	10/23/90	ND	ND	0.6	ND	0.5	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
58	01/30/91	ND	ND	ND	ND	ND	--	--	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
59	02/16/93	ND	ND	ND	ND	ND	--	--	--

<sup>1</sup> TVH = Total Volatile Hydrocarbons

<sup>2</sup> BTXE = Benzene, Toluene, Xylene, and Ethylbenzene

<sup>3</sup> EPA 8011, ethylene dibromide

<sup>4</sup> EPA 8010, 1, 2-dichloroethane

<sup>5</sup> ug/L = micrograms per liter

<sup>6</sup> ND = None detected, chemicals not present at concentrations above the detection limits

<sup>7</sup> -- = Test not requested

<sup>8</sup> Well resampled

Table 2. Groundwater Elevation Data

Monitoring Well	TOC Elev <sup>1</sup> (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)	Free Product Thickness (feet)	
11	99.66	01/19/89	26.82	72.84	--	
		04/03/89	26.35	73.31	--	
		07/05/89	26.95	72.71	--	
		11/09/89	27.28	72.83	--	
		01/24/90	27.40	72.26	--	
		04/30/90	27.56	72.10	--	
		07/03/90	28.89	70.77	--	
		10/23/90	28.93	70.73	--	
		01/21/91	27.75	71.97	--	
		04/24/91	28.14	71.52	--	
		07/24/91	28.78	70.88	--	
		10/24/91	29.09	70.57	--	
		01/23/92	29.85	69.81	--	
		05/01/92	27.44	72.22	--	
		08/07/92	27.86	71.80	--	
		11/16/92	27.84	71.82	--	
		02/16/93	25.94	73.72	--	
05/12/93	27.13	72.53	--			
08/17/93	27.20	72.46	--			
28	98.99	01/19/89	26.16	72.83	--	
		04/03/89	25.70	73.29	--	
		07/05/89	26.26	72.73	--	
		11/08/89	26.59	72.40	--	
		01/24/90	26.81	72.18	--	
		97.79	05/10/90	31.83	65.96	1.22
			07/03/90	31.95	65.84	0.04
			10/23/90	31.25	66.54	1.38
			01/21/91	28.00	69.79	0.00
			10/24/91	27.26	70.53	0.00
	01/23/92		32.99	64.89	0.00	
	08/07/92		26.95	70.84	-- <sup>2</sup>	
	11/16/92	25.95	71.84	--		
	02/16/93	24.06	73.73	--		
	05/12/93	25.48	72.31	--		
	08/17/93	25.55	72.24	--		
	29	97.95	01/19/89	26.14	71.81	--
04/03/89			25.88	72.07	--	
07/05/89			26.19	71.76	--	
11/09/89			26.51	71.44	--	
01/24/90			26.66	71.29	--	
04/30/90			26.73	71.22	--	
07/03/90			27.22	70.73	--	
10/23/90			27.40	70.55	--	
01/21/91			26.89	71.06	--	

**Table 2. Groundwater Elevation Data (continued)**

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
29		03/28/91	27.04	70.91	--
		10/24/91	27.47	70.48	--
		01/23/92	27.89	70.06	--
		11/16/92	26.78	71.17	--
		02/16/93	25.60	72.35	--
		05/12/93	26.04	71.91	--
		08/17/93	26.25	71.70	--
30	99.30	01/19/89	27.50	71.80	1.56
		04/03/89	28.44	70.86	2.56
		07/05/89	28.90	70.40	3.38
		11/09/89	29.52	69.78	3.67
		04/30/90	27.23	72.07	0.29
		07/03/90	29.07	70.23	0.57
		10/23/90	29.07	70.23	1.27
		01/21/91	29.09	70.23	2.27
		04/24/91	27.80	71.50	0.19
		05/31/91	28.08	71.23	0.49
		10/24/91	28.94	70.36	0.00
		11/16/92	27.29	72.01	--
		02/16/93	25.42	73.88	--
		05/12/93	27.10	72.20	--
		08/17/93	27.01	72.29	--
31	98.90	01/19/89	26.15	72.75	--
		04/03/89	25.90	73.00	--
		07/05/89	26.28	72.76	--
		11/09/89	26.64	72.26	--
		01/24/90	26.84	72.06	--
		04/30/90	26.87	72.03	--
		07/03/90	27.50	71.40	--
		09/23/90	27.52	71.36	--
		01/21/91	27.09	71.81	--
		04/24/91	27.12	71.78	--
		07/24/91	27.60	71.30	--
		10/24/91	28.81	70.09	--
		01/23/92	28.31	70.59	--
		05/01/92	26.70	72.20	--
		08/07/92	27.00	71.90	--
		11/16/92	27.04	71.86	--
		02/16/93	25.63	73.27	--
		05/12/93	26.20	72.70	--
08/17/93	26.41	72.49	--		

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
32	98.53	01/24/90	25.64	72.89	--
		04/30/90	25.82	72.71	--
		06/01/90	26.30	72.23	--
		10/23/90	26.70	71.83	--
		01/21/91	26.06	72.47	--
		04/24/91	26.40	72.13	--
		10/24/91	27.05	71.48	--
		39	99.00	04/03/89	25.87
07/05/89	26.38			72.62	--
11/09/89	26.70			72.30	--
01/24/90	26.86			72.14	--
04/30/90	26.97			72.03	--
07/03/90	28.17			70.83	--
10/23/90	28.17			70.83	--
01/21/91	27.15			71.85	--
03/28/91	27.76			71.24	--
04/24/91	27.33			71.67	--
07/24/91	27.91			71.09	--
10/24/91	28.26			70.74	--
01/23/92	29.00			70.00	--
05/01/92	26.82			72.18	--
08/07/92	27.18			71.82	--
11/16/92	27.19			71.81	--
02/16/93	25.53			73.47	--
05/12/93	26.52			72.48	--
08/17/93	26.65	72.35	--		
42	99.12	04/03/89	25.77	73.35	--
		07/05/89	26.30	72.89	--
		11/09/89	26.66	72.46	--
		01/24/90	26.82	72.30	--
		04/18/90	26.94	72.18	--
		07/03/90	28.58	70.54	--
		10/23/90	28.58	70.54	0.08
		07/24/91	28.10	71.02	0.00
		10/24/91	28.24	70.88	--
		01/23/92	29.33	69.79	--
		05/01/92	26.88	72.44	--
		08/07/92	27.10	72.02	--
		11/16/92	26.68	72.44	--
		02/16/93	25.41	73.71	--
		05/12/93	26.74	72.38	--
		08/17/93	26.80	72.32	--



Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
43	98.87	04/03/89	25.32	73.55	0.08
		07/05/89	26.80	72.07	1.34
		11/09/89	28.44	70.43	2.89
		04/30/90	27.05	71.82	0.79
		07/03/90	28.36	70.51	0.70
		10/23/90	28.19	70.68	0.83
		10/24/91	26.30	72.57	0.00
		01/24/92	28.25	70.62	0.02
		05/01/92	25.44	73.43	0.00
		08/07/92	25.11	73.76	--
		11/16/92	26.42	72.45	--
		02/16/93	24.35	74.52	--
		05/12/93	25.90	72.97	--
		08/17/93	25.50	73.37	--
		45	100.90	02/16/93	24.35
12/05/89	28.71			72.19	--
04/30/90	28.85			72.05	--
07/03/90	29.45			71.45	--
10/23/90	29.50			71.40	--
01/21/91	29.03			71.87	--
04/24/91	28.87			72.03	--
07/25/91	29.63			71.27	--
10/24/91	29.62			71.28	--
01/23/92	30.45			70.45	--
05/01/92	28.42			72.48	--
08/07/92	28.70			72.20	--
11/16/92	28.84			72.06	--
02/16/93	27.14			73.76	--
05/12/93	28.00			72.90	--
08/17/93	28.35	72.55	--		
46	98.11	12/19/89	27.40	70.71	--
		04/30/90	27.46	70.63	--
		07/03/90	27.75	70.36	--
		10/23/90	27.86	70.25	--
		01/21/91	27.60	70.51	--
		04/24/91	27.40	70.71	--
		07/24/91	28.73	69.38	--
		10/24/91	27.88	70.23	--
		01/23/92	28.31	69.80	--
		08/07/92	27.28	70.83	--
		11/16/92	27.42	70.69	--
		02/16/93	26.44	71.67	--
		05/12/93	26.78	71.33	--
		08/17/93	27.01	71.10	--

Table 2. Groundwater Elevation Data (continued)

Monitoring Well	TOC Elev <sup>1</sup> (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)	Free Product Thickness (feet)
58	98.89	01/30/91	28.25	70.64	--
		03/28/91	27.81	71.08	--
		04/24/91	27.55	71.34	--
		07/24/91	33.42	65.47	--
		10/24/91	28.29	70.60	--
		01/23/92	28.75	70.14	--
		05/01/92	27.10	71.79	--
		08/07/92	27.40	71.49	--
		11/16/92	27.44	71.45	--
		02/16/93	26.10	72.79	--
		05/12/93	26.68	72.21	--
		08/17/93	26.88	72.01	--

<sup>1</sup> Elevation reference: PG&E manhole approximately 30 feet south of 14th Street on Martin Luther King Jr. Way, assumed to be 100.00 feet, TOC = Top of casing

<sup>2</sup> -- = No free product present



EXTRACTION WELL



MONITORING WELL

TVH

TOTAL VOLATILE HYDROCARBONS,  
AS GASOLINE

BENZENE, TOLUENE, XYLENES,  
ETHYLBENZENE

BTXE

ND

NONE DETECTED

CONCENTRATIONS IN ug/l

8-18-93

14TH STREET

EXISTING BUILDING

PARKING

EXISTING BUILDING

MARTIN LUTHER KING JR. WAY

EW-1

GW TREATMENT PLANT

DIRECTION OF GROUNDWATER FLOW

TRUE NORTH

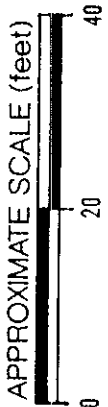
APPROXIMATE SCALE (feet)



REFERENCE NORTH



0 20 40



45

11  
TVH ND  
BTXE ND

28

42  
E

30

43  
TVH ND  
BTXE ND

32  
PREVIOUS TANK

59

SITE PLAN

1330 MARTIN LUTHER KING JR. WAY - OAK.

JOB NUMBER  
430.010

DATE  
9/15/93

APPROVED  
MK

PLATE

1

Subsurface Consultants

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

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CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-06A	SAMPLE VOL./WT.:	NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

September 2, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/18/1993
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-01A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: 11	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

September 2, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/17/1993
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-02A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: 31	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

September 2, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER

DATE SAMPLED: 08/18/1993  
DATE RECEIVED: 08/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 08/24/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9308181-03A  
SAMPLE ID: 39

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

September 2, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.010  
PROJECT: MLK GROUNDWATER

DATE SAMPLED: 08/17/1993 ✓  
DATE RECEIVED: 08/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 08/24/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 50

ELI SAMPLE ID: 89308181-04A  
SAMPLE ID: 42

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT *</u> [ug/L (ppb)]
Gasoline Range	4120 ✓	1000
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C9	

\* Higher detection limit is due to high analyte concentration.

Jeannette Chen  
Chemist

September 2, 1993  
Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/17/1993
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-05A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: 43	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

September 2, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-08A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: 11 MATRIX SPIKE RECOVERY	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
-------------------------------	-------------------------

Gasoline Range	105%
----------------	------

<u>CARBON NO. RANGE</u>	
-------------------------	--

Gasoline Range	-
----------------	---

<u>PEAK CARBON NO.</u>	
------------------------	--

Gasoline Range	-
----------------	---

Jeannette Chen  
Chemist

September 2, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
ELI SAMPLE ID: 9308181-09A	REPORT WT.:	NA
SAMPLE ID: 11 MATRIX SPIKE RECOVERY	SAMPLE VOL./WT.:	5ml
DUPLICATE	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
-------------------------------	-------------------------

Gasoline Range	84%
----------------	-----

<u>CARBON NO. RANGE</u>	
-------------------------	--

Gasoline Range	-
----------------	---

<u>PEAK CARBON NO.</u>	
------------------------	--

Gasoline Range	-
----------------	---

Jeannette Chen  
Chemist

September 2, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-10A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
-------------------------------	-------------------------

Gasoline Range	89%
----------------	-----

<u>CARBON NO. RANGE</u>	
-------------------------	--

Gasoline Range	-
----------------	---

<u>PEAK CARBON NO.</u>	
------------------------	--

Gasoline Range	-
----------------	---

Jeannette Chen  
Chemist

September 2, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/24/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-11A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
-------------------------------	-------------------------

Gasoline Range	92%
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<u>CARBON NO. RANGE</u>	
-------------------------	--

Gasoline Range	-
----------------	---

<u>PEAK CARBON NO.</u>	
------------------------	--

Gasoline Range	-
----------------	---

Jeannette Chen  
Chemist

September 2, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-06A	SAMPLE VOL./WT.:	NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Sufan Hsin  
Chemist

September 2, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/18/1993
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-01A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: 11	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Sufan Hsin  
Chemist

September 2, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/17/1993
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-02A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: 31	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Sufan Hsin  
Chemist

September 2, 1993  
Date



**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/18/1993
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-03A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: 39	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Sufan Hsin  
Chemist

September 2, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	08/17/1993
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-04A	SAMPLE VOL./WT.:	100u1
SAMPLE ID: 42	DILUTION FACTOR:	50

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L * ug/L (ppb)
V1	Benzene	268	50
V2	Chlorobenzene	<50	50
V3	1,2-Dichlorobenzene	<50	50
V4	1,3-Dichlorobenzene	<50	50
V5	1,4-Dichlorobenzene	<50	50
V6	Ethyl benzene	377	50
V7	Toluene	<50	50
V8	Xylenes (Dimethyl benzenes)	323	50

Note: All positively identified compounds were second column or second detector confirmed.

\* Higher detection limit is due to high analyte concentration.

Sufan Hsin  
Chemist

September 2, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-181  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSU8FACE CONSULTANTS	DATE SAMPLED:	08/17/1993
JOB #: 430.010	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308181-05A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: 43	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Sufan Hsin  
Chemist

September 2, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-08-182  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	08/19/1993
PROJECT: MLK GROUNDWATER TREATMENT SYSTEM	DATE EXTRACTED:	NA
	DATE ANALYZED:	08/25/1993
	INSTRUMENT ID:	VG-4A
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9308182-08A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: MATRIX SPIKE RECOVERY DUP. *	DILUTION FACTOR:	1

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	123%
V2	Chlorobenzene	99%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	105%
V7	Toluene	102%
V8	Xylenes (Dimethyl benzenes)	103%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Sufan Hsin  
Chemist

September 1, 1993  
Date



July 12, 1993  
SCI 430.015

3623

Mr. William Meckel  
East Bay Municipal Utility District  
Mail Slot #702  
P.O. Box 24055  
Oakland, California 94623-1055

Quarterly Monitoring Report 13  
Wastewater Discharge Permit Account #502-29091  
1330 Martin Luther King Jr. Way  
Oakland, California

Dear Mr. Meckel:

This letter presents quarterly monitoring results from the groundwater treatment plant at 1330 Martin Luther King Jr. Way. Monitoring of treated effluent has been performed in accordance with criteria specified in the EBMUD wastewater discharge permit account #502-29091, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

During the thirteenth quarter of operation (April 9, 1993 through July 8, 1993) approximately 318,070 gallons of treated water were discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 52 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethylbenzene (BTEX) have been reduced to nondetectable concentrations before discharge into the EBMUD sanitary sewer. No indications of breakthrough have occurred in the primary carbon column. Results of the water quality data generated during the thirteenth quarter are presented in Table 1. During this quarter, Extraction Well #1 (EW-1) was not in operation. For this reason, there is no analytical data presented for EW-1-50, 51, 52. Analytical test reports and Chain-of-Custody documents are attached.

The analytical test results indicate that biologic activity within the primary holding tank is ongoing. During this quarter, hydrocarbon concentrations up to approximately 204 ug/l entered the primary holding tank and no detectable concentrations of hydrocarbons were recorded leaving the tank before passing through the carbon treatment system. Consequently, hydrocarbon loading of the carbon treatment system remains minimal.

■ Subsurface Consultants, Inc.

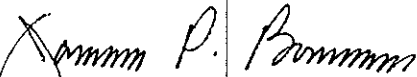
Mr. William Meckel  
East Bay Municipal Utility District  
SCI 430.015  
July 12, 1993  
Page 2

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:egh

Attachments: Table 1 - Contaminant Concentrations in Water  
Analytical Test Reports  
Chain-of-Custody Documents

cc: Mr. David W. Ralph  
Office of Economic Development and Employment

Ms. Julie Carver  
Environmental Affairs

✓ Ms. Jennifer Eberle  
ACHCSA

Mr. Eddy So  
RWQCB

Mr. Donnell Choy  
City of Oakland

TABLE 1. CONTAMINANT CONCENTRATIONS IN WATER

<u>Sample</u>	<u>Sampling Date</u>	<u>TVH (ug/L)</u>	<u>Benzene (ug/L)</u>	<u>Toluene (ug/L)</u>	<u>Ethyl-Benzene (ug/L)</u>	<u>Total Xylenes (ug/L)</u>
EW-2-50	4/21/93	157	2.8	1.0	2.4	9.7
A-50		ND	ND	ND	ND	ND
B-50		ND	ND	ND	ND	ND
SS#1-50		ND	ND	ND	ND	ND
EW-2-51	5/18/93	155	3.8	1.2	2.2	11.2
A-51		37	ND	ND	ND	ND
B-51		ND	ND	ND	ND	ND
SS#1-51		ND	ND	ND	ND	ND
EW-2-52	6/17/93	204	12.6	ND	3.6	10.3
A-52		ND	ND	ND	ND	ND
B-52		ND	ND	ND	ND	ND
SS#1-52		ND	ND	ND	ND	ND

---

TVH = Total volatile hydrocarbons, EPA 8015/5030

BTEX, Analyses by EPA 8020/5030

ug/L = micrograms per liter or parts per billion (ppb)

ND = None detected, chemicals not present at concentrations above the detection limits; see test reports for detection limits

EW-2 = indicates sample from Extraction Well #2

A = influent at primary carbon vessel

B = Between carbon vessels

SS#1 = side sewer #1, (effluent sample)



ORGANIC ANALYSIS REPORT  
Purgeable Aromatics, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/22/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-05A  
SAMPLE ID: METHOD BLANK

COMP. No.	COMPOUND	ug/L (Ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

May 3, 1993

Date

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Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 04/21/1993  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/22/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-01A  
SAMPLE ID: A-50

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

May 3, 1993

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(916) 381-7953

Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 04/21/1993  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/22/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-02A  
SAMPLE ID: B-50

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

May 3, 1993

Date

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Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 04/21/1993  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/22/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-03A  
SAMPLE ID: SS#1-50

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

May 3, 1993

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Date

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6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 04/21/1993  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/22/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-04A  
SAMPLE ID: EW-2-50

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	2.8	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	2.4	0.5
V7	Toluene	1.0	0.5
V8	Xylenes(dimethylbenzenes)	9.7	0.5

Note: All positively indentified compounds were second column or second detector confirmed.

Huey-Chen Chow

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Chemist

May 3, 1993

\_\_\_\_\_  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

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Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/22/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-07A  
SAMPLE ID: A-50 MATRIX SPIKE RECOVERY

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	81%
V2	Chlorobenzene	84%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	85%
V7	Toluene	81%
V8	Xylenes(dimethylbenzenes)	82%

Huey-Chen Chow

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Chemist

May 3, 1993

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6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/22/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-08A  
SAMPLE ID: A-50 MATRIX SPIKE RECOVERY DUP.

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	80%
V2	Chlorobenzene	85%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	87%
V7	Toluene	81%
V8	Xylenes(dimethylbenzenes)	84%

Huey-Chen Chow

Chemist

May 3, 1993

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/23/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-05A  
SAMPLE ID: METHOD BLANK

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen

\_\_\_\_\_  
Chemist

May 3, 1993

Date



**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
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Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 04/21/1993  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/23/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-01A  
SAMPLE ID: A-50

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen

\_\_\_\_\_  
Chemist

May 3, 1993

\_\_\_\_\_  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
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Order No.: 93-04-231  
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Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 04/21/1993  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/23/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-02A  
SAMPLE ID: B-50

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen

\_\_\_\_\_  
Chemist

May 3, 1993

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 04/21/1993  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/23/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-03A  
SAMPLE ID: SS#1-50

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen

Chemist

May 3, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

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Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 04/21/1993  
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DATE EXTRACTED: NA  
DATE ANALYZED: 04/23/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-04A  
SAMPLE ID: EW-2-50

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	157	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C7	

Jeannette Chen

\_\_\_\_\_  
Chemist

May 3, 1993

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/23/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-07A  
SAMPLE ID: A-50 MATRIX SPIKE RECOVERY

PETROLEUM HYDROCARBONS                      % SPIKE RECOVERY

Gasoline Range                                      111%

CARBON NO. RANGE

Gasoline Range                                      -

PEAK CARBON NO.

Gasoline Range                                      -

Jeannette Chen

\_\_\_\_\_  
Chemist

May 3, 1993

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

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6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-04-231  
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Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/23/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-08A  
SAMPLE ID: A-50 MATRIX SPIKE RECOVERY  
DUPLICATE

PETROLEUM HYDROCARBONS                      % SPIKE RECOVERY

Gasoline Range    113%

CARBON NO. RANGE

Gasoline Range    -

PEAK CARBON NO.

Gasoline Range    -

Jeannette Chen

\_\_\_\_\_  
Chemist

May 3, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/23/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-09A  
SAMPLE ID: REAGENT SPIKE RECOVERY

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	103%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen

\_\_\_\_\_  
Chemist

May 3, 1993

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

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6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-04-231  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK - TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 04/22/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 04/23/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9304231-10A  
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	101%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen

Chemist

May 3, 1993

Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GW TREATMENT PLANT

DATE SAMPLED: NA  
DATE RECEIVED: 05/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305211-08A  
SAMPLE ID: METHOD BLANK

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GW TREATMENT PLANT

DATE SAMPLED: 05/18/1993  
DATE RECEIVED: 05/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305211-01A  
SAMPLE ID: EW-2-51

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	155	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C7	

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015  
PROJECT: MLK GW TREATMENT PLANT

DATE SAMPLED: 05/18/1993  
DATE RECEIVED: 05/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305211-02A  
SAMPLE ID: A-51

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	05/18/1993
JOB #: 430.015	DATE RECEIVED:	05/19/1993
PROJECT: MLK GW TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	05/19/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9305211-03A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: B-51	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	05/18/1993
JOB #: 430.015	DATE RECEIVED:	05/19/1993
PROJECT: MLK GW TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	05/19/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9305211-04A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: SS#1-51	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	05/19/1993
PROJECT: MLK GW TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	05/19/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9305211-10A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: MATRIX SPIKE RECOVERY *	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	99%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	05/19/1993
PROJECT: MLK GW TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	05/19/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
ELI SAMPLE ID: 9305211-11A	REPORT WT.:	NA
SAMPLE ID: MATRIX SPIKE RECOVERY *	SAMPLE VOL./WT.:	5ml
DUPLICATE	DILUTION FACTOR:	1

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	108%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Jeannette Chen  
Chemist

June 3, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	05/19/1993
PROJECT: MLK GW TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	05/19/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9305211-12A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	90%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

June 3, 1993  
Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	05/19/1993
PROJECT: MLK GW TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	05/19/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9305211-13A	SAMPLE VOL./WT.:	NA
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	97%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

June 3, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS JOB #: 430.015 & 272.029 PROJECT: MLK GW TREATMENT PLANT & FIREHOUSE 23  ELI SAMPLE ID: 9305211-08A SAMPLE ID: METHOD BLANK	DATE SAMPLED: NA DATE RECEIVED: 05/19/1993 DATE EXTRACTED: NA DATE ANALYZED: 05/26/1993 INSTRUMENT ID: VG-4 MATRIX: AQUEOUS % MOISTURE: NA REPORT WT.: NA SAMPLE VOL./WT.: NA DILUTION FACTOR: 1
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COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

June 8, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	05/18/1993
JOB #: 430.015	DATE RECEIVED:	05/19/1993
PROJECT: MLK GW TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	05/26/1993
	INSTRUMENT ID:	VG-4
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9305211-01A	SAMPLE VOL./WT.:	5mL
SAMPLE ID: EW-2-51	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	3.8	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	2.2	0.5
V7	Toluene	1.2	0.5
V8	Xylenes (Dimethyl benzenes)	11.2	0.5

Note: All positively identified compounds were second column or second detector confirmed.

Huey-Chen Chow  
Chemist

June 8, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS JOB #: 430.015 PROJECT: MLK GW TREATMENT PLANT  ELI SAMPLE ID: 9305211-02A SAMPLE ID: A-51	DATE SAMPLED: 05/18/1993 DATE RECEIVED: 05/19/1993 DATE EXTRACTED: NA DATE ANALYZED: 05/26/1993 INSTRUMENT ID: VG-4 MATRIX: AQUEOUS % MOISTURE: NA REPORT WT.: NA SAMPLE VOL./WT.: 5ml DILUTION FACTOR: 1
--	--

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

June 8, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	05/18/1993
JOB #: 430.015	DATE RECEIVED:	05/19/1993
PROJECT: MLK GW TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	05/26/1993
	INSTRUMENT ID:	VG-4
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9305211-03A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: B-51	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

June 8, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	05/18/1993
JOB #: 430.015	DATE RECEIVED:	05/19/1993
PROJECT: MLK GW TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	05/26/1993
	INSTRUMENT ID:	VG-4
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9305211-04A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: SS#1-51	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

June 8, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.015 & 272.029  
PROJECT: MLK GW TREATMENT PLANT &  
FIREHOUSE 23

DATE SAMPLED: 05/18/1993  
DATE RECEIVED: 05/19/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/26/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305211-10A  
SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	116%
V2	Chlorobenzene	87%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	89%
V7	Toluene	88%
V8	Xylenes (Dimethyl benzenes)	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow  
Chemist

June 8, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-211  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS JOB #: 430.015 & 272.029 PROJECT: MLK GW TREATMENT PLANT & FIREHOUSE 23  ELI SAMPLE ID: 9305211-11A SAMPLE ID: MATRIX SPIKE RECOVERY * DUPLICATE	DATE SAMPLED: 05/18/1993 DATE RECEIVED: 05/19/1993 DATE EXTRACTED: NA DATE ANALYZED: 05/26/1993 INSTRUMENT ID: VG-4 MATRIX: AQUEOUS % MOISTURE: NA REPORT WT.: NA SAMPLE VOL./WT.: 5ml DILUTION FACTOR: 1
--	--

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	109%
V2	Chlorobenzene	88%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	89%
V7	Toluene	84%
V8	Xylenes (Dimethyl benzenes)	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow	June 8, 1993
Chemist	Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/26/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-05A  
SAMPLE ID: METHOD BLANK

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

July 7, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: 06/22/1993  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/26/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-01A  
SAMPLE ID: EW-2-52

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	204	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C9	

Jeannette Chen  
Chemist

July 7, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: 06/22/1993  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/26/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-02A  
SAMPLE ID: A-52

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

July 7, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: 06/22/1993  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/26/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-03A  
SAMPLE ID: B-52

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

July 7, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: 06/22/1993  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/26/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-04A  
SAMPLE ID: SS#1-52

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

July 7, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/26/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-07A  
SAMPLE ID: MATRIX SPIKE RECOVERY \*

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	90%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Jeannette Chen      July 7, 1993  
Chemist                      Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/26/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-08A

SAMPLE ID: MATRIX SPIKE RECOVERY DUP. \*

PETROLEUM HYDROCARBONS                      % SPIKE RECOVERY

Gasoline Range    105%

CARBON NO. RANGE

Gasoline Range    --

PEAK CARBON NO.

Gasoline Range    --

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Jeannette Chen  
Chemist

July 7, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/26/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-09A  
SAMPLE ID: REAGENT SPIKE RECOVERY

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	85%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

July 7, 1993  
Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/26/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-10A  
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	94%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen      July 7, 1993  
Chemist                      Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/23/1993  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-05A  
SAMPLE ID: METHOD BLANK

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

July 7, 1993  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: 06/22/1993  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/23/1993  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-01A  
SAMPLE ID: EW-2-52

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	12.6	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	3.6	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	10.3	0.5

Huey-Chen Chow  
Chemist

July 7, 1993  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: 06/22/1993  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/23/1993  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-02A  
SAMPLE ID: A-52

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

July 7, 1993  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: 06/22/1993  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/23/1993  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-03A  
SAMPLE ID: B-52

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

July 7, 1993  
Date

ORGANIC ANALYSIS REPORT  
Purgeable Aromatics, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: 06/22/1993  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/23/1993  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-04A  
SAMPLE ID: SS#1-52

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

July 7, 1993  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/23/1993  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-07A  
SAMPLE ID: EW-2-52 MATRIX SPIKE RECOVERY

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	-
V2	Chlorobenzene	95%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	115%
V7	Toluene	96%
V8	Xylenes(dimethylbenzenes)	109%

Huey-Chen Chow  
Chemist

July 7, 1993  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-06-353  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK G.W. TREATMENT SYSTEM

DATE SAMPLED: NA  
DATE RECEIVED: 06/23/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 06/23/1993  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9306353-08A  
SAMPLE ID: EW-2-52 MATRIX SPIKE RECOVERY DUP.

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	-
V2	Chlorobenzene	107%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	118%
V7	Toluene	120%
V8	Xylenes (dimethylbenzenes)	117%

Huey-Chen Chow  
Chemist

July 7, 1993  
Date



WPS 112

93-04-231 GCV8/GCV19

PAGE 1 OF 1

# CHAIN OF CUSTODY FORM

PROJECT NAME: MLK - TREATMENT PLANT  
 LAB: EURIKA LAB  
 JOB NUMBER: 430.015  
 TURNAROUND: NORMAL  
 PROJECT CONTACT: MARK KAWAKAMI  
 REQUESTED BY: MARK KAWAKAMI  
 SAMPLED BY: FERNANDO VELEZ

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX			CONTAINERS				METHOD PRESERVED			SAMPLING DATE			NOTES		
		WATER	SOIL	WASTE	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH		DAY	YEAR
1A	A-50	X			3				X		X		04	21	93		X TPH (GAS) X BTEX
2A	B-50	X			3				X		X		04	21	93		X
3A	SSH1-50	X			3				X		X		04	21	93		X
4A	EW-2-50	X			3				X		X		04	21	93		X

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
	4/21/93 11:00	K. Franceschi	4/22/93 12:00
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME

### COMMENTS & NOTES:

ALL SAMPLES ARE "GRAB SAMPLES" CONTAINER NOT SEALED "TAMPER PROOF"

**Subsurface Consultants, Inc.**

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137

# CHAIN OF CUSTODY FORM

PROJECT NAME: MUK GW TREATMENT PLANT

93.05.211 H32/GCV8

PROJECT CONTACT: MARK KAWAKAMA

LAB: ESPECA LABORATORIES

JOB NUMBER: 430-015

PROJECT CONTACT: MARK KAWAKAMA

TURNAROUND: ASAP

SAMPLED BY: FRANSISCO VELAZ

REQUESTED BY: MARK KAWAKAMA

ANALYSIS REQUESTED	
<u>PH (CLASSIC) / BTEX</u>	<u>Handwritten notes</u>
<u>...</u>	<u>...</u>
<u>...</u>	<u>...</u>

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX			CONTAINERS			METHOD PRESERVED			SAMPLING DATE			NOTES						
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	ICE		NONE	MONTH	DAY	YEAR	TIME	
<u>1A</u>	<u>EW-2-51</u>	<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>					<u>05</u>	<u>18</u>	<u>93</u>		<u>Handwritten notes</u>	
<u>2A</u>	<u>A-51</u>	<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>										
<u>3A</u>	<u>B-51</u>	<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>										
<u>4A</u>	<u>SS-1-51</u>	<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>					<u>05</u>	<u>18</u>	<u>93</u>		<u>Handwritten notes</u>	
																				<u>Handwritten notes</u>

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature) <u>Dennis Alexander</u>	DATE / TIME <u>5/19/93</u>	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME

COMMENTS & NOTES:

ALL SAMPLES ARE "GAS" SAMPLES"  
CONDITIONS NOT SCALED "IN PER. PRESSURE"

**Subsurface Consultants, Inc.**  
171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
(510) 268-0461 • FAX: 510-268-0137

5/19/93



June 14, 1993  
SCI 430.010

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Quarterly Groundwater Monitoring  
Gasoline Contamination  
1330 Martin Luther King Jr. Way  
Oakland, California**

Dear Ms. Eberle:

This letter presents quarterly groundwater monitoring results for the referenced site. Groundwater monitoring has been performed as a result of an underground gasoline tank release. Subsurface Consultants, Inc. (SCI) has been providing consulting services for this project since 1989. The location of the site is presented on Plate 1.

Contaminated soil and groundwater resulting from the gasoline release is presently being remediated. Site remediation consists of (1) vapor extraction, and (2) groundwater extraction and treatment. The vapor extraction system has removed all measurable free product in the area. The groundwater extraction system has significantly lowered dissolved product concentrations and reduced the extent of the dissolved product plume. Vapor extraction and groundwater treatment are ongoing.

During this event, Wells 11, 31, 39, 42 and 43 were sampled. The groundwater monitoring events consist of (1) measuring groundwater levels, (2) purging water from each well until pH, conductivity and temperature have stabilized, and (3) sampling the wells with pre-cleaned disposable samplers. The samples were retained in glass containers and preserved with hydrochloric acid. The containers were placed in an ice filled cooler and remained iced until delivery to the analytical laboratory. Chain-of-custody documents accompanied the samples to the laboratory.

■ **Subsurface Consultants, Inc.**

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
June 14, 1993  
SCI 430.010  
Page 2

Analytical testing was performed by Eureka Laboratories, Inc., a State of California Department of Health Services certified laboratory for hazardous waste and water testing. The analytical tests included:

1. Total volatile hydrocarbons (TVH), sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8015 modified (gas chromatograph coupled to a flame ionization detector), and
2. Benzene, toluene, xylenes and ethylbenzene (BTXE), sample preparation and analysis using EPA Methods 5030 and 8020 (gas chromatograph coupled to a flame ionization detector).

A summary of the current and previous analytical test results and groundwater elevation data are presented in the attached Tables 1 and 2. Analytical test reports and chain-of-custody documents are also attached.

### Conclusions

The groundwater level data indicate that the regional groundwater flow direction is toward the west-northwest at a gradient of approximately 1 percent. This groundwater flow direction and gradient remain consistent with previous measurements. Locally, however, groundwater is flowing toward the extraction well (EW1) shown on Plate 1.

In general, the analytical test results indicate that dissolved hydrocarbon concentrations in groundwater are continuing to decline. A modest increase in the gasoline concentration was observed in Well 42. Well 42 is situated in an area where historically, contaminant concentrations have been high. We recommend that monitoring continue on a quarterly basis.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

*James P. Bowers*

James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:egh

*They nearly  
doubled in  
MW 42!*

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
June 14, 1993  
SCI 430.010  
Page 3

■ Subsurface Consultants, Inc.

Attachments: Table 1 - Contaminant Concentrations in Groundwater  
Table 2 - Groundwater Elevation Data  
Plate 1 - Site Plan  
Analytical Test Reports  
Chain-of-Custody Documents

cc: Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612

Mr. David W. Ralph  
Office of Economic Development and Employment  
1333 Broadway, Suite 900  
Oakland, California 94612

Ms. Julie Carver  
City of Oakland  
Environmental Affairs  
1333 Broadway, Suite 800  
Oakland, California 94612

Mr. Donnell Choy  
City of Oakland  
905 14th Street, 12th Floor  
Oakland, California 94612

Table 1. Contaminant Concentrations In Groundwater

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
11	07/05/88	10,000	1,800	ND <sup>6</sup>	1,200	ND	-- <sup>7</sup>	--	--
	04/03/89	53,000	7,100	4,000	2,400	380	--	--	--
	07/06/89	22,000	5,300	3,200	2,300	390	ND	26	--
	11/08/89	120,000	18,000	8,000	21,000	4,500	ND	37	--
	07/18/90	26,000	950	19	98	ND	--	--	--
	10/23/90	4,200	1,600	8.5	170	28	--	0.2	--
	01/21/91	1,900	600	6.2	84	60	--	0.15	--
	04/24/91	4,800	1,100	3.5	46	120	--	--	--
	07/24/91	950	330	0.9	1.8	12	--	--	--
	10/24/91	970	350	1.6	1.6	14	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	340	77	0.6	0.6	ND	--	--	--
	08/06/92	220	54	ND	ND	ND	--	--	--
	11/16/92	159	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
	05/12/93	ND	ND	ND	ND	ND	--	--	--
28	09/02/88	890	431	75.4	84	ND	ND	9.2	--
	07/06/89	13,000	4,900	1,500	1,300	100	ND	27	--
29	09/02/88	ND	ND	8.1	ND	ND	ND	ND	--
	04/03/89	450	ND	2.0	6.7	2.0	--	--	--
	07/06/89	ND	ND	15	ND	ND	ND	ND	--
	11/08/89	780	ND	14	32	7.9	ND	ND	--
	10/23/90	1,800	1.2	6.5	4.8	2.7	--	--	--
	01/21/91	1,100	ND	3.7	4.9	1.3	--	ND	--
	03/28/91	500	ND	1.6	0.8	ND	--	--	--
31	09/02/88	ND	ND	ND	ND	ND	ND	ND	--
	04/03/89	ND	ND	ND	ND	ND	--	--	--
	07/06/89	ND	ND	ND	ND	ND	ND	ND	--
	11/08/89	ND	ND	ND	ND	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	01/21/91	ND	ND	0.6	2.1	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	43	ND	ND	ND	ND	--	--	--
	12/17/92 <sup>8</sup>	35.3	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
05/12/93	ND	ND	ND	ND	ND	--	--	--	

Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
32	10/23/90	48,000	7,600	8,200	5,600	150	--	3.8	--
	01/21/91	96,000	9,600	15,000	16,000	2,000	--	ND	--
	04/24/91	170	ND	ND	ND	ND	--	--	--
39	04/03/89	2,000	250	11	210	ND	--	--	--
	07/06/89	7,900	2,700	1,300	860	97	ND	3.0	--
	11/08/89	9,300	4,500	760	310	150	ND	4.0	36
	07/18/90	ND	4.1	ND	ND	ND	--	--	--
	10/23/90	160	12	6.4	5.0	ND	--	ND	ND
	01/21/90	200	23	0.9	2.0	1.2	--	ND	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	1.4	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
05/12/93	ND	ND	ND	ND	ND	--	--	--	
42	07/06/89	13,000	4,500	100	1,000	ND	ND	8.0	--
	10/23/90	8,800	420	580	910	91	--	0.7	--
	07/24/91	21,000	2,200	300	650	180	--	--	--
	10/24/91	18,000	2,300	1,100	1,000	260	--	16	--
	01/23/92	10,000	1,100	280	430	300	--	--	--
	05/01/92	16,000	1,200	330	580	220	--	--	--
	08/07/92	12,000	890	510	1,000	340	--	--	--
	11/16/92	587	1.2	4.3	43	ND	--	--	--
	02/16/93	6730	386	51	411	183	--	--	--
	05/12/93	<u>13400</u>	<u>748</u>	238	777	ND	--	--	--
43	10/24/91	6,300	ND	ND	130	9.1	--	--	--
	05/01/92	930	ND	ND	3.8	ND	--	--	--
	08/07/92	450	ND	2.4	3.5	1.5	--	--	--
	11/16/92	614	ND	2.0	34.4	1.6	--	--	--
	02/16/93	123	12.5	4.3	60.9	18.6	--	--	--
	05/12/93	96.4	ND	ND	ND	ND	--	--	--



Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
45	12/05/89	ND	ND	ND	ND	ND	ND	ND	--
	10/23/90	ND	0.9	1.4	1.8	ND	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
	<i>ok - stop</i>								
46	11/30/89	ND	2.1	1.9	2.0	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	10/23/90	ND	ND	0.6	ND	0.5	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
58	01/30/91	ND	ND	ND	ND	ND	--	--	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
	<i>ok to stop</i>								
59	02/16/93	ND	ND	ND	ND	ND	--	--	--

<sup>1</sup> TVH = Total Volatile Hydrocarbons

<sup>2</sup> BTXE = Benzene, Toluene, Xylene, and Ethylbenzene

<sup>3</sup> EPA 8011, ethylene dibromide

<sup>4</sup> EPA 8010, 1, 2-dichloroethane

<sup>5</sup> ug/L = micrograms per liter

<sup>6</sup> ND = None detected, chemicals not present at concentrations above the detection limits

<sup>7</sup> -- = Test not requested

<sup>8</sup> Well resampled

**Table 2. Groundwater Elevation Data**

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
11	99.66	01/19/89	26.82	72.84	--
		04/03/89	26.35	73.31	--
		07/05/89	26.95	72.71	--
		11/09/89	27.28	72.83	--
		01/24/90	27.40	72.26	--
		04/30/90	27.56	72.10	--
		07/03/90	28.89	70.77	--
		10/23/90	28.93	70.73	--
		01/21/91	27.75	71.97	--
		04/24/91	28.14	71.52	--
		07/24/91	28.78	70.88	--
		10/24/91	29.09	70.57	--
		01/23/92	29.85	69.81	--
		05/01/92	27.44	72.22	--
		08/07/92	27.86	71.80	--
		11/16/92	27.84	71.82	--
02/16/93	25.94	73.72	--		
05/12/93	27.13	72.53	--		
28	98.99	01/19/89	26.16	72.83	--
		04/03/89	25.70	73.29	--
		07/05/89	26.26	72.73	--
		11/08/89	26.59	72.40	--
		01/24/90	26.81	72.18	--
		05/10/90	31.83	65.96	1.22
		07/03/90	31.95	65.84	0.04
		10/23/90	31.25	66.54	1.38
	97.79	01/21/91	28.00	69.79	0.00
		10/24/91	27.26	70.53	0.00
		01/23/92	32.99	64.89	0.00
		08/07/92	26.95	70.84	-- <sup>2</sup>
		11/16/92	25.95	71.84	--
		02/16/93	24.06	73.73	--
		05/12/93	25.48	72.31	--
		29	97.95	01/19/89	26.14
04/03/89	25.88			72.07	--
07/05/89	26.19			71.76	--
11/09/89	26.51			71.44	--
01/24/90	26.66			71.29	--
04/30/90	26.73			71.22	--
07/03/90	27.22			70.73	--
10/23/90	27.40			70.55	--
01/21/91	26.89			71.06	--

**Table 2. Groundwater Elevation Data (continued)**

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
		03/28/91	27.04	70.91	--
		10/24/91	27.47	70.48	--
		01/23/92	27.89	70.06	--
		11/16/92	26.78	71.17	--
		02/16/93	25.60	72.35	--
		05/12/93	26.04	71.91	--
30	99.30	01/19/89	27.50	71.80	1.56
		04/03/89	28.44	70.86	2.56
		07/05/89	28.90	70.40	3.38
		11/09/89	29.52	69.78	3.67
		04/30/90	27.23	72.07	0.29
		07/03/90	29.07	70.23	0.57
		10/23/90	29.07	70.23	1.27
		01/21/91	29.09	70.23	2.27
		04/24/91	27.80	71.50	0.19
		05/31/91	28.08	71.23	0.49
		10/24/91	28.94	70.36	0.00
		11/16/92	27.29	72.01	--
		02/16/93	25.42	73.88	--
		05/12/93	27.10	72.20	--
31	98.90	01/19/89	26.15	72.75	--
		04/03/89	25.90	73.00	--
		07/05/89	26.28	72.76	--
		11/09/89	26.64	72.26	--
		01/24/90	26.84	72.06	--
		04/30/90	26.87	72.03	--
		07/03/90	27.50	71.40	--
		09/23/90	27.52	71.36	--
		01/21/91	27.09	71.81	--
		04/24/91	27.12	71.78	--
		07/24/91	27.60	71.30	--
		10/24/91	28.81	70.09	--
		01/23/92	28.31	70.59	--
		05/01/92	26.70	72.20	--
		08/07/92	27.00	71.90	--
		11/16/92	27.04	71.86	--
		02/16/93	25.63	73.27	--
		05/12/93	26.20	72.70	--

**Table 2. Groundwater Elevation Data (continued)**

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
32	98.53	01/24/90	25.64	72.89	--
		04/30/90	25.82	72.71	--
		06/01/90	26.30	72.23	--
		10/23/90	26.70	71.83	--
		01/21/91	26.06	72.47	--
		04/24/91	26.40	72.13	--
		10/24/91	27.05	71.48	--
39	99.00	04/03/89	25.87	73.13	--
		07/05/89	26.38	72.62	--
		11/09/89	26.70	72.30	--
		01/24/90	26.86	72.14	--
		04/30/90	26.97	72.03	--
		07/03/90	28.17	70.83	--
		10/23/90	28.17	70.83	--
		01/21/91	27.15	71.85	--
		03/28/91	27.76	71.24	--
		04/24/91	27.33	71.67	--
		07/24/91	27.91	71.09	--
		10/24/91	28.26	70.74	--
		01/23/92	29.00	70.00	--
		05/01/92	26.82	72.18	--
		08/07/92	27.18	71.82	--
11/16/92	27.19	71.81	--		
02/16/93	25.53	73.47	--		
05/12/93	26.52	72.48	--		
42	99.12	04/03/89	25.77	73.35	--
		07/05/89	26.30	72.89	--
		11/09/89	26.66	72.46	--
		01/24/90	26.82	72.30	--
		04/18/90	26.94	72.18	--
		07/03/90	28.58	70.54	--
		10/23/90	28.58	70.54	0.08
		07/24/91	28.10	71.02	0.00
		10/24/91	28.24	70.88	--
		01/23/92	29.33	69.79	--
		05/01/92	26.88	72.44	--
		08/07/92	27.10	72.02	--
		11/16/92	26.68	72.44	--
		02/16/93	25.41	73.71	--
		05/12/93	26.74	72.38	--

Table 2. Groundwater Elevation Data (continued)

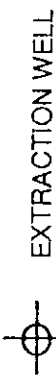
Monitoring Well	TOC Elev <sup>1</sup> (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)	Free Product Thickness (feet)
43	98.87	04/03/89	25.32	73.55	0.08
		07/05/89	26.80	72.07	1.34
		11/09/89	28.44	70.43	2.89
		04/30/90	27.05	71.82	0.79
		07/03/90	28.36	70.51	0.70
		10/23/90	28.19	70.68	0.83
		10/24/91	26.30	72.57	0.00
		01/24/92	28.25	70.62	0.02
		05/01/92	25.44	73.43	0.00
		08/07/92	25.11	73.76	--
		11/16/92	26.42	72.45	--
		02/16/93	24.35	74.52	--
		05/12/93	25.90	72.97	--
45	100.90	02/16/93	24.35	74.52	--
		12/05/89	28.71	72.19	--
		04/30/90	28.85	72.05	--
		07/03/90	29.45	71.45	--
		10/23/90	29.50	71.40	--
		01/21/91	29.03	71.87	--
		04/24/91	28.87	72.03	--
		07/25/91	29.63	71.27	--
		10/24/91	29.62	71.28	--
		01/23/92	30.45	70.45	--
		05/01/92	28.42	72.48	--
		08/07/92	28.70	72.20	--
		11/16/92	28.84	72.06	--
		02/16/93	27.14	73.76	--
05/12/93	28.00	72.90	--		
46	98.11	12/19/89	27.40	70.71	--
		04/30/90	27.46	70.63	--
		07/03/90	27.75	70.36	--
		10/23/90	27.86	70.25	--
		01/21/91	27.60	70.51	--
		04/24/91	27.40	70.71	--
		07/24/91	28.73	69.38	--
		10/24/91	27.88	70.23	--
		01/23/92	28.31	69.80	--
		08/07/92	27.28	70.83	--
		11/16/92	27.42	70.69	--
		02/16/93	26.44	71.67	--
		05/12/93	26.78	71.33	--

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
58	98.89	01/30/91	28.25	70.64	--
		03/28/91	27.81	71.08	--
		04/24/91	27.55	71.34	--
		07/24/91	33.42	65.47	--
		10/24/91	28.29	70.60	--
		01/23/92	28.75	70.14	--
		05/01/92	27.10	71.79	--
		08/07/92	27.40	71.49	--
		11/16/92	27.44	71.45	--
		02/16/93	26.10	72.79	--
		05/12/93	26.68	72.21	--

<sup>1</sup> Elevation reference: PG&E manhole approximately 30 feet south of 14th Street on Martin Luther King Jr. Way, assumed to be 100.00 feet, TOC = Top of casing

<sup>2</sup> -- = No free product present



EXTRACTION WELL



MONITORING WELL

TVH ND  
BTXE ND

TOTAL VOLATILE HYDROCARBONS,  
AS GASOLINE  
BENZENE, TOLUENE, XYLENES,  
ETHYLBENZENE

ND NONE DETECTED

CONCENTRATIONS IN ug/l



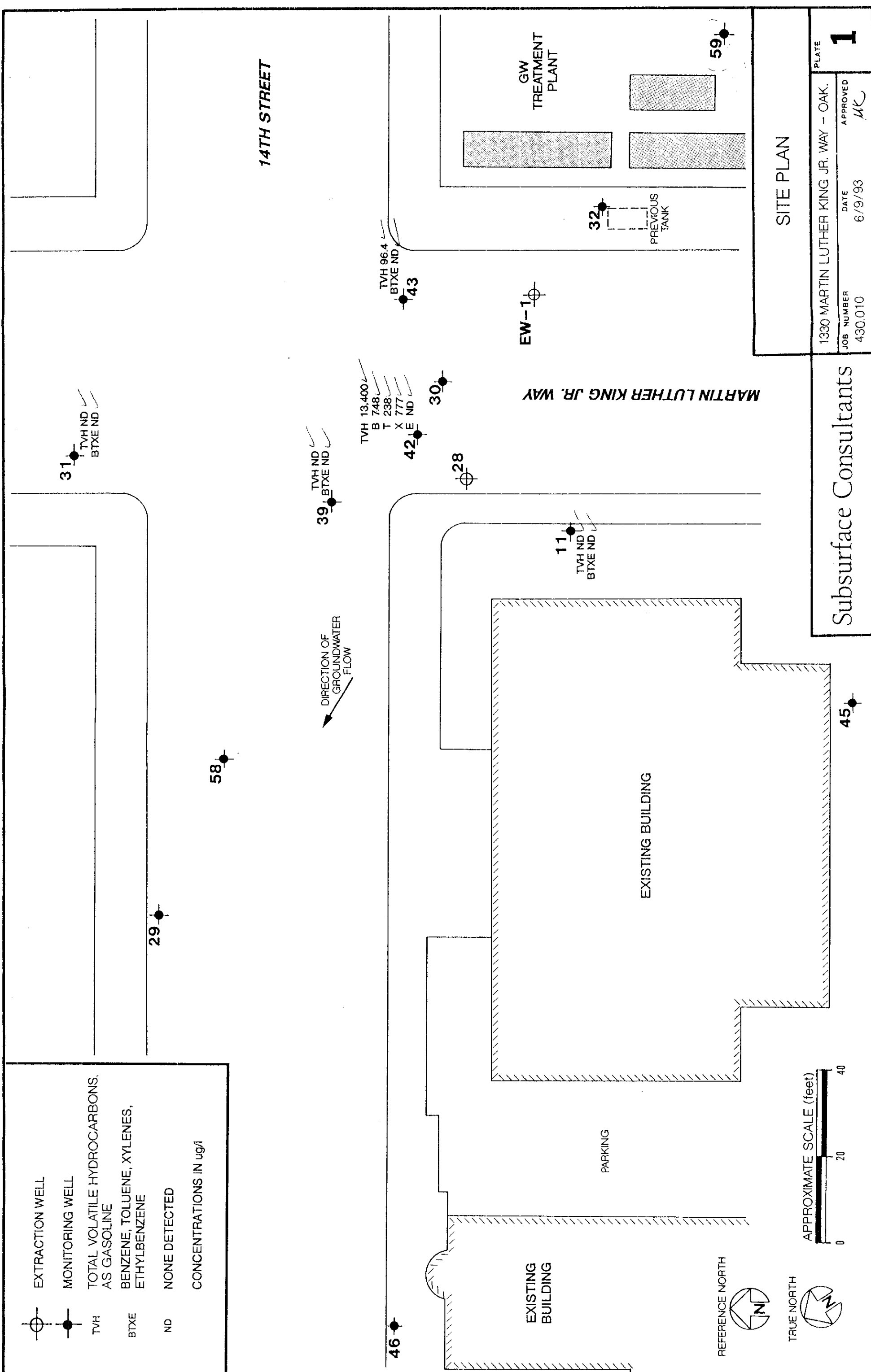
REFERENCE NORTH



TRUE NORTH



APPROXIMATE SCALE (feet)



14TH STREET

EW-1

MARTIN LUTHER KING JR. WAY

GW TREATMENT PLANT

EXISTING BUILDING

PARKING

PREVIOUS TANK

SITE PLAN

1330 MARTIN LUTHER KING JR. WAY - OAK.  
JOB NUMBER 43C.010  
DATE 6/9/93  
APPROVED *MC*

Subsurface Consultants

PLATE 1

ORGANIC ANALYSIS REPORT  
Purgeable Aromatics, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-06A  
SAMPLE ID: METHOD BLANK

COMP. No.	COMPOUND	ug/L	DETECTION
		(ppb)	LIMIT
		ug/L (ppb)	ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

June 3, 1993  
Date



ORGANIC ANALYSIS REPORT  
Purgeable Aromatics, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 05/12/1993  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-01A  
SAMPLE ID: 11

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

June 3, 1993  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 05/12/1993  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-02A  
SAMPLE ID: 31

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

June 3, 1993  
Date

ORGANIC ANALYSIS REPORT  
Purgeable Aromatics, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 05/12/1993  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-03A  
SAMPLE ID: 39

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

June 3, 1993  
Date

ORGANIC ANALYSIS REPORT  
Purgeable Aromatics, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 05/12/1993  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1 & 50 \*

ELI SAMPLE ID: 9305153-04A  
SAMPLE ID: 42

COMP. No.	COMPOUND	ug/L	DETECTION
		(ppb)	LIMIT
			ug/L (ppb)
V1	Benzene	748 *	25
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	238 *	25
V8	Xylenes(dimethylbenzenes)	777 *	25

Note: All positively indentified compounds were second column or second detector confirmed.

\* A lower sample volume or higher dilution factor was used for the quantification of this compound due to high analyte concentration.

Huey-Chen Chow  
Chemist

June 3, 1993  
Date

ORGANIC ANALYSIS REPORT  
Purgeable Aromatics, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 05/12/1993  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-05A  
SAMPLE ID: 43

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

June 3, 1993  
Date

ORGANIC ANALYSIS REPORT  
Purgeable Aromatics, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-08A  
SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	96%
V2	Chlorobenzene	81%
V3	1,2-Dichlorobenzene	--
V4	1,3-Dichlorobenzene	--
V5	1,4-Dichlorobenzene	--
V6	Ethyl benzene	83%
V7	Toluene	90%
V8	Xylenes (dimethylbenzenes)	88%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow  
Chemist

June 3, 1993  
Date

ORGANIC ANALYSIS REPORT  
Purgeable Aromatics, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-09A  
SAMPLE ID: MATRIX SPIKE RECOVERY DUPLICATE \*

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	103%
V2	Chlorobenzene	97%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	97%
V7	Toluene	105%
V8	Xylenes(dimethylbenzenes)	104%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow  
Chemist

June 3, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-06A  
SAMPLE ID: METHOD BLANK

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

June 3, 1993  
Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 05/12/1993  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-01A  
SAMPLE ID: 11

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 05/12/1993  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-02A  
SAMPLE ID: 31

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 05/12/1993  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-03A  
SAMPLE ID: 39

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 05/12/1993  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 50

ELI SAMPLE ID: 9305153-04A  
SAMPLE ID: 42

	CONCENTRATION [ug/L (ppb)]	DETECTION LIMIT * [ug/L (ppb)]
<u>PETROLEUM HYDROCARBONS</u>		
Gasoline Range	13400	1000
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C7	

\* Higher detection limit is due to high analyte concentration.

Jeannette Chen      June 3, 1993  
Chemist                      Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 05/12/1993  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-05A  
SAMPLE ID: 43

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	96.4	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C7	

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-08A  
SAMPLE ID: 39 MATRIX SPIKE RECOVERY

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	99%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-09A  
SAMPLE ID: 39 MATRIX SPIKE RECOVERY  
DUPLICATE

PETROLEUM HYDROCARBONS                      % SPIKE RECOVERY

Gasoline Range    108%

CARBON NO. RANGE

Gasoline Range    -

PEAK CARBON NO.

Gasoline Range    -

Jeannette Chen  
Chemist

June 3, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

ELI SAMPLE ID: 9305153-10A  
SAMPLE ID: REAGENT SPIKE RECOVERY

---

DATE SAMPLED: NA  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	90%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

June 3, 1993  
Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-153  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 05/13/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/19/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305153-11A  
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.

---

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	97%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Jeannette Chen  
Chemist

June 3, 1993  
Date

**CHAIN OF CUSTODY FORM**

PROJECT NAME: MUK GROUNDWATER      93-05-153      608/6019      UPS 13<sup>00</sup> PAGE 1 OF 1

JOB NUMBER: 430,010      LAB: EXREKA LABORATORIES

PROJECT CONTACT: MARK KAWAKAMI      TURNAROUND: NORMAL

SAMPLED BY: \_\_\_\_\_      REQUESTED BY: MARK KAWAKAMI

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES		
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH	DAY		YEAR	TIME
1A	11	X				X				X					05	12	93		X (Acetic + BTEX)
2A	31	X				X				X									X
3A	39	X				X				X									X
4A	42	X				X				X									X
5A	43	X				X				X					05	29	93		X

**CHAIN OF CUSTODY RECORD**

RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
	5/12/93 1200	V. Franceschi	5/13/93 1100
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME

COMMENTS & NOTES:

paid \$825.00. ✓ # 10252

**Subsurface Consultants, Inc.**  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137

June 8, 1993  
SCI 430.014

93 JUN 10 11 5:17

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Quarterly Groundwater Monitoring  
May 1993  
Floor Drain Sump  
13th and Jefferson Streets  
Oakland, California**

Dear Ms. Eberle:

This letter records the results of the May 1993 groundwater sampling and analytical testing event performed by Subsurface Consultants, Inc. (SCI) for DCA<sup>1</sup> contamination at the referenced site. Well locations are shown on the attached Site Plan, Plate 1.

**Background**

SCI previously documented the removal of a concrete floor drain sump and associated contaminated soils in a report dated September 24, 1990. A groundwater contamination assessment report by SCI dated July 8, 1991, presents the monitoring well installation details.

Soil contamination resulting from underground gasoline storage tanks near the intersection of 13th and Jefferson Streets also occurred in the area. Remediation activities for this condition are detailed in our report dated December 6, 1990. Analytical test results from previous quarterly groundwater sampling events for the gasoline contamination were most recently presented in a letter dated January 8, 1993.

---

<sup>1</sup> DCA = 1,2-Dichloroethane

■ Subsurface Consultants, Inc.

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
June 8, 1993  
Page 2

■ Subsurface Consultants, Inc.

### Quarterly Monitoring

Groundwater monitoring at the site has been performed quarterly over the past three years. Groundwater level measurements are summarized in Table 1. Groundwater surface contours for the latest event, May 6, 1993, are shown on Plate 1. Groundwater flow patterns have remained relatively consistent during recent monitoring events.

Prior to sampling, the wells were purged of at least 4 well volumes of water using a disposable bailer. The purged water was disposed of in the existing groundwater treatment plant on-site. During this event, Wells 48 and 54 were sampled.

The water samples were retained in pre-cleaned containers, placed in an iced cooler, and kept refrigerated until delivery to the analytical laboratory. The samples were accompanied by chain-of-custody records, copies of which are attached.

Analytical testing was performed by Eureka Laboratories, Inc., a State of California Department of Health Services certified analytical laboratory for the tests performed. Water samples were analytically tested for the following:

Volatile Organic Chemicals, sample preparation and analysis using EPA method 5030 (purge and trap) and 8010 (gas chromatograph coupled to an electrolytic conductivity detector).

Water samples from the wells have also been analyzed in the past for total volatile hydrocarbons (EPA 8015/5030), total extractable hydrocarbons (EPA 8015/3550), hydrocarbon oil and grease (SMWW 17:5520 E&F) and benzene, toluene, xylene and ethylbenzene (EPA 8020), because these compounds were associated with the gasoline tank and sump releases. The analytical test results are summarized in Tables 2 and 3.

### Conclusions

The groundwater level data indicates that the groundwater flow direction is toward the northwest at a gradient of approximately 0.6 percent. Groundwater flow direction and gradient remain consistent with previous measurements.

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
June 8, 1993  
Page 3

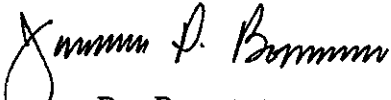
■ Subsurface Consultants, Inc.

The results of the latest sampling event indicate that chloroform was present in Well 54 at a concentration of 0.7 ug/l. No other volatile organic chemicals (EPA 8010) were present in the wells being monitored at concentrations in excess of analytical detection limits.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:egh

Attachments: Table 1 - Groundwater Elevation Data  
Table 2 - Petroleum Hydrocarbon Concentrations in  
Groundwater  
Table 3 - Halogenated Volatile Organic Chemical  
Concentrations in Groundwater  
Plate 1 - Site Plan  
Chain-of-Custody Records  
Analytical Test Reports

1 copy each: David W. Ralph  
Offices of Economic Development and Employment

Ms. Julie Carver  
Environmental Affairs

Mr. Eddy So  
Regional Water Quality Control Board

Mr. Donnell Choy  
Office of City Attorney

Table 1. GROUNDWATER ELEVATION DATA

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>
MW-47	09/24/90	100.50	27.28	73.22
	10/04/90		27.32	73.18
	12/03/90		27.38	73.12
	01/21/91		27.17	73.33
	03/13/91		26.85	73.65
	04/03/91		26.38	74.12
	06/13/91		28.39	72.11
	09/10/91		27.08	73.42
	12/12/91		27.95	72.55
	04/17/92		26.18	74.32
	07/28/92		26.48	74.02
	11/03/92		26.86	73.64
	02/02/93		24.96	75.54
	05/06/93		25.26	75.24
MW-48	07/18/90	102.40	29.08	73.32
	10/04/90		29.29	73.11
	12/03/90		29.28	73.12
	01/21/91		29.03	73.37
	03/13/91		28.72	73.68
	04/03/91		28.24	74.16
	06/13/91		29.47	72.93
	09/10/91		28.94	73.46
	12/12/91		30.39	72.01
	04/17/92		28.07	74.33
	07/28/92		28.32	74.08
	11/03/92		28.74	73.66
	02/02/93		26.65	75.75
	05/06/93		27.10	75.30
MW-49	12/03/90	101.73	28.44	73.29
	01/21/91		28.20	73.53
	03/13/91		27.79	73.94
	04/03/91		27.28	74.45
	06/13/91		27.66	74.07
	09/10/91		28.04	73.69
	12/12/91		30.45	71.28
	04/17/92		27.26	74.64
	11/03/92		27.84	73.89
12/18/92	Well Abandoned			
MW-51	10/04/90	102.64	28.57	74.07
	12/03/90		28.57	74.07
	01/21/91		28.44	74.20
	03/13/91		27.76	74.88
	04/03/91		27.32	75.32
	06/13/91		28.82	73.82
	09/10/91		28.00	74.64
MW-52	10/04/90	102.44	28.41	74.03
	12/03/90		28.38	74.06
	01/21/91		28.24	74.20
	03/13/91		27.57	74.87
	04/03/91		27.16	75.28
	06/13/91		29.41	73.03
	09/10/91		27.85	74.59

Table 1. Groundwater Elevation Data (continued)

■ Subsurface Consultants, Inc.

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>
MW-53	09/24/90	101.28	27.44	73.84
	10/04/90		27.50	73.78
	12/03/90		27.46	73.82
	01/21/91		28.00	73.28
	03/13/91		27.00	74.28
	06/13/91		27.61	73.67
	08/12/91	Well Abandoned		
MW-54	09/24/90	100.78	27.01	73.77
	10/04/90		27.30	73.48
	12/03/90		27.01	73.77
	01/21/91	101.92 <sup>3</sup>	27.28	74.64
	03/13/91		27.40	74.52
	06/13/91		28.93	72.99
	09/10/91		27.66	74.26
	12/12/91		28.88	73.04
	04/17/92		26.82	75.10
	11/03/92		27.54	74.38
	02/02/93		25.54	76.38
	05/06/93		25.77	76.15
MW-59	02/12/91	100.37	27.45	72.92
	03/13/91		27.60	72.77
	04/03/91		27.36	73.01
	06/13/91		28.01	72.36
	09/10/91		28.00	72.37
	12/12/91		28.53	71.84
	04/17/92		26.91	73.46
	07/28/92		27.27	73.10
	11/03/92		27.56	72.81
	02/02/93		24.74	75.63
05/06/93	25.76	74.61		

<sup>1</sup> Top of Casing

<sup>2</sup> Depth measured below top of casing

<sup>3</sup> Well head damaged and repaired

Assumed datum: The elevation of the PG&E manhole in Martin Luther King, Jr. Way, near the northwest corner of the block, was assumed to have an elevation of 100 feet (see Plate 1)





**Table 2. Petroleum Hydrocarbon Concentrations in Groundwater (continued)**

MW-54	09/21/90	--	1700	--	ND	1.5	20	1.9
	10/04/90	--	1300	--	ND	0.7	12	28
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-59	03/13/91	--	ND	--	ND	ND	ND	ND

1 Oil and Grease

2 Total Volatile Hydrocarbons

3 Total Extractable Hydrocarbons

4 Benzene

5 Toluene

6 Xylene

7 Ethylbenzene

8 ND = Non-detectable, see analytical test reports for detection limits

9 -- Not tested

**Table 3.**  
**HALOGENATED VOLATILE ORGANIC CHEMICAL**  
**CONCENTRATIONS IN GROUNDWATER**

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-29	01/04/91	ND <sup>4</sup>	ND	ND	ND
MW-31	01/04/91	ND	ND	10	ND
MW-45	01/04/91	ND	ND	ND	ND
MW-46	01/04/91	ND	ND	ND	ND
MW-47	12/03/90	ND	11	ND	ND
	01/04/91	16	ND	ND	ND
	03/13/91	6.7	ND	ND	ND
	06/13/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
MW-48	10/04/90	60	ND	ND	ND
	12/03/90	31	ND	ND	ND
	01/04/91	15	ND	ND	ND
	03/13/91	30	ND	ND	ND
	06/19/91	6.1	ND	ND	ND
	09/11/91	5.3	ND	ND	ND
	12/12/91	16	ND	ND	ND
	04/17/92	1	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
	02/03/93	ND	ND	ND	ND
	05/06/93	ND	ND	ND	ND
MW-49	12/03/90	ND	ND	ND	ND
	03/03/91	ND	ND	ND	ND
	06/13/91	5.0	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
	12/18/92	Well Abandoned			
MW-51	12/04/90	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
MW-52	12/04/90	ND	ND	1.3	ND
	06/13/91	ND	ND	2.0	ND
MW-53	10/04/90	ND	ND	1.2	ND
	12/04/90	ND	ND	1.9	ND
	03/13/91	ND	ND	2.0	ND
	06/13/91	ND	ND	8.0	ND
	08/12/91	Well abandoned			

**Table 3. Halogenated Volatile Organic Chemical Concentrations in Groundwater (continued)**






<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-54	10/04/90	ND	ND	1.6	ND
	12/04/90	ND	ND	1.5	ND
	01/04/91	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
	11/03/92	ND	ND	ND	ND
	02/02/93	ND	ND	1.1	ND
	05/06/93	ND	ND	0.7	ND
MW-59	03/13/91	ND	ND	ND	ND
	04/03/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND

<sup>1</sup> 1,2 Dichloroethane

<sup>2</sup> 1,2 Dichloroethene

<sup>3</sup> Micrograms/liter = parts per billion

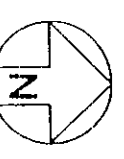
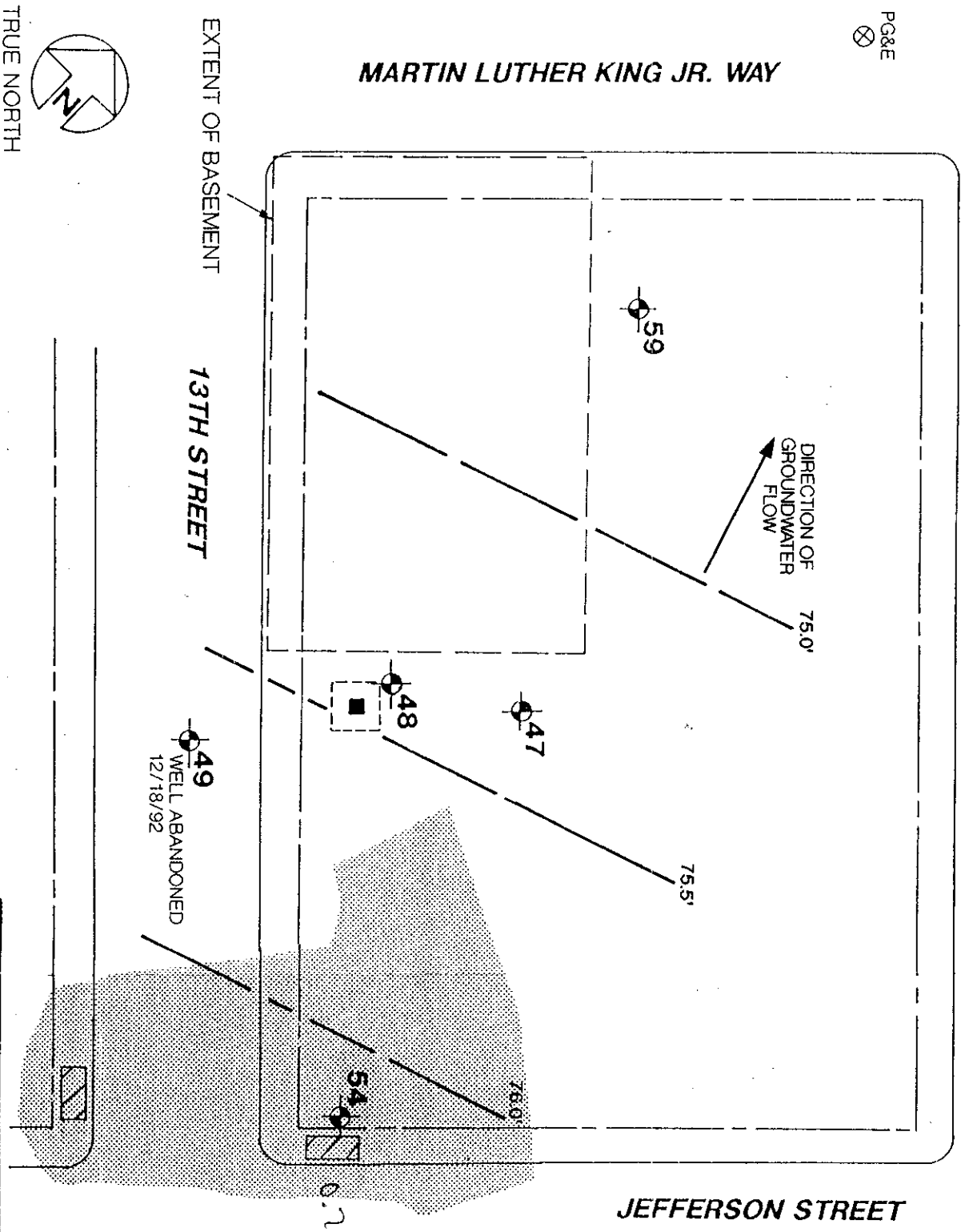
<sup>4</sup> None detected, see test reports for detection limits

-  TEST BORING/MONITORING WELL
-  PROPERTY LINE
-  APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION
-  PREVIOUS FLOOR DRAIN SUMP
-  GROUNDWATER CONTOURS (feet)  
(MAY 6, 1993)

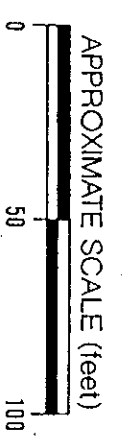
14TH STREET

MARTIN LUTHER KING JR. WAY

PG&E




REFERENCE NORTH



SITE PLAN

Subsurface Consultants

13TH & JEFFERSON - OAKLAND, CA  
JOB NUMBER 430.014  
DATE 6/3/93  
APPROVED 

PLATE

1

PURGEABLE HALOCARBONS  
EPA METHOD 8010

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-078  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: 13 & JEFFERSON  
JOB #: 430.014

DATE SAMPLED: NA  
DATE RECEIVED: 05/07/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/20/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305078-03A  
SAMPLE ID: METHOD BLANK

COMP. No.	COMPOUND	CONCENTRATION ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Bromodichloromethane	<0.5	0.5
V2	Bromoform	<0.5	0.5
V3	Bromomethane	<0.5	0.5
V4	Carbon tetrachloride	<0.5	0.5
V5	Chlorobenzene	<0.5	0.5
V6	Chloroethane	<0.5	0.5
V7	Chloroform	<0.5	0.5
V8	Chloromethane	<0.5	0.5
V9	Dibromochloromethane	<0.5	0.5
V10	Dibromomethane	<0.5	0.5
V11	1,2-Dichlorobenzene	<0.5	0.5
V12	1,3-Dichlorobenzene	<0.5	0.5
V13	1,4-Dichlorobenzene	<0.5	0.5
V14	1,1-Dichloroethane	<0.5	0.5
V15	1,2-Dichloroethane	<0.5	0.5
V16	1,1-Dichloroethylene (Vinylidene chloride)	<0.5	0.5
V17	trans-1,2-Dichloroethylene	<0.5	0.5
V18	Dichloromethane	<0.5	0.5
V19	1,2-Dichloropropane	<0.5	0.5
V20	cis-1,3-Dichloropropylene	<0.5	0.5
V21	trans-1,3-Dichloropropylene	<0.5	0.5
V22	1,1,2,2-Tetrachloroethane	<0.5	0.5
V23	1,1,1,2-Tetrachloroethane	<0.5	0.5
V24	Tetrachloroethylene	<0.5	0.5
V25	1,1,1-Trichloroethane	<0.5	0.5
V26	1,1,2-Trichloroethane	<0.5	0.5
V27	Trichloroethylene	<0.5	0.5
V28	Vinyl chloride	<0.5	0.5
V29	Dichlorodifluoromethane	<0.5	0.5
V30	Trichlorofluoromethane	<0.5	0.5
V31	2-chloro-ethyl-vinyl-ether	<0.5	0.5

Huey-Chen Chow  
Chemist

June 1, 1993  
Date

## PURGEABLE HALOCARBONS

EPA METHOD 8010

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-078  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: 13 & JEFFERSON  
JOB #: 430.014

DATE SAMPLED: 05/06/1993  
DATE RECEIVED: 05/07/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/20/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305078-01A  
SAMPLE ID: 54

COMP. No.	COMPOUND	CONCENTRATION ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Bromodichloromethane	<0.5	0.5
V2	Bromoform	<0.5	0.5
V3	Bromomethane	<0.5	0.5
V4	Carbon tetrachloride	<0.5	0.5
V5	Chlorobenzene	<0.5	0.5
V6	Chloroethane	<0.5	0.5
V7	Chloroform	0.7	0.5
V8	Chloromethane	<0.5	0.5
V9	Dibromochloromethane	<0.5	0.5
V10	Dibromomethane	<0.5	0.5
V11	1,2-Dichlorobenzene	<0.5	0.5
V12	1,3-Dichlorobenzene	<0.5	0.5
V13	1,4-Dichlorobenzene	<0.5	0.5
V14	1,1-Dichloroethane	<0.5	0.5
V15	1,2-Dichloroethane	<0.5	0.5
V16	1,1-Dichloroethylene (Vinylidene chloride)	<0.5	0.5
V17	trans-1,2-Dichloroethylene	<0.5	0.5
V18	Dichloromethane	<0.5	0.5
V19	1,2-Dichloropropane	<0.5	0.5
V20	cis-1,3-Dichloropropylene	<0.5	0.5
V21	trans-1,3-Dichloropropylene	<0.5	0.5
V22	1,1,2,2-Tetrachloroethane	<0.5	0.5
V23	1,1,1,2-Tetrachloroethane	<0.5	0.5
V24	Tetrachloroethylene	<0.5	0.5
V25	1,1,1-Trichloroethane	<0.5	0.5
V26	1,1,2-Trichloroethane	<0.5	0.5
V27	Trichloroethylene	<0.5	0.5
V28	Vinyl chloride	<0.5	0.5
V29	Dichlorodifluoromethane	<0.5	0.5
V30	Trichlorofluoromethane	<0.5	0.5
V31	2-chloro-ethyl-vinyl-ether	<0.5	0.5

Note: All positively indentified compounds were second column or second detector confirmed.

Huey-Chen Chow  
Chemist

June 1, 1993  
Date

**PURGEABLE HALOCARBONS**  
**EPA METHOD 8010**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-078  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: 13 & JEFFERSON  
JOB #: 430.014

DATE SAMPLED: 05/06/1993  
DATE RECEIVED: 05/07/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/20/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305078-02A  
SAMPLE ID: 48

COMP. No.	COMPOUND	CONCENTRATION ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Bromodichloromethane	<0.5	0.5
V2	Bromoform	<0.5	0.5
V3	Bromomethane	<0.5	0.5
V4	Carbon tetrachloride	<0.5	0.5
V5	Chlorobenzene	<0.5	0.5
V6	Chloroethane	<0.5	0.5
V7	Chloroform	<0.5	0.5
V8	Chloromethane	<0.5	0.5
V9	Dibromochloromethane	<0.5	0.5
V10	Dibromomethane	<0.5	0.5
V11	1,2-Dichlorobenzene	<0.5	0.5
V12	1,3-Dichlorobenzene	<0.5	0.5
V13	1,4-Dichlorobenzene	<0.5	0.5
V14	1,1-Dichloroethane	<0.5	0.5
V15	1,2-Dichloroethane	<0.5	0.5
V16	1,1-Dichloroethylene (Vinylidene chloride)	<0.5	0.5
V17	trans-1,2-Dichloroethylene	<0.5	0.5
V18	Dichloromethane	<0.5	0.5
V19	1,2-Dichloropropane	<0.5	0.5
V20	cis-1,3-Dichloropropylene	<0.5	0.5
V21	trans-1,3-Dichloropropylene	<0.5	0.5
V22	1,1,2,2-Tetrachloroethane	<0.5	0.5
V23	1,1,1,2-Tetrachloroethane	<0.5	0.5
V24	Tetrachloroethylene	<0.5	0.5
V25	1,1,1-Trichloroethane	<0.5	0.5
V26	1,1,2-Trichloroethane	<0.5	0.5
V27	Trichloroethylene	<0.5	0.5
V28	Vinyl chloride	<0.5	0.5
V29	Dichlorodifluoromethane	<0.5	0.5
V30	Trichlorofluoromethane	<0.5	0.5
V31	2-chloro-ethyl-vinyl-ether	<0.5	0.5

Huey-Chen Chow  
Chemist

June 1, 1993  
Date

PURGEABLE HALOCARBONS  
EPA METHOD 8010

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-05-078  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: 13 & JEFFERSON  
JOB #: 430.014

DATE SAMPLED: NA  
DATE RECEIVED: 05/07/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/20/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305078-05A  
SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Bromodichloromethane	-
V2	Bromoform	-
V3	Bromomethane	-
V4	Carbon tetrachloride	99%
V5	Chlorobenzene	-
V6	Chloroethane	-
V7	Chloroform	-
V8	Chloromethane	-
V9	Dibromochloromethane	-
V10	Dibromomethane	-
V11	1,2-Dichlorobenzene	95%
V12	1,3-Dichlorobenzene	-
V13	1,4-Dichlorobenzene	102%
V14	1,1-Dichloroethane	-
V15	1,2-Dichloroethane	-
V16	1,1-Dichloroethylene (Vinylidene chloride)	96%
V17	trans-1,2-Dichloroethylene	-
V18	Dichloromethane	-
V19	1,2-Dichloropropane	-
V20	cis-1,3-Dichloropropylene	-
V21	trans-1,3-Dichloropropylene	-
V22	1,1,2,2-Tetrachloroethane	-
V23	1,1,1,2-Tetrachloroethane	-
V24	Tetrachloroethylene	-
V25	1,1,1-Trichloroethane	-
V26	1,1,2-Trichloroethane	-
V27	Trichloroethylene	110%
V28	Vinyl chloride	-
V29	Dichlorodifluoromethane	-
V30	Trichlorofluoromethane	-
V31	2-chloro-ethyl-vinyl-ether	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow  
Chemist

June 1, 1993  
Date



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EPA METHOD 8010

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Order No.: 93-05-078  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: 13 & JEFFERSON  
JOB #: 430.014

DATE SAMPLED: NA  
DATE RECEIVED: 05/07/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 05/20/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9305078-06A

SAMPLE ID: MATRIX SPIKE RECOVERY DUPLICATE \*

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Bromodichloromethane	-
V2	Bromoform	-
V3	Bromomethane	-
V4	Carbon tetrachloride	90%
V5	Chlorobenzene	-
V6	Chloroethane	-
V7	Chloroform	-
V8	Chloromethane	-
V9	Dibromochloromethane	-
V10	Dibromomethane	-
V11	1,2-Dichlorobenzene	96%
V12	1,3-Dichlorobenzene	-
V13	1,4-Dichlorobenzene	93%
V14	1,1-Dichloroethane	-
V15	1,2-Dichloroethane	-
V16	1,1-Dichloroethylene (Vinylidene chloride)	81%
V17	trans-1,2-Dichloroethylene	-
V18	Dichloromethane	-
V19	1,2-Dichloropropane	-
V20	cis-1,3-Dichloropropylene	-
V21	trans-1,3-Dichloropropylene	-
V22	1,1,2,2-Tetrachloroethane	-
V23	1,1,1,2-Tetrachloroethane	-
V24	Tetrachloroethylene	-
V25	1,1,1-Trichloroethane	-
V26	1,1,2-Trichloroethane	-
V27	Trichloroethylene	102%
V28	Vinyl chloride	-
V29	Dichlorodifluoromethane	-
V30	Trichlorofluoromethane	-
V31	2-chloro-ethyl-vinyl-ether	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow  
Chemist

June 1, 1993  
Date

**CHAIN OF CUSTODY FORM**

93-05-078 ~~F45~~ GCV8

PAGE 1 OF 1

ANALYSIS REQUESTED

PROJECT NAME: 13 \$ JEFFERSON  
 JOB NUMBER: 430.014  
 PROJECT CONTACT: MARK KAWAKAMI  
 SAMPLED BY: FERNANDO VELEZ  
 LAB: SUREKA LABORATORIES  
 TURNAROUND: NORMAL  
 REQUESTED BY: MARK KAWAKAMI

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX			CONTAINERS				METHOD PRESERVED				SAMPLING DATE				NOTES			
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICF	NONE	MONTH	DAY		YEAR	TIME	
1A	54	X				3				X		X			05	06	93	1000	X	
2A	48	X				3				X		X			05	06	93	1000	X	

CHAIN OF CUSTODY RECORD				COMMENTS & NOTES:
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME	
	5/6/93 10:00	K. Francochi	5/7/93 11:00am	
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME	
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME	
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME	

**Subsurface Consultants, Inc.**  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137

ALAMEDA COUNTY  
HEALTH CARE SERVICES  
AGENCY



DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH  
State Water Resources Control Board  
Division of Clean Water Programs  
UST Local Oversight Program  
80 Swan Way, Rm 200  
Oakland, CA 94621  
(510) 271-4530

May 4, 1993  
STID 3623

Lois Parr  
Oakland Redevelopment Agency  
1333 Broadway, Suite 900  
Oakland CA 94612

RE: 1330 Martin Luther King Way  
Oakland CA 94612

Dear Ms. Parr,

We are in receipt of the "Request to Modify Groundwater Monitoring Program, Gasoline Contamination," letter report prepared by Subsurface Consultants, Inc. (SCI), dated 4/19/93. This document requests the termination of groundwater monitoring and sampling for wells 45 and 58. The basis for this request is non-detectable concentrations in these wells for the past nine quarterly monitoring events. The other wells will continue to be monitored and sampled on a quarterly basis for TVH and BTEX. Soil vapor extraction and groundwater treatment are ongoing.

This request is found to be acceptable. The next quarterly monitoring/sampling event is slated for 5/11/93. I trust this letter will arrive in a timely fashion, so you can organize the 5/11/93 quarterly event.

If you have any questions, please contact me at 510-271-4530.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jennifer Eberle".

Jennifer Eberle  
Hazardous Materials Specialist

cc: James Bowers, Subsurface Consultants, Inc., 171-12th St.,  
Suite 201, Oakland CA 94607  
Rich Hiatt, RWQCB  
Ed Howell/File

je 3623-B

April 19, 1993  
SCI 430.010

SC 430.010 7:2:32

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Request to Modify Groundwater  
Monitoring Program  
Gasoline Contamination  
1330 Martin Luther King Jr. Way  
Oakland, California**

Dear Ms. Eberle:

On behalf of the City of Oakland Redevelopment Agency, Subsurface Consultants, Inc. (SCI) requests to modify the groundwater monitoring program for the referenced site. Specifically, we request that the monitoring of Wells 45 and 58 be terminated. The basis for our request is presented below. Well locations are shown on the attached Plate 1.

**Background**

Soil and groundwater contamination resulted from a leaking underground gasoline storage tank at the site. On-site soil remediation and tank removal activities are documented in a report dated December 6, 1990. Free product accumulated on the groundwater surface and migrated beneath the intersection of 14th Street and Martin Luther King, Jr. Way. The extent of the free product and dissolved product plumes were characterized during previous investigations. The results of these studies were recorded in a report dated November 20, 1989. *prior to tank removal?*

Groundwater and off-site contaminated soil resulting from the gasoline release are presently being remediated. Remediation consists of (1) soil vapor extraction, and (2) groundwater extraction and treatment. The soil vapor extraction system has removed all measurable free product in the area. The groundwater extraction system has significantly lowered dissolved product concentrations and reduced the extent of the dissolved product plume. Vapor extraction and groundwater treatment are ongoing.

■ **Subsurface Consultants, Inc.**

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.010  
April 19, 1993  
Page 2

■ Subsurface Consultants, Inc.

### Quarterly Monitoring

Groundwater monitoring at the site has been performed quarterly over the past three years. The wells that are monitored include Wells 11, 31, 39, 42, 43, 45 and 58. The regional groundwater flow is toward the west-northwest at a gradient of approximately one percent. Locally, groundwater is flowing toward the extraction well(EW1). Groundwater flow patterns have remained relatively consistent during recent monitoring events.

when? Analytical testing was performed by Curtis & Tompkins, Ltd., and Eureka Laboratories, Inc., both State of California Department of Health Services certified analytical laboratories for the tests performed. Water samples were analytically tested for total volatile hydrocarbons (EPA 8015/5030), and benzene, toluene, xylene and ethylbenzene (EPA 8020). The results of the analyses are summarized in Table 1.

### Request for Monitoring Plan Modification

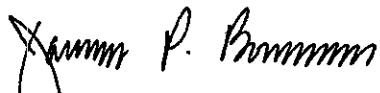
Based on the analytical data, we conclude that soil and groundwater remediation efforts are successfully reducing gasoline concentrations in the soil and groundwater. Total volatile hydrocarbons (TVH) and benzene, toluene, xylene and ethylbenzene (BTXE) have not been detected in Monitoring Wells 45 and 58 during at least the past nine (9) quarterly monitoring events at concentrations above reporting limits. For this reason, we propose to cease the monitoring of Wells 45 and 58. We will continue to monitor the other wells on a quarterly basis for TVH and BTXE.

Our next sampling event is scheduled for May 11, 1993. We would appreciate a response to our proposed monitoring program modification prior to this date.

If you need additional information or have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/96)

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.010  
April 19, 1993  
Page 3

■ Subsurface Consultants, Inc.

MK:JPB:egh

Attachments: Table 1 - Petroleum Hydrocarbon Concentrations in  
Groundwater  
Plate 1 - Site Plan

cc: Ms. Julie Carver  
Environmental Affairs

Ms. Lois Parr  
Oakland Redevelopment Agency

**Table 1. Contaminant Concentrations In Groundwater**

<u>Test Boring</u>	<u>Sample Date</u>	<u>TVH<sup>1</sup></u> <u>(ug/L)<sup>5</sup></u>	<u>B<sup>2</sup></u> <u>(ug/L)</u>	<u>T<sup>2</sup></u> <u>(ug/L)</u>	<u>X<sup>2</sup></u> <u>(ug/L)</u>	<u>E<sup>2</sup></u> <u>(ug/L)</u>	<u>Total Organic Lead</u> <u>(ug/L)</u>	<u>EDB<sup>3</sup></u> <u>(ug/L)</u>	<u>1,2 DCA<sup>4</sup></u> <u>(ug/L)</u>
11	07/05/88	10,000	1,800	ND <sup>6</sup>	1,200	ND	-- <sup>7</sup>	--	--
	04/03/89	53,000	7,100	4,000	2,400	380	--	--	--
	07/06/89	22,000	5,300	3,200	2,300	390	ND	26	--
	11/08/89	120,000	18,000	8,000	21,000	4,500	ND	37	--
	07/18/90	26,000	950	19	98	ND	--	--	--
	10/23/90	4,200	1,600	8.5	170	28	--	0.2	--
	01/21/91	1,900	600	6.2	84	60	--	0.15	--
	04/24/91	4,800	1,100	3.5	46	120	--	--	--
	07/24/91	950	330	0.9	1.8	12	--	--	--
	10/24/91	970	350	1.6	1.6	14	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	340	77	0.6	0.6	ND	--	--	--
	08/06/92	220	54	ND	ND	ND	--	--	--
	11/16/92	159	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
28	09/02/88	890	431	75.4	84	ND	ND	9.2	--
	07/06/89	13,000	4,900	1,500	1,300	100	ND	27	--
29	09/02/88	ND	ND	8.1	ND	ND	ND	ND	--
	04/03/89	450	ND	2.0	6.7	2.0	--	--	--
	07/06/89	ND	ND	15	ND	ND	ND	ND	--
	11/08/89	780	ND	14	32	7.9	ND	ND	--
	10/23/90	1,800	1.2	6.5	4.8	2.7	--	--	--
	01/21/91	1,100	ND	3.7	4.9	1.3	--	ND	--
03/28/91	500	ND	1.6	0.8	ND	--	--	--	
31	09/02/88	ND	ND	ND	ND	ND	ND	ND	--
	04/03/89	ND	ND	ND	ND	ND	--	--	--
	07/06/89	ND	ND	ND	ND	ND	ND	ND	--
	11/08/89	ND	ND	ND	ND	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	01/21/91	ND	ND	0.6	2.1	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	43	ND	ND	ND	ND	--	--	--
	12/17/92 <sup>8</sup>	35.3	ND	ND	ND	ND	--	--	--
02/16/93	ND	ND	ND	ND	ND	--	--	--	

Table 1. Contaminant Concentrations In Groundwater (continued)

<u>Test Boring</u>	<u>Sample Date</u>	<u>TVH<sup>1</sup> (ug/L)<sup>5</sup></u>	<u>B<sup>2</sup> (ug/L)</u>	<u>T<sup>2</sup> (ug/L)</u>	<u>X<sup>2</sup> (ug/L)</u>	<u>E<sup>2</sup> (ug/L)</u>	<u>Total Organic Lead (ug/L)</u>	<u>EDB<sup>3</sup> (ug/L)</u>	<u>1,2 DCA<sup>4</sup> (ug/L)</u>
32	10/23/90	48,000	7,600	8,200	5,600	150	--	3.8	--
	01/21/91	96,000	9,600	15,000	16,000	2,000	--	ND	--
	04/24/91	170	ND	ND	ND	ND	--	--	--
39	04/03/89	2,000	250	11	210	ND	--	--	--
	07/06/89	7,900	2,700	1,300	860	97	ND	3.0	--
	11/08/89	9,300	4,500	760	310	150	ND	4.0	36
	07/18/90	ND	4.1	ND	ND	ND	--	--	--
	10/23/90	160	12	6.4	5.0	ND	--	ND	ND
	01/21/90	200	23	0.9	2.0	1.2	--	ND	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	1.4	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
02/16/93	ND	ND	ND	ND	ND	--	--	--	
42	07/06/89	13,000	4,500	100	1,000	ND	ND	8.0	--
	10/23/90	8,800	420	580	910	91	--	0.7	--
	07/24/91	21,000	2,200	300	650	180	--	--	--
	10/24/91	18,000	2,300	1,100	1,000	260	--	16	--
	01/23/92	10,000	1,100	280	430	300	--	--	--
	05/01/92	16,000	1,200	330	580	220	--	--	--
	08/07/92	12,000	890	510	1,000	340	--	--	--
	11/16/92	587	1.2	4.3	43	ND	--	--	--
02/16/93	6730	386	51	411	183	--	--	--	
43	10/24/91	6,300	ND	ND	130	9.1	--	--	--
	05/01/92	930	ND	ND	3.8	ND	--	--	--
	08/07/92	450	ND	2.4	3.5	1.5	--	--	--
	11/16/92	614	ND	2.0	34.4	1.6	--	--	--
	02/16/93	123	12.5	4.3	60.9	18.6	--	--	--



Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
45	12/05/89	ND	ND	ND	ND	ND	ND	ND	--
	10/23/90	ND	0.9	1.4	1.8	ND	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
46	11/30/89	ND	2.1	1.9	2.0	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	10/23/90	ND	ND	0.6	ND	0.5	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
58	01/30/91	ND	ND	ND	ND	ND	--	--	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
59	02/16/93	ND	ND	ND	ND	ND	--	--	--

<sup>1</sup> TVH = Total Volatile Hydrocarbons

<sup>2</sup> BTXE = Benzene, Toluene, Xylene, and Ethylbenzene

<sup>3</sup> EPA 8011, ethylene dibromide

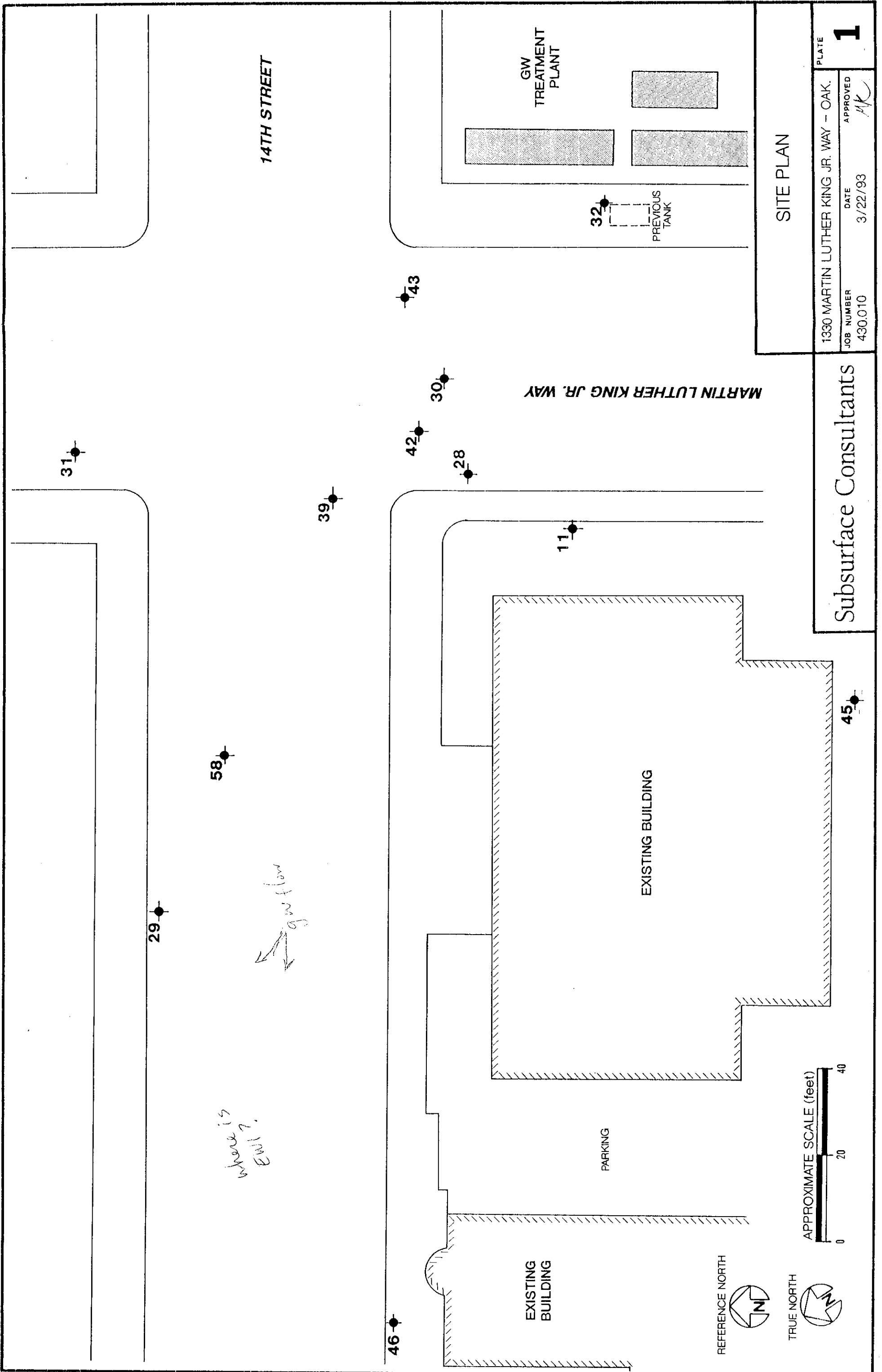
<sup>4</sup> EPA 8010, 1, 2-dichloroethane

<sup>5</sup> ug/L = micrograms per liter

<sup>6</sup> ND = None detected, chemicals not present at concentrations above the detection limits

<sup>7</sup> -- = Test not requested

<sup>8</sup> Well resampled



14TH STREET

GW TREATMENT PLANT

32 PREVIOUS TANK

SITE PLAN

1330 MARTIN LUTHER KING JR. WAY - OAK.  
 JOB NUMBER 430.010  
 DATE 3/22/93  
 APPROVED *AK*  
 PLATE 1

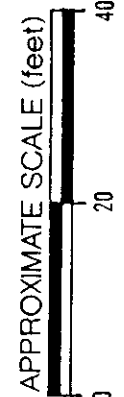
MARTIN LUTHER KING JR. WAY

Subsurface Consultants

EXISTING BUILDING

PARKING

EXISTING BUILDING



*where is EWI?*

*gw flow*

April 6, 1993  
SCI 430.015

Mr. William Meckel  
East Bay Municipal Utility District  
Mail Slot #702  
P.O. Box 24055  
Oakland, California 94623-1055

3623

**Quarterly Monitoring Report 12**  
**Wastewater Discharge Permit Account #502-29091**  
**1330 Martin Luther King Jr. Way**  
**Oakland, California**

Dear Mr. Meckel:

This letter presents quarterly monitoring results from the groundwater treatment plant at 1330 Martin Luther King Jr. Way. Monitoring of treated effluent has been performed in accordance with criteria specified in the EBMUD wastewater discharge permit account #502-29091, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

During the twelfth quarter of operation (January 9, 1993 through April 8, 1993) approximately 225,570 gallons of treated water were discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 49 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethylbenzene (BTEX) have been reduced to nondetectable concentrations before discharge into the EBMUD sanitary sewer. No indications of breakthrough have occurred in the primary carbon column. Results of the water quality data generated during the twelfth quarter are presented in Table 1. During this quarter, Extraction Well #1 (EW-1) was not in operation. For this reason, there is no analytical data presented for EW-1-47, 48, 49. Analytical test reports and Chain-of-Custody documents are attached.

The analytical test results indicate that biologic activity within the primary holding tank is ongoing. During this quarter, hydrocarbon concentrations up to approximately 675 ug/l entered the primary holding tank and low concentrations, less than 37 ug/l, of hydrocarbons were recorded leaving the tank before passing through the carbon treatment system. Consequently, hydrocarbon loading of the carbon treatment system remains minimal.

■ **Subsurface Consultants, Inc.**

Mr. William Meckel  
East Bay Municipal Utility District  
SCI 430.015  
April 6, 1993  
Page 2

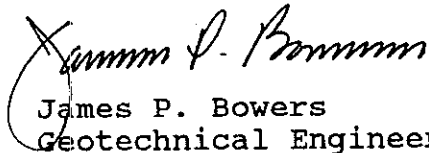
■ Subsurface Consultants, Inc.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:egh

Attachments: Table 1 - Contaminant Concentrations in Water  
Analytical Test Reports  
Chain-of-Custody Documents

cc: Ms. Lois Parr  
Oakland Redevelopment Agency

Ms. Julie Carver  
Environmental Affairs

✓ Ms. Jennifer Eberle  
ACHCSA

Mr. Eddy So  
RWQCB

Mr. Donnell Choy  
City of Oakland

TABLE 1. CONTAMINANT CONCENTRATIONS IN WATER

<u>Sample</u>	<u>Sampling Date</u>	<u>TVH (ug/L)</u>	<u>Benzene (ug/L)</u>	<u>Toluene (ug/L)</u>	<u>Ethyl-Benzene (ug/L)</u>	<u>Total Xylenes (ug/L)</u>
EW-2-47	1/25/93	ND	ND	ND	ND	ND
A-47		ND	ND	ND	ND	ND
B-47		ND	ND	ND	ND	ND
SS#1-47		ND	ND	ND	ND	ND
EW-2-48	2/26/93	122	1.0	0.8	ND	ND
A-48		37	ND	ND	ND	ND
B-48		ND	ND	ND	ND	ND
SS#1-48		ND	ND	ND	ND	ND
EW-2-49	3/17/93	675	7.7	1.3	9.0	58
A-49		ND	ND	ND	ND	ND
B-49		ND	ND	ND	ND	ND
SS#1-49		ND	ND	ND	ND	ND

TVH = Total volatile hydrocarbons, EPA 8015/5030

BTEX, Analyses by EPA 8020/5030

ug/L = micrograms per liter or parts per billion (ppb)

ND = None detected, chemicals not present at concentrations above the detection limits; see test reports for detection limits

EW-2 = indicates sample from Extraction Well #2

A = influent at primary carbon vessel

B = Between carbon vessels

SS#1 = side sewer #1, (effluent sample)

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 01/27/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 01/28/1993  
INSTRUMENT ID: VG-3  
MATRIX: NA  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9301172-05A  
SAMPLE ID: METHOD BLANK

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

February 10, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 01/25/1993  
DATE RECEIVED: 01/27/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 01/28/1993  
INSTRUMENT ID: VG-3  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9301172-01A  
SAMPLE ID: EW-2-47

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

February 10, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	01/25/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE RECEIVED:	01/27/1993
JOB #: 430.015	DATE EXTRACTED:	NA
	DATE ANALYZED:	01/28/1993
	INSTRUMENT ID:	VG-3
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9301172-02A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: A-47	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

February 10, 1993  
Date



**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	01/25/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE RECEIVED:	01/27/1993
JOB #: 430.015	DATE EXTRACTED:	NA
	DATE ANALYZED:	01/28/1993
	INSTRUMENT ID:	VG-3
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9301172-03A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: B-47	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

February 10, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 01/25/1993  
DATE RECEIVED: 01/27/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 01/28/1993  
INSTRUMENT ID: VG-3  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9301172-04A  
SAMPLE ID: SS#1-47

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

February 10, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS PROJECT: MLK GROUNDWATER TREATMENT PLANT JOB #: 430.015  ELI SAMPLE ID: 9301172-07A SAMPLE ID: MATRIX SPIKE RECOVERY *	DATE SAMPLED: NA DATE RECEIVED: 01/27/1993 DATE EXTRACTED: NA DATE ANALYZED: 01/28/1993 INSTRUMENT ID: VG-3 MATRIX: AQUEOUS % MOISTURE: NA REPORT WT.: NA SAMPLE VOL./WT.: 5ml DILUTION FACTOR: 1
--	--

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	89%
V2	Chlorobenzene	90%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	90%
V7	Toluene	92%
V8	Xylenes (Dimethyl benzenes)	98%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow  
Chemist

February 10, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

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Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE RECEIVED:	01/27/1993
JOB #: 430.015	DATE EXTRACTED:	NA
	DATE ANALYZED:	01/28/1993
	INSTRUMENT ID:	VG-3
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9301172-08A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: MATRIX SPIKE RECOVERY DUP. *	DILUTION FACTOR:	1

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	107%
V2	Chlorobenzene	103%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	106%
V7	Toluene	119%
V8	Xylenes (Dimethyl benzenes)	117%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow  
Chemist

February 10, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE RECEIVED:	01/27/1993
JOB #: 430.015	DATE EXTRACTED:	NA
	DATE ANALYZED:	02/01/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9301172-05A	SAMPLE VOL./WT.:	NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang  
Chemist

February 10, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 01/25/1993  
DATE RECEIVED: 01/27/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/01/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9301172-01A  
SAMPLE ID: EW-2-47

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang  
Chemist

February 10, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
 6790 Florin-Perkins Road  
 Sacramento, CA 95828  
 (916) 381-7953

Order No.: 93-01-172  
 Hazardous Waste Testing  
 Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT: MLK GROUNDWATER TREATMENT PLANT  
 JOB #: 430.015

DATE SAMPLED: 01/25/1993  
 DATE RECEIVED: 01/27/1993  
 DATE EXTRACTED: NA  
 DATE ANALYZED: 02/01/1993  
 INSTRUMENT ID: SVG7  
 MATRIX: AQUEOUS  
 % MOISTURE: NA  
 REPORT WT.: NA  
 SAMPLE VOL./WT.: 5ml  
 DILUTION FACTOR: 1

ELI SAMPLE ID: 9301172-02A  
 SAMPLE ID: A-47

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang  
 Chemist

February 10, 1993  
 Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
 6790 Florin-Perkins Road  
 Sacramento, CA 95828  
 (916) 381-7953

Order No.: 93-01-172  
 Hazardous Waste Testing  
 Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS PROJECT: MLK GROUNDWATER TREATMENT PLANT JOB #: 430.015  ELI SAMPLE ID: 9301172-03A SAMPLE ID: B-47	DATE SAMPLED: 01/25/1993 DATE RECEIVED: 01/27/1993 DATE EXTRACTED: NA DATE ANALYZED: 02/01/1993 INSTRUMENT ID: SVG7 MATRIX: AQUEOUS % MOISTURE: NA REPORT WT.: NA SAMPLE VOL./WT.: 5ml DILUTION FACTOR: 1
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<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
 <u>CARBON NO. RANGE</u>		
Gasoline Range	-	
 <u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang  
 Chemist

February 10, 1993  
 Date



**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 01/25/1993  
DATE RECEIVED: 01/27/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/01/1993  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9301172-04A  
SAMPLE ID: SS#1-47

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang  
Chemist

February 10, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE RECEIVED:	01/27/1993
JOB #: 430.015	DATE EXTRACTED:	NA
	DATE ANALYZED:	02/01/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9301172-07A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: MATRIX SPIKE RECOVERY	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	83%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Susie Yang  
Chemist

February 10, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE RECEIVED:	01/27/1993
JOB #: 430.015	DATE EXTRACTED:	NA
	DATE ANALYZED:	02/01/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9301172-08A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: MATRIX SPIKE RECOVERY DUP.	DILUTION FACTOR:	1

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PETROLEUM HYDROCARBONS                      SPIKE RECOVERY %

Gasoline Range                                      87%

CARBON NO. RANGE

Gasoline Range                                      -

PEAK CARBON NO.

Gasoline Range                                      -

Susie Yang  
Chemist

February 10, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE RECEIVED:	01/27/1993
JOB #: 430.015	DATE EXTRACTED:	NA
	DATE ANALYZED:	02/01/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9301172-09A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: REAGENT SPIKE RECOVERY	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	84%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Susie Yang  
Chemist

February 10, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-01-172  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE RECEIVED:	01/27/1993
JOB #: 430.015	DATE EXTRACTED:	NA
	DATE ANALYZED:	02/01/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9301172-10A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	90%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Susie Yang  
Chemist

February 10, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	VG-1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-05A	SAMPLE VOL./WT.:	NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

March 15, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	02/26/1993
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	VG-1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-01A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: EW-2-48	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	1.0	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	0.8	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Note: All positively identified compounds were second column or second detector confirmed.

Huey-Chen Chow  
Chemist

March 15, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	02/26/1993
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	VG-1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-02A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: A-48	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

March 15, 1993  
Date



**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	02/26/1993
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	VG-1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-03A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: B-48	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

March 15, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	02/26/1993
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	VG-1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-04A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: SS#1-48	DILUTION FACTOR:	1

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow  
Chemist

March 15, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	VG-1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-07A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: EW-2-48 MATRIX SPIKE RECOVERY	DILUTION FACTOR:	1

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	80%
V2	Chlorobenzene	86%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	75%
V7	Toluene	76%
V8	Xylenes (Dimethyl benzenes)	84%

Huey-Chen Chow  
Chemist

March 15, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

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6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	VG-1
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
ELI SAMPLE ID: 9303004-08A	REPORT WT.:	NA
SAMPLE ID: EW-2-48 MATRIX SPIKE RECOVERY	SAMPLE VOL./WT.:	5ml
DUPLICATE	DILUTION FACTOR:	1

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	86%
V2	Chlorobenzene	98%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	89%
V7	Toluene	89%
V8	Xylenes (Dimethyl benzenes)	103%

<u>Huey-Chen Chow</u>	<u>March 15, 1993</u>
Chemist	Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-05A	SAMPLE VOL./WT.:	NA
SAMPLE ID: METHOD BLANK	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang  
Chemist

March 15, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	02/26/1993
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-01A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: EW-2-48	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	122	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C10	

Susie Yang  
Chemist

March 15, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	02/26/1993
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-02A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: A-48	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	37	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C10	

Susie Yang  
Chemist

March 15, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	02/26/1993
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-03A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: B-48	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang  
Chemist

March 15, 1993  
Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	02/26/1993
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-04A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: SS#1-48	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang  
Chemist

March 15, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
	REPORT WT.:	NA
ELI SAMPLE ID: 9303004-07A	SAMPLE VOL./WT.:	5ml
SAMPLE ID: EW-2-48 MATRIX SPIKE RECOVERY	DILUTION FACTOR:	1

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<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	83%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Susie Yang  
Chemist

March 15, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-004  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS	DATE SAMPLED:	NA
JOB #: 430.015	DATE RECEIVED:	03/02/1993
PROJECT: MLK GROUNDWATER TREATMENT PLANT	DATE EXTRACTED:	NA
	DATE ANALYZED:	03/03/1993
	INSTRUMENT ID:	SVG7
	MATRIX:	AQUEOUS
	% MOISTURE:	NA
ELI SAMPLE ID: 9303004-08A	REPORT WT.:	NA
SAMPLE ID: EW-2-48 MATRIX SPIKE RECOVERY	SAMPLE VOL./WT.:	5ml
DUPLICATE	DILUTION FACTOR:	1

---

<u>PETROLEUM HYDROCARBONS</u>	<u>SPIKE RECOVERY %</u>
Gasoline Range	97%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Susie Yang  
Chemist

March 15, 1993  
Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/19/93  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-05A  
SAMPLE ID: METHOD BLANK

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

NA = Not Applicable

Huey-Chen Chow April 1, 1993  
Chemist Date

**PURGEABLE AROMATICS**  
**EPA METHOD 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 03/17/93  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/19/93  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-01A  
SAMPLE ID: EW-2-49

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)	DILUTION FACTOR
V1	Benzene	7.7	0.5	1
V2	Chlorobenzene	<0.5	0.5	1
V3	1,2-Dichlorobenzene	<0.5	0.5	1
V4	1,3-Dichlorobenzene	<0.5	0.5	1
V5	1,4-Dichlorobenzene	<0.5	0.5	1
V6	Ethyl benzene	9.0	0.5	1
V7	Toluene	1.3	0.5	1
V8	Xylenes (Dimethyl benzenes) *	58	5	10

Note: All positively identified compounds were second column or second detector confirmed.

\* A lower sample volume or higher dilution factor was used for the quantification of this compound due to high analyte concentration.

NA = Not Applicable

Huey-Chen Chow  
Chemist

April 1, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 03/17/93  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/19/93  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-02A  
SAMPLE ID: A-49

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

NA = Not Applicable

Huey-Chen Chow April 1, 1993  
Chemist Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 03/17/93  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/19/93  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-03A  
SAMPLE ID: B-49

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

NA = Not Applicable

Huey-Chen Chow  
Chemist

April 1, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 03/17/93  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/19/93  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-04A  
SAMPLE ID: SS#1-49

COMP NO.	COMPOUND	CONC. ug/L (ppb)	D/L ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

NA = Not Applicable

Huey-Chen Chow  
Chemist

April 1, 1993  
Date



PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/19/93  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-07A  
SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	103%
V2	Chlorobenzene	93%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	88%
V7	Toluene	89%
V8	Xylenes (Dimethyl benzenes)	98%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

NA = Not Applicable

Huey-Chen Chow  
Chemist

April 1, 1993  
Date

PURGEABLE AROMATICS  
EPA METHOD 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/19/93  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-08A  
SAMPLE ID: MATRIX SPIKE RECOVERY DUPLICATE \*

COMP NO.	COMPOUND	SPIKE RECOVERY
V1	Benzene	109%
V2	Chlorobenzene	96%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	91%
V7	Toluene	93%
V8	Xylenes (Dimethyl benzenes)	100%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

NA = Not Applicable

Huey-Chen Chow  
Chemist

April 1, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/18/93  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
& MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-05A  
SAMPLE ID: METHOD BLANK

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

NA = Not Applicable

Jeannette Chen  
Chemist

April 1, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 03/17/93  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/18/93  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-01A  
SAMPLE ID: EW-2-49

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	675	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C7	

NA = Not Applicable

Jeannette Chen                      April 1, 1993  
Chemist                                      Date

**TOTAL PETROLEUM HYDROCARBONS**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 03/17/93  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/18/93  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-02A  
SAMPLE ID: A-49

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

NA = Not Applicable

Jeannette Chen  
Chemist

April 1, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 03/17/93  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/18/93  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-03A  
SAMPLE ID: B-49

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

NA = Not Applicable

Jeannette Chen                      April 1, 1993  
Chemist                                      Date

**TOTAL PETROLEUM HYDROCARBONS**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 03/17/93  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/18/93  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-04A  
SAMPLE ID: SS#1-49

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

NA = Not Applicable

Jeannette Chen April 1, 1993  
Chemist Date

**TOTAL PETROLEUM HYDROCARBONS**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/18/93  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-07A  
SAMPLE ID: MATRIX SPIKE RECOVERY  
SS#1-49

---

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	101%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

NA = Not Applicable

Jeannette Chen                      April 1, 1993  
Chemist                                      Date



TOTAL PETROLEUM HYDROCARBONS  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/18/93  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5 ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-08A  
SAMPLE ID: MATRIX SPIKE RECOVERY DUPLICATE  
SS#1-49

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<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	110%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

NA = Not Applicable

Jeannette Chen                      April 1, 1993  
Chemist                                      Date

**TOTAL PETROLEUM HYDROCARBONS**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/18/93  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-09A  
SAMPLE ID: REAGENT SPIKE RECOVERY

---

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	106%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

NA = Not Applicable

Jeannette Chen                      April 1, 1993  
Chemist                                      Date

**TOTAL PETROLEUM HYDROCARBONS**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-03-197  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 03/18/93  
DATE EXTRACTED: NA  
DATE ANALYZED: 03/18/93  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9303197-10A  
SAMPLE ID: REAGENT SPIKE RECOVERY DUPLICATE

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	101%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

NA = Not Applicable

Jeannette Chen                      April 1, 1993  
Chemist                                      Date



# CHAIN OF CUSTODY FORM

93-03-004 GC8/6CV19

503 PAGE OF ANALYSIS REQUESTED

PROJECT NAME: MIL GROUNDWATER TREATMENT PLANT  
 JOB NUMBER: 430.015  
 PROJECT CONTACT: MARK KAWAKAMI  
 SAMPLED BY: FERNANDO VELEZ  
 LAB: ESSEX LABORATORIES  
 TURNAROUND: NORMAL  
 REQUESTED BY: MARK KAWAKAMI

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX			CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES			
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH		DAY	YEAR	TIME
1A	EW-2-48	X				X				X					02	26	93		Petroleum Hydrocarbons (Aromatic) BTEX
2A	A-48	X				X				X									X
3A	B-48	X				X				X									X
4A	SS#1-48	X				X				X					02	26	93		X

## CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
<i>[Signature]</i>	3/1/93 9:30	K. Yamaguchi	3/2/93 10:30am
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME

COMMENTS & NOTES:  
 ALL SAMPLES ARE "GRAB SAMPLES" CONTAINERS NOT SEALED "TAMPER PROOF"  
 - RETURN COOLER TO SCI

**Subsurface Consultants, Inc.**  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137

PROJECT NAME: MLK GROUNDWATER TREATMENT PLANT  
 JOB NUMBER: 430.015 LAB: EUREKA LABORATORIES  
 PROJECT CONTACT: MARK KAWAKAMI TURNAROUND: NORMAL  
 SAMPLED BY: FERNANDO VELEZ REQUESTED BY: MARK KAWAKAMI

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX			CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES		
		WATER	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH	DAY		YEAR	TIME
1A	Ew-2-49	X			X			X			X			03	17	92	1030	X TPH (GAS) 5030/CA LOFT 8020
2A	A-49	X			X			X			X			↙	↘	↗	↖	X
3A	B-49	X			X			X			X			↙	↘	↗	↖	X
4A	SS#1-49	X			X			X			X			↙	↘	↗	↖	X

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
	3/17/92 11:00		

COMMENTS & NOTES:  
 ALL SAMPLES ARE "GRAB SAMPLES"  
 CONTAINER NOT SEALED  
 "TAMPER PROOF"

Subsurface Consultants, Inc.  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137

3/18/93 10:30 AM

March 25, 1993  
SCI 430.014

90 MAR 25 PM 3:51

*no sign on lab report*

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Revised Quarterly Groundwater Monitoring  
February 1993  
Floor Drain Sump  
13th and Jefferson Streets  
Oakland, California**

Dear Ms. Eberle:

This letter records the results of the February 1993 groundwater sampling and analytical testing event performed by Subsurface Consultants, Inc. (SCI) for DCA<sup>1</sup> contamination at the referenced site. Well locations are shown on the attached Site Plan, Plate 1.

**Background**

SCI previously documented the removal of a concrete floor drain sump and associated contaminated soils in a report dated September 24, 1990. A groundwater contamination assessment report by SCI dated July 8, 1991, presents the monitoring well installation details.

Soil contamination resulting from underground gasoline storage tanks near the intersection of 13th and Jefferson Streets also occurred in the area. Remediation activities for this condition are detailed in our report dated December 6, 1990. Analytical test results from previous quarterly groundwater sampling events for the gasoline contamination were most recently presented in a letter dated January 8, 1993.

---

<sup>1</sup> DCA = 1,2-Dichloroethane

**■ Subsurface Consultants, Inc.**

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
March 25, 1993  
Page 2

■ Subsurface Consultants, Inc.

### Quarterly Monitoring

Groundwater monitoring at the site has been performed quarterly over the past two years. Groundwater level measurements are summarized in Table 1. Groundwater surface contours for the latest event, February 2, 1993, are shown on Plate 1. Groundwater flow patterns have remained relatively consistent during recent monitoring events.

Prior to sampling, the wells were purged of at least 4 well volumes of water using a disposable bailer. The purged water was disposed of in the existing groundwater treatment plant on-site. During this event, Wells 48 and 54 were sampled.

The water samples were retained in pre-cleaned containers, placed in an iced cooler, and kept refrigerated until delivery to the analytical laboratory. The samples were accompanied by chain-of-custody records, copies of which are attached.

Analytical testing was performed by Eureka Laboratories, Inc., a State of California Department of Health Services certified analytical laboratory for the tests performed. Water samples were analytically tested for the following:

    Volatile Organic Chemicals, sample preparation and analysis using EPA method 5030 (purge and trap) and 8010 (gas chromatograph coupled to an electrolytic conductivity detector).

Water samples from the wells have also been analyzed in the past for total volatile hydrocarbons (EPA 8015/5030), total extractable hydrocarbons (EPA 8015/3550), hydrocarbon oil and grease (SMWW 17:5520 E&F) and benzene, toluene, xylene and ethylbenzene (EPA 8020), because these compounds were associated with the gasoline tank and sump releases. The analytical test results are summarized in Tables 2 and 3.

Volatile organic chemicals (VOC) have not been detected in Wells 47, 49, 54, and 59 for at least the past 4 quarters. For this reason, a request to modify the groundwater monitoring program was submitted to the Alameda County Health Care Services Agency (ACHCSA) in a letter dated January 21, 1993. The ACHCSA subsequently granted our request to cease monitoring of Wells 47 and 59 for VOCs but, required that Wells 48 and 54 be monitored on a quarterly basis.



Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
March 25, 1993  
Page 3

■ Subsurface Consultants, Inc.

Well 49 was abandoned on December 18, 1992, because of construction activities in the area. Well abandonment activities are summarized in a letter dated January 11, 1993.

### Conclusions

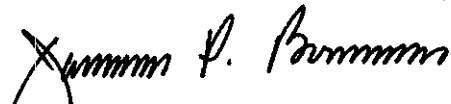
The groundwater level data indicates that the groundwater flow direction is toward the northwest at a gradient of approximately 0.7 percent. Groundwater flow direction and gradient remain consistent with previous measurements.

The results of the latest sampling event indicate that chloroform was present in Well <sup>OK</sup>54 at a concentration of 1.1 ug/l. No other volatile organic chemicals (EPA 8010) were present at concentrations in excess of analytical detection limits, in the wells being monitored. Monitoring for volatile organic chemicals will continue on a quarterly basis.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, inc.

  
James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:egh

Attachments: Table 1 - Groundwater Elevation Data  
Table 2 - Petroleum Hydrocarbon Concentrations in Groundwater  
Table 3 - Halogenated Volatile Organic Chemical Concentrations in Groundwater  
Plate 1 - Site Plan  
Chain-of-Custody Records  
Analytical Test Reports

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
March 25, 1993  
Page 4

- 1 copy: Ms. Lois Parr  
Oakland Redevelopment Agency  
City of Oakland  
1333 Broadway, Suite 900  
Oakland, California 94612
- 1 copy: Ms. Julie Carver  
Environmental Affairs  
City of Oakland  
1333 Broadway, Suite 800  
Oakland, California 94612
- 1 copy: Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612
- 1 copy: Mr. Donnell Choy  
Office of City Attorney  
City of Oakland  
505 14th Street, 12th Floor  
Oakland, California 94612

Table 1. Groundwater Elevation Data

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>
MW-47	09/24/90	100.50	27.28	73.22
	10/04/90		27.32	73.18
	12/03/90		27.38	73.12
	01/21/91		27.17	73.33
	03/13/91		26.85	73.65
	04/03/91		26.38	74.12
	06/13/91		28.39	72.11
	09/10/91		27.08	73.42
	12/12/91		27.95	72.55
	04/17/92		26.18	74.32
	07/28/92		26.48	74.02
	11/03/92		26.86	73.64
	02/02/93		24.96	75.54
	MW-48		07/18/90	102.40
10/04/90		29.29	73.11	
12/03/90		29.28	73.12	
01/21/91		29.03	73.37	
03/13/91		28.72	73.68	
04/03/91		28.24	74.16	
06/13/91		29.47	72.93	
09/10/91		28.94	73.46	
12/12/91		30.39	72.01	
04/17/92		28.07	74.33	
07/28/92		28.32	74.08	
11/03/92		28.74	73.66	
02/02/93		26.65	75.75	
MW-49	12/03/90	101.73	28.44	73.29
	01/21/91		28.20	73.53
	03/13/91		27.79	73.94
	04/03/91		27.28	74.45
	06/13/91		27.66	74.07
	09/10/91		28.04	73.69
	12/12/91		30.45	71.28
	04/17/92		27.26	74.64
	11/03/92		27.84	73.89
	12/18/92		Well Abandoned	
MW-51	10/04/90	102.64	28.57	74.07
	12/03/90		28.57	74.07
	01/21/91		28.44	74.20
	03/13/91		27.76	74.88
	04/03/91		27.32	75.32
	06/13/91		28.82	73.82
	09/10/91		28.00	74.64
MW-52	10/04/90	102.44	28.41	74.03
	12/03/90		28.38	74.06
	01/21/91		28.24	74.20
	03/13/91		27.57	74.87
	04/03/91		27.16	75.28
	06/13/91		29.41	73.03
	09/10/91		27.85	74.59

Table 1. Groundwater Elevation Data (continued)

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>	
MW-53	09/24/90	101.28	27.44	73.84	
	10/04/90		27.50	73.78	
	12/03/90		27.46	73.82	
	01/21/91		28.00	73.28	
	03/13/91		27.00	74.28	
	06/13/91		27.61	73.67	
	08/12/91		Well Abandoned		
	MW-54	09/24/90	100.78	27.01	73.77
10/04/90		27.30		73.48	
12/03/90		27.01		73.77	
01/21/91		27.28		74.64	
03/13/91		101.92 <sup>3</sup>		27.40	74.52
06/13/91		28.93		72.99	
09/10/91		27.66	74.26		
12/12/91		28.88	73.04		
04/17/92		26.82	75.10		
11/03/92		27.54	74.38		
02/02/93		25.54	76.38		
MW-59		02/12/91	100.37	27.45	72.92
		03/13/91		27.60	72.77
	04/03/91	27.36		73.01	
	06/13/91	28.01		72.36	
	09/10/91	28.00		72.37	
	12/12/91	28.53		71.84	
	04/17/92	26.91		73.46	
	07/28/92	27.27		73.10	
	11/03/92	27.56		72.81	
	02/02/93	24.74		75.63	

<sup>1</sup> Top of Casing

<sup>2</sup> Depth measured below top of casing

<sup>3</sup> Well head damaged and repaired

Assumed datum: The elevation of the PG&E manhole in Martin Luther King, Jr. Way, near the northwest corner of the block, was assumed to have an elevation of 100 feet (see Plate 1)

**Table 2. Petroleum Hydrocarbon Concentrations in Groundwater**

<u>Well</u>	<u>Date</u>	<u>O&amp;G<sup>1</sup></u> <u>(ug/L)</u>	<u>TVH<sup>2</sup></u> <u>(ug/L)</u>	<u>TEH<sup>3</sup></u> <u>(ug/L)</u>	<u>B<sup>4</sup></u> <u>(ug/L)</u>	<u>T<sup>5</sup></u> <u>(ug/L)</u>	<u>X<sup>6</sup></u> <u>(ug/L)</u>	<u>E<sup>7</sup></u> <u>(ug/L)</u>
MW-47	04/06/90	--	ND <sup>8</sup>	---	ND	ND	ND	ND
	10/04/90	--	---	---	ND	ND	ND	ND
	12/03/90	--	ND	---	ND	ND	ND	ND
	03/13/91	--	ND	---	ND	ND	ND	ND
	06/13/91	--	ND	---	ND	ND	ND	ND
	09/11/91	--	ND	---	ND	ND	ND	ND
	12/12/91	--	ND	---	ND	ND	ND	ND
	04/17/92	--	---	---	ND	ND	ND	ND
MW-48	04/06/90	--	ND	---	ND	ND	ND	ND
	07/18/90	ND	ND	ND	ND	ND	ND	ND
	10/04/90	--	---	110	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND	ND	ND	ND
	04/17/92	ND	---	---	ND	ND	ND	ND
MW-49	04/06/90	--	ND	---	ND	ND	ND	ND
	12/03/90	---	ND	---	ND	ND	ND	ND
	03/13/91	---	ND	---	ND	ND	ND	ND
	06/13/91	---	ND	---	ND	ND	ND	ND
	09/11/91	--	ND	---	ND	ND	ND	ND
	12/12/91	--	ND	---	ND	ND	ND	ND
	04/17/92	---	---	---	ND	ND	ND	ND
	12/18/92	Well Abandoned						
MW-51	04/06/90	--	ND	---	ND	ND	ND	ND
	10/04/90	---	---	---	ND	ND	ND	ND
	12/04/90	---	ND	---	ND	ND	ND	ND
	03/13/91	---	ND	---	ND	ND	ND	ND
	06/13/91	---	ND	---	ND	ND	ND	ND
	09/11/91	---	ND	---	ND	ND	ND	ND
MW-52	04/06/90	--	ND	---	ND	ND	ND	ND
	10/04/90	---	---	---	ND	ND	ND	ND
	12/04/90	---	ND	---	ND	ND	ND	ND
	03/13/91	---	ND	---	ND	ND	ND	ND
	06/13/91	---	ND	---	ND	ND	ND	ND
	09/11/91	---	ND	---	ND	ND	ND	ND
MW-53	09/21/90	---	ND	---	ND	ND	ND	ND
	10/04/90	---	ND	---	ND	ND	ND	ND
	12/04/90	---	ND	---	ND	ND	ND	ND
	03/13/91	---	ND	---	ND	ND	ND	ND
	06/11/91	---	ND	---	ND	ND	ND	ND
	08/12/91	Well Abandoned						

**Table 2. Petroleum Hydrocarbon Concentrations in Groundwater (continued)**

MW-54	09/21/90	---	1700	--	ND	1.5	20	1.9
	10/04/90	---	1300	---	ND	0.7	12	28
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	---	ND	---	ND	ND	ND	ND
	06/13/91	---	ND	---	ND	ND	ND	ND
	09/11/91	---	ND	---	ND	ND	ND	ND
	12/12/91	---	ND	---	ND	ND	ND	ND
	04/17/92	---	--	---	ND	ND	ND	ND
MW-59	03/13/91	--	ND	---	ND	ND	ND	ND

<sup>1</sup> Oil and Grease

<sup>2</sup> Total Volatile Hydrocarbons

<sup>3</sup> Total Extractable Hydrocarbons

<sup>4</sup> Benzene

<sup>5</sup> Toluene

<sup>6</sup> Xylene

<sup>7</sup> Ethylbenzene

<sup>8</sup> ND = Non-detectable, see analytical test reports for detection limits

<sup>9</sup> -- Not tested

**Table 3.**  
**Halogenated Volatile Organic Chemical**  
**Concentrations in Groundwater**

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-29	01/04/91	ND <sup>4</sup>	ND	ND	ND
MW-31	01/04/91	ND	ND	10	ND
MW-45	01/04/91	ND	ND	ND	ND
MW-46	01/04/91	ND	ND	ND	ND
MW-47	12/03/90	ND	11	ND	ND
	01/04/91	16	ND	ND	ND
	03/13/91	6.7	ND	ND	ND
	06/13/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
MW-48	10/04/90	60	ND	ND	ND
	12/03/90	31	ND	ND	ND
	01/04/91	15	ND	ND	ND
	03/13/91	30	ND	ND	ND
	06/19/91	6.1	ND	ND	ND
	09/11/91	5.3	ND	ND	ND
	12/12/91	16	ND	ND	ND
	04/17/92	1	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
	02/03/93	ND ✓	ND ✓	ND ✓	ND ✓
	MW-49	12/03/90	ND	ND	ND
03/03/91		ND	ND	ND	ND
06/13/91		5.0	ND	ND	ND
09/11/91		ND	ND	ND	ND
12/12/91		ND	ND	ND	ND
04/17/92		ND	ND	ND	ND
11/03/92		ND	ND	ND	ND
12/18/92		Well Abandoned			
MW-51	12/04/90	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
MW-52	12/04/90	ND	ND	1.3	ND
	06/13/91	ND	ND	2.0	ND
MW-53	10/04/90	ND	ND	1.2	ND
	12/04/90	ND	ND	1.9	ND
	03/13/91	ND	ND	2.0	ND
	06/13/91	ND	ND	8.0	ND
	08/12/91	Well abandoned			

**Table 3. Halogenated Volatile Organic Chemical  
Concentrations in Groundwater (continued)**

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-54	10/04/90	ND	ND	1.6	ND
	12/04/90	ND	ND	1.5	ND
	01/04/91	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
	11/03/92	ND	ND	ND	ND
	02/02/93 ✓	ND ✓	ND ✓	1.1 ✓	ND ✓
MW-59	03/13/91	ND	ND	ND	ND
	04/03/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND






<sup>1</sup> 1,2 Dichloroethane

<sup>2</sup> 1,2 Dichloroethene

<sup>3</sup> Micrograms/liter = parts per billion

<sup>4</sup> None detected, see test reports for detection limits

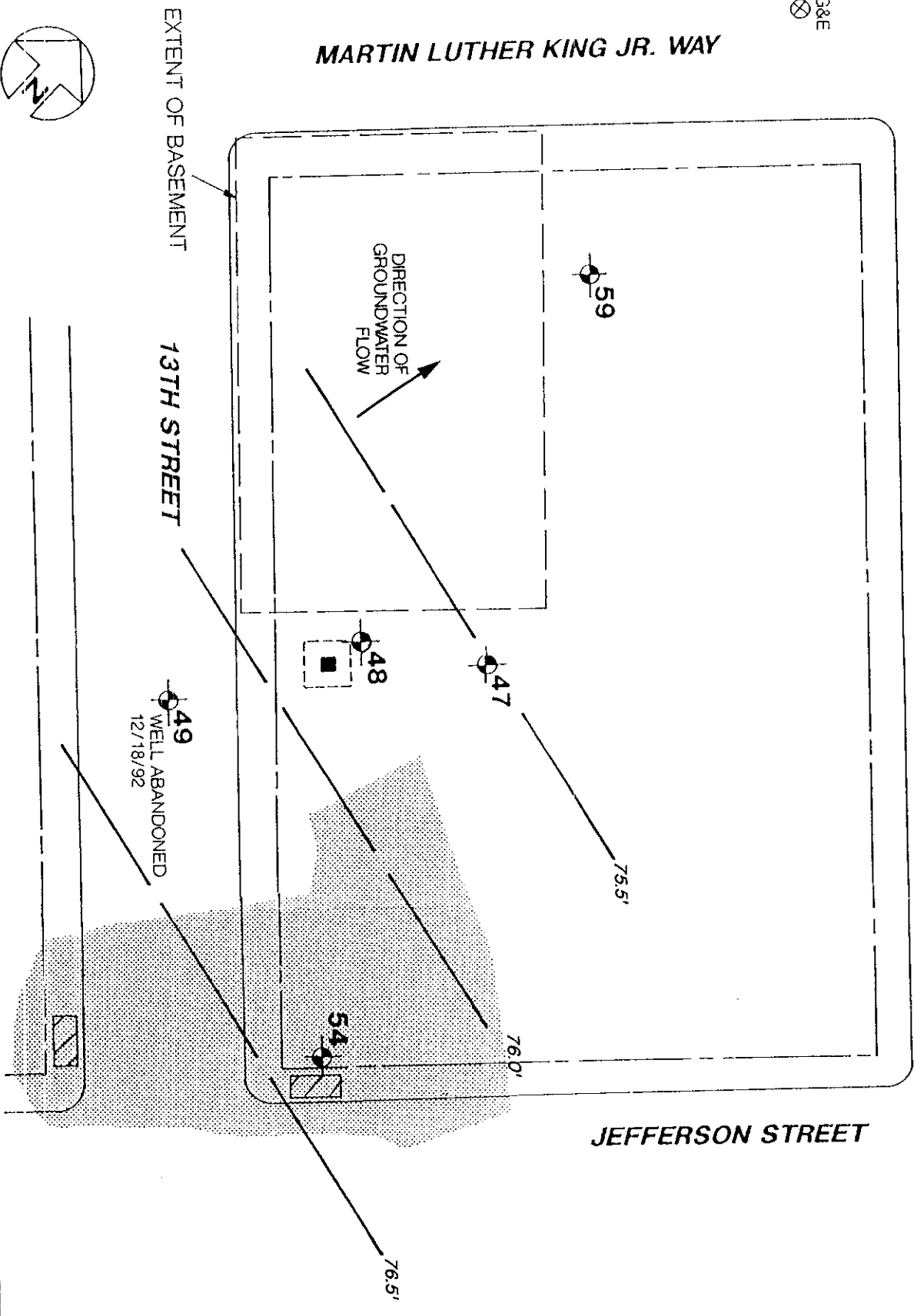



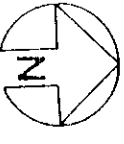
 TEST BORING/MONITORING WELL  
 PROPERTY LINE  
 APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION  
 PREVIOUS FLOOR DRAIN SUMP  
 GROUNDWATER CONTOURS (feet)  
 76.5'

MARTIN LUTHER KING JR. WAY

14TH STREET

JEFFERSON STREET



TRUE NORTH   
 REFERENCE NORTH 

APPROXIMATE SCALE (feet)  
 0 50 100

Subsurface Consultants

SITE PLAN


13TH & JEFFERSON - OAKLAND, CA  
 JOB NUMBER 430.014  
 DATE 1/13/93  
 APPROVED 

PLATE 1

ORGANIC ANALYSIS REPORT  
Purgeable Halocarbons, EPA Method 8010

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 93-02-038  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: 13TH & JEFFERSON  
PROJECT #: 430.014

DATE SAMPLED: 02/02/1993 ✓  
DATE RECEIVED: 02/04/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/09/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302038-01A  
SAMPLE ID: MW-48

COMP. NO.	COMPOUND	CONC. ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Bromodichloromethane	<0.5	0.5
V2	Bromoform	<0.5	0.5
V3	Bromomethane	<0.5	0.5
V4	Carbon tetrachloride	<0.5	0.5
V5	Chlorobenzene	<0.5	0.5
V6	Chloroethane	<0.5	0.5
V7	Chloroform	<0.5	0.5
V8	Chloromethane	<0.5	0.5
V9	Dibromochloromethane	<0.5	0.5
V10	Dibromomethane	<0.5	0.5
V11	1,2-Dichlorobenzene	<0.5	0.5
V12	1,3-Dichlorobenzene	<0.5	0.5
V13	1,4-Dichlorobenzene	<0.5	0.5
V14	1,1-Dichloroethane	<0.5	0.5
V15	1,2-Dichloroethane	<0.5	0.5
V16	1,1-Dichloroethylene (Vinylidene chloride)	<0.5	0.5
V17	trans-1,2-Dichloroethylene	<0.5	0.5
V18	Methylene Chloride	<0.5	0.5
V19	1,2-Dichloropropane	<0.5	0.5
V20	cis-1,3-Dichloropropylene	<0.5	0.5
V21	trans-1,3-Dichloropropylene	<0.5	0.5
V22	1,1,2,2-Tetrachloroethane	<0.5	0.5
V23	1,1,1,2-Tetrachloroethane	<0.5	0.5
V24	Tetrachloroethylene	<0.5	0.5
V25	1,1,1-Trichloroethane	<0.5	0.5
V26	1,1,2-Trichloroethane	<0.5	0.5
V27	Trichloroethylene	<0.5	0.5
V28	Vinyl chloride	<0.5	0.5
V29	Dichlorodifluoromethane	<0.5	0.5
V30	Trichlorofluoromethane	<0.5	0.5
V31	2-chloro-ethyl-vinyl-ether	<0.5	0.5

Huey-Chen Chow

Chemist

February 19, 1993

Date

ORGANIC ANALYSIS REPORT  
Purgeable Halocarbons, EPA Method 8010

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 93-02-038  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: 13TH & JEFFERSON  
PROJECT #: 430.014

DATE SAMPLED: 02/02/1993 ✓  
DATE RECEIVED: 02/04/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/09/1993  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302038-02A  
SAMPLE ID: MW-54

COMP. NC.	COMPOUND	CONC. ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Bromodichloromethane	<0.5	0.5
V2	Bromoform	<0.5	0.5
V3	Bromomethane	<0.5	0.5
V4	Carbon tetrachloride	<0.5	0.5
V5	Chlorobenzene	<0.5	0.5
V6	Chloroethane	<0.5	0.5
V7	Chloroform	1.1	0.5
V8	Chloromethane	<0.5	0.5
V9	Dibromochloromethane	<0.5	0.5
V10	Dibromomethane	<0.5	0.5
V11	1,2-Dichlorobenzene	<0.5	0.5
V12	1,3-Dichlorobenzene	<0.5	0.5
V13	1,4-Dichlorobenzene	<0.5	0.5
V14	1,1-Dichloroethane	<0.5	0.5
V15	1,2-Dichloroethane	<0.5	0.5
V16	1,1-Dichloroethylene (Vinylidene chloride)	<0.5	0.5
V17	trans-1,2-Dichloroethylene	<0.5	0.5
V18	Methylene Chloride	<0.5	0.5
V19	1,2-Dichloropropane	<0.5	0.5
V20	cis-1,3-Dichloropropylene	<0.5	0.5
V21	trans-1,3-Dichloropropylene	<0.5	0.5
V22	1,1,2,2-Tetrachloroethane	<0.5	0.5
V23	1,1,1,2-Tetrachloroethane	<0.5	0.5
V24	Tetrachloroethylene	<0.5	0.5
V25	1,1,1-Trichloroethane	<0.5	0.5
V26	1,1,2-Trichloroethane	<0.5	0.5
V27	Trichloroethylene	<0.5	0.5
V28	Vinyl chloride	<0.5	0.5
V29	Dichlorodifluoromethane	<0.5	0.5
V30	Trichlorofluoromethane	<0.5	0.5
V31	2-chloro-ethyl-vinyl-ether	<0.5	0.5

Note: All positively identified compounds were second column or second detector confirmed.

Huey-Chen Chow

Chemist

February 19, 1993

Date

ORGANIC ANALYSIS REPORT  
Purgeable Halocarbons, EPA Method 8010

EUREKA LABORATORIES, INC.  
 6790 Florin-Perkins Road  
 Sacramento, CA 95828  
 (916) 381-7953

Order No: 93-02-038  
 Hazardous Waste Testing  
 Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT: 13TH & JEFFERSON  
 PROJECT #: 430.014

DATE SAMPLED: NA  
 DATE RECEIVED: 02/04/1993  
 DATE EXTRACTED: NA  
 DATE ANALYZED: 02/09/1993  
 INSTRUMENT ID: VG-4  
 MATRIX: AQUEOUS  
 % MOISTURE: NA  
 REPORT WT: NA  
 SAMPLE VOL./WT.: NA  
 DILUTION FACTOR: 1

EI SAMPLE ID: 9302038-03A  
 SAMPLE ID: METHOD BLANK

COMP. NO.	COMPOUND	CONC. ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Bromodichloromethane	<0.5	0.5
V2	Bromoform	<0.5	0.5
V3	Bromomethane	<0.5	0.5
V4	Carbon tetrachloride	<0.5	0.5
V5	Chlorobenzene	<0.5	0.5
V6	Chloroethane	<0.5	0.5
V7	Chloroform	<0.5	0.5
V8	Chloromethane	<0.5	0.5
V9	Dibromochloromethane	<0.5	0.5
V10	Dibromomethane	<0.5	0.5
V11	1,2-Dichlorobenzene	<0.5	0.5
V12	1,3-Dichlorobenzene	<0.5	0.5
V13	1,4-Dichlorobenzene	<0.5	0.5
V14	1,1-Dichloroethane	<0.5	0.5
V15	1,2-Dichloroethane	<0.5	0.5
V16	1,1-Dichloroethylene (Vinylidene chloride)	<0.5	0.5
V17	trans-1,2-Dichloroethylene	<0.5	0.5
V18	Methylene Chloride	<0.5	0.5
V19	1,2-Dichloropropane	<0.5	0.5
V20	cis-1,3-Dichloropropylene	<0.5	0.5
V21	trans-1,3-Dichloropropylene	<0.5	0.5
V22	1,1,2,2-Tetrachloroethane	<0.5	0.5
V23	1,1,1,2-Tetrachloroethane	<0.5	0.5
V24	Tetrachloroethylene	<0.5	0.5
V25	1,1,1-Trichloroethane	<0.5	0.5
V26	1,1,2-Trichloroethane	<0.5	0.5
V27	Trichloroethylene	<0.5	0.5
V28	Vinyl chloride	<0.5	0.5
V29	Dichlorodifluoromethane	<0.5	0.5
V30	Trichlorofluoromethane	<0.5	0.5
V31	2-chloro-ethyl-vinyl-ether	<0.5	0.5

Huey-Chen Chow

Chemist

February 19, 1993  
 Date

ORGANIC ANALYSIS REPORT  
Purgeable Halocarbons, EPA Method 8010

EUREKA LABORATORIES, INC.  
 6790 Florin-Perkins Road  
 Sacramento, CA 95828  
 (916) 381-7953

Order No: 93-02-038  
 Hazardous Waste Testing  
 Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT: 13TH & JEFFERSON  
 PROJECT #: 430.014

DATE SAMPLED: NA  
 DATE RECEIVED: 02/04/1993  
 DATE EXTRACTED: NA  
 DATE ANALYZED: 02/09/1993  
 INSTRUMENT ID: VG-4  
 MATRIX: AQUEOUS  
 % MOISTURE: NA  
 REPORT WT: NA  
 SAMPLE VOL./WT.: 5ml  
 DILUTION FACTOR: 1

ELI SAMPLE ID: 9302038-05A  
 SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP. No.	COMPOUND		COMP No.	COMPOUND	
V1	Bromodichloromethane	-	V16	1,1-Dichloroethylene	92%
V2	Bromoform	-		(Vinylidene chloride)	
V3	Bromomethane	-	V17	trans-1,2-Dichloroethylene	-
V4	Carbon tetrachloride	88%	V18	Dichloromethane	-
V5	Chlorobenzene	-	V19	1,2-Dichloropropane	-
V5	Chloroethane	-	V20	cis-1,3-Dichloropropylene	-
V7	Chloroform	-	V21	trans-1,3-Dichloropropylene	-
V3	Chloromethane	-	V22	1,1,2,2-Tetrachloroethane	-
V9	Dibromochloromethane	-	V23	1,1,1,2-Tetrachloroethane	-
V10	Dibromomethane	-	V24	Tetrachloroethylene	-
V11	1,2-Dichlorobenzene	99%	V25	1,1,1-Trichloroethane	-
V12	1,3-Dichlorobenzene	-	V26	1,1,2-Trichloroethane	-
V13	1,4-Dichlorobenzene	103%	V27	Trichloroethylene	106%
V14	1,1-Dichloroethane	-	V28	Vinyl chloride	-
V15	1,2-Dichloroethane	-	V29	Dichlorodifluoromethane	-
			V30	Trichlorofluoromethane	-
			V31	2-chloro-ethyl-vinyl-ether	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow

Chemist

February 19, 1993

Date

ORGANIC ANALYSIS REPORT  
Purgeable Halocarbons, EPA Method 8010

EUREKA LABORATORIES, INC.  
 6790 Florin-Perkins Road  
 Sacramento, CA 95828  
 (916) 381-7953

Order No: 93-02-038  
 Hazardous Waste Testing  
 Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT: 13TH & JEFFERSON  
 PROJECT #: 430.014

DATE SAMPLED: NA  
 DATE RECEIVED: 02/04/1993  
 DATE EXTRACTED: NA  
 DATE ANALYZED: 02/09/1993  
 INSTRUMENT ID: VG-4  
 MATRIX: AQUEOUS  
 % MOISTURE: NA  
 REPORT WT: NA  
 SAMPLE VOL./WT.: 5ml  
 DILUTION FACTOR: 1

ELI SAMPLE ID: 9302038-06A  
 SAMPLE ID: MATRIX SPIKE RECOVERY DUP. \*

COMP. No.	COMPOUND		COMP No.	COMPOUND	
V1	Bromodichloromethane	-	V16	1,1-Dichloroethylene	91%
V2	Bromoform	-		(Vinylidene chloride)	
V3	Bromomethane	-	V17	trans-1,2-Dichloroethylene	-
V4	Carbon tetrachloride	90%	V18	Dichloromethane	-
V5	Chlorobenzene	-	V19	1,2-Dichloropropane	-
V6	Chloroethane	-	V20	cis-1,3-Dichloropropylene	-
V7	Chloroform	-	V21	trans-1,3-Dichloropropylene	-
V8	Chloromethane	-	V22	1,1,2,2-Tetrachloroethane	-
V9	Dibromochloromethane	-	V23	1,1,1,2-Tetrachloroethane	-
V10	Dibromomethane	-	V24	Tetrachloroethylene	-
V11	1,2-Dichlorobenzene	100%	V25	1,1,1-Trichloroethane	-
V12	1,3-Dichlorobenzene	-	V26	1,1,2-Trichloroethane	-
V13	1,4-Dichlorobenzene	102%	V27	Trichloroethylene	95%
V14	1,1-Dichloroethane	-	V28	Vinyl chloride	-
V15	1,2-Dichloroethane	-	V29	Dichlorodifluoromethane	-
			V30	Trichlorofluoromethane	-
			V31	2-chloro-ethyl-vinyl-ether	-

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow

Chemist

February 19, 1993

Date



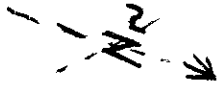
14<sup>th</sup> + Jefferson, Oakland

8/31/89

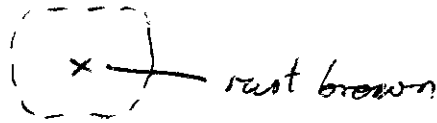
Tanks pulled. Former waste oil tank pulled first. Heavily corroded, some pipe/fixture holes which had been "soldered" shut have corroded open.

Unknown tank had minor to moderate corrosion as did the gasoline tank.

(13<sup>th</sup> St)



Gasoline

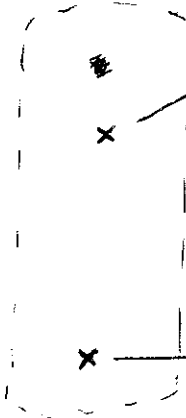


Unknown, riveted



Moist brown clayey sand, has odor of paint thinner (Stoddard solvent?) smells like solvent

Former waste oil tank, riveted (poss. former fuel oil tank)



Green-grey clayey sand, taken immediately below tank bottom.  
"Soil"/backfill beneath tank bottom is green/brown/black + shows imprints of tank corrosion

"Sump" end of tank  
Tank bottom has 18 diam.  
6-8" deep "protrusion"

Green-grey clayey sand, taken immediately below tank bottom (no soil or fill removed) taken at 9:02. Appears to have some oil + grease



13<sup>th</sup> + Jefferson Streets, Oakland

9/28/89

10:00

Spoke with Jim Bowers. I asked him if Sean Carron had told him what I discussed with Sean out in the field. Jim said Sean told him of the need to analyze the soil being put back into the ground to prove it's clean (the soil has reportedly been clean from the start - it overlay a contamination layer).

Jim said they are now taking samples of the soil as it goes back in & analyzing it for TPH and BTEX.

Jim said he contacted Don Dalke at the RWQCB concerning not being able to put aerated soil back into the ground. Jim said Don said the "policy" (Guidelines, per Lester Feldman) was designed to protect local agencies from [fly-by-night] contractors who do poor work from saying they aerated the soil to ~~low~~ <sup>low levels</sup> & putting it back into the ground.

I told Jim this was not the intent of the policy and that in my draft copy of the policy it seemed it was the RWQCB's own concerns that were being addressed. Nowhere was it mentioned that the local agency concerns were being considered.

I told Jim that if he writes a proposal, ~~to~~ ~~to~~ aerate, sample & return to the ground contaminated soil, he address the proposal to the RWQCB & say per discussions with Katherine Chesick of Alameda County, A.C. will accept what

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the RWQCB accepts per sampling, aeration, and returning to the ground of contaminated soil.

10:10

I spoke with Lester Feldman of the RWQCB. Lester said ~~the~~ Subsurface Consultants better sample the soil they put in the ground as clean. Lester said he would tell Jim Bowers that if one of Lester's people visits the site & finds one bit of contaminated soil going into the ground, Lester will get them for Water Code violations.

Lester said that aerated soil is not to be put back into the ground and that Jim Bowers should contact him directly (so I don't get caught in the middle) about it.

- Lester said if aerated soil is to go into the ground a permit is needed (or the Water Code will be violated)
- waste discharge requirements must be met (the site will have to be monitored forever)
- and the Subchapter 15 disposal to land requirements will have to be met.

Lester said at this time they are not issuing permits and that it would take about 18 months to get to permit applications

I gave Lester the project address (13<sup>th</sup> + Jefferson) the consultant name (Subsurface Consultants), the lead on the project (Jim Bowers) and the field lead (Sean Carson).