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Environmental Services

TRANSMITTAL LETTER

FROM: John Trigg
Sierra Environmental

DATE: 4/15/94

SES Project No.: 4-719-07

VIA: X First Class Mail
___ UPS
___ Overnight Mail
___ Courier

TO: Wyman Hong
Alameda Cty. Zone 7

RE: Well Installation Report Permit #93615
Telegraph Business Park
5427 Telegraph Avenue
Oakland, CA

We are sending: 1 Copy of Report.

For: X Your review
X Your use
X Your information

Please: X Keep
___ Return
___ Acknowledge receipt

Comments: Please call if you have any question.

* high hits ? Stratford wells monitoring?

P.O. Box 2546 • Martinez, California 94553 • (510) 370-1280

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April 15, 1994

Jon Legallet
Telegraph Business Properties
1401 Griffith Street
San Francisco, CA 94124

Re: Subsurface Investigation Report
Telegraph Business Park
5427 Telegraph Avenue
Oakland, California
SES Project #4-719-07

Dear Mr. Legallet:

This report provides the results of grab ground water sampling and documents the installation of three on-site monitoring wells at the above-referenced site (Figure 1, Appendix A). The work was conducted by Sierra Environmental Services (SES).

INTRODUCTION

Scope of Work

The objective of the investigation was to determine the presence or absence of hydrocarbons in soil and ground water beneath the site. The scope of work for the investigation was to:

1. Prepare a site safety plan specific to this investigation based on past and present site use.

2. Drill twelve on-site soil borings. Survey the soil samples in the field with an organic vapor meter (OVM) to determine whether volatile hydrocarbons may be present in the samples. Use OVM readings and field observations to select soil samples from the borings for analysis. Analyze the soil samples for total petroleum hydrocarbons as diesel [TPH(D)], and Stoddard Solvent. In addition, collect and analyze grab ground water samples from the borings for TPH(D), and Stoddard Solvent.

3. Install three 2-inch diameter monitoring well in selected soil borings.

4. Develop the three ground water monitoring wells, and collect and analyze ground water samples from the newly installed monitoring wells for TPH(D), Stoddard Solvent, oil & grease (O&G), benzene, toluene, ethylbenzene and xylenes (BTEX), and halogenated volatile organic compounds (HVOCs).

5. Survey the top of casing elevations of the new wells, and measure depth to water and free-phase hydrocarbon thickness (if product is present) in all wells. Use the survey and water level data to verify the ground water flow direction and gradient in the site vicinity.

6. Report the results.

Background

The site was formerly a large-scale dry-cleaning establishment. The on-site underground storage tanks were used by previous occupants to store Stoddard Solvent, Stoddard Solvent waste and vehicle fuel.

In May, 1992, SES personnel supervised the removal of seventeen underground storage tanks from the site.[1] Hydrocarbons as gasoline, diesel, Stoddard Solvent, and BTEX were detected in sidewall samples taken from the tank excavations. Analytic results were previously reported in the 1992 SES report.

SUBSURFACE INVESTIGATION

On December 13 and 14, 1993 Soils Exploration Services of Vacaville, California (C-57 #582696) drilled twelve on-site soil borings and installed ground water monitoring wells (MW-1 through MW-3) in three of the soil borings using a CME-55 hollow-stem auger drill rig. The monitoring well and soil boring locations are shown on Figure 2 (Appendix A).

The monitoring wells were drilled and installed to determine the ground water flow direction and gradient in the site vicinity and to verify the presence or absence of hydrocarbons beneath the site.

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[1] Sierra Environmental Services, 1992, Consultant's Report of Tank Removal Activities, prepared for Telegraph Business Properties, July 21, 1992, 9 pages and 4 appendices.

Soil Borings

Soil samples were collected, screened using the OVM, and logged in accordance with SES Standard Operating Procedures for Soil Sampling, OVM Readings, and Logging Method, respectively (Appendix C).

Soils encountered during drilling generally consisted of a very low-permeability clayey sand unit and a low- to moderate-permeability silty sand unit. The soils encountered were typical of an alluvial environment.

The ASTM Soil Classification System used for logging is included in Appendix D. Detailed descriptions of subsurface sediments, sampling depths, and OVM field measurements are shown on the boring logs (Appendix D).

Monitoring Well Installation

Ground water was encountered during drilling in the borings at approximately 7 to 15 feet below grade. Water levels stabilized at approximately 6 to 10.5 feet below grade in the three monitoring wells two days after development. The shallow water-bearing zone beneath the site is a predominantly clayey silt/silty clay unit. The three monitoring wells were constructed in accordance with SES Standard Operating Procedures for Monitoring Well Installation (Appendix C). Water levels and well construction details are shown on the borings logs in Appendix D and are tabulated in Table 4 (Appendix B).

Drill cuttings and steam-cleaning rinseate were temporarily stored on-site in drums and labelled pending disposal at an appropriate waste receiving facility.

WELL DEVELOPMENT AND GROUND WATER SAMPLING

The three ground water monitoring wells (MW-1, MW-2 and MW-3) were developed on December 23 and 28, 1993 by SES personnel using a vented surge block and a steam-cleaned

PVC bailer in accordance with SES Standard Operating Procedure - Well Development (Appendix C).

Ground water samples were collected from the ground water monitoring wells on January 5, 1994 by SES personnel in accordance with SES Standard Operating Procedure - Ground Water Sampling (Appendix C).

The purged ground water was drummed, labelled and stored on-site pending disposal at an appropriate disposal facility.

SURVEYING AND GROUND WATER GRADIENT

The top-of-casing elevations of the three new monitoring wells were surveyed to within 0.01 foot by Ron Miller, Professional Engineer #15816 on January 13, 1994. The elevations are referenced to United States Geological Survey (U.S.G.S.) benchmark #3172 located on the north end island at the east side crosswalk of Telegraph Avenue and Claremont Avenue and to U.S.G.S. benchmark #2546, located on the southwest corner of Telegraph Avenue and Aileen Street.

Water levels were measured within 0.01 foot in both ground water monitoring wells on August 6, 1993. Free-phase hydrocarbons were not present in any of the wells. Water level measurements, top-of-casing elevations, and ground water elevations are shown in Table 4 (Appendix B).

Ground water elevation data from January 5, 1994 indicate that the ground water flow direction in the site vicinity is westerly with a gradient of approximately 0.02 ft/ft (Figure 3, Appendix A).

ANALYTIC RESULTS

Field observations and OVM measurements were used to select soil samples for analyses. Soil samples from the soil borings (B-1 through B-9) and wells (MW-1, MW-2 and MW-3) were

analyzed for TPH(D) and Stoddard Solvent by the Leaking Underground Fuel Tank (LUFT) Manual Method.

Ground water samples collected from the soil borings and monitoring wells were analyzed for TPH(D) and Stoddard Solvent by the LUFT method. The ground water samples from the monitoring wells were also analyzed for O&G by Standard Methods Method 5520B, BTEX by EPA Method 602 and HVOCs by EPA Method 8010. All analyses were performed by Precision Analytical of Richmond, California. SES is not responsible for laboratory omissions or errors.

Analytic Results for Soil

Hydrocarbons as diesel were not detected in soil samples from seven of the twelve borings. In the remaining five borings, TPH(D) was detected at concentrations ranging from 2.5 to 190 parts per million (ppm). Stoddard Solvent was detected in eleven of the twelve soil borings at concentrations ranging from 1.2 to 6,500 ppm. Analytic results for soil are shown in Table 1 (Appendix B). The chain of custody documents and laboratory analytic reports are included in Appendix E.

Analytic Results for Ground Water

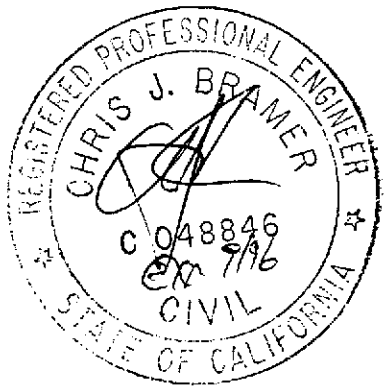
Hydrocarbons as diesel were detected in ten of the twelve ground water samples collected at concentrations ranging from 70 parts per billion (ppb) to 4,000 ppb. Stoddard Solvent was detected in eleven of the twelve ground water samples collected at concentrations ranging from 60 to 1,400,000 ppb. Oil and grease was detected in one of the three ground water samples (MW-1) at 6,300 ppb. BTEX components were also detected in each of the three monitoring wells. In addition, HVOCs were detected in the three monitoring wells. Analytic results for ground water are shown in Tables 2 and 3 (Appendix B). The chain of custody documents and laboratory analytic reports are included in Appendix E.

CONCLUSIONS AND RECOMMENDATIONS

Hydrocarbons as diesel, Stoddard Solvent, and/or volatile or halogenated compounds were detected in samples from the monitoring wells installed for this investigation. Additional

monitoring events, completed quarterly, should be conducted to verify these results, the ground water flow direction and gradient at the site. Additional site characterization is needed to determine the extent of hydrocarbons in soil and ground water in the site vicinity.

Thank you for the opportunity to provide environmental consulting services to Telegraph Business Park. Please call Chris Bramer or me if you have any questions.



Sincerely,
Sierra Environmental Services

Argy Mena
Staff Geologist

Chris Bramer
Professional Engineer #C48846

AJM/CJB/wmc
71907RP.AP4

Attachments: Appendix A - Figures
Appendix B - Tables
Appendix C - SES Standard Operating Procedures
Appendix D - ASTM Soil Classification System Chart and Boring Logs
Appendix E - Chain of Custody Documents and Laboratory Analytic Reports

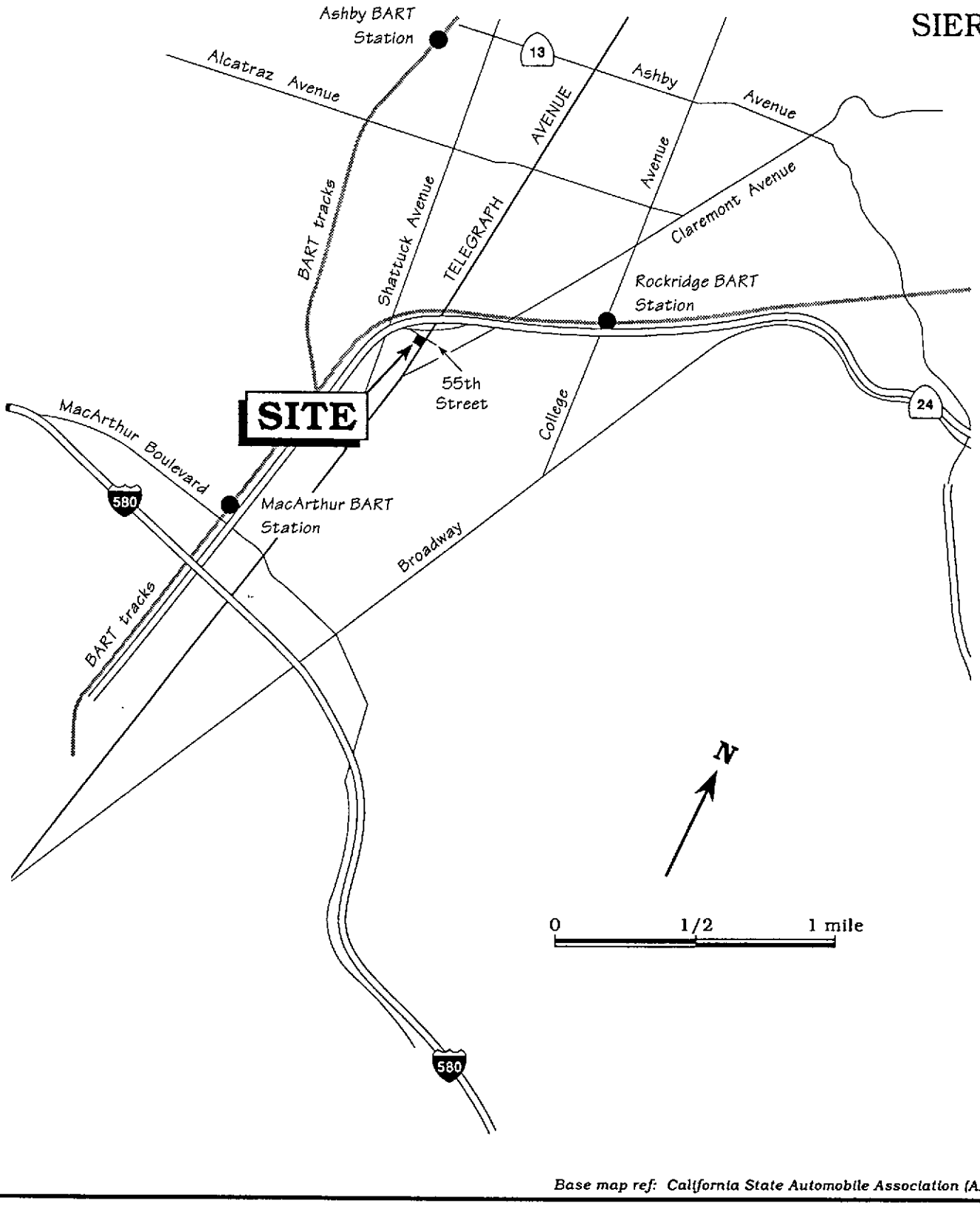


Figure 1. Site Location Map - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California

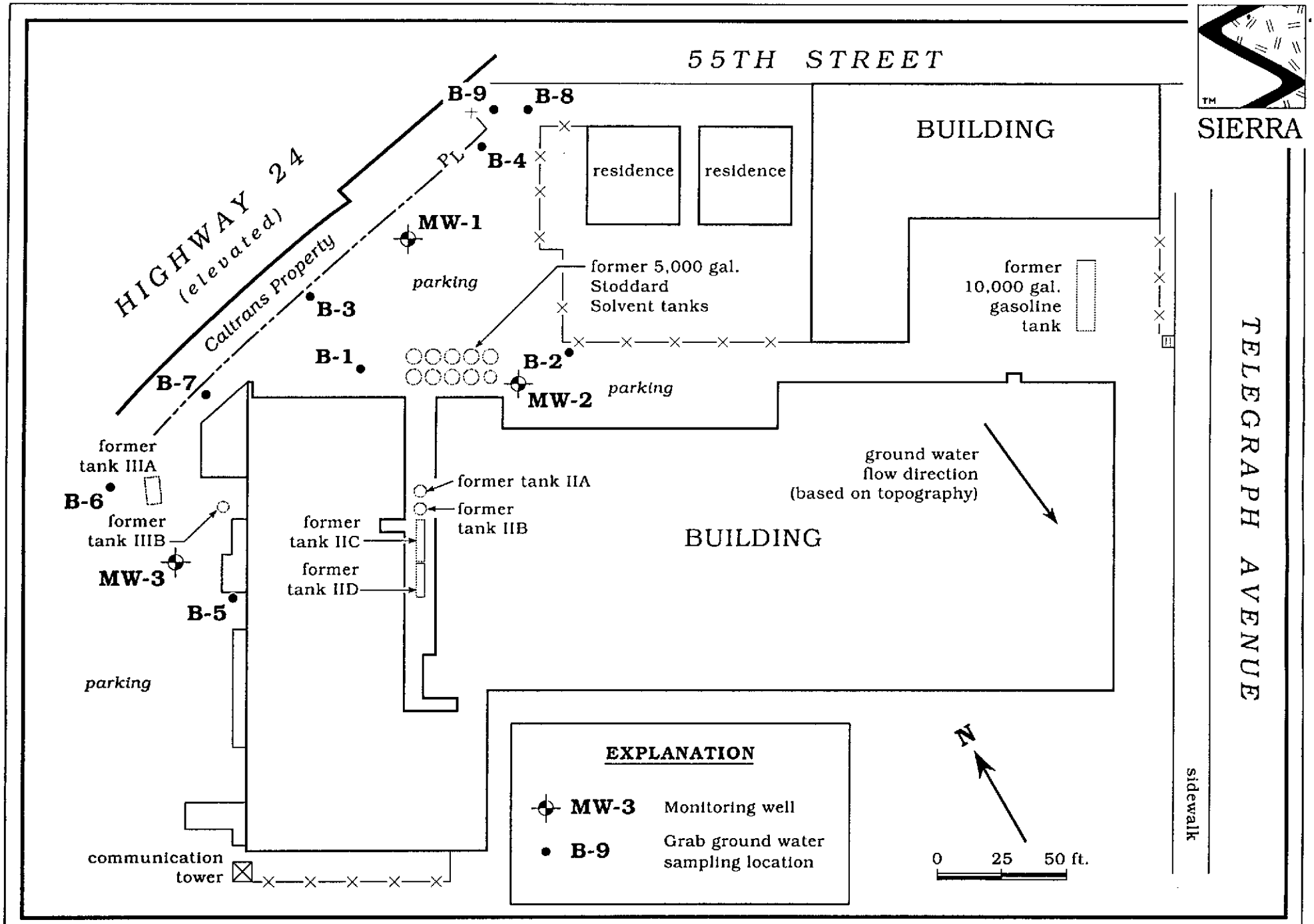


Figure 2. Monitoring Well and Grab Ground Water Sampling Locations – Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California

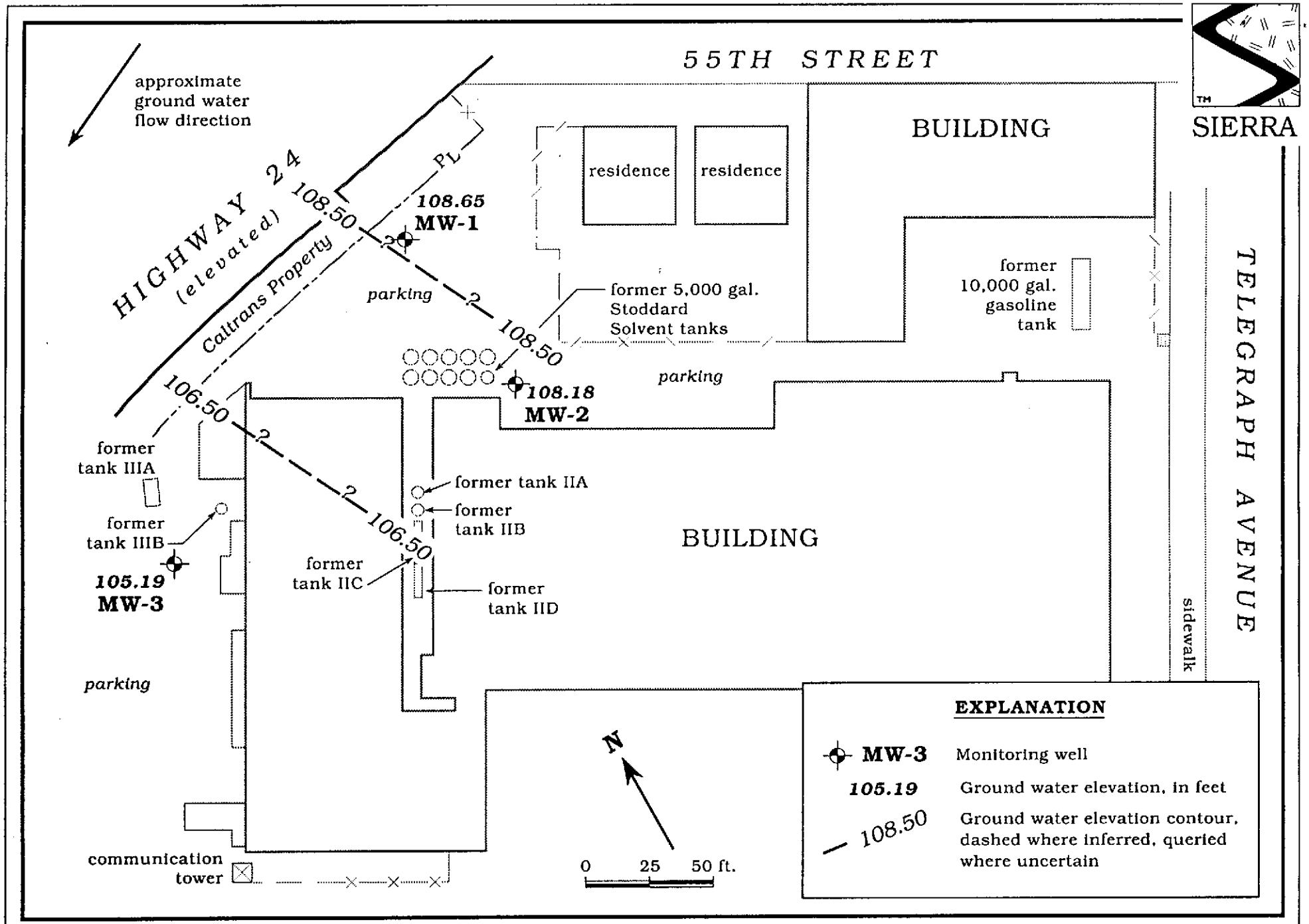


Figure 3. Monitoring Well Location and Ground Water Elevation Contour Map - January 5, 1994 - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California

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Table 1. Analytic Results for Soil - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California

Sample ID	Depth (ft)	Date Sampled	Analytic Method	Analytic Lab	TPH(D)	Stoddard Solvent
					<----------ppm---------->	
B-1	2.5	12/13/93	LUFT	PAL	<10	980
	8.5	12/13/93	LUFT	PAL	<10	2,000
B-2	5.5	12/13/93	LUFT	PAL	<10	1,640
	10.5	12/13/93	LUFT	PAL	<10	3,060
B-3	5.5	12/13/93	LUFT	PAL	13	1,900
B-4	5.5	12/13/93	LUFT	PAL	<10	100
B-5	5.5	12/14/93	LUFT	PAL	<1.0	<1.0
B-6	5.5	12/14/93	LUFT	PAL	190	110
	10.5	12/14/93	LUFT	PAL	11	150
B-7	5.5	12/14/93	LUFT	PAL	11	1,380
	10.5	12/14/93	LUFT	PAL	14	920
B-8	5.5	12/14/93	LUFT	PAL	<1.0	<1.0
	10.5	12/14/93	LUFT	PAL	<1.0	<1.0
	15.5	12/14/93	LUFT	PAL	<1.0	<1.0
	20.5	12/14/93	LUFT	PAL	<1.0	<1.0
B-9	5.5	12/14/93	LUFT	PAL	<1.0	<1.0
	10.5	12/14/93	LUFT	PAL	<1.0	<1.0
MW-1	5.5	12/14/93	LUFT	PAL	15	2,320
	9.5	12/14/93	LUFT	PAL	<1.0	1.2
	15.5	12/14/93	LUFT	PAL	<1.0	7.5
	20.5	12/14/93	LUFT	PAL	<1.0	<1.0
MW-2	5.5	12/14/93	LUFT	PAL	<10	2,780
	10.5	12/14/93	LUFT	PAL	<10	6,500
	15.5	12/14/93	LUFT	PAL	<1.0	18
	20.5	12/14/93	LUFT	PAL	<1.0	<1.0
	25.5	12/14/93	LUFT	PAL	<10	200

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Table 1. Analytic Results for Soil - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California (continued)

Sample ID	Depth (ft)	Date Sampled	Analytic Method	Analytic Lab	TPH(D)	Stoddard Solvent
					<----------ppm---------->	
MW-3	5.5	12/14/93	LUFT	PAL	2.9	2.6
	10.5	12/14/93	LUFT	PAL	<10	260
	15.5	12/14/93	LUFT	PAL	2.5	34

EXPLANATION

TPH(D) = Total Petroleum Hydrocarbons as Diesel
LUFT = Leaking Underground Fuel Tanks
ppm = Parts per million
ft = Feet

ANALYTIC METHODS:

LUFT = Department of Health Services LUFT Manual Method for TPH(D) and Stoddard Solvent

ANALYTIC LABORATORY:

PAL = Precision Analytical Laboratory, Inc. of Richmond, California

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Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California

Sample ID	Date Sampled	Analytic Method	Analytic Lab	TPH(D)	Stoddard Solvent	O&G	B	T	E	X
				<----------			ppb			---------->
B-1	12/13/93	LUFT	PAL	1,200	93,000	---	---	---	---	---
B-2	12/13/93	LUFT	PAL	4,000	1,400,000	---	---	---	---	---
B-3	12/13/93	LUFT	PAL	3,700	780,000	---	---	---	---	---
B-4	12/13/93	LUFT	PAL	90	15,000	---	---	---	---	---
B-5	12/14/93	LUFT	PAL	100	1,600	---	---	---	---	---
B-6	12/14/93	LUFT	PAL	460	9,000	---	---	---	---	---
B-7	12/14/93	LUFT	PAL	390	18,000	---	---	---	---	---
B-8	12/14/93	LUFT	PAL	<50	<50	---	---	---	---	---
B-9	12/14/93	LUFT	PAL	<50	60	---	---	---	---	---
MW-1	1/5/94	LUFT/602	PAL	500	1,000	6,300	3.3	1.6	<0.3	6.0
MW-2	1/5/94	LUFT/602	PAL	200	35,000	<5,000	12	38	<3.0	150
MW-3	1/5/94	LUFT/602	PAL	70	1,100	<5,000	180	20	85	10
Trip Blank TB-LB	1/5/94	602	PAL	---	---	---	<0.3	<0.3	<0.3	<0.3
Bailer Blank BB	1/5/94	602	PAL	---	---	---	<0.3	<0.3	<0.3	<0.3

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Table 2. Analytic Results for Ground Water - Petroleum Hydrocarbons - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California (continued)

EXPLANATION:

TPH(D) = Total Petroleum Hydrocarbons as Diesel
O&G = Oil and Grease
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
HVOCs = Halogenated Volatile Organic Compounds
LUFT = Leaking Underground Fuel Tanks
ppb = Parts per billion
--- = Not analyzed/Not applicable

ANALYTIC METHODS:

LUFT = Department of Health Services LUFT Manual Method for TPH(D), Stoddard Solvent, and O&G
602 = EPA Method 602 for BTEX

ANALYTIC LABORATORY:

PAL = Precision Analytical Laboratory, Inc. of Richmond, California

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Table 3. Analytic Results for Ground Water - Halogenated Volatile Organic Compounds - Telegraph Business Park, 5427 Telegraph Avenue, Oakland, California

Sample ID	Date Sampled	Analytic Method	Analytic Lab	1,1-DCA	t-1,2-DCE	c-1,2-DCE	CF	1,2-DCA	TCE	1,2-DCB	Other HVOCs
				<----------ppb---------->							
MW-1	1/5/94	8010	PAL	<0.3	<0.2	0.44	0.35	<0.2	<0.3	0.36	ND[1]
MW-2	1/5/94	8010	PAL	10	1.1	130	5.6	2.7	2.6	0.90	ND[2]
MW-3	1/5/94	8010	PAL	0.70	<0.2	5.2	1.3	0.20	<0.3	1.5	ND[3]

EXPLANATION:

1,1-DCA = 1,1-Dichloroethane
t-1,2-DCE = trans-1,2-Dichloroethene
c-1,2-DCE = cis-1,2-Dichloroethene
CF = Chloroform
1,2-DCA = 1,2-Dichloroethane
TCE = Trichloroethene
1,2-DCB = 1,2-Dichlorobenzene
HVOCs = Halogenated Volatile Organic Compounds
ppb = Parts per billion
ND = Not detected

ANALYTIC LAB:

PAL = Precision Analytic Laboratory, Inc. of Richmond, California

ANALYTIC METHODS:

8010 = EPA Method 8010 for HVOCs

NOTES:

1 1,4-Dichlorobenzene was detected at 0.34 ppb. Other HVOCs not detected at detection limits of 0.2 to 2.0 ppb.

2 1,2-Dichloropropene, T-1,3-Dichloropropene, and 1,4-Dichlorobenzene were detected at 18, 1.0 and 1.0 ppb, respectively. Other HVOCs not detected at detection limits of 0.2 to 2.0 ppb.

3 Chlorobenzene and 1,4-Dichlorobenzene were detected at 0.70 and 0.30 ppb, respectively. Other HVOCs not detected at detection limits of 0.2 to 2.0 ppb.

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APPENDIX C
SIERRA ENVIRONMENTAL SERVICES
STANDARD OPERATING PROCEDURES

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SES STANDARD OPERATING PROCEDURE

SOIL SAMPLING

The following describes sampling procedures used by SES field personnel to collect, handle, and transport soil samples. Before samples are collected, careful consideration is given to the type of analysis to be performed so that precautions are taken to prevent loss of volatile components or contamination of the sample, and to preserve the sample for subsequent analysis.

All drilling and sampling equipment is steam-cleaned between boreholes to prevent cross-contamination. The sampler is washed with an EPA approved detergent (such as liquinox or trisodium phosphate) between sample collection. Collection methods specific to soil sampling are presented below.

Soil samples are collected at pre-specified depth intervals or at a sediment/lithologic change for hydrogeologic description and possible chemical analysis. Samples are collected using a modified California split-spoon sampler lined with 2- or 2.5-inch I.D. x 4- or 6-inch long steam-cleaned or new stainless steel or brass tubes. The sampler is lowered into the borehole and driven 18 inches, using a 140-pound hammer. The drilling contractor provides the SES field personnel with the number of blows required to drive the sampler for each 6 inches of penetration.

The sampler is then extracted from the borehole and the middle or bottom brass tube is carefully removed for possible analysis. The soil material is immediately trimmed flush with the tube ends, and sealed with Teflon tape beneath polyethylene end caps. The caps are hermetically sealed to the brass tube with duct tape. The sample is then labeled to include the date, boring number, depth of sample, project number, SES, and the SES field personnel's initials. The samples are put into a plastic "zip-lock" type bag and placed into an ice chest maintained below 4°C with blue ice or dry ice, for transport under chain of custody to the laboratory. The chain-of-custody form includes the project number, analysis requested, sample ID, date analysis and the SES field personnel's name. The form is signed, dated and timed by each person who yields or receives the samples beginning with the field personnel and ending with the laboratory personnel.

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SES STANDARD OPERATING PROCEDURE

OVM READINGS

SES uses an organic vapor meter (OVM) to determine the presence or absence of volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene, and xylenes in soil samples chosen for field screening. The OVM uses a photoionization detector (PID) and is calibrated daily to 100 parts per million of 1-liter of isobutylene. The OVM, which measures in parts per million by volume (ppmv), is used for qualitative, not quantitative, assessment because the correlation between the volume measurements of the OVM and the weight measurements of the laboratory instruments is not well defined.

A field screen sample is obtained from the brass tube immediately above or below the brass tube containing the sample selected for possible analysis. The soil to be screened is removed from the brass tube, and is placed in a pre-cleaned brass tube with aluminum foil and a polyethylene cap on one end. The brass tube is loosely filled to approximately 1/2 full. Another square of aluminum foil is placed on the open end and a polyethylene cap with crossed slits is placed over it.

The field screen sample is allowed to temperature equilibrate for approximately 15 to 30 minutes in the sun, allowing any VOCs which might be present in the soil to volatilize out into the brass tube's headspace. The OVM nozzle is then placed inside the sealed brass tube, through the slits in the cap, in order to measure the VOCs present, if any, in the headspace. The nozzle should remain inside the brass tube for approximately 15 to 30 seconds or until the maximum reading has been recorded on the OVM readout panel.

The depth from which the sample came and the corresponding OVM reading is recorded on the original field log sheet. Field observations, OVM and (odor and staining) readings are used in determining which soil samples are to be analyzed in the laboratory.

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SES STANDARD OPERATING PROCEDURE

LOGGING METHOD

Unconsolidated soil is classified and described by trained SES field personnel. All available information is used, including the following: soil recovered in the sampler, including the soil visible on both ends of the sample retained for possible analysis; soil cuttings generated during drilling; and the drilling contractor's observations of the drill rig's behavior.

Classification and description of unconsolidated soil is accomplished using the American Society of Testing and Materials (ASTM) Methods D2487-85 (Unified Soil Classification System (USCS)) and/or D2488-69 (Description and Identification of Soils (Visual-Manual Procedure)).

The soil classification and description is recorded on the field log sheet by SES field personnel and includes the following information:

1) Soil type;
2) Soil classification;
3) Soil color, including mottling;
4) Moisture content;
5) Plasticity and consistency (fine-grained material) or density (coarse-grained material);
6) Percentages of clay, silt, sand and gravel;
7) Grain size range of sands and gravels;
8) Angularity and largest diameter of gravel component;
9) Estimated permeability;
10) Odor; and
11) Any other observations which would assist in the interpretation of the depositional environment and/or differentiation between the various geologic units expected to be encountered.

In addition to the above, the ground water levels encountered during drilling and measured after the water stabilized is also recorded on the field log.

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SES STANDARD OPERATING PROCEDURE

MONITORING WELL DESIGN AND CONSTRUCTION

Where possible, information from published and unpublished reports is reviewed prior to installation of monitoring wells. Relevant data includes highest and lowest anticipated ground water elevations, aquifer materials, aquifer yield and contaminants expected. This information is used to aid the field geologist rather than to predetermine how the wells will be constructed. Well construction is based on *site specific conditions* and is determined in the field after discussion with the senior geologist.

The wells are screened to monitor the first water-bearing zone encountered. If high ground water conditions exist the top of the well screen may be set at static water level or below static water level.

Fifteen feet of well screen will be used in the wells (five feet above static ground water and ten feet below static water) unless a five foot clay layer is encountered. If a clay layer is encountered, it will be confirmed by sampling. The sampling hole into the underlying confining layer will be sealed with bentonite pellets and the well screen will terminate 0 to 1 foot into the clay layer. When field observations indicate that low permeability materials are acting as an aquitard to prevent movement of contaminants less screen may be used.

Monitoring wells are constructed with flush-threaded, 2-inch or 4-inch diameter, slotted PVC, stainless steel or teflon well screen and PVC, stainless steel or teflon blank casing. Number 3 or #212 sand is used in the annular space around the well screen. The sand is placed into the annular space around the well screen to approximately 2 feet above the top of the well screen. If high ground water conditions exist, the sand may be placed 0 to 1 foot above the top of the well screen. Two feet of bentonite pellets are used to separate the sand from the sanitary surface seal (grout). If high ground water conditions exist 1/2 foot of bentonite may be used to separate the sand from the sanitary surface seal.

The grout (Portland cement with approximately 3-5% bentonite powder) is poured into the annular space above the bentonite pellets. If the surface seal is greater than 5 feet thick, grout consisting of cement mixed with 3-5% bentonite powder will be tremied or pumped into the

annular space above the bentonite pellets to prevent the infiltration of surface water into the well. If the surface seal is less than 5 feet thick, the grout will be poured from the surface. The resulting seal will be checked for shrinkage within 24 hours and additional grout will be added, if necessary. The surface seal is used to prevent infiltration of surface water into the well.

The monitoring well(s) is locked with a stovepipe or cap and covered with a traffic-rated vault if it is located in a developed area. The well ID is clearly marked on the cap or casing.

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SES STANDARD OPERATING PROCEDURE

WELL DEVELOPMENT

SES develops ground water monitoring wells not less than 48 hours after the placement of the surface seal (grouting) to allow sufficient time for the cement grout to set. The wells are developed to restore the natural hydraulic conductivity of the formation(s) to be monitored and to remove all sand and as much fine-grained material as possible.

Prior to development, SES field personnel measure the depth to water and the total depth of the well. The total depth measurement is compared to the well completion diagram shown on the field log and any discrepancies are noted.

Well development consists of several cycles of surging and evacuation of water in the well, each ending with measurements of temperature, pH, conductivity, and observation of turbidity.

Surging takes place for several minutes to loosen fines from the screened interval. Position vented surge block several feet below the water surface and surge with an upward motion.

Development shall continue for a period of at least four hours or when ten well volumes have been removed, whichever occurs first, and until ground water removed from the well is clear and visibly free of suspended materials. Note the time and the approximate volume of water removed prior to each determination of the following parameters (and whether well is bailed or pumped dry): pH, temperature, and specific conductivity. These measurements should be made a minimum of five times during well development.

If the water is still cloudy after the four hour period but these three parameters have stabilized, then the well will be considered developed regardless of the volume of water purged from the well. Stabilization of pH, temperature, and specific conductivity will be considered to have occurred when these parameters undergo changes not exceeding $\pm$0.1, 0.5 degrees F, and 5 percent, respectively.

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After development is completed, the depth to water and the total depth of the well are remeasured. The total depth of the well and the total depth noted on the field log should be approximately the same. All data measured during the procedures described herein are recorded on the SES Well Development Form, which is part of the project file.

The ground water removed from the wells during development remains onsite in 55-gallon Department of Transportation-approved drums. The water is removed by a licensed hauler and taken to an approved disposal facility.

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SES STANDARD OPERATING PROCEDURE

GROUND WATER SAMPLING

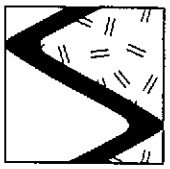
The following describes sampling procedures used by SES field personnel to collect and handle ground water samples. Before samples are collected, careful consideration is given to the type of analysis to be performed so that precautions are taken to prevent loss of volatile components or contamination of the sample, and to preserve the sample for subsequent analysis. Wells will be sampled no less than 24 hours after well development. Collection methods specific to ground water sampling are presented below.

Prior to sampling, each well is checked for the presence of free-phase hydrocarbons using an MMC flexi-dip interface probe. Product thickness (measured to the nearest 0.01 foot) is noted on the sampling form. Water level measurements are also made using either a water level meter or the interface probe. The water level measurements are also noted on the sampling form.

Prior to sampling, each well is purged of a minimum of four well casing volumes of water using a steam-cleaned PVC bailer, or a pre-cleaned pump. Temperature, pH and electrical conductivity are measured at least three times during purging. Purging is continued until these parameters have stabilized (i.e., changes in temperature, pH or conductivity do not exceed ±0.5°F, 0.1 or 5%, respectively).

The purge water is stored temporarily on-site in 55-gallon Department of Transportation-approved drums pending analytic results. The drums are labeled with the date, contents, the SES field personnel initials and SES phone number.

Ground water samples are collected from the wells with steam-cleaned Teflon bailers. The water samples are decanted into the appropriate container for the analysis to be performed. Pre-preserved sample containers may be used or the analytic laboratory may add preservative to the sample upon arrival. Duplicate samples are collected from each well as a back-up sample and/or to provide quality control. The samples are labeled to include the project number, sample ID, date, preservative, and the field person's initials. The samples are placed in polyethylene bags and in an ice chest (maintained at 4°C with blue ice or ice) for transport under chain-of-custody to the laboratory.



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The chain-of-custody form includes the project number, analysis requested, sample ID, date analysis and the SES field person's name. The form is signed and dated (with the transfer time) by each person who yields or receives the samples beginning with the field personnel and ending with the laboratory personnel.

A trip blank and bailer blank accompanies each sampling set, or 5% trip blanks and 5% bailer blanks are included for sets of greater than 20 samples. The bailer blank is prepared by pouring previously boiled water into a steam-cleaned Teflon bailer prior to sampling a well. The trip and bailer blanks are analyzed for some or all of the same compounds as the ground water samples.

GWTRSAMP.SOP

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APPENDIX D

ASTM SOIL CLASSIFICATION SYSTEM CHART
BORING LOG EXPLANATION
AND BORING LOGS

					Group Symbol				Group Name
>50% Sand & Gravel	GRAVEL % gravel > % sand	≤5% fines	Well-graded		GW	<15% sand			Well-graded GRAVEL
						≥15% sand			Well-graded GRAVEL with Sand
			Poorly graded		GP	<15% sand			Poorly graded GRAVEL
						≥15% sand			Poorly graded GRAVEL with Sand
		10% fines	Well-graded	fines=ML or MH	GW-GM	<15% sand			Well-graded GRAVEL with Silt
						≥15% sand			Well-graded GRAVEL with Silt and Sand
				fines=CL or CH	GW-GC	<15% sand			Well-graded GRAVEL with Clay
						≥15% sand			Well-graded GRAVEL with Clay and Sand
			Poorly graded	fines=ML or MH	GP-GM	<15% sand			Poorly graded GRAVEL with Silt
						≥15% sand			Poorly graded GRAVEL with Silt and Sand
				fines=CL or CH	GP-GC	<15% sand			Poorly graded GRAVEL with Clay
						≥15% sand			Poorly graded GRAVEL with Clay and Sand
		≥15% fines		fines=ML or MH	GM	<15% sand			Silty GRAVEL
						≥15% sand			Silty GRAVEL with Sand
				fines=CL or CH	GC	<15% sand			Clayey GRAVEL
						≥15% sand			Clayey GRAVEL with Sand
	SAND % sand ≥ % gravel	≤5% fines	Well-graded		SW	<15% gravel			Well-graded SAND
						≥15% gravel			Well-graded SAND with Gravel
			Poorly graded		SP	<15% gravel			Poorly graded SAND
						≥15% gravel			Poorly graded SAND with Gravel
		10% fines	Well-graded	fines=ML or MH	SW-SM	<15% gravel			Well-graded SAND with Silt
						≥15% gravel			Well-graded SAND with Silt and Gravel
				fines=CL or CH	SW-SC	<15% gravel			Well-graded SAND with Clay
						≥15% gravel			Well-graded SAND with Clay and Gravel
			Poorly graded	fines=ML or MH	SP-SM	<15% gravel			Poorly graded SAND with Silt
						≥15% gravel			Poorly graded SAND with Silt and Gravel
				fines=CL or CH	SP-SC	<15% gravel			Poorly graded SAND with Clay
						≥15% gravel			Poorly graded SAND with Clay and Gravel
		≥15% fines		fines=ML or MH	SM	<15% gravel			Silty SAND
						≥15% gravel			Silty SAND with Gravel
				fines=CL or CH	SC	<15% gravel			Clayey SAND
						≥15% gravel			Clayey SAND with Gravel
>50% or More Fines	Low-Plasticity Clay				CL	<30% sand & gravel	<15% Sand and Gravel		Lean CLAY
							15-25% sand & gravel	% sand ≥% gravel	Lean CLAY with Sand
								% sand <% gravel	Lean CLAY with Gravel
						≥30% sand & gravel	% sand ≥% of gravel	<15% gravel	Sandy lean CLAY
								≥15% gravel	Sandy lean CLAY with Gravel
							% sand <% gravel	<15% sand	Gravelly lean CLAY
								≥15% sand	Gravelly lean CLAY with Sand
	Low-Permeability Silt				ML	<30% sand & gravel	<15% sand & gravel		SILT
							15-25% sand & gravel	% sand ≥% gravel	SILT with Sand
								% sand <% gravel	SILT with Gravel
						≥30% sand & gravel	% sand ≥% of gravel	<15% gravel	Sandy SILT
								≥15% gravel	Sandy SILT with Gravel
							% sand <% gravel	<15% sand	Gravelly SILT
								≥15% sand	Gravelly SILT with Sand
	Plastic Clay				CH	<30% sand & gravel	<15% sand & gravel		Fat CLAY
							15-25% sand & gravel	% sand ≥% gravel	Fat CLAY with Sand
								% sand <% gravel	Fat CLAY with Gravel
						≥30% sand & gravel	% sand ≥% of gravel	<15% gravel	Sandy fat CLAY
								≥15% gravel	Sandy fat CLAY with Gravel
							% sand <% gravel	<15% sand	Gravelly fat CLAY
								≥15% sand	Gravelly fat CLAY with Sand
	Plastic Silt				MH	<30% sand & gravel	<15% sand & gravel		Elastic SILT
							15-25% sand & gravel	% sand ≥% gravel	Elastic SILT with Sand
								% sand <% gravel	Elastic SILT with Gravel
						≥30% sand & gravel	% sand ≥% of gravel	<15% gravel	Sandy elastic SILT
								≥15% gravel	Sandy elastic SILT with Gravel
							% sand <% gravel	<15% sand	Gravelly elastic SILT
								≥15% sand	Gravelly elastic SILT with Sand
	Organics (Peat or Bay Mud)				OL/OH	<30% sand & gravel	<15% sand & gravel		Organic SOIL
							15-25% sand & gravel	% sand ≥% gravel	Organic SOIL with Sand
								%sand <% gravel	Organic SOIL with Gravel
						≥30% sand & gravel	% sand ≥% gravel	<15% gravel	Sandy Organic SOIL
								≥15% gravel	Sandy Organic SOIL with Gravel
							% sand <% gravel	<15% sand	Gravelly Organic SOIL
								≥15% sand	Gravelly Organic SOIL with Sand

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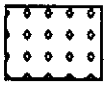
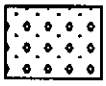
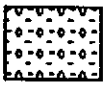
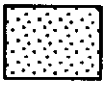
EXPLANATION FOR SES BORING LOGS

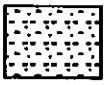

GRAVEL

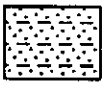

Sandy GRAVEL


Silty GRAVEL

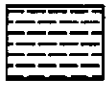

Clayey GRAVEL

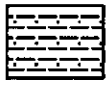

SAND


Silty SAND/Sandy SILT

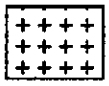

Clayey SAND


SILT


CLAY

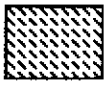

Sandy CLAY


Silty CLAY/Clayey SILT


Organics


Hard Rock


Slough


Asphalt


Concrete
Cement/Grout

K = Field estimation of soil hydraulic conductivity

Drive sample interval

Drive sample collected for possible chemical analysis

Contact between sedimentary or lithologic units; dotted where approximate, dashed where uncertain, hatched where gradational

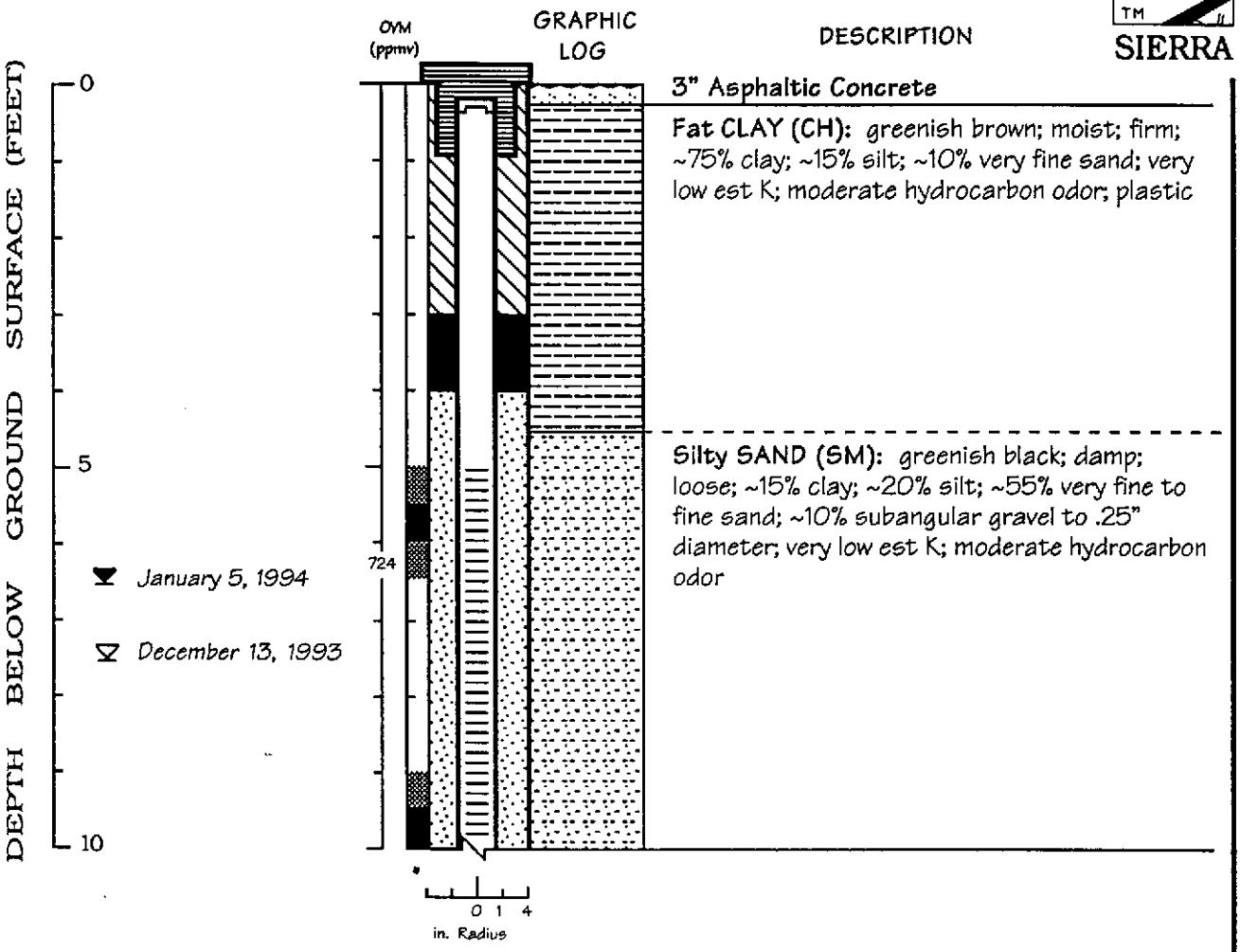
Initial water level measured during drilling (date in italics)

Static water level, measured after well development (date in italics)

Note: Soils are logged using ASTM D2487 Soil Classification System

WELL MW-1

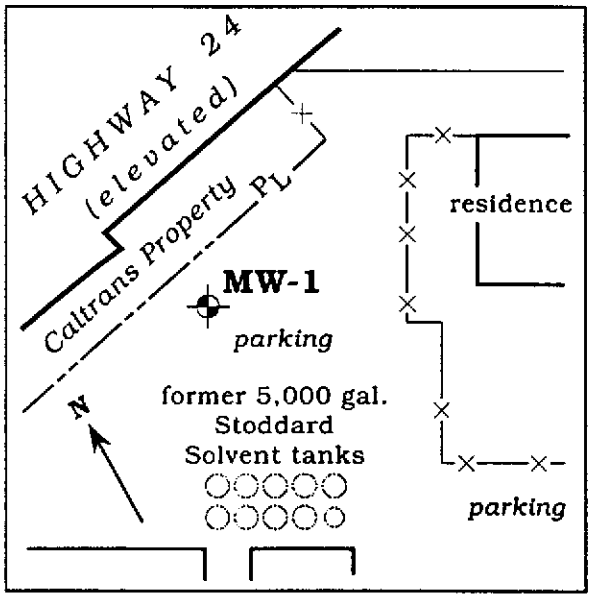
SIERRA



Well Construction and Boring Log - Well MW-1

Telegraph Business Park
5427 Telegraph Avenue
Oakland, California

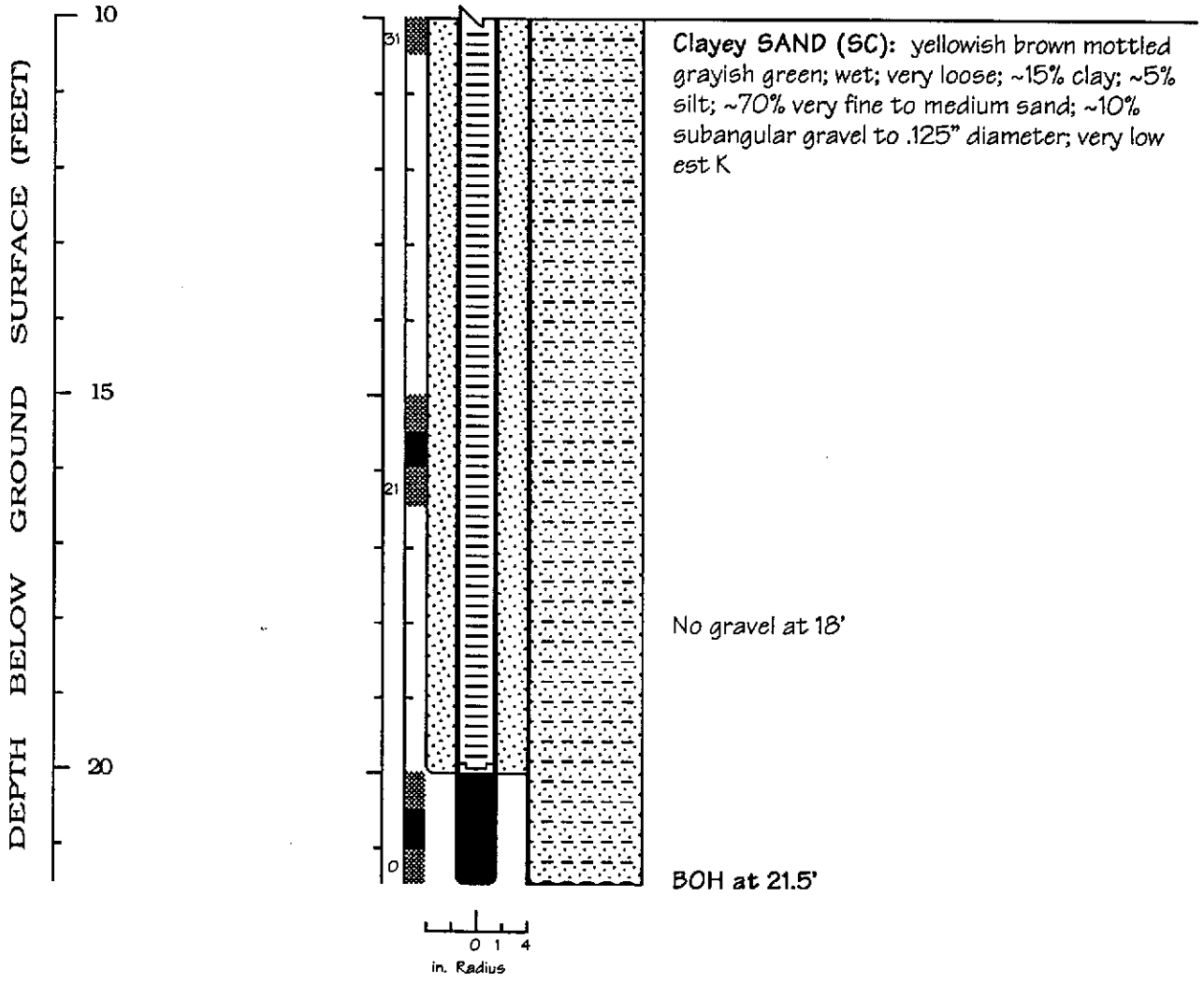
Logged by: John Trigg
Supervisor: C. Bramer P.E. #C48846
Drilling Company: Soils Exploration Services
C-57#: 582696
Driller: Steve Brinkerhoff
Drilling Method: Hollow stem auger
Date Drilled: December 13, 1993
Well Head Completion: Locking cap & Traffic-rated vault
Type of sampler: Split barrel (2" diameter)



WELL MW-1

(continued)

SIERRA

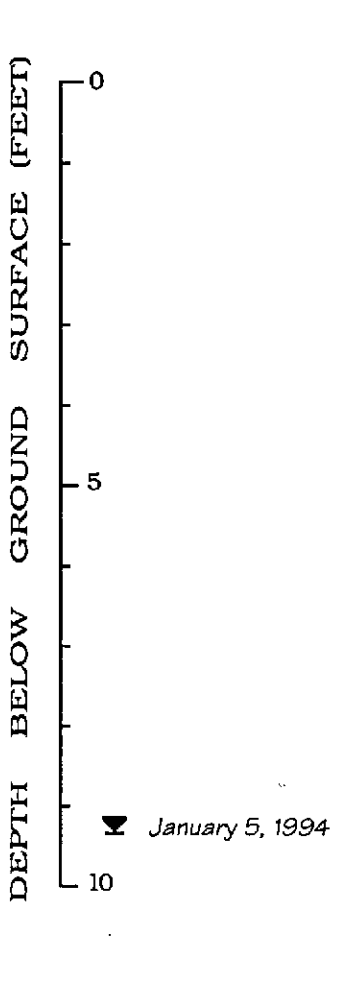


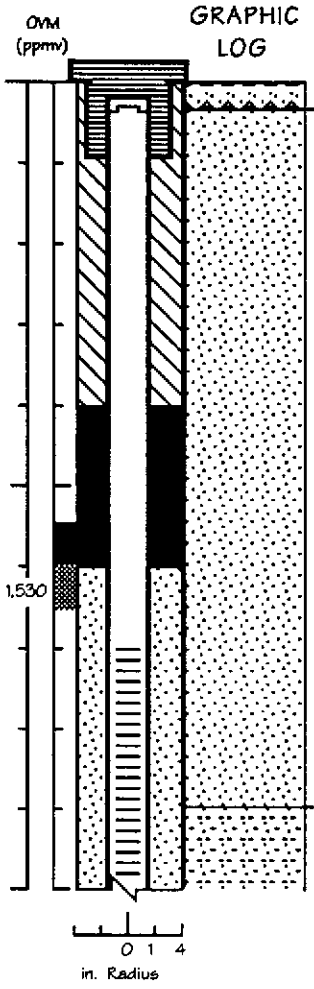
Well Construction and Boring Log - Well MW-1

Telegraph Business Park
5427 Telegraph Avenue
Oakland, California

WELL MW-2

SIERRA





DESCRIPTION

4" Asphaltic Concrete

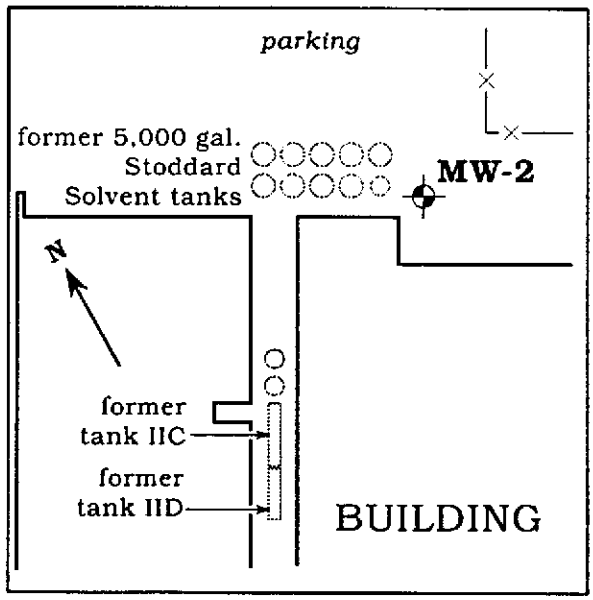
Poorly graded SAND with Silt (SP/SM/SC): black; moist; loose; ~5% clay; ~5% silt; ~85% very fine sand; ~5% angular gravel to .125" diameter; low est K; moderate hydrocarbon odor

Silty SAND (SM): black mottled grayish green; moist; loose; ~15% clay; ~20% silt; ~65% very fine to medium sand; very low est K; very strong hydrocarbon odor

Well Construction and Boring Log - Well MW-2

Telegraph Business Park
5427 Telegraph Avenue
Oakland, California

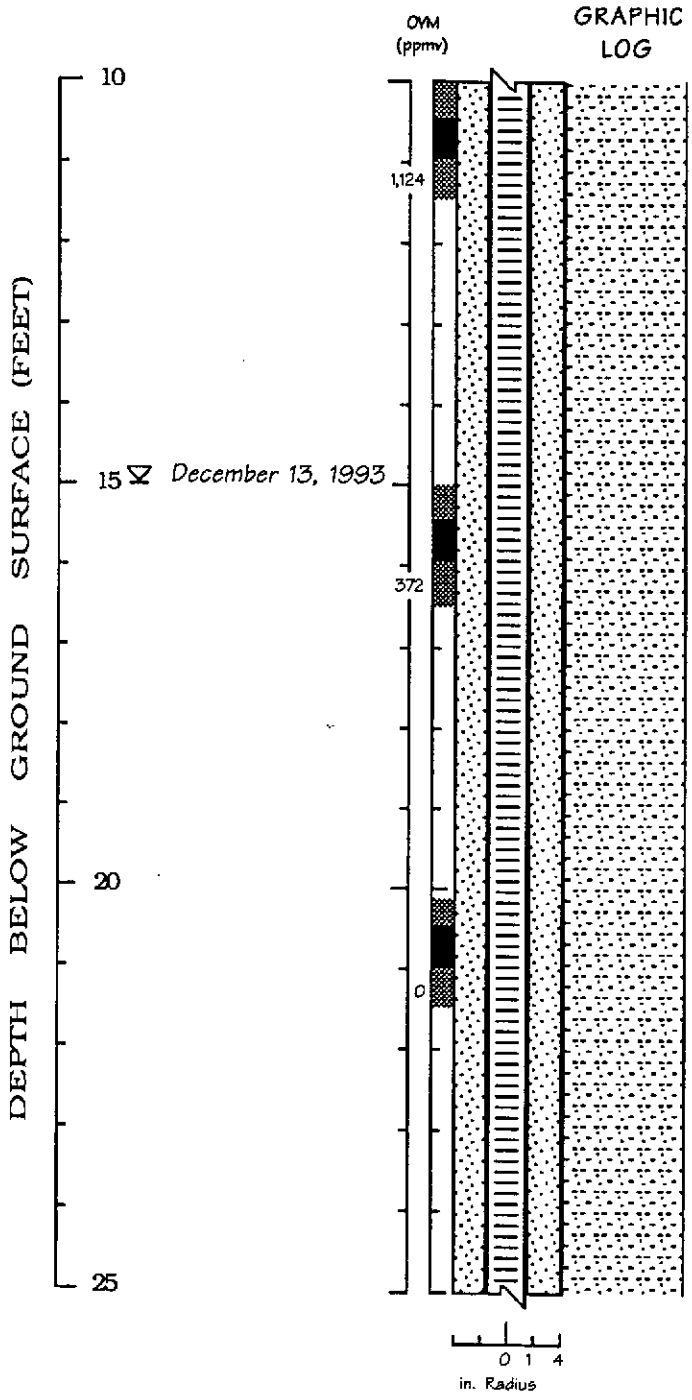
Logged by: John Trigg
Supervisor: C. Bramer P.E. #C48846
Drilling Company: Soils Exploration Services
C-57#: 582696
Driller: Steve Brinkerhoff
Drilling Method: Hollow stem auger
Date Drilled: December 13, 1993
Well Head Completion: Locking cap & Traffic-rated vault
Type of sampler: Split barrel (2" diameter)



WELL MW-2

(continued)

SIERRA



Silty SAND (SP/SM/SC): orangish brown mottled grayish green; wet; loose; ~10% clay; ~10% silt; ~70% very fine to medium sand; ~10% subangular gravel to .5" diameter; moderate hydrocarbon odor

Grades to medium dense; sandy at 25'

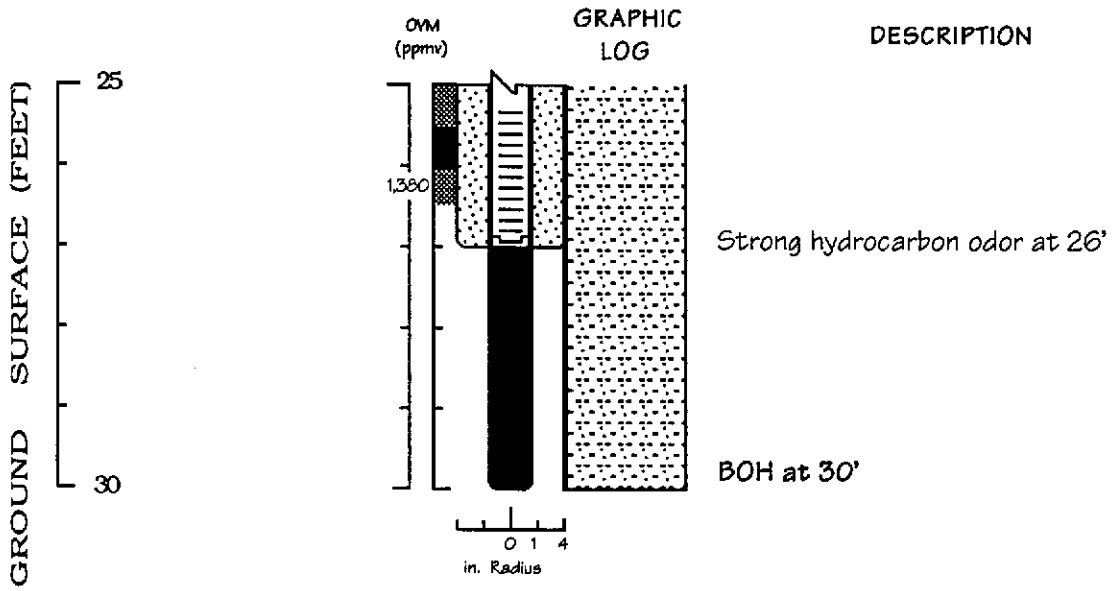
Well Construction and Boring Log - Well MW-2

Telegraph Business Park
5427 Telegraph Avenue
Oakland, California

WELL MW-2

(continued)

SIERRA

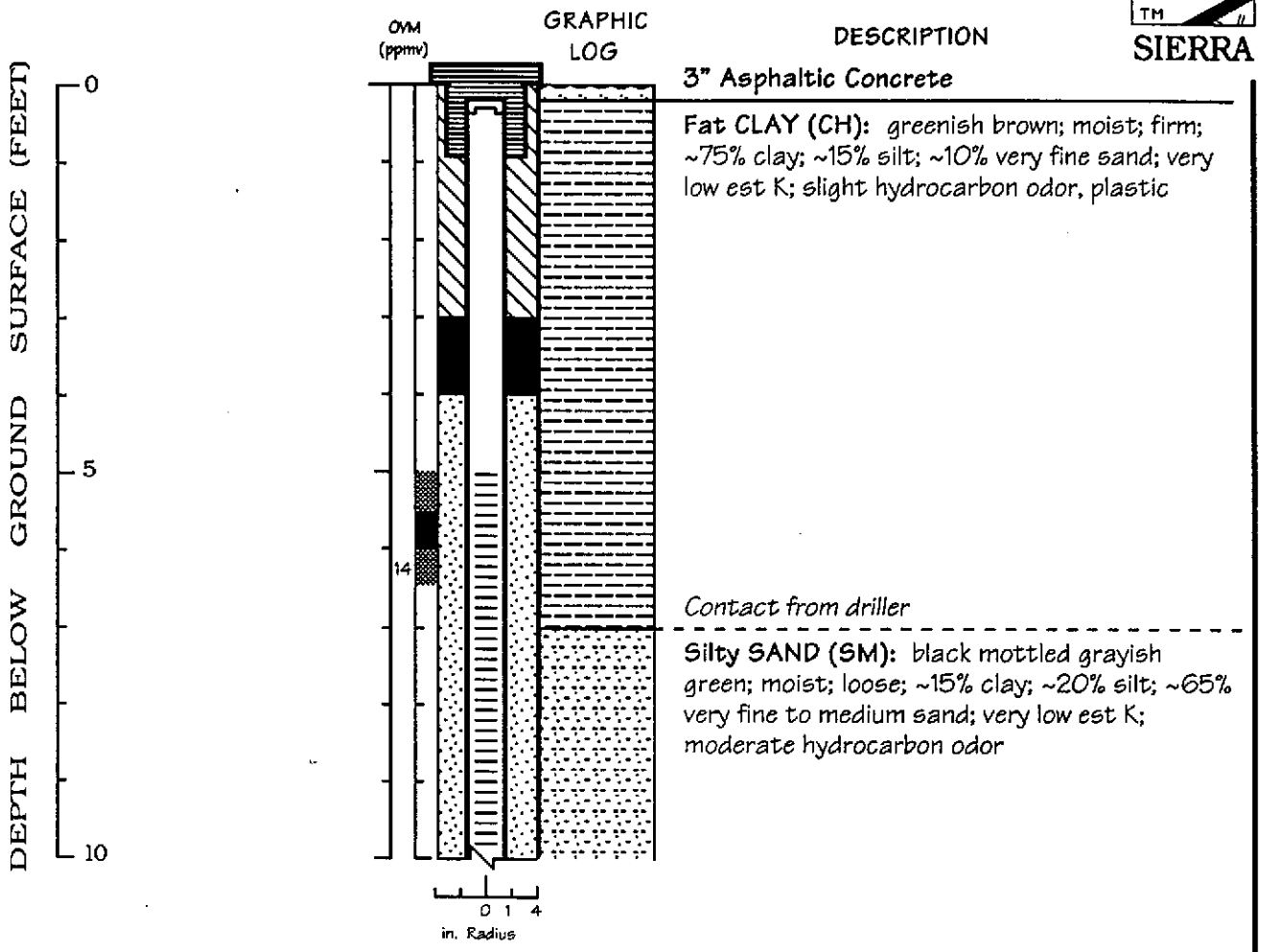


Well Construction and Boring Log – Well MW-2

Telegraph Business Park
5427 Telegraph Avenue
Oakland, California

WELL MW-3

SIERRA



3" Asphaltic Concrete

Fat CLAY (CH): greenish brown; moist; firm; ~75% clay; ~15% silt; ~10% very fine sand; very low est K; slight hydrocarbon odor, plastic

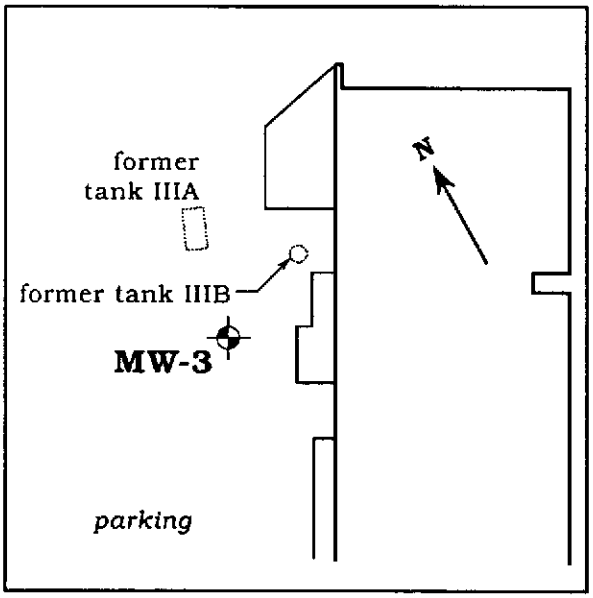
Contact from driller

Silty SAND (SM): black mottled grayish green; moist; loose; ~15% clay; ~20% silt; ~65% very fine to medium sand; very low est K; moderate hydrocarbon odor

Well Construction and Boring Log - Well MW-3

Telegraph Business Park
5427 Telegraph Avenue
Oakland, California

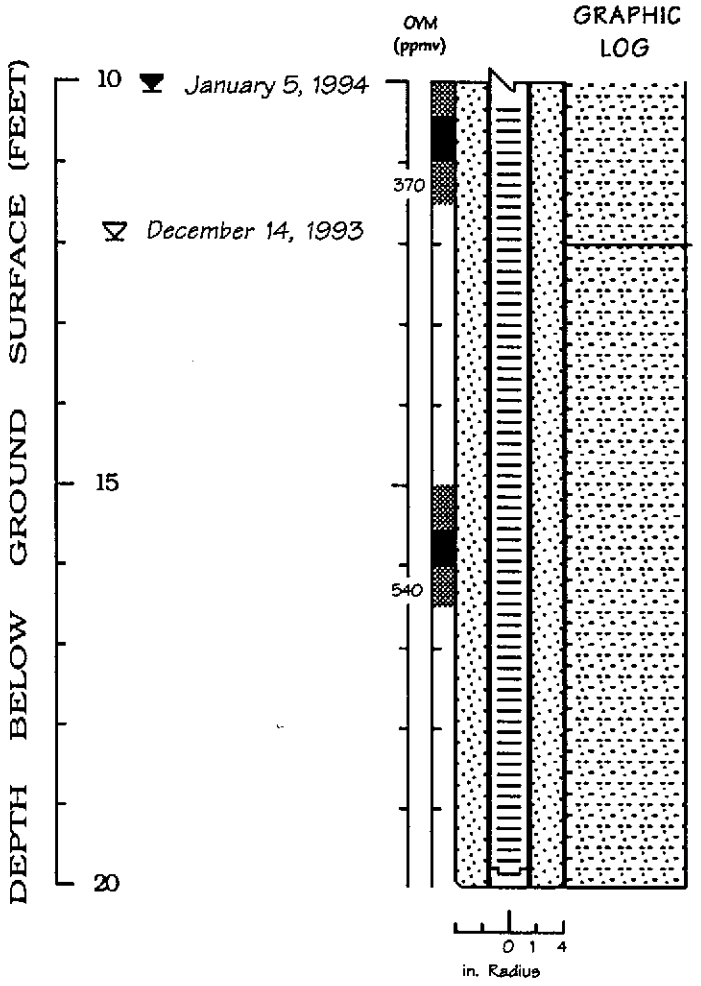
Logged by: John Trigg
Supervisor: C. Bramer P.E. #C48846
Drilling Company: Soils Exploration Services
C-57#: 582696
Driller: Steve Brinkerhoff
Drilling Method: Hollow stem auger
Date Drilled: December 14, 1993
Well Head Completion: Locking cap & Traffic-rated vault
Type of sampler: Split barrel (2" diameter)



WELL MW-3

(continued)

SIERRA



Silty SAND (SM): *greenish gray mottled orangish brown; wet; medium dense; ~10% clay; ~20% silt; ~70% very fine to coarse sand; very low est K; strong hydrocarbon odor*

Grades more gravelly; angular gravel to 1" diameter below 14'

Silty SAND (SP/SM/SC): *orangish brown mottled grayish green; wet; medium dense; ~10% clay; ~10% silt; ~70% very fine to medium sand; ~10% subangular gravel to .5" diameter; low est K; strong hydrocarbon odor*

BOH at 20'

Well Construction and Boring Log - Well MW-3

Telegraph Business Park
5427 Telegraph Avenue
Oakland, California

SIERRA

APPENDIX E
CHAIN OF CUSTODY DOCUMENTS AND
LABORATORY ANALYTIC REPORTS

Page 1

Direct Bill to J. Legallet

Chain-of-Custody Record

Facility No. TBP
Facility Address Oakland, CA
Consultant Project Number 4-719-07
Consultant Name SIERRA ENVIRONMENTAL SERVICES
Address P.O. Box 2546, Martinez, CA 94553
Project Contact (Name) John Trigg / C. Bramer
(Phone) (415) 370-1280
(FAX Number) (415) 370-7959

Client Contact (Name) Jon Legallet
(Company) Tel. Business Properties
(Phone) —
Laboratory Name Precision Analytical
Samples Collected by (Name) John Trigg
Collection Date 12/13+14/93
Signature

Date Coll.	Laboratory Number	Sample Identification	# - size of Container(s)	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (yes or no)	BTEX + TPH Gas (602/8020 + 8015/5030)	TPH Diesel (8015/3550/3510)	Oil and Grease (Non-polar) (5520 B/E/F)	Halogenated Hydrocarbons (601/8010)	Volatile Organic Compounds (624/8240)	Total Lead (AA)	Metals: Cd, Cr, Ni, Pb, Zn (ICAP or AA)	Organic lead (DHS LUFT)	TPH Full Scan Stadland + Diesel		Remarks
12/13	1	B-1 @2.5	1ea 2X6	S	D	—	None	Y									X		Analyze
	2	@8.5				—											X		Hold
	3	@13.0				—													Analyze
	4	B-2 @5.5				—											X		Hold
	5	@10.5				—											X		
	6	@15.5				—													
	7	@20.5				—													
	8	@25.5				—													
	9	B-3 @5.5				—											X		Analyze
	10	B-4 @5.5				—											X		
12/14	11	B-5 @5.5				—											X		

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	SES	12/15/93-1635			
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory by (Signature)		Date/Time
			Kathwenda John		12/15/93 4:30pm

Turn Around Time (Circle One)
24 hours
48 hours
5 days
(10 days)
As Contracted

Page 2

Direct Bill to J. Legallet

Chain-of-Custody Record

Facility No. TBP
Facility Address Oakland, CA
Consultant Project Number 4-719-07
Consultant Name SIERRA ENVIRONMENTAL SERVICES
Address P.O. Box 2546, Martinez, CA 94553
Project Contact (Name) John Trigg / C. Bramer
(Phone) (415) 370-1280
(FAX Number) (415) 370-7959

Client Contact (Name) Jon Legallet
(Company) Tel. Business Properties
(Phone) —
Laboratory Name Precision Analytical
Samples Collected by (Name) John Trigg
Collection Date 12/13+14/93
Signature

Date Coll.

Laboratory Number	Sample Identification	# - size of Container(s)	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (yes or no)	ANALYSIS TO BE PERFORMED: BTEX + TPH Gas (602/8020 + 8015/5030)	TPH Diesel (8015/3550/3510)	Oil and Grease (Non-polar) (5520 B/E/F)	Halogenated Hydrocarbons (601/8010)	Volatile Organic Compounds (624/8240)	Total Lead (AA)	Metals: Cd, Cr, Ni, Pb, Zn (ICAP or AA)	Organic lead (DHS LUFT)	TPH Full Scan Stoddard + Diesel		Remarks
12/14 12	B-6 @5.5	1ea 2x6	S	D	—	None	Y									X		Analyzer
13	@10.5				—											X		
14	B-7 @5.5				—											X		
15	@10.5				—											X		
16	B-8 @5.5				—											X		
17	@10.5				—											X		
18	@15.5				—											X		
19	@20.5				—											X		
20	B-9 @5.5				—											X		
21	@10.5				—											X		

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	SES	12/15/93-1635			
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory by (Signature)		Date/Time
					12/16/93 4:35pm

Turn Around Time (Circle One)
24 hours
48 hours
5 days
(10 days)
As Contracted

Page 3

Direct Bill to J. Legallet

Chain-of-Custody Record

Facility No. TBP
Facility Address Oakland, CA
Consultant Project Number 4-719-07
Consultant Name SIERRA ENVIRONMENTAL SERVICES
Address P.O. Box 2546, Martinez, CA 94553
Project Contact (Name) John Trigg / C. Bramer
(Phone) (415) 370-1280
(FAX Number) (415) 370-7959

Client Contact (Name) Jon Legallet
(Company) Tel. Business Properties
(Phone) —
Laboratory Name Precision Analytical
Samples Collected by (Name) John Trigg
Collection Date 12/13+14/93
Signature

Date Coll.	Laboratory Number	Sample Identification	# - size of Container(s)	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (yes or no)	BTEX + TPH Gas (602/8020 + 8015/5030)	TPH Diesel (8015/3550/3510)	Oil and Grease (Non-polar) (5520 B/E/F)	Halogenated Hydrocarbons (601/8010)	Volatile Organic Compounds (624/8240)	Total Lead (AA)	Metals: Cd, Cr, Ni, Pb, Zn (ICAP or AA)	Organic lead (DHS LUFT)	TPH Full Scan Stoddard + Diesel		Remarks
12/13	22	MW-1 @5.5	1ea 2½	S	D	—	None	Y									X		Analyze
	23	@9.5				—											X		
	24	@15.5				—											X		
	25	@20.5				—											X		
	26	MW-2 @5.5				—											X		
	27	@10.5				—											X		
	28	@15.5				—											X		
	29	@20.5				—											X		
	30	@25.5				—											X		
12/14	31	MW-3 @5.5				—											X		
	32	@10.5				—											X		
	33	@15.5				—											X		

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	SES	12/15/93-1635			
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory by (Signature)		Date/Time
					12/15/93 4:35 pm

Turn Around Time (Circle One)
24 hours
48 hours
5 days
(10 days)
As Contracted

Direct Bill to Jon Legallet.

Chain-of-Custody Record

Facility No. TBP
Facility Address Oakland, CA
Consultant Project Number
Consultant Name SIERRA ENVIRONMENTAL SERVICES
Address P.O. Box 2546, Martinez, CA 94553
Project Contact (Name) John Trigg/C. Bramer
(Phone) (415) 370-1280
(FAX Number) (415) 370-7959

Client Contact (Name) Jon Legallet
(Company) Tel. Business Properties
(Phone) —
Laboratory Name Precision Analytical
Samples Collected by (Name) John Trigg
Collection Date 12/13+14/93
Signature

Lab #	Laboratory Number	Sample Identification	# - size of Container(s)	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (yes or no)	ANALYSIS TO BE PERFORMED: BTEX + TPH Gas (602/8020 + 8015/5030)	TPH Diesel (8015/3550/3510)	Oil and Grease (Non-polar) (5520 B/E/F)	Halogenated Hydrocarbons (601/8010)	Volatile Organic Compounds (624/8240)	Total Lead (AA)	Metals: Cd, Cr, Ni, Pb, Zn (ICAP or AA)	Organic lead (DHS LUFT)	TPH Full Scan Stoddard + Diesel		Remarks
																			* Indicates "Hot Sample"
1/13		B-1*	3 VOA	W	G	—	None	Y											Hold
			2 liter			—											X		Analyze
1/13		B-2*	3 VOA			—													Hold
			2 liter			—											X		Analyze
1/13		B-3*	3 VOA			—													Hold
			2 liter			—											X		Analyze
1/13		B-4*	3 VOA			—													Hold
			2 liter			—											X		Analyze
1/14		B-5*	3 VOA			—													Hold
			2 liter			—											X		Analyze
1/14		B-6*	3 VOA			—													Hold
			2 liter	↓	↓	—	↓	↓									X		Analyze

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	SES	12/15/93-1635			
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory by (Signature)		Date/Time
					12/16/93 4:35

Turn Around Time (Circle One)
24 hours
48 hours
5 days
(10 days)
As Contracted

Direct Bill to Jon Legallet.

Chain-of-Custody Record

Facility No. TBP
Facility Address Oakland, CA
Consultant Project Number
Consultant Name SIERRA ENVIRONMENTAL SERVICES
Address P.O. Box 2546, Martinez, CA 94553
Project Contact (Name) John Trigg / C. Bramer
(Phone) (415) 370-1280
(FAX Number) (415) 370-7959

Client Contact (Name) Jon Legallet
(Company) Tcl. Business Properties
(Phone)
Laboratory Name Precision Analytical
Samples Collected by (Name) John Trigg
Collection Date 12/13+14/93
Signature

Lab #	Laboratory Number	Sample Identification	# - size of Container(s)	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (yes or no)	ANALYSIS TO BE PERFORMED: BTEX + TPH Gas (602/8020 + 8015/5030)	TPH Diesel (8015/3550/3510)	Oil and Grease (Non-polar) (5520 B/E/F)	Halogenated Hydrocarbons (601/8010)	Volatile Organic Compounds (624/8240)	Total Lead (AA)	Metals: Cd, Cr, Ni, Pb, Zn (ICAP or AA)	Organic lead (DHS LUFT)	TPH Full Scan Stoddard + Diesel		Remarks: * Indicates "Hot Sample"
'14		*B-7	3 VOA	W	G	—	None	Y											Hold
			2 liter			—											X		Analyze
'14		B-8	3 VOA			—													Hold
			2 liter			—											X		Analyze
'14		B-9	3 VOA			—													Hold
			2 liter	↓	↓	—	↓	↓									X		Analyze

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	SES	12/15/93-1635			
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory by (Signature)		Date/Time
					12/15/93 4:35 pm

Turn Around Time (Circle One)
24 hours
48 hours
5 days
(10 days)
As Contracted

Chain-of-Custody Record

Facility No. TELEGRAPH BUSINESS PARK
Facility Address 5427 TELEGRAPH AVE, OAKLAND
Consultant Project Number 41-719-07
Consultant Name SIERRA ENVIRONMENTAL SERVICES
Address P.O. Box 2546, Martinez, CA 94553
Project Contact (Name) ED MORALES / JOHN TRIGG
(Phone) (415) 370-1280
(FAX Number) (415) 370-7959

Client Contact (Name)
(Company)
(Phone)
Laboratory Name PRECISION Analytical
Samples Collected by (Name) R. HILTON
Collection Date 1/5/94
Signature

Laboratory Number	Sample Identification	# - size of Container(s)	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (yes or no)	ANALYSIS TO BE PERFORMED: BTEX + ~~TPH~~ (602/8020 ~~or 8015~~) only - BTEX	TPH Diesel (8015/3550/3510)	Oil and Grease (Non-polar) (5520 B/E/F)	Halogenated Hydrocarbons (601/8010)	Volatile Organic Compounds (624/8240)	Total Lead (AA)	Metals: Cd, Cr, Ni, Pb, Zn (ICAP or AA)	Organic lead (DHS LUFT)	TPH FULL SCAN STODARD & DIESEL		Remarks
1	TBLB	3 VOA	W	G	1440	HCl	YES	X										Analyze
2	BB	↓			1450	2		X										
	MW1	6 VOA			1500	HCl		X			X							
3	MW1	2 LITER				H_2SO_4				X								
	MW1	2 LITER			↓	NONE										X		
	MW2	6 VOA			1530	HCl		X			X							
4	MW2	2 LITER				H_2SO_4				X								
	MW2	2 LITER			↓	NONE										X		
	MW3	6 VOA			1550	HCl		X			X							
5	MW3	2 LITER				H_2SO_4				X								
	MW3	2 LITER			↓	NONE										X		

Relinquished By (Signature)	Organization SES	Date/Time	Received By (Signature)	Organization Precision	Date/Time 1/6/94 10:45 AM	Turn Around Time (Circle One): 24 hours, 48 hours, 5 days, 10 days, As Contracted	
Relinquished By (Signature)	Organization P.A.L.I	Date/Time 1/7/94 3:00pm	Received By (Signature)	Organization NET	Date/Time 1/7/94 15:02		
Relinquished By (Signature)	Organization NET	Date/Time 1/7/94 15:01	Received for Laboratory by (Signature)		Date/Time 1/7/94 3:01pm		1/6/94

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (510) 222-3002 FAX (510) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 1150

Attn: John Trigg
Sierra Environmental Services
P.O. Box 2546
Martinez, CA 94553

Date Received: 12/15/93
Date Extracted: 12/21/93
Date Analyzed: 12/21/93
Date Reported: 12/29/93
Job #: 75310

Project: #4-719-07/TBP
Oakland, CA
Matrix: Soil

Total Petroleum Hydrocarbon Analysis
DHS Extraction Method (LUFT)
mg/Kg

Lab I.D.	Client I.D.	Diesel Range	MDL
75310-1	B-1 @ 2.5	ND<10	10
75310-2	B-1 @ 8.5	ND<10	10
75310-4	B-2 @ 5.5	ND<10	10
75310-5	B-2 @ 10.5	ND<10	10
75310-9	B-3 @ 5.5	13	10
75310-10	B-4 @ 5.5	ND<10	10
75310-11	B-5 @ 5.5	ND<1.0	1.0
75310-12	B-6 @ 5.5	190	10
75310-13	B-6 @ 10.5	11	10
75310-14	B-7 @ 5.5	11	10
75310-15	B-7 @ 10.5	14	10

QA/QC: Matrix Spike Recovery for Diesel: 95%
Matrix Spike Duplicate Recovery for Diesel: 101%

MDL: Method Detection Limit. Compound below this level would not be detected.

Jaime Chow
Laboratory Director

JC/dwc

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (510) 222-3002 FAX (510) 222-1251

STATE LICENSE NO. 1150

Attn: John Trigg
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Martinez, CA 94553

Date Received: 12/15/93
Date Extracted: 12/21/93
Date Analyzed: 12/21/93
Date Reported: 12/29/93
Job #: 75310

Project: #4-719-07/TBP
Oakland, CA
Matrix: Soil

Total Petroleum Hydrocarbon Analysis
DHS Extraction Method (LUFT)
mg/Kg

Lab I.D.	Client I.D.	Diesel Range	MDL
75310-16	B-8 a 5.5	ND<1.0	1.0
75310-17	B-8 @ 10.5	ND<1.0	1.0
75310-18	B-8 @ 15.5	ND<1.0	1.0
75310-19	B-8 @ 20.5	ND<1.0	1.0
75310-20	B-9 @ 5.5	ND<1.0	1.0
75310-21	B-9 @ 10.5	ND<1.0	1.0
75310-22	MW-1 @ 5.5	15	10
75310-23	MW-1 @ 9.5	ND<1.0	1.0
75310-24	MW-1 @ 15.5	ND<1.0	1.0
75310-25	MW-1 @ 20.5	ND<1.0	1.0
75310-26	MW-2 @ 5.5	ND<10	10
75310-27	MW-2 @ 10.5	ND<10	10
75310-28	MW-2 @ 15.5	ND<1.0	1.0
75310-29	MW-2 @ 20.5	ND<1.0	1.0
75310-30	MW-2 @ 25.5	ND<10	10
75310-31	MW-3 @ 5.5	2.9	1.0
75310-32	MW-3 @ 10.5	ND<10	10
75310-33	MW-3 @ 15.5	2.5	1.0

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STATE LICENSE NO. 1150

Attn: John Trigg
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Martinez, CA 94553

Date Received: 12/15/93
Date Extracted: 12/21/93
Date Analyzed: 12/21/93
Date Reported: 12/29/93
Job #: 75310

Project: #4-719-07/TBP
Oakland, CA
Matrix: Soil

Total Petroleum Hydrocarbon Analysis
DHS Extraction Method (LUFT)
mg/Kg

Lab I.D.	Client I.D.	Stoddard	MDL
75310-1	B-1 @ 2.5	980	10
75310-2	B-1 @ 8.5	2,000	10
75310-4	B-2 @ 5.5	1,640	10
75310-5	B-2 @ 10.5	3,060	10
75310-9	B-3 @ 5.5	1,900	10
75310-10	B-4 @ 5.5	100	10
75310-11	B-5 @ 5.5	ND<1.0	1.0
75310-12	B-6 @ 5.5	110	10
75310-13	B-6 @ 10.5	150	10
75310-14	B-7 @ 5.5	1,380	10
75310-15	B-7 @ 10.5	920	10

QA/QC: Matrix Spike Recovery for Stoddard: 93%
Matrix Spike Duplicate Recovery for Stoddard: 89%

MDL: Method Detection Limit. Compound below this level would not be detected.

Jaime Chow
Laboratory Director

JC/dwc

Precision Analytical Laboratory, Inc.
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STATE LICENSE NO. 1150

Attn: John Trigg
Sierra Environmental Services
P.O. Box 2546
Martinez, CA 94553

Date Received: 12/15/93
Date Extracted: 12/21/93
Date Analyzed: 12/21/93
Date Reported: 12/29/93
Job #: 75310

Project: #4-719-07/TBP
Oakland, CA
Matrix: Soil

Total Petroleum Hydrocarbon Analysis
DHS Extraction Method (LUFT)
mg/Kg

Lab I.D.	Client I.D.	Stoddard	MDL
75310-16	B-8 a 5.5	ND<1.0	1.0
75310-17	B-8 @ 10.5	ND<1.0	1.0
75310-18	B-8 @ 15.5	ND<1.0	1.0
75310-19	B-8 @ 20.5	ND<1.0	1.0
75310-20	B-9 @ 5.5	ND<1.0	1.0
75310-21	B-9 @ 10.5	ND<1.0	1.0
75310-22	MW-1 @ 5.5	2,320	10
75310-23	MW-1 @ 9.5	1.2	1.0
75310-24	MW-1 @ 15.5	7.5	1.0
75310-25	MW-1 @ 20.5	ND<1.0	1.0
75310-26	MW-2 @ 5.5	2,780	10
75310-27	MW-2 @ 10.5	6,500	10
75310-28	MW-2 @ 15.5	18	1.0
75310-29	MW-2 @ 20.5	ND<1.0	1.0
75310-30	MW-2 @ 25.5	200	10
75310-31	MW-3 @ 5.5	2.6	1.0
75310-32	MW-3 @ 10.5	260	10
75310-33	MW-3 @ 15.5	34	1.0

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CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 1150

Attn: John Trigg
Sierra Environmental Services
P.O. Box 2546
Martinez, CA 94553

Date Received: 12/15/93
Date Extracted: 12/20/93
Date Analyzed: 12/20/93
Date Reported: 12/29/93
Job #: 75309

Project: TBP, Oakland, CA
Matrix: Water

Total Petroleum Hydrocarbon Analysis
DHS Extraction Method (LUFT)
mg/L

Lab I.D.	Client I.D.	Diesel Range	MDL
75309-1	B-1	1.2	0.05
75309-2	B-2	4.0	0.05
75309-3	B-3	3.7	0.05
75309-4	B-4	0.090	0.05
75309-5	B-5	0.10	0.05
75309-6	B-6	0.46	0.05
75309-7	B-7	0.39	0.05
75309-8	B-8	ND<0.05	0.05
75309-9	B-9	ND<0.05	0.05

QA/QC: Method Spike Recovery for Diesel: 90%
Method Spike Duplicate Recovery for Diesel: 83%

MDL: Method Detection Limit. Compound below this level would not be detected.

Jaime Chow
Laboratory Director

JC/dwc

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (510) 222-3002 FAX (510) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 1150

Attn: John Trigg
Sierra Environmental Services
P.O. Box 2546
Martinez, CA 94553

Date Received: 12/15/93
Date Extracted: 12/20/93
Date Analyzed: 12/20/93
Date Reported: 12/29/93
Job #: 75309

Project: TBP, Oakland, CA
Matrix: Water

Total Petroleum Hydrocarbon Analysis
DHS Extraction Method (LUFT)
mg/L

Lab I.D.	Client I.D.	Stoddard	MDL
75309-1	B-1	93	0.05
75309-2	B-2	1,400	0.05
75309-3	B-3	780	0.05
75309-4	B-4	15	0.05
75309-5	B-5	1.6	0.05
75309-6	B-6	9.0	0.05
75309-7	B-7	18	0.05
75309-8	B-8	ND<0.05	0.05
75309-9	B-9	0.060	0.05

MDL: Method Detection Limit. Compound below this level would not be detected.

Jaime Chow
Laboratory Director

JC/dwc

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (510) 222-3002 FAX (510) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 1150

Date Received: 01/06/94
Date Extracted: 01/07/94
Date Analyzed: 01/10/94
Date Reported: 01/13/94
Job #: 75365

Attn: Ed Morales
Sierra Environmental Services
P.O. Box 2546
Martinez, CA 94553

Project: #4-719-07/Telegraph Business Park
5427 Telegraph Avenue, Oakland
Matrix: Water

Total Petroleum Hydrocarbon Analysis
DHS Extraction Method (LUFT)
mg/L

Lab I.D.	Client I.D.	Diesel Range	MDL
75365-3	MW1	0.50	0.05
75365-4	MW2	0.20	0.05
75365-5	MW3	0.070	0.05

QA/QC: Matrix Spike Recovery for Diesel: 97%
Matrix Spike Duplicate Recovery for Diesel: 98%

MDL: Method Detection Limit. Compound below this level would not be detected.

Jaime Chow
Laboratory Director

JC/dwc

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (510) 222-3002 FAX (510) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 1150

Attn: Ed Morales
Sierra Environmental Services
P.O. Box 2546
Martinez, CA 94553

Date Received: 01/06/94
Date Extracted: 01/07/94
Date Analyzed: 01/10/94
Date Reported: 01/13/94
Job #: 75365

Project: #4-719-07/Telegraph Business Park
5427 Telegraph Avenue, Oakland
Matrix: Water

Total Petroleum Hydrocarbon Analysis
DHS Extraction Method (LUFT)
mg/L

Lab I.D.	Client I.D.	Stoddard Range	MDL
75365-3	MW1	1.0	0.05
75365-4	MW2	35	0.05
75365-5	MW3	1.1	0.05

MDL: Method Detection Limit. Compound below this level would not be detected.

Jaime Chow
Laboratory Director

JC/dwc

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (510) 222-3002 FAX (510) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 1150

Date Received: 01/06/94
Date Analyzed: 01/13/94
Date Reported: 01/13/94
Job #: 75365

Attn: Ed Morales
Sierra Environmental Services
P.O. Box 2546
Martinez, CA 94553

Project: #4-719-07/Telegraph Business Park
5427 Telegraph Avenue, Oakland
Matrix: Water

Total Oil & Grease
Standard Methods, 17th Edition, 5520 B
mg/L

Lab I.D.	Client I.D.	Total Oil & Grease	MDL
75365-3	MW1	6.3	5.0
75365-4	MW2	ND<5.0	5.0
75365-5	MW3	ND<5.0	5.0

QA/QC: Matrix Spike Recovery: 99%

MDL: Method Detection Limit. Compound below this level would not be detected.

Jaime Chow
Laboratory Director

JC/dwc

Precision Analytical Laboratory, Inc.

4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (510) 222-3002 FAX (510) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 1150

Attn: Ed Morales
Sierra Environmental Services
P.O. Box 2546
Martinez, CA 94553

Date Received: 01/06/94
Date Analyzed: 01/11/94
Date Reported: 01/13/94
Job #: 75365

Project: #4-719-07/Telegraph Business Park
5427 Telegraph Avenue, Oakland
Matrix: Water

Aromatic Volatile Hydrocarbon Analysis
EPA Method 602
µg/L

Lab I.D.	Client I.D.	Benzene	MDL	Toluene	MDL
75365-1	TBLB	ND<0.3	0.3	ND<0.3	0.3
75365-2	BB	ND<0.3	0.3	ND<0.3	0.3
75365-3	MW1	3.3	0.3	1.6	0.3
75365-4	MW2	12	3.0	38	3.0
75365-5	MW3	180	3.0	20	3.0

Lab I.D.	Client I.D.	Ethyl-benzene	MDL	Xylenes	MDL
75365-1	TBLB	ND<0.3	0.3	ND<0.3	0.3
75365-2	BB	ND<0.3	0.3	ND<0.3	0.3
75365-3	MW1	ND<0.3	0.3	6.0	0.3
75365-4	MW2	ND<3.0	3.0	150	3.0
75365-5	MW3	85	3.0	10	3.0

QA/QC: Matrix Spike Recovery for Benzene: 96%
Matrix Spike Recovery for Toluene: 96%
Matrix Spike Recovery for Chlorobenzene: 102%

Matrix Spike Duplicate Recovery for Benzene: 97%
Matrix Spike Duplicate Recovery for Toluene: 97%
Matrix Spike Duplicate Recovery for Chlorobenzene: 102%

MDL: Method Detection Limit. Compound below this level would not be detected.

Jaime Chow
Laboratory Director

JC/dwc

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (510) 222-3002 FAX (510) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 1150

Attn: Ed Morales
Sierra Environmental Services
P.O. Box 2546
Martinez, CA 94553

Date Received: 01/06/94
Date Analyzed: 01/10/94
Date Reported: 01/13/94
Job #: 75365

Project: #4-719-07/Telegraph Business Park
5427 Telegraph Avenue, Oakland
Matrix: Water

PURGEABLE HALOCARBONS
EPA Method 8010
µg/L

Lab I.D.: 75365-3
Client I.D.: MW1

	Result	MDL
Bromomethane & Chloroethane	ND<2.0	2.0
Vinyl Chloride & Chloromethane	ND<1.0	1.0
Freon 113	ND<1.0	1.0
1,1-Dichloroethene	ND<0.4	0.4
Methylene Chloride	ND<1.0	1.0
Trans-1,2-Dichloroethene	ND<0.2	0.2
1,1-Dichloroethane	ND<0.3	0.3
Cis-1,2-Dichloroethene	0.44	0.3
Chloroform	0.35	0.2
1,1,1-Trichloroethane	ND<0.3	0.3
Carbon Tetrachloride	ND<0.2	0.2
1,2-Dichloroethane	ND<0.2	0.2
Trichloroethene	ND<0.3	0.3
1,2-Dichloropropene	ND<0.3	0.3
2-Chloro-vinyl ether	ND<0.4	0.4
Bromodichloromethane	ND<0.2	0.2
T-1,3-Dichloropropene	ND<0.3	0.3
Cis-1,3-Dichloropropene	ND<0.2	0.2
1,1,2-Trichloroethane	ND<0.3	0.3
Tetrachloroethene	ND<0.3	0.3
Dibromochloromethane	ND<0.3	0.3
Chlorobenzene	ND<0.2	0.2
Bromoform	ND<0.3	0.3
1,1,2,2-Tetrachloroethane	ND<0.3	0.3
1,3-Dichlorobenzene	ND<0.3	0.3
1,4-Dichlorobenzene	0.34	0.2
1,2-Dichlorobenzene	0.36	0.2

MDL: Method Detection Limit

Jaime Chow
Laboratory Director

JC/dwc

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (510) 222-3002 FAX (510) 222-1251

STATE LICENSE NO. 1150

Attn: Ed Morales
Sierra Environmental Services
P.O. Box 2546
Martinez, CA 94553

Date Received: 01/06/94
Date Analyzed: 01/10/94
Date Reported: 01/13/94
Job #: 75365

Project: #4-719-07/Telegraph Business Park
5427 Telegraph Avenue, Oakland
Matrix: Water

PURGEABLE HALOCARBONS
EPA Method 8010
µg/L

Lab I.D.: 75365-3
Client I.D.: MW1

QA/QC: Matrix Spike Recovery for 1,1-Dichloroethane: 80%
Matrix Spike Recovery for Trichloroethene: 125%
Matrix Spike Recovery for Chlorobenzene: 102%

Matrix Spike Duplicate Recovery for 1,1-Dichloroethane: 90%
Matrix Spike Duplicate Recovery for Trichloroethene: 125%
Matrix Spike Duplicate Recovery for Chlorobenzene: 103%

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CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 1150

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Job #: 75365

Project: #4-719-07/Telegraph Business Park
5427 Telegraph Avenue, Oakland
Matrix: Water

PURGEABLE HALOCARBONS
EPA Method 8010
µg/L

Lab I.D.: 75365-4
Client I.D.: MW2

	Result	MDL
Bromomethane & Chloroethane	ND<2.0	2.0
Vinyl Chloride & Chloromethane	ND<1.0	1.0
Freon 113	ND<1.0	1.0
1,1-Dichloroethene	ND<0.4	0.4
Methylene Chloride	ND<1.0	1.0
Trans-1,2-Dichloroethene	1.1	0.2
1,1-Dichloroethane	10	0.3
Cis-1,2-Dichloroethene	130	0.3
Chloroform	5.6	0.2
1,1,1-Trichloroethane	ND<0.3	0.3
Carbon Tetrachloride	ND<0.2	0.2
1,2-Dichloroethane	2.7	0.2
Trichloroethene	2.6	0.3
1,2-Dichloropropene	18	0.3
2-Chloro-vinyl ether	ND<0.4	0.4
Bromodichloromethane	ND<0.2	0.2
T-1,3-Dichloropropene	1.0	0.3
Cis-1,3-Dichloropropene	ND<0.2	0.2
1,1,2-Trichloroethane	ND<0.3	0.3
Tetrachloroethene	ND<0.3	0.3
Dibromochloromethane	ND<0.3	0.3
Chlorobenzene	ND<0.2	0.2
Bromoform	ND<0.3	0.3
1,1,2,2-Tetrachloroethane	ND<0.3	0.3
1,3-Dichlorobenzene	ND<0.3	0.3
1,4-Dichlorobenzene	1.0	0.2
1,2-Dichlorobenzene	0.90	0.2

MDL: Method Detection Limit

Jaime Chow
Laboratory Director

JC/dwc

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CERTIFICATE OF ANALYSIS

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Date Received: 01/06/94
Date Analyzed: 01/10/94
Date Reported: 01/13/94
Job #: 75365

Project: #4-719-07/Telegraph Business Park
5427 Telegraph Avenue, Oakland
Matrix: Water

PURGEABLE HALOCARBONS
EPA Method 8010
µg/L

Lab I.D.: 75365-5
Client I.D.: MW3

	Result	MDL
Bromomethane & Chloroethane	ND<2.0	2.0
Vinyl Chloride & Chloromethane	ND<1.0	1.0
Freon 113	ND<1.0	1.0
1,1-Dichloroethene	ND<0.4	0.4
Methylene Chloride	ND<1.0	1.0
Trans-1,2-Dichloroethene	ND<0.2	0.2
1,1-Dichloroethane	0.70	0.3
Cis-1,2-Dichloroethene	5.2	0.3
Chloroform	1.3	0.2
1,1,1-Trichloroethane	ND<0.3	0.3
Carbon Tetrachloride	ND<0.2	0.2
1,2-Dichloroethane	0.20	0.2
Trichloroethene	ND<0.3	0.3
1,2-Dichloropropene	ND<0.3	0.3
2-Chloro-vinyl ether	ND<0.4	0.4
Bromodichloromethane	ND<0.2	0.2
T-1,3-Dichloropropene	ND<0.3	0.3
Cis-1,3-Dichloropropene	ND<0.2	0.2
1,1,2-Trichloroethane	ND<0.3	0.3
Tetrachloroethene	ND<0.3	0.3
Dibromochloromethane	ND<0.3	0.3
Chlorobenzene	0.70	0.2
Bromoform	ND<0.3	0.3
1,1,2,2-Tetrachloroethane	ND<0.3	0.3
1,3-Dichlorobenzene	ND<0.3	0.3
1,4-Dichlorobenzene	0.30	0.2
1,2-Dichlorobenzene	1.5	0.2

MDL: Method Detection Limit

Jaime Chow
Laboratory Director

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