

Casimiro and Josephine Damele 3750 Victor Avenue Oakland CA 94619 30 July 1999

Project No. P214

Report Soil and Groundwater Investigation 4401 Market Street Oakland CA

Dear Mr. and Mrs. Damele:

Attached is our report documenting the following activities at the subject property:

- Compilation of historical environmental data.
- Preparation and permitting for the soil and groundwater investigation.
- Measurement of water levels in the 3 existing monitoring wells and evaluation of groundwater flow.
- Collection and analysis of soil and grab groundwater samples from 9 Geoprobe borings.

If you have any questions, please call.

Sincerely,

STREAMBORN

Kenneth B. Alexander, RG, CH

Certified Hydrogeologist

K.B. alf

Enclosure

cc: Don Hwang/Alameda County Environmental Health Services, Alameda CA

Christopher Fleming, San Leandro CA

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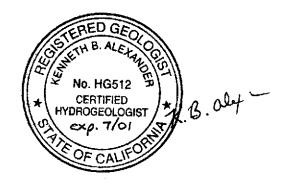
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Report Soil and Groundwater Investigation 4401 Market Street Oakland CA

Prepared For
Casimiro and Josephine Damele
Oakland CA



Prepared By
STREAMBORN
Berkeley CA
Streamborn Project No. P214

30 July 1999

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INTRODUCTION

This report summarizes a soil and groundwater investigation at 4401 Market Street, Oakland CA (Figure 1). The investigation was designed to explore gasoline releases from former underground storage tanks at the property. Work was performed in accordance with our workplan, dated 15 September 1997 (Streamborn 1997). Activities included: (1) compilation of historical environmental data, (2) measurement of groundwater levels in 3 existing monitoring wells, (3) completion of 9 Geoprobe borings, and (4) collection of soil and grab groundwater samples.

BACKGROUND

A chronology of activities associated with the former underground gasoline tanks is summarized in Table 1.

The subject property contains a one-story building constructed in 1943 and used as a gasoline service station by ARCO until the mid-1970's (W.A. Craig 1995). Since then, a vehicle repair business operated by George's Auto Repair has occupied the property. The current owners, Casimiro and Josephine Damele, purchased the property in October 1971.

Four underground gasoline tanks (one 1,000-gallon tank and three 500-gallon tanks) were located on the southeast corner of the property near the intersection of Market Street and 44th Street (Figure 2). In June 1990, Environmental Bio-Systems, Inc. (Hayward CA) removed the four underground storage tanks (EBS 1990). All four tanks were rusted, pitted, and contained holes. In addition, EBS reported a 3-inch split seam in the top of the 1,000-gallon gasoline tank. Contaminated soil was discovered within the tank excavation (Table 2). Soil excavated during the tank removal was placed back into the excavation. Removal of the fuel dispensers, product piping, and pump island was not documented in the EBS report.

In September 1990, W.A. Craig, Inc. (Napa CA) excavated 2 trenches to a depth of approximately 5 feet in the vicinity of the former pump island. Contaminated soil was observed but no laboratory analyses were performed. Soil excavated during trenching was placed back into the trenches.

In October 1994, W.A. Craig drilled 7 borings at the property. Free product, presumably gasoline, was observed in boring SB2 at the southwest corner of the property (Figure 2). Gasoline constituents were detected at significant concentrations in soil samples from 3 of the borings (SB2, SB4, and MW2) (Table 3).

Also in October 1994, W.A. Craig completed 3 of the borings as monitoring wells MW1, MW2, and MW3 (W.A. Craig 1995). Monitoring well completion data are summarized in Table 4. Monitoring wells MW1, MW2, and MW3 have 6- to 8-foot long intercepted intervals that do not straddle the groundwater table. Groundwater levels are typically 3 to 7 feet above the intercepted interval and direct observations regarding the presence or absence of free product in the wells are not possible.

Between November 1994 and June 1997, W.A. Craig performed 9 rounds of groundwater monitoring (W.A. Craig 1997a, 1997d). Analytical data from well sampling are summarized in Table 5. Gasoline constituents have been detected in samples from well MW2 during each monitoring event (Table 5). However, the analytical results may not be indicative of actual groundwater conditions because the intercepted intervals of the 3 wells are completely below the water table (Table 4).

Since 1994, groundwater within the 3 monitoring wells has typically been measured at depths between 12 and 16 feet (Table 6). The groundwater gradient direction has varied between south-southeast and west-southwest.

SOIL AND GROUNDWATER INVESTIGATION

The soil and groundwater investigation was conducted on 8 April 1999 and 9 July 1999. Prior to initiating field work, the following activities were conducted:

- A workplan was prepared describing the proposed field work (Streamborn 1997). Alameda County Environmental Health Services approved the workplan.
- A boring permit was obtained from the Alameda County Public Works Agency (Appendix B).
- An encroachment permit was obtained from the City of Oakland to allow us to complete borings in Market Street and 44th Street (Appendix B).
- An access agreement was completed for 903 44th Street to allow us to complete 2 borings on that property (Appendix C).
- A private utility locator was retained to identify subsurface utilities at the proposed boring locations.
- Underground Service Alert (USA) was notified to check for buried utilities at the proposed boring locations.

Groundwater Level Measurements

On 31 March 1999, prior to drilling, groundwater levels were measured in monitoring wells MW1, MW2, and MW3 (Table 6). These measurements indicated a depth to groundwater of approximately 14 feet below the adjacent pavement surface. For the 31 March 1999 measurements, we interpreted the groundwater gradient direction and magnitude in the vicinity of the former underground tanks (Figure 3). Overall, the direction of groundwater flow is toward the south-southwest with a magnitude of 0.006 (32 feet per mile).

Soil and Grab Groundwater Sampling from Borings

Five borings were drilled on 8 April 1999 and four borings were drilled on 9 July 1999 using a Geoprobe rig operated by Fisch Environmental Exploration Services (Valley Springs CA). The following was typically conducted at each boring:

 The boring was advanced by pushing a decontaminated 52-inch long by 2-inch outside diameter decontaminated stainless steel soil sampler fitted with a stainless steel drive point. The inside of the soil sampler contained a decontaminated 46-inch long by 1-3/4-inch outside diameter clear plastic (cellulose acetate butyrate) liner.

Soil was continuously sampled in 48-inch vertical increments. After each incremental push, the sampler was retrieved, the liner was removed, and the liner was cut into sections. Soil contained in the liner sections was classified and examined for chemical staining. Soil exposed at the ends of each section was examined for chemical odor, and screened using an organic vapor meter (Thermo Environmental

Instruments Model 580B, equipped with a 10.0 eV photoionization detector, calibrated to 100 parts per million isobutylene, volume/volume basis). The liner sections were then capped, labeled, and stored in a cooler with ice.

- At the conclusion of soil sampling, a temporary PVC casing was placed in the uncased borehole. The temporary casing consisted of 1-inch ID SCH 40 PVC with the lower 10-foot section slotted. Water was allowed to collect in the casing for approximately 10 minutes. The depth to water was then measured in the casing. An unpurged grab groundwater sample was collected from the temporarily-cased boring using a teflon bailer.
- At the conclusion of groundwater sampling, the temporary casing was withdrawn and the borehole was backfilled through a tremie pipe with cement-bentonite grout (proportions: 7 gallons of water, 5 pounds of bentonite, 94 pounds of cement). Holes were resurfaced with asphalt, where appropriate.

Soil and groundwater samples were collected from every boring except B14. We were unable to collect a groundwater sample from B14 because no water entered the boring during the time (approximately 1 hour) the boring was open.

Boring locations are shown on Figure 2. Table 7 summarizes field observations. Boring logs are contained in Appendix A. The standard operating procedures we employed are appended.

Subsurface Conditions

Subsurface conditions encountered in borings B8 through B15 typically consisted of (Table 7):

- Lean Clay, Silt, and Fat Clay, beginning at the ground surface and extending to a depth of approximately 17 to 19 feet.
- Clayey Sand, beginning at a depth of 17 to 19 feet and extending to a depth of at least 24 feet (maximum depth sampled).

In boring B16, a stratum of clayey sand was encountered beginning at a depth of approximately 9.5 feet and extending to a depth of 13 feet. Also in boring B16, a stratum of clayey gravel was encountered beginning at a depth of approximately 21 feet and extending to a depth of 23 feet.

Analysis of Soil and Grab Groundwater Samples from Borings

In borings B8 through B16, the following soil samples were retained for laboratory analysis:

- In borings B8 through B13, soil samples were collected at (1) 11.5 to 12 feet, and (2) 15 to 15.5 feet.
- In boring B14, soil samples were collected at (1) 11.5 to 12 feet, (2) 15 to 15.5 feet, and (3) 21 to 21.5 feet.
- In boring B15, soil samples were collected at (1) 11.5 to 12 feet, (2) 15 to 15.5 feet, and (3) 17.5 to 18 feet.
- In boring B16, soil samples were collected at (1) 11.5 to 12 feet, (2) 15 to 15.5 feet, and (3) 19.5 to 20 feet.

Grab groundwater samples were collected from all borings except B14.

All soil and grab groundwater samples were analyzed for (1) Total Petroleum Hydrocarbons (TPH) as Gasoline, (2) Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), and (3) Methyl tertiary Butyl Ether (MtBE).

Analytical results for soil samples are summarized in Table 3. Analytical results for grab groundwater samples are summarized in Table 8 and Figure 4. The chain-of-custody forms and the laboratory reports are appended.

Remarkable soil concentrations were encountered in boring B10 at a depth of 15 to 15.5 feet; otherwise, soil concentrations were typically very low or nondetect.

Remarkable groundwater concentrations were encountered in borings B9, B10, B11, and B15. Free product, presumably gasoline, was observed floating on top of the groundwater in boring B10 at a depth of approximately 15 feet. We measured approximately 1-inch of free product using a 1/2-inch diameter disposable bailer. In borings B9 and B11, groundwater sampling revealed elevated concentrations of TPH as gasoline and benzene. In boring B15, located farthest downgradient, groundwater sampling revealed an elevated concentration of TPH as gasoline.

EVALUATION OF THE SAMPLING RESULTS

Figure 4 summarizes the grab groundwater analytical results. Dissolved gasoline constituents have been transported in groundwater at least 100 feet in the downgradient direction (south-southwest at boring B15) from the former tanks.

Of greater concern is the presence of free product in boring B10, roughly 50 feet downgradient of the former tanks. We did not observe free product in any other boring. Although a grab groundwater sample was not collected from boring B14 due to a lack of water in the boring, we did not observe evidence of free product in the soil samples from boring B14. We believe that the downgradient extent of the free product is located between borings B10 and B14. In 1994, W.A. Craig observed free product in boring SB2. Given the location of monitoring well MW2 (in between borings SB2 and B10), we would expect to see free product in well MW2; however, the construction of well MW2 precludes gasoline, that may be floating on top of the groundwater, from entering the well. Accordingly, the existing data are insufficient to estimate the volume of free product in the vicinity of the former tanks and boring B10.

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- W. A. Craig (1997d). Groundwater Monitoring Report, June 1997, Damele Property, 4401 Market Street, Oakland CA. Prepared for Mr. and Mrs. Casimiro Damele, Oakland CA. Prepared by W.A. Craig, Inc., Napa, CA. 27 June 1997.
- USEPA (1998). Region 9 Preliminary Remediation Goals for Residential Soil (PRGs). Prepared by U.S. Environmental Protection Agency, Region 9, San Francisco CA. 1 August 1998.

Table 1
Environmental Chronology
4401 Market Street, Oakland CA

Date	Activities Performed By	Description						
Unknown	Unknown	• Four underground gasoline tanks (one 1,000-gallon and three 500-gallon tanks) wer installed.						
		 W.A. Craig (1997b) reported that the structure at the property was constructed in 19 and used as a gasoline station until the 1970's. 						
22 June 1990	Environmental Bio-Systems	 The 4 underground gasoline tanks were removed. Removal of the fuel dispensers, product piping, and pump island was not documented. Soil excavated during the tan removal was placed back into the excavation. 						
		Soil samples were collected below the tanks and from the excavated soil. Soil samples were analyzed for TPH-gasoline and BTEX. Soil sampling indicated a release of gasoline compounds.						
6 September 1990	W.A. Craig	• Two trenches were excavated to a depth of approximately 5 feet in the vicinity of the former dispenser island.						
27 and 28	W A C	Contaminated soil was observed but no laboratory analyses were performed. Soil excavated during trenching was placed back into the translate.						
October 1994	W.A. Craig	which were completed as monitoring wells (MWI, MW2, and MW3); three of						
		southwest corner of the property.						
8 November	W.A. Craig	Soil samples were analyzed for TPH-gasoline and BTEX.						
1994		 Groundwater monitoring was conducted for wells MW1, MW2, and MW3. Samples were analyzed for TPH-gasoline and BTEX. 						
14 February 199	1	Groundwater monitoring was conducted for wells MW1, MW2, All MW2, All MW1, MW2, All						
7 June 1995	W.A. Craig	Groundwater monitoring was conducted for wells MWI MWI AWA						
20. 4		• Samples were analyzed for TPH-gasoline and BTEX.						
29 August 1995	Claig	Groundwater monitoring was conducted for wells MWI 1 MW2						
December 1995	1	 Samples were analyzed for TPH-gasoline and BTEX. Groundwater monitoring was conducted for wells MW1, MW2, and MW3. Samples were analyzed 6. Trans. 						
	+	Samples were analyzed for TPH-gasoline and BTEX.						
March 1996	l and chang	Groundwater monitoring was conducted for wells MWI MOVE						
9 June 1996	-	and MrRE						
	17.24. Cruig	Groundwater monitoring was conducted for wells MW1, MW2, and MW3. Samples were analyzed for TPH-gasoline, BTEX, and MtBE.						
0 December 996	-	Groundwater monitoring was conducted for wells MW1, MW2, 12, 12, 12, 12, 12, 12, 12, 12, 12, 1						
2 June 1997		Samples were analyzed for TPH-gasoline, BTEX, and MtBE. Groundwater monitoring was conducted for wells MW1, MW2, and MW3. Samples were analyzed for TPH-gasoline, BTEX, and MtBE.						
		Samples were analyzed for TPH-gasoline, BTEX, and MtBE.						
pril and July 1999		 Nine borings were drilled in Market and 44th Streets and at 903 44th Street (B8 through B16). Free product, presumably gasoline, was observed in boring B10. Soil samples and at the street of the samples and at the samples are the						
	│ • ;	Soil samples and grab groundwater samples were collected from all 9 borings. Samples were analyzed for TPH-gasoline, BTEX, and MtBE.						

- (a) TPH = Total petroleum hydrocarbons.
- (b) BTEX = Benzene, tolucne, ethylbenzene, and xylenes.
- (c) MtBE = Methyl tertiary butyl ether.

Table 2
Soil Analytical Data during Tank Removal
4401 Market Street, Oakland CA

Sample Identification	Sample Depth (feet)	Sample Description	Sample Date	Sample Type	TPH- Gasoline (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl- benzene (mg/kg)	Xylenes (mg/kg)
S2	±8.5	±2-feet below invert of middle 500-gallon gasoline tank	22 June 1990	Grab (liner)	360	0.99	12	9.5	53
S3	±7.5	±2-feet below invert of southern 500- gallon gasoline tank	22 June 1990	Grab (liner)	160	1.2	2.5	2.8	13
S4	±8	±2-feet below invert at non-fill end of 1,000-gallon gasoline tank	22 June 1990	Grab (liner)	210	3.3	9.4	7.6	32
S 5	±8	±2-feet below invert at fill end of 1,000- gallon gasoline tank	22 June 1990	Grab (liner)	870	3.2	24	20	110
S6	±8.5	±2-feet below invert of northern 500- gallon gasoline tank	22 June 1990	Grab (liner)	730	5	24	26	140
S8	±15	±8.5-feet below inverts and midway between the two northern 500-gallon gasoline tanks	22 June 1990	Grab (liner)	260	3.7	14	7.1	33

- (a) Analytical data from Environmental Bio-Systems (1990).
- (b) TPH -Gasoline = Total Petroleum Hydrocarbons as Gasoline.
- (c) Samples were collected by Environmental Bio-Systems, Inc. (Hayward CA). Samples were analyzed by Anametrix, Inc. (San Jose CA).

Table 3
Soil Analytical Data from Borings
4401 Market Street, Oakland CA

Boring or Well No.	Sample Depth (feet)	Sample Date	Sample Identification	Sampled By	TPH- Gasoline (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl- benzene (mg/kg)	Xylenes (mg/kg)	MtBE (mg/kg)
SB1	10 to 10.5	27 October 1994	3365 SB1-10	WAC	<1	<0.005	<0.005	<0.005	<0.005	NA
	15 to 15.5	27 October 1994	3365 SB1-15	WAC	72	<0.01	0.13	0.21	0.18	NA
	20 to 20.5	27 October 1994	3365 SB1-20	WAC	<1	<0.005	<0.005	<0.005	<0.005	NA
SB2	10 to 10.5	27 October 1994	3365 SB2-10.5	WAC	40	0.079	0.034	0.43	4.7	NA
	15 to 15.5	27 October 1994	3365 SB2-15	WAC	19	0,46	0.041	0.31	4.2	NA
	20 to 20.5	27 October 1994	3365 SB2-20.5	WAC	5.7	0.006	<0.005	0.010	0.079	NA
SB3	10 to 10.5	27 October 1994	3365 SB3-10	WAC	<1	<0.005	<0.005	<0,005	<0.005	NA
	15 to 15.5	27 October 1994	3365 SB3-15	WAC	<1	<0.005	<0.005	<0.005	<0.005	NA
		ببع ربيسين يتي			Established	(PRG)	(PRG)	(PRG)	(PRG)	Established

- (a) Depths measured from the adjacent ground surface.
- (b) "<" denotes parameter below laboratory method reporting limit (shaded cells).
- (c) TPH = total petroleum hydrocarbons. MtBE = Methyl tertiary Butyl Ether. NA = Not analyzed. WAC = W.A. Craig, Inc. (Napa CA).
- (d) PRG = Residential Preliminary Remediation Goals. From Preliminary Remediation Goals (PRGs), US Environmental Protection Agency, Region 9, San Francisco CA. 1998.
- (e) Concentrations exceeding the regulatory criteria in **bold**.

Footnote

(1) Laboratory reported that hydrocarbon found in gasoline range is uncharacteristic of gasoline profile.

Table 4
Well Completion Data
4401 Market Street, Oakland CA

Well Number:	MW1	MW2	MW3
Date of Installation	27 October 1994	28 October 1994	28 October 1994
Installed By	W.A. Craig	W.A. Craig	W.A. Craig
Installation Method	Hollow-stem auger	Hollow-stem auger	Hollow-stem auger
Measuring Point Description	Top of PVC casing, north side	Top of PVC casing, north side	Top of PVC casing,
Measuring Point Elevation (feet)	71.12	70.62	71.79
Approximate Ground Surface Elevation (feet)	72.1	71.9	72.9
Approximate Seal Depth (feet)	19	19	19
Total Boring Depth (feet)	25.5	27.5	27.5
Total Casing Length (feet)	25.5	25	25
Casing Diameter (inches)	2	2	2
Boring Diameter (inches)	8	8	8
Screened Casing Interval (feet) – depth	20 to 25.5	20 to 25	20 to 25
elevation	52 to 46.5	52 to 47	53 to 48
Sand Pack Interval (feet) - depth	19 to 25.5	19 to 27.5	19 to 27.5
elevation	53 to 46.5	53 to 44.5	52 to 45.5
Blank Casing Interval (feet) – depth	1 to 20	1.3 to 20	1.2 to 20
elevation	71 to 52	70.7 to 52	71.8 to 53
Screen Specifications	SCH 40 PVC, slot size unknown	SCH 40 PVC, slot size unknown	SCH 40 PVC, slot size unknown

- (a) Elevations referenced to Mean Sea Level.
- (b) Depths measured relative to ground surface.
- (c) W.A. Craig = W.A. Craig, Inc. (Napa CA).
- (d) Well completion data from W.A. Craig (1995).

Table 5
Groundwater Analytical Data from Monitoring Wells
4401 Market Street, Oakland CA

Well Number	Sample Date	Sampled By	TPH- Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Xylenes (μg/L)	MtBE (μg/L)
MW1	8 November 1994	W.A. Craig	54	<0.5	<0.5	<0.5	1.2	NA
	14 February 1995	W.A. Craig	71	<0.5	<0.5	<0.5	0.97	NA
	7 June 1995	W.A. Craig	540	0.6	<0.5	1.7	1.3	NA
	29 August 1995	W.A. Craig	440	<0.5	<0.5	1.3	1.1	NA
	8 December 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	NA
	7 March 1996	W.A. Craig	77	<0.5	<0.5	<0.5	<0.5	44
	19 June 1996	W.A. Craig	500	<0.5	<0.5	0.85	0.36	84
	20 December 1996	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	28
	12 June 1997	W.A. Craig	190	<0.5	<0.5	<0.5	<0.5	12
MW2	8 November 1994	W.A. Craig	20,000	1,400	960	980	4,600	NA
	14 February 1995	W.A. Craig	8,600	380	210	410	2,000	NA
	7 June 1995	W.A. Craig	6,200	500	78	270	1,200	NA
	29 August 1995	W.A. Craig	4,100	330	61	210	980	NA
	8 December 1995	W.A. Craig	9,400	360	190	440	2,000	NA
	7 March 1996	W.A. Craig	12,000	790	170	440	2,000	18
	19 June 1996	W.A. Craig	9,000	520	82	350	1,500	ND
	20 December 1996	W.A. Craig	13,000	830	180	410	2,200	<16
	12 June 1997	W.A. Craig	5,100	320	32	190	880	<36
MW3	8 November 1994	W.A. Craig	<50	0.71	0.84	1.2	5.8	NA
	14 February 1995	W.A. Craig	< 50	<0.5	<0.5	<0.5	<0.5	NA
	7 June 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	1.6	NA
	29 August 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	NA
	8 December 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	NA
	7 March 1996	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	්ර
i	19 June 1996	W.A. Craig	≤50	<0.5	<0.5	<0.5	<0.5	<5
	20 December 1996	W.A. Craig	<50	<0.5	<0.5	<0.5	≥0.5	<5
ŀ	12 June 1997	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	<5

Regulatory Criteria	Not	1	150	700	1,750	35
	Established	(MCL)	(MCL)	(MCL)	(MCL)	(AL)

- (a) Analytical data from W.A. Craig (1997d). Wells were constructed by W. A. Craig. Inc. (Napa CA); however, the screened intervals of the wells are completely below the water table and the analytical results may not be indicative of actual groundwater conditions.
- (b) "<" denotes parameter below laboratory method reporting limit (shaded cells). ND = not detected (shaded cells).
- (c) TPH = Total petroleum hydrocarbons. MtBE = Methyl tertiary Butyl Ether. NA = Not analyzed.
- (d) MCL = California Primary Maximum Contaminant Level. AL = Interim Action Level established by California Department of Health Services. From: Jon B. Marshack (1998). A Compilation of Water Quality Goals. Central Valley Regional Water Quality Control Board, Sacramento CA. March 1998.
- (e) Concentrations exceeding the regulatory criteria in bold.



Table 6
Groundwater Level Measurements 4401 Market Street, Oakland CA

Well Number:	М	W1	M	W2	M	W3				
Measuring Point:		TOC N Side, Elevation = 71.12		TOC N Side, Elevation = 70.62		N Side, n = 71.79	G	Froundwater Gradie	nt	
	Depth	Elevation	Depth	Elevation	Depth	Elevation	Direction	Dogwing	Magnituda	
Intercepted Interval:	19 to 25.5	53 to 46.5	19 to 27.5	53 to 44.5	19 to 27.5	52 to 45.5	Direction	Bearing	Magnitude	
14 February 1995	12.65	58.47	12.12	58.50	13.45 (?)	58.34 (?)	Not calculated due to questionable measuremen			
7 June 1995	14.62	56.50	14.38	56.24	14.64	57.15	S 2° E	South	0.015	
29 August 1995	15.04	56.08	14.40	56.22	14.94	56.85	S 45° W	Southwest	0.011	
8 December 1995	15.94	55.18	15.22	55.40	15.82	55.97	S 57° W	West-Southwest	0.011	
7 March 1996	12.36	58.76	12.04	58.58	12.89	58.90	S 23° E	South-Southeast	0.006	
19 June 1996	13.70	57.42	13.38	57.24	13.94	57.85	S 3° E	South	0.010	
20 December 1996	12.35	58.77	12.22	58.44	12.86	58.93	S 29° E	South-Southeast	0.010	
12 June 1997	14.64	56.48	14.08	56.54	14.50	57.29	S 33° W	South-Southwest	0.012	
31 March 1999	13.03	58.09	12.58	58.04	13.34	58.45	S 13° W	South-Southwest	0.006	
Total Depth (Last Measurement)	24	1.6	24	1.5	24	1.6			·	

- (a) Measurements cited in units of feet. Elevations referenced to Mean Sea Level.
- (b) Measurements prior to 1999 collected by W.A. Craig, Inc. (Napa CA). 31 March 1999 measurements collected by Streamborn (Berkeley CA).
- (c) TOC = top of PVC casing. N = north. Measuring points are the tops of PVC casing, north side.
- (d) ? = Questionable measurement.
- (e) Intercepted intervals correspond to the sand pack interval. Depths of intercepted intervals measured relative to the ground surface.

Table 7
Field Observations from Borings 4401 Market Street, Oakland CA

Boring Number	Date Performed	Total Depth (feet)	Depth to Water (feet)	Lithology	Depth Interval (feet), Organic Vapor Meter Measurement (ppm v/v), and Observations of Chemical Odor and Chemical Staining in Soil	Observations of Chemical Odor and Sheen in Groundwater
В8	8 April 1999	±16	±13	±1' to ±5': Lean Clay (CL) ±5' to ±7': Silt (ML) ±7' to ±16+': Fat Clay (CH)	±1' to 16': OVM <5, no odor or staining	No odor, no sheen
В9	8 April 1999	±16	±14	±1' to ±5': Lean Clay (CL) ±5' to ±7': Silt (ML) ±7' to ±16+': Fat Clay (CH)	±1' to 14': OVM <5, no odor or staining ±14.5': OVM = 5, slight gasoline odor, no staining	Slight gasoline odor, no sheen
B10	8 April 1999	±16	±13	±1' to ±5': Lean Clay (CL) ±5' to ±7': Silt (ML) ±7' to ±16+': Fat Clay (CH)	±1' to 13': OVM <5, no odor or staining ±13': OVM = 580, strong gasoline odor, no staining ±15': OVM = 850, strong gasoline odor, no staining	±1 inch of gasoline floating on groundwater (as observed in a 1/2-inch diameter bailer.
B11	8 April 1999	±19	±18	±1' to ±5': Lean Clay (CL) ±5' to ±7': Silt (ML) ±7' to ±18': Fat Clay (CH) ±18' to ±19+': Lean Clay (CL)	±1' to 15': OVM <5, no odor or staining ±15': OVM = 520, strong gasoline odor, no staining ±18': OVM = 180, strong gasoline odor, no staining	Strong gasoline odor, no sheen
B12	8 April 1999	±16	±13	±1' to ±5': Lean Clay (CL) ±5' to ±7': Silt (ML) ±7' to ±16+': Fat Clay (CH)	±1' to 16': OVM <5, no odor or staining	No odor, no sheen
B13	9 July 1999	±20	±15	±1' to ±8': Lean Clay (CL) ±8' to ±19.5': Fat Clay (CH) ±19.5' to ±20+': Clayey Sand (SC)	±1' to 2±1': OVM <5, no odor or staining	No odor, no sheeп
B14	9 July 1999	±24	dry	0' to ±8': Lean Clay (CL) ±8' to ±20.5': Fat Clay (CH) ±20.5' to ±24+': Clayey Sand (SC)	0' to 19': OVM <5, no odor or staining ±19.5': OVM = 230, moderate gasoline odor, no staining ±20.5': OVM = 80, moderate gasoline odor, no staining ±21.5': OVM = 30, moderate gasoline odor, no staining	Dry hole. No groundwater sample collected.
B15	9 July 1999	±20	±15	0' to ±8': Lean Clay (CL) ±8' to ±17': Fat Clay (CH) ±17' to ±20+': Clayey Sand (SC)	0' to 18': OVM <5, no odor or staining ±18': OVM = 140, strong gasoline odor, no staining ±19.5': OVM = 250, strong gasoline odor, no staining	Strong petroleum odor, no sheen
B16	9 July 1999	±24	±21	±1' to ±9.5': Lean Clay (CL) ±9.5' to ±13': Clayey Sand (SC) ±13' to ±19': Lean Clay (CL) ±19' to ±21': Clayey Sand (SC) ±21' to ±23': Clayey Gravel (GC) ±23' to ±24+': Clayey Sand (SC)	±1' to 24': OVM <5, no odor or staining	No odor, no sheen

- (a) All depths measured from the adjacent ground or pavement surface.
- (b) Organic vapor meter screening performed by placing the suction inlet of the organic vapor meter next to freshly exposed soil. Organic vapor meter = Thermo Environmental Instruments, Model 580B, equipped with 10.2 eV photoionization detector, calibrated to 100 ppm v/v isobutylene.
- (c) The depth to groundwater was measured in each temporarily-cased boring approximately 10 minutes following the conclusion of soil sampling. Reliable (stabilized) measurements of the depth to groundwater were not obtained and the groundwater table may be shallower than our measurements indicate.

Streamborn

Table 8
Groundwater Analytical Data from Borings
4401 Market Street, Oakland CA

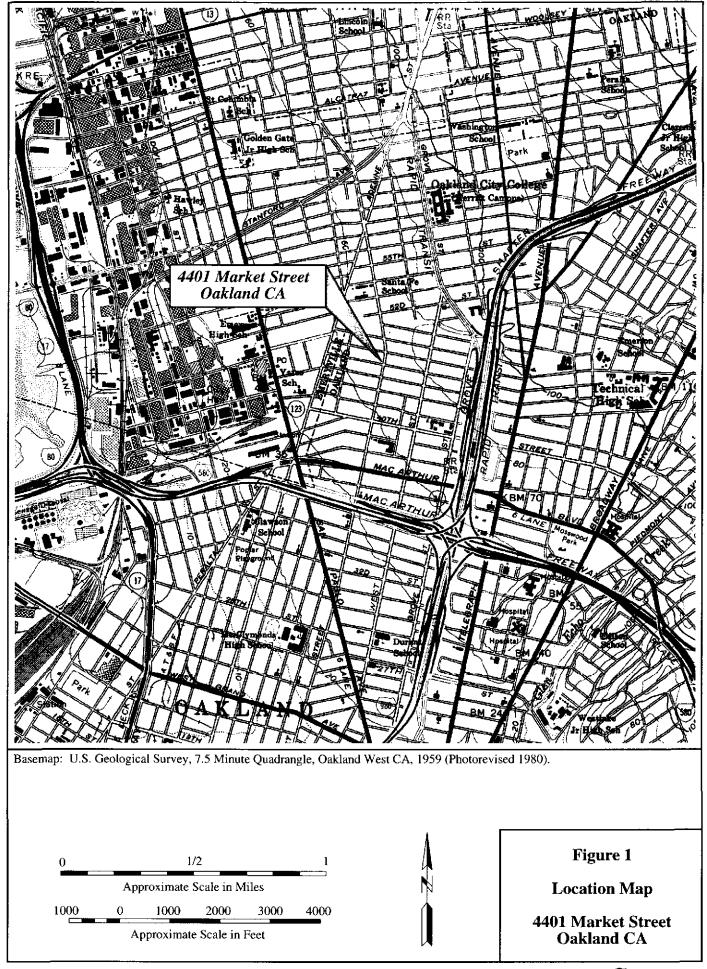
Boring Number	Depth to Water (feet)	Sample Date	Sampled By	Purged?	TPH- Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Xylenes (μg/L)	MtBE (μg/L)
В8	±13	8 April 1999	Streamborn	No	<50	<0.5	<0.5	<0.5	<0.5	<5
В9	±14	8 April 1999	Streamborn	No	850	9.5	2.4	3.5	48	<5
B10	±13	8 April 1999	Streamborn	No	Free prod	luct observed	l floating on	groundwater	· No sample	
B11	±18	8 April 1999	Streamborn	No	2,600	34	4.6	92	440	<10
B12	±13	8 April 1999	Streamborn	No	<50	<0.5	<0.5	<0.5	<0.5	< 5
B13	±15	9 July 1999	Streamborn	No	<50	<0.5	<0.5	<0.5	<0.5	<5
B15	±15	9 July 1999	Streamborn	No	5,100(1)	< 5	<5	<5	<5	<50
B16	±21	9 July 1999	Streamborn	No	<50	<0.5	<0.5	<0.5	<0.5	6.5

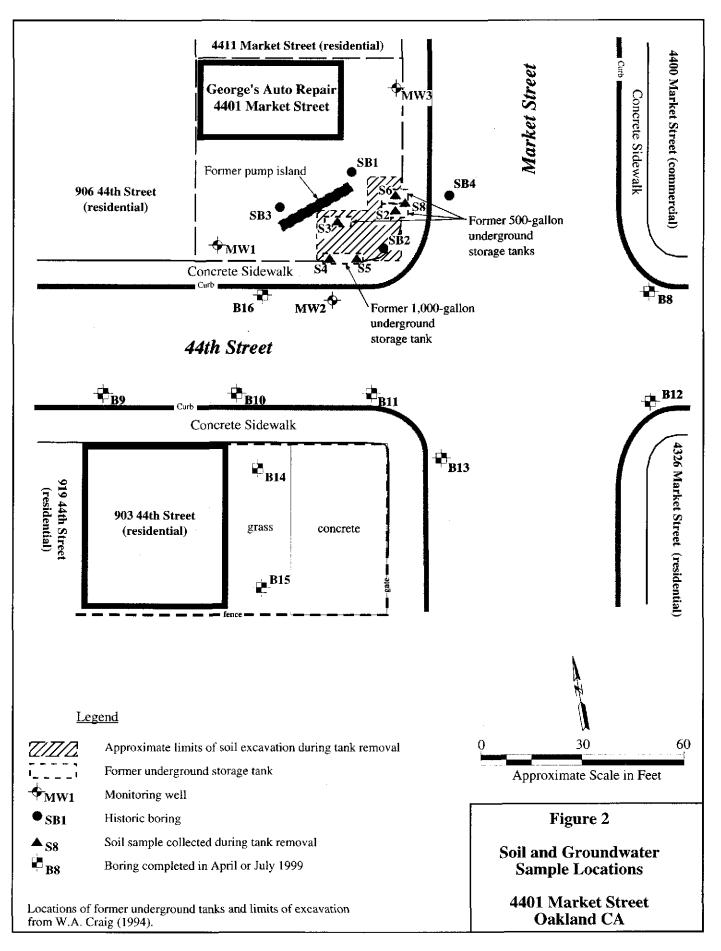
Regulatory Criteria	Not	1	150	700	1,750	35
	Established	(MCL)	(MCL)	(MCL)	(MCL)	(AL)
		(1.102)	(MCL)	(IVICL)	(MCL)	(AL)

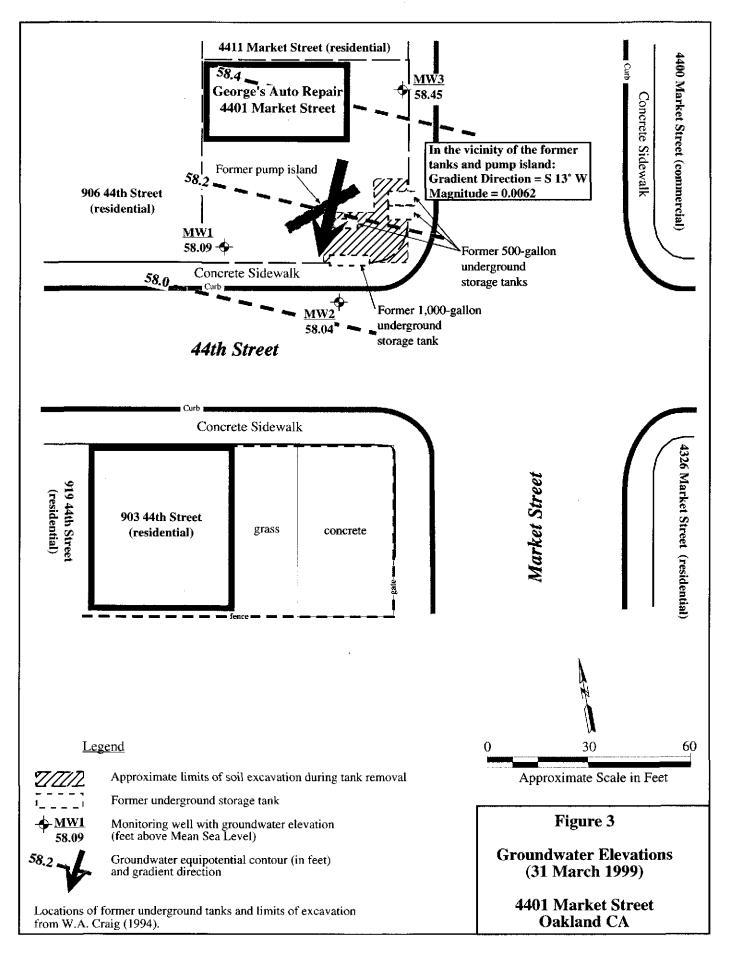
- (a) Depths measured from the adjacent ground surface.
- (b) "<" denotes parameter below laboratory method reporting limit (shaded cells).
- (c) TPH = Total Petroleum Hydrocarbons. MtBE = Methyl tertiary Butyl Ether.
- (d) MCL = California Primary Maximum Contaminant Level. AL = interim Action Level established by California Department of Health Services. From: Jon B. Marshack (1998). A Compilation of Water Quality Goals. Central Valley Regional Water Quality Control Board, Sacramento CA. March 1998.
- (e) Concentrations exceeding the regulatory criteria in **bold**.

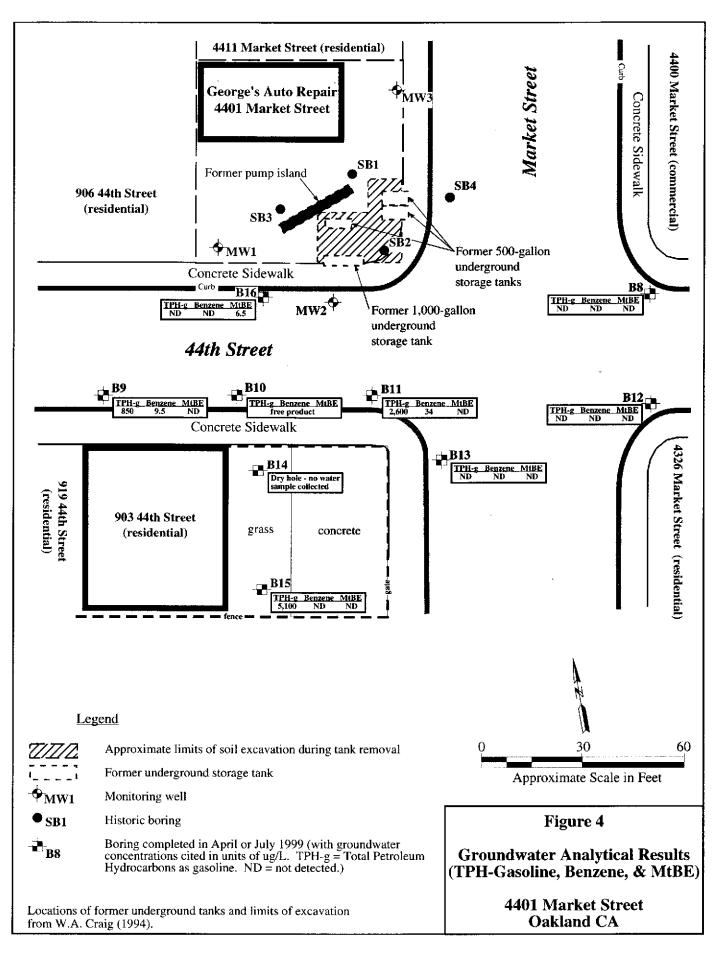
Footnote

(1) Laboratory reported that hydrocarbon found in gasoline range does not match their gasoline standard.









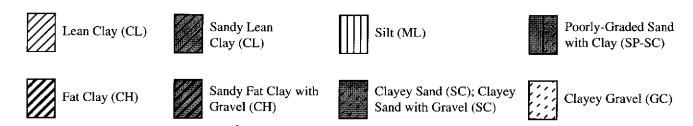
BORING LOG LEGEND AND NOTES

Soil Classification

Soils were classified in the field in approximate accordance with ASTM D 2488-93 (Standard Practice for Description and Identification of Soils, Visual-Manual Procedure).

Soil classifications represent the opinion of the field geologist or field engineer regarding the nature and character of encountered materials. Proportions of textural classes (sand, gravel, etc.) cited on the logs should be considered approximate. Laboratory classification tests may not have been performed to verify the field classifications. In general, mixtures of soil types and gradual transitions between soil types may more accurately represent the subsurface materials, instead of the distinct divisions depicted on the logs. Soils were necessarily classified only at depths where samples were examined; extrapolation to other depths, as depicted on the logs, adds uncertainty.

Textural Classification



Textural Transitions

Observed gradational transition between soil types
Observed location of contact between soil types

Sampling



Sampling Interval

General Notes and References

- (a) OVM (ppmv) = Measurement by field organic vapor monitor in ppm volume/volume. Measurements performed using Thermo Environmental Instruments Model 580B OVM, 10.0 eV photoionization detector, calibrated to 100 ppm v/v isobutylene. Measurements performed by screening the ends of the freshly retrieved liners. Value cited on log was maximum reading obtained at either end of liner.
- (b) Depths measured from the adjacent ground or pavement surface.
- (c) 1996 Annual Book of ASTM Standards, Volume 04.08, Soil and Rock (1): D 420 D 4914. American Society of Testing and Materials, Philadelphia PA. 1996.
- (d) Munsell Soil Color Charts, 1994 Revised Edition. Macbeth Division of Kollmorgan Instruments Corporation, New Windsor NY. 1994.



Boring No. B8 (page 1 of 2)

Project Soil and Groundwater Investigation

4401 Market Street

Oakland CA

Location Northeast corner of 44th Street and Market

Street intersection

Elevation Approximate ground surface elevation = 72 feet MSL

Drill Method Direct push (Geoprobe)

Drill Rig Geoprobe GH-40

Completion None. Boring backfilled with cement-bentonite grout.

Sampling 52-inch long by 2-inch outside diameter stainless steel soil sampler fitted with a 46-inch long by 1-3/4-inch

outside diameter clear plastic liner.

Address 4401 Market Street

Oakland CA

Logged By K. Alexander, HG 512

STREAMBORN (Berkeley CA)

Project No. P214

Start 7:15 AM, 8 April 1999

Finish 9:00 AM, 8 April 1999

Driller Fisch Environmental Services

(Valley Springs CA)

Drilled Depth ±16 feet

Groundwater ±12 feet below ground surface

				· · · · · · · · · · · · · · · · · · ·		T
Graphic Log	USCS	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	(a/v mqq)
	> co < > o> ao < ; < ; go < 2000000000	\ /	2 5 2 4 2 4 2 4 2 4 2 4 4 5 5 5 5 5 5 5		±4 inches of asphalt underlain by ±4 inches of aggregate base.	
		\bigvee			Lean Clay (CL). Dark gravish brown (10YR 4/2), low plasticity, trace coarse sand, soft, moist. Pocket penetrometer = 2.0 tsf. Torvane = 0.7 tsf. No chemical staining or odor.	5-
	—CL—	X		35		
	-	/ \			Sandy Lean Clay (CL). Very dark gray (10YR 3/1), low plasticity, fine sand, trace coarse sand, soft, moist. No chemical staining or odor.	<5
	—CL—					
		\setminus /	**************************************			
	t de l'entre de la company de la company La company de la company de	\bigvee	**************************************		Silt (ML). Very dark gray (10YR 3/1), low plasticity, trace coarse sand, soft, moist. No chemical staining or odor.	<5
	-ML-	X		48		
		<i>/</i> \	***************************************	***********		
		/ \		***************************************	Fat Clay (CH). Dark grayish brown (2.5Y 4/2), high plasticity, soft, moist. No chemical staining or odor.	<5
	energen aranga a ada	$\langle - \rangle$	to compression the market and the	V A 7 A 200 W A 7 A 200 A A A A		
	····CH	\setminus / \mid			At 9 feet: Dark gray (2.58 4/1) yery stiff sticky. No chamical staining or	
	~ 0.00, 0.000 03, 03, 03, 03, 03, 03, 03, 03, 03,	$ \mathcal{M} $			odor	<5
	**************************************	V		48	Sample interval continued on next page.	
	Graphic Log	And this had a fee a second and the		TO STATE OF THE PARTY OF THE PA	TO THE PROPERTY OF THE PROPERT	Lean Clay (CL). Dark gravish brown (10YR 4/2), low plasticity, trace coarse sand, soft, moist. Pocket penetrometer = 2.0 tsf. Torvane = 0.7 tsf. No chemical staining or odor. CL 335 Sandy Lean Clay (CL). Very dark gray (10YR 3/1), low plasticity, fine sand, trace coarse sand, soft, moist. No chemical staining or odor. CL Silt (ML). Very dark gray (10YR 3/1), low plasticity, trace coarse sand, soft, moist. No chemical staining or odor. ML 48 Fat Clay (CH). Dark grayish brown (2.5Y 4/2), high plasticity, soft, moist. No chemical staining or odor. CH At 9 feet: Dark gray (2.5Y 4/1), very stiff, sticky. No chemical staining or odor.

Boring No. B8 (page 2 of 2)

					DUL	ing No. B8 (page 2 of 2)	•
Depth (feet)	Graphic Log	USCS	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	(a/v mqq)
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700		OTT	/ \	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	**:::::::::::::::::::::::::::::::::::::	# 80.000.000.000.000.000.000.000.000.000.	***********************
12.0		-CH-				At 12 feet: Olive brown (2.5Y 4/3), trace fine to medium sand, stiff, moist to wet. Pocket penetrometer = 1.5 tsf. Torvane = 0.8 tsf. No chemical staining or odor.	<5
-13.0-			\ <i>[</i>			At 13 feet: Soft, wet. No chemical staining or odor.	
Market would so to be tooks			$ M \rangle$		··· • • • • • • • • • • • • • • • • • •	At 13 feet: Sort, wet. No chemical stating of odor.	A 1000 00 00 00 00 00 00 00 00 00 00 00 0
			W				•
14.0			l X	 	 48- 	Sandy Fat Clay with Gravel (CH). Grayish brown (10YR 5/2), high	 -
33000			/ \		***************************************	plasticity, ±30% fine to coarse sand, ±20% gravel, ±50% clay, medium stiff,	<5
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16.0	M. K. S. N. N.					Bottom of boring = 16 feet. Boring backfilled with cement-bentonite grout.	
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# Boring No. B9 (page 1 of 2)

Project Soil and Groundwater Investigation

4401 Market Street

Oakland CA

Location South side of 44th Street, ±90 feet west of

intersection with Market Street

Elevation Approximate ground surface elevation = 72 feet MSL

Drill Method Direct push (Geoprobe)

Drill Rig Geoprobe GH-40

Completion None. Boring backfilled with cement-bentonite grout.

Sampling 52-inch long by 2-inch outside diameter stainless steel soil sampler fitted with a 46-inch long by 1-3/4-inch

outside diameter clear plastic liner.

Address 4401 Market Street

Oakland CA

Logged By K. Alexander, HG 512

STREAMBORN (Berkeley CA)

Project No. P214

Start 3:35 PM, 8 April 1999

Finish 4:30 PM, 8 April 1999

Driller Fisch Environmental Services

(Valley Springs CA)

Drilled Depth ±16 feet

Groundwater ±15 feet below ground surface

Depth (feet)	Graphic Log	nscs	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (v/v mqq)
0.0	TO THE RESIDENCE AND ARREST	::::::::::::::::::::::::::::::::::::::		***************************************	0.00.000.000.000.000.000.000.000.000.0	±6 inches of asphalt underlain by ±4 inches of aggregate base.	:000000000000
—1.0———————————————————————————————————			$\bigvee$			Lean Clay (CL). Dark grayish brown (10YR 4/2), low plasticity, trace coarse sand, soft, moist. Pocket penetrometer = 2.0 tsf. Torvane = 0.7 tsf. No chemical staining or odor.	5-
-2.0-		—CL—	Y		<del></del> 27		
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		COMMISSION CON CONTROL	$/\setminus$	6		Sandy Lean Clay (CL). Very dark gray (10YR 3/1), low plasticity, fine sand, trace coarse sand, soft, moist. No chemical staining or odor.	<5
4.0 ************************************					Wash and Address or a year or or or		
5.0			$\bigvee$	\$ \$80,000 to \$1,000 to \$100 to		Silt (ML). Very dark gray (10YR 3/1), low plasticity, trace coarse sand, soft, moist. No chemical staining or odor.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
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8.0			$\triangle$			Fat Clay (CH). Dark grayish brown (2.5Y 4/2), high plasticity, soft, moist.  Pocket penetrometer = 1.5 tsf. Torvane = 0.8 tsf. No chemical staining or odor.	******<5******************************
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10.0			<u> </u>		48	Sample interval continued on next page.	

Boring No. B9 (page 2 of 2)

_					1001	ing No. by (page 2 of 2)	
Depth (feet)	Graphic Log	USCS	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (v/v)
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14.0-			l I		<del>- 48 -</del>	At 14 feet: Trace coarse sand, hard, wet. No chemical staining. Slight	
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16.0-			<u> </u>			Bottom of boring = 16 feet. Boring backfilled with cement-bentonite grout.	
			<u>, 46000-4600-4600-4600-4600</u>	***********************	hilibit at an in an ormanic victoria	Bouton of boring = 10 feet. Boring backfined with cement-bentonite grout.	an and an annual and an an
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# Boring No. B10 (page 1 of 2)

Project Soil and Groundwater Investigation

4401 Market Street

Oakland CA

Location South side of 44th Street, ±50 feet west of

intersection with Market Street

Elevation Approximate ground surface elevation = 72 feet MSL

Drill Method Direct push (Geoprobe)

Drill Rig Geoprobe GH-40

Completion None. Boring backfilled with cement-bentonite grout.

Sampling 52-inch long by 2-inch outside diameter stainless steel

soil sampler fitted with a 46-inch long by 1-3/4-inch outside diameter clear plastic liner.

Address 4401 Market Street

Oakland CA

Logged By K. Alexander, HG 512

STREAMBORN (Berkeley CA)

Project No. P214

Start 12:35 PM, 8 April 1999

Finish 1:40 PM, 8 April 1999

Driller Fisch Environmental Services

(Valley Springs CA)

Drilled Depth ±16 feet

Groundwater ±12 feet below ground surface

<u> </u>							
Depth (feet)	Graphic Log	nscs	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (ppm v/v)
0.0		ation (at tables for his second baseause)	\ <i> </i>		*************************	±6 inches of asphalt underlain by ±4 inches of aggregate base.	
1.0		—CL—	$\bigvee$		27	Lean Clay (CL). Dark grayish brown (10YR 4/2), low plasticity, trace coarse sand, soft, moist. Pocket penetrometer = 2.0 tsf. Torvane = 0.7 tsf.  No chemical staining or odor.	<5-
-2.0-		—CL—	<b>.</b>		<del>27</del>		
-3.0-		—CL—	$\left\langle \cdot \right\rangle$		WHAT IN THE TOTAL TH	Sandy Lean Clay (CL). Very dark gray (10YR 3/1), low plasticity, fine sand, trace coarse sand, soft, moist. No chemical staining or odor.	<5
——————————————————————————————————————					48 —	Silt (ML). Very dark gray (10YR 3/1), low plasticity, trace coarse sand, soft, moist. No chemical staining or odor.	AMA MANAMANIA JAMAS SA S
-7.0-		CH-	$\left\langle \cdot \right\rangle$			Fat Clay (CH). Dark grayish brown (2.5Y 4/2), high plasticity, soft, moist.  Pocket penetrometer = 1.5 tsf. Torvane = 0.8 tsf. No chemical staining or odor.	5-13403-1-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-
<del></del> 9,0		s, this had to section of the telescope and the section of the sec	$\bigvee$		48	Sample interval continued on next page.	<5 NAME OF THE PROPERTY OF THE

Boring No. B10 (page 2 of 2)

					15011	ing No. B10 (page 2 of 2)	,
Depth (feet)	Graphic Log	USCS	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	(v/v mqq)
10.0						Sample interval continued from previous page.	
-12.0-				**************************************		At 12 feet: Moist to wet. No chemical staining or odor.	<5
-13.0-		—СН—	$\setminus$	ACT NOT COME IN COMMUNICATION AND ADMINISTRATION AN		At 13 feet: Wet. No chemical staining. Strong gasoline odor.	579
-14.0			X		48		
-15.0-			$/\setminus$	-6844 68520022000 (00.000000		At 15 feet: Approximately one inch of gasoline observed floating on groundwater (as measured in a 1/2-inch diameter disposable bailer).	-850-
-16.0 -17.0						Bottom of boring = 16 feet. Boring backfilled with cement-bentonite grout.	
-18.0			2 1 0 And Sandar And Sandar Sanda	with a transportation and an arrangement			
19.0			***********************	**************************************			
-20.0							
-21.0 -		***************************************					
-22.0							
-23.0							
25.0	4 > 44-40-63 - 436-200464 Vision-codes		CONTRACTOR OF A CONTRACTOR OF				

# Boring No. B11 (page 1 of 2)

Project Soil and Groundwater Investigation

4401 Market Street

Oakland CA

Location Southwest corner of 44th Street and Market

Street intersection

Elevation Approximate ground surface elevation = 72 feet MSL

Drill Method Direct push (Geoprobe)

Drill Rig Geoprobe GH-40

Completion None. Boring backfilled with cement-bentonite grout.

Sampling 52-inch long by 2-inch outside diameter stainless steel soil sampler fitted with a 46-inch long by 1-3/4-inch

outside diameter clear plastic liner.

Address 4401 Market Street

Oakland CA

Logged By K. Alexander, HG 512

STREAMBORN (Berkeley CA)

Project No. P214

Start 11:20 AM, 8 April 1999

Finish 12:15 PM, 8 April 1999

Driller Fisch Environmental Services

(Valley Springs CA)

Drilled Depth ±19 feet

Groundwater ±18 feet below ground surface

L	_						
Depth (feet)	Graphic Log	nscs	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (ppm v/v)
0.0	***************************************		1		***************************************	±6 inches of asphalt underlain by ±4 inches of aggregate base.	**************************************
-1.0-		25 disht shall der en umerengangang	$\setminus /$			Lean Clay (CL). Dark grayish brown (10YR 4/2), low plasticity, trace coarse sand, soft, moist. Pocket penetrometer = 2.0 tsf. Torvane = 0.7 tsf.  No chemical staining or odor.	<5-
-2.0-		—CL—	Y		<u>—27</u> —		
		*****************************	<b> </b>	9000000 000000000000000000000000000000			
-3.0-			$/\setminus$	**************************************		Sandy Lean Clay (CL). Very dark gray (10YR 3/1), low plasticity, fine sand, trace coarse sand, soft, moist. No chemical staining or odor.	<5
4.0		CL			* 1 * 1 * 1 * 1 * 1 * 1 * 1 * 1 * 1 * 1		
		**************************************	\ /		//////////////////////////////////////		MANAGARARITANA
5.0			$\bigvee_{i}$	oromonoporora es as es ena es e ce cada y NETTI Tirrendonnel		Silt (ML). Very dark gray (10YR 3/1), low plasticity, trace coarse sand, soft, moist. No chemical staining or odor.	<u></u>
-6.0-		—ML—	X	to a manion metan deferinger or op-	<u>48</u>		
and and the second seco		······································	$  \wedge  $		te description and the territory of the		enecessaries e necessaries es est
7.0-		3 93 93 4 4 4 4 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4	$/\setminus$			Fat Clay (CH). Dark grayish brown (2.5Y 4/2), high plasticity, soft, moist.  Pocket penetrometer = 1.5 tsf. Torvane = 0.8 tsf. No chemical staining or odor.	<5
-8.0-		CH		***************************************	V/07EAVAAAAAAAAAAAAAAAA		. n. november of the state of t
9.0		**************************************	$ \setminus I $	Controls represent to paging an annual		3 3 3 3 3 3 3 3 4 4 4 4 4 4 4 4 4 4 4 4	
			\	······································	40		***************************************
10.0			<u>Y</u>		48	Sample interval continued on next page.	

Boring No. B11 (page 2 of 2)

					ווטע	ing No. B11 (page 2 of 2)	
Depth (feet)	Graphic Log	USCS	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (ppm v/v)
10.0		\$2.5.115.5a.oc.1a.oc.1oc.0oc.0oc.	Ι Λ	***************************************		Sample interval continued from previous page.	FO CALIBOAY) BULL FOR STORY MARKET
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11.0-			17 N				
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1			∤ Λ ∣	£252 (**58667640)#24648*594			<b>&lt;5</b>
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-15.0-			1 / N			A LA SALE A SALE A SALE AND A SAL	***************************************
15.0-			// \			At 15 feet: Grayish brown (10YR 5/2), trace coarse sand, trace brown	**************************************
***************************************		e-4116/ac-directional management	// \	erenn eren mann man man	***	mottling, moist to wet. No chemical staining. Strong gasoline odor.	·
			<b>/</b> \	-clare x brokesbester ex ere re-	**************************************		522
16.0						At 16 feet: Unable to collect groundwater sample due to lack of water.	
		***************************************	/\	*************************	A COMMUNICATION OF THE CO. CO.	Pushed sampler to 19 feet.	······································
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-18.0-			1/\		<del> </del>	Sandy Lean Clay (CL). Greenish gray (10Y 5/1), fine to coarse sand, low	100
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		CL	// \		-		·
19.0			,	<u> </u>		Determined the second beautiful with present hontonite group	-1 -
			•<2<2<3 62 62 88 88 88 88 88 88 88 88 88 88 88 88 88	Li an-reachdondobus hanne nabh-annsh-an		Bottom of boring = 19 feet. Boring backfilled with cement-bentonite grout.	**
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1			And selved in Alder Shell Co. Child	sear ar near n menencararan	**************************************		A 1.7 Maria (M. a. 1.2 M.) Albertones
25.0							

# Boring No. B12 (page 1 of 2)

Project Soil and Groundwater Investigation

4401 Market Street

Oakland CA

Location Southeast corner of 44th Street and Market

Street intersection

Elevation Approximate ground surface elevation = 72 feet MSL

Drill Method Direct push (Geoprobe)

Drill Rig Geoprobe GH-40

Completion None. Boring backfilled with cement-bentonite grout.

Sampling 52-inch long by 2-inch outside diameter stainless steel soil sampler fitted with a 46-inch long by 1-3/4-inch

outside diameter clear plastic liner.

Address 4401 Market Street

Oakland CA

Logged By K. Alexander, HG 512

STREAMBORN (Berkeley CA)

Project No. P214

Start 9:25 AM, 8 April 1999

Finish 10:30 AM, 8 April 1999

Driller Fisch Environmental Services

(Valley Springs CA)

Drilled Depth ±16 feet

Groundwater ±12 feet below ground surface

	·						
Depth (feet)	Graphic Log	uscs	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	(v/v mqq)
0.0		· Colorian marco co co co co			Section (Section 2007) - Color and the color and color	±4 inches of asphalt underlain by ±4 inches of aggregate base.	
-1.0-			$\bigvee$			Lean Clay (CL). Dark grayish brown (10YR 4/2), low plasticity, trace coarse sand, soft, moist. Pocket penetrometer = 2.0 tsf. Torvane = 0.7 tsf.  No chemical staining or odor.	<5
2.0-		—CL	Y	<u> </u>	27		
**************************************					**************************************		
3.0			[/ \]	***************************************	**************************************	Sandy Lean Clay (CL). Very dark gray (10YR 3/1), low plasticity, fine sand, trace coarse sand, soft, moist. No chemical staining or odor.	<b>&lt;</b> 5
**************************************		- 00 00 00 00 00 00 00 00 00 00 00 00 00	/ \	**************************************		sand, trace coarse sand, sort, moist. No chemical staining of odor.	
-4.0-		—CL—	$\longrightarrow$		_		
5.0			$\setminus /$	**************************************			······································
COO O O O O O O O O O O O O O O O O O O		**************************************	V	**************************************	01 0703 63808888 1 Mari 2004 4000 N 228 LLCs annuncidadessed	Silt (ML). Very dark gray (10YR 3/1), low plasticity, trace coarse sand, soft, moist. No chemical staining or odor.	·····<5
6.0—		-ML-	Y	randonaldiratelab (ren pe venno	48	O D D C C C C C C C C C C C C C C C C C	6 c> x e sue de la com ce a d'en l
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7.0-			// \		-	Fat Clay (CH). Dark grayish brown (2.5Y 4/2), high plasticity, soft, moist.	<del>  _</del>
***************************************			/ \	. 2004244 (1 (1 (1) ) 4 20 20		No chemical staining or odor.	<5
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10.0						Sample interval communication next page.	

Boring No. B12 (page 2 of 2)

	Boring No. B12 (page 2 of 2)										
Depth (feet)	Graphic Log	nscs	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (ppm v/v)				
10.0		MIN	<b>\</b>	CIC VANDACIA (C. Dourse annue		Sample interval continued from previous page.					
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-12.0-		—СH—				At 12 feet: Olive brown (2.5Y 4/3), trace fine to medium sand, stiff, moist to					
		TO A STREET AN ACCOUNT OF THE STREET	<b>N</b> /			wet. Pocket penetrometer = 1.5 tsf. Torvane = 0.8 tsf. No chemical staining or odor.	<5				
-13.0-		····				At 13 feet: Soft, wet. No chemical staining or odor.					
MA MALLE EN LESS AND DO CORROCCOU		~000qre00007v47v6v63v43v63v63v63v63v	\		***************************************	[At 13 test, Soft, well no chemical Standing of Odol.	***************************************				
			\/		Marie proping and a constant						
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-16.0-				> +0.000C > C = C + C + C + C + C + C + C + C + C +	E 3000000000000000000000000000000000000						
10.0	/0/3/3/0/3 ₋₀₀₀₀				Property of the State of Colonia	Bottom of boring = 16 feet. Boring backfilled with cement-bentonite grout.					
2-1 <b>10</b> 00002-2011-2011-2011-2011-2011-2011-2	**************************************				~~~~~~~	NESCRIPTIVE VIV. VIV. VIV. VIV. VIV. VIV. VIV. V	~*************************************				
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# Boring No. B13 (page 1 of 2)

Project Soil and Groundwater Investigation

4401 Market Street

Oakland CA

Location West side of Market Street, ±16 feet south

of intersection with 44th Street

Elevation Approximate ground surface elevation = 72 feet MSL

Drill Method Direct push (Geoprobe)

Drill Rig Geoprobe GH-40

Completion None. Boring backfilled with cement-bentonite grout.

Sampling 52-inch long by 2-inch outside diameter stainless steel

soil sampler fitted with a 46-inch long by 1-3/4-inch

outside diameter clear plastic liner.

Address 4401 Market Street

Oakland CA

Logged By K. Alexander, HG 512

STREAMBORN (Berkeley CA)

Project No. P214

Start 8:00 AM, 9 July 1999

Finish 10:00 AM, 9 July 1999

Driller Fisch Environmental Services

(Valley Springs CA)

Drilled Depth ±20 feet

Groundwater ±15 feet below ground surface

Depth (feet)	Graphic Log	uscs	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	(a/v mqq)
0.0		#50 ( 0.00 C) +0 #3+03*************		. d (		±4 inches of concrete underlain by ±4 inches of aggregate base.	Carlo an artist militaria, militaria esta tr
1.0			$\bigvee$		27 100 100 100 100 100 100 100 100 100 10	Lean Clay (CL). Dark grayish brown (10YR 4/2), low plasticity, trace coarse sand, soft, moist. Pocket penetrometer = 0.5 tsf. Torvane = 0.3 tsf.  No chemical staining or odor.	\$5
-2.0-			Y		<u>24</u>		
-3.0					gen, en egyen en en en en en en ek yek		
4.0		—CL—			New agency 1241 CCR1 CC 11 Cura	At 4 feet: Very dark gray (10YR 3/1), medium plasticity, few coarse sand,	<5
5.0-		9999 (AND PT CT (AT PEACE AT A TABLE AT A TA	$\setminus$		V2 (274) (V 1000000 A10000 A100000 A1000000 A10000000 A1000000 A10000000 A10000000 A10000000 A10000000 A100000000	medium stiff. Pocket penetrometer = 1.0 tsf. Torvane = 0.6 tsf.  No chemical staining or odor.	
6.0					60 60 60 60 60 60 60 60 60 60 60 60 60 6		
7.0			$/ \setminus$				
-8.0- -9.0-			$\bigcup$	NAMES AND		Fat Clay (CH). Dark grayish brown (2.5Y 4/2), high plasticity, some brown mottling, stiff, moist. Pocket penetrometer = 2.5 tsf. Torvane = >0.9 tsf.  No chemical staining or odor.	
managed to the Atherine		inininananahantahan (** * * * * * * * * * * * * * * * * *	$  \setminus  $		** <b>***</b> ******************************		************
10.0			V	OMERSKA CASTO OLYATOLICANO	48	Sample interval continued on next page.	

Boring No. B13 (page 2 of 2)

					DOL	ng No. B13 (page 2 of 2)	
Depth (feet)	Graphic Log	USCS	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (v/v)
10.0		erry program aproximately to	ΙΛ.			Sample interval continued from previous page.	0.002
* 900 0-00 0-00 0-00-00-00-00-00-00-00-00-0		emmanumi a habii i ii beere e	/\	, w w wee w week	. 50000-002-000-000-07-00-00-0	Bland to a color DECOSP 33 SERVING AND	>-00h000-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0
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-12.0-						At 12 feet: Dark grayish brown (2.5Y 4/2), trace coarse sand, trace	
- 10 18 18 17 17 18 19 19 19 19 19 19 19 19 19 19 19 19 19			$\ \ /$			subrounded gravel to 1/2 inch, very stiff, moist to wet. No chemical staining or odor.	
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-15.0-			/ \		Tile (ME) Bill to a proportional and a second secon	At 15 feet: Grayish brown (10YR 5/2), soft to medium stiff, wet. No chemical staining or odor.	
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gyggagay y againmachaillithiabhlith		-sc-	<b>٧</b>		PERSONAL PROPERTY AND ADDRESS OF THE PERSONAL PR	Clayey Sand with Gravel (SC). Grayish brown (10YR 5/2), ±40% clay, ±50% fine to coarse sand, ±10% subangular gravel to 1 inch, very dense,	<5
-20.0-				1 2 m m brown on berge 1444 144 m	C1C101C C2CC	wet. No chemical staining or odor.	
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25.0					<u> </u>		<u> </u>

## Boring No. B14 (page 1 of 2)

Project Soil and Groundwater Investigation

4401 Market Street

Oakland CA

Location In yard of residence at 903 44th Street,

±19 feet south of 44th Street

Elevation Approximate ground surface elevation = 72 feet MSL

Drill Method Direct push (Geoprobe)

Drill Rig Geoprobe GH-40

Completion None. Boring backfilled with cement-bentonite grout.

Sampling 52-inch long by 2-inch outside diameter stainless steel

soil sampler fitted with a 46-inch long by 1-3/4-inch

outside diameter clear plastic liner.

Address 4401 Market Street

Oakland CA

Logged By K. Alexander, HG 512

STREAMBORN (Berkeley CA)

Project No. P214

Start 11:45 PM, 9 July 1999

Finish 12:50 PM, 9 July 1999

Driller Fisch Environmental Services

(Valley Springs CA)

Drilled Depth ±24 feet

Groundwater Not observed

Depth (feet)	Graphic Log	uscs	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (ppm v/v)
0.0		#\$#coconocococo co#2000	A /	CONTROL OF STREET		Lean Clay (CL). Dark grayish brown (10YR 4/2), low plasticity, trace	-<5
			N /	**************************************	***************************************	coarse sand, soft, moist. No chemical staining or odor.	
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1.0			11//				†
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			V 1	· v + 3-4-4-03, vicesto-contente-conte ^{24, 4}	\$0000000000000000000000000000000000000		
4.0		—CL—				At 4 feet: Very dark gray (10YR 3/1), medium plasticity, few coarse sand,	<5
		20,000,200,000,000,000,000	N 1	**************************************		medium stiff. Pocket penetrometer = $1.0 \text{ tsf.}$ Torvane = $0.6 \text{ tsf.}$	
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<b>├</b> -5.0 <b>─</b>	<i>////</i>		11 <i>1</i> .				<del>                                     </del>
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-8.0-						Fat Clay (CH). Dark grayish brown (2.5Y 4/2), high plasticity, some brown	<del> </del>
		eron ver til eller sid have eller stekkeling.	\ <i>I</i>		eereessa essatuanus asutsu	mottling, stiff, moist. Pocket penetrometer = 2.5 tsf. Torvane = >0.9 tsf.	
************************		Children Children Berkeleiner	\ <i>[</i> ]	e en	· /// 2003/00/2004/2004/2004/2004/2004/2004/20	No chemical staining or odor.	
<u>_9.0</u> _		CH	\	rakilik aderakini nderan an		<ul> <li>(2) (2) (2) (3) (3) (3) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4</li></ul>	
7.0			$[\ \ ]$	:::::::::::::::::::::::::::::::::::::::	>^>c+	**************************************	·····<5·····
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10.0			V	***************************************	48	Sample interval continued on next page.	
10.0		•				Sample interval continued on next page.	

Boring No. B14 (page 2 of 2)

	Boring No. B14 (page 2 of 2)										
Depth (feet)	Graphic Log	USCS	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (ppm v/v)				
10.0		**************************************				Sample interval continued from previous page.					
-12.0-			igwedge								
-13.0-			$\ \ /$			At 12 fect: Dark grayish brown (2.5Y 4/2), trace coarse sand, trace subrounded gravel to 1/2 inch, very stiff, moist. No chemical staining or odor.	<5				
-14.0-				**************************************	<del> 48</del>						
—15.0—		СН	$\bigwedge$		* 55 q p = 3-9230 prosintageness (3-42)	At 15 feet: No chemical staining or odor.					
**************************************		**************************************				At 16 feet: Dark greenish gray (10Y 3/1), soft to medium stiff. No chemical	<5<5				
<b>—17.0</b> —			$\setminus$		***************************************	staining or odor.					
—18.0			<b>X</b>		— 48 —		TO SHARE THE STATE OF THE SHARE THE				
-19.0 <i>-</i>		**************************************									
-20.0-			$\left( \cdot \right)$	90-69 002204 (2020) 4040 (40 40 40 40 40 40 40 40 40 40 40 40 40 4		At 19.5 feet: No chemical staining. Moderate gasoline odor.	228				
-21.0			X		_ 24 _	Clayey Sand with Gravel (SC). Grayish brown (10YR 5/2), ±40% clay, ±50% fine to coarse sand, ±10% subangular gravel to 1 inch, very dense, moist to wet. No chemical staining. Moderate gasoline odor.	76				
-22.0-		SC-	$\langle \cdot \rangle$	**************************************		At 22 feet: Unable to collect groundwater sample due to lack of water.	28				
—23.0—			X	2121 124124 12412 12412 12412 12412 12412 12412 12412 12412 12412 12412 12412 12412 12412 12412 12412 12412 12	<u> </u>						
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. 25.0	l		<u> </u>	L							

# Boring No. B15 (page 1 of 2)

Project Soil and Groundwater Investigation

4401 Market Street

Oakland CA

Location In yard of residence at 903 44th Street,

±54.5 feet south of 44th Street

Elevation Approximate ground surface elevation = 72 feet MSL

Drill Method Direct push (Geoprobe)

Drill Rig Geoprobe GH-40

Completion None. Boring backfilled with cement-bentonite grout.

Sampling 52-inch long by 2-inch outside diameter stainless steel soil sampler fitted with a 46-inch long by 1-3/4-inch

outside diameter clear plastic liner.

Address 4401 Market Street

Oakland CA

Logged By K. Alexander, HG 512

STREAMBORN (Berkeley CA)

Project No. P214

Start 10:10 AM, 9 July 1999

Finish 11:30 AM, 9 July 1999

Driller Fisch Environmental Services

(Valley Springs CA)

Drilled Depth ±20 feet

Groundwater ±17 feet below ground surface

	•						
Depth (feet)	Graphic Log	nscs	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (ppm v/v)
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4.0-		—CL—				At 4 feet: Very dark gray (10YR 3/1), medium plasticity, few coarse sand,	<5
a i ara a a a a a a a a a a a a a a a a			N /	ererenenananananananana	(4140MM)	medium stiff. No chemical staining or odor.	
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-8.0-						Fat Clay (CH). Dark grayish brown (2.5Y 4/2), high plasticity, some brown	
TAYANESIA ALATEYAYETTAY		**************************************	\ <i>[</i>			mottling, stiff, moist. No chemical staining or odor.	end nonegogy vondagendderfeleren.
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Boring No. B15 (page 2 of 2)

						ing No. B15 (page 2 of 2)	
Depth (feet)	Graphic Log	uscs	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (v/v mdd)
10.0			٨			Sample interval continued from previous page.	######################################
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		era arabania menangangan memberahkan	\ <i>I</i>		L	At 12 feet: Dark grayish brown (2.5Y 4/2), trace coarse sand, trace subrounded gravel to 1/2 inch, very stiff, moist to wet. No chemical staining	<b>&lt;5</b>
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***************************************		***************************************	11/	~*************************************	*******************************	±50% fine to coarse sand, ±10% subangular gravel to 1 inch, very dense.	<5
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10,0		***************************************	ΙΛ.		***************************************	At 18 feet: No chemical staining. Strong gasoline odor.	140
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CERTIFICATION CONTRACTOR CONTRACTOR	~~ • ~ • • • • • • • • • • • • • • • •		***************	************************	***************************************	Bottom of boring = 20 feet. Boring backfilled with cement-bentonite grout.	nagaga manananan da sabas
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### Boring No. B16 (page 1 of 2)

Project Soil and Groundwater Investigation

4401 Market Street

Oakland CA

Location North side of 44th Street, ±50 feet west of

intersection with Market Street

Elevation Approximate ground surface elevation = 72 feet MSL

Drill Method Direct push (Geoprobe)

Drill Rig Geoprobe GH-40

Completion None. Boring backfilled with cement-bentonite grout.

Sampling 52-inch long by 2-inch outside diameter stainless steel soil sampler fitted with a 46-inch long by 1-3/4-inch

outside diameter clear plastic liner.

Address 4401 Market Street

Oakland CA

Logged By K. Alexander, HG 512

STREAMBORN (Berkeley CA)

Project No. P214

Start 14:30 PM, 9 July 1999

Finish 16:00 PM, 9 July 1999

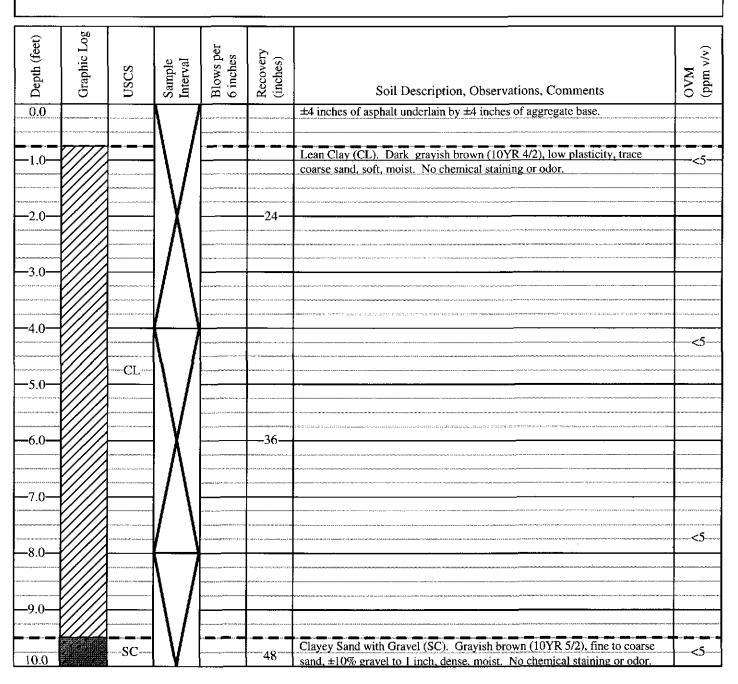
Driller Fisch Environmental Services

(Valley Springs CA)

Drilled Depth ±24 feet

Groundwater ±21 feet below ground surface

(during drilling)



Boring No. B16 (page 2 of 2)

					DUL	ing No. B16 (page 2 of 2)	
Depth (feet)	Graphic Log	SOSA	Sample Interval	Blows per 6 inches	Recovery (inches)	Soil Description, Observations, Comments	OVM (v/v)
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070300000000000000000000000000000000000			/ \			sand, medium dense, moist. No chemical staining or odor,	<5
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16.0		—CL—				At 16 feet: Black (10YR 2/1), very stiff. No chemical staining or odor.	.5
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18.0	////		Y		<b>—</b> 48 <b>—</b>		
	////		Λ	warenessery (\$42259/65454)	::::::::::::::::::::::::::::::::::::::	At 18 feet: Dark greenish gray (10Y 3/1), stiff.	PCCCRONEPERC CPCCCCCCR
PERSONAL MARKET ACADEMICAL			/\	C YNY PRON SECULOUS MORES.	***************************************		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
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	a the sile sile s	—SC—	<u> </u>	4.5501.000.000.000.000.000.000.000.000.00	***************************************	moist to wet. No chemical staining or odor.	
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21.0	1,111		\ /			Clayey Gravel with Sand (GC). Grayish brown (10YR 5/2), subangular	<del></del>
	3:551	····	\			gravel to 1-1/4 inch, fine to coarse sand, very dense, wet. No chemical	<5
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		der-reservative parameter de la companya de la comp	/ \		***************************************	Clayey Sand (SC). Brown (10YR 5/3), ±40% clay, ±50% fine to coarse	····<5·····
***************************************		SC	/ \	erannonia de la carta en estado e		sand, ±10% subangular gravel to 3/8-inch, very dense, wet. No chemical staining or odor.	
-24.0			<u>/</u> \	·		SCHEETE STATE OF THE STATE OF T	A NATIONAL DAMPS OF THE PROPERTY OF THE PROPER
-24.0						Bottom of boring = 24 feet. Boring backfilled with cement-bentonite grout.	economic or commence of the second of the se
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25.0		errorensky optimist i North State (18.		·*************************************	**************************************		·····
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### **ZONE 7 WATER AGENCY**

5997 PARKSIDE DRIVE

PLEASANTON, CALIFORNIA 94588

**YOICE (510) 484-2600** FAX (510) 462-3914

91992

### DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE	FOR OFFICE USE
LOCATION OF PROJECT 4401 Market Street, Oakland CA (see attached map)	PERMIT NUMBER 99 WR D 96 LOCATION NUMBER
CLIENT Name Casimiro and Josephine Damele Address 3750 Victor Avenue Voice 510/531-0778 City Oakland CA Zp 94619  APPLICANT Name Kenneth B. Alexander, RG, CH	PERMIT CONDITIONS  Circled Permit Requirements Apply  A GENERAL
Address P.O. Box 8330 Voice 510/528-2613  City Berkeley CA Zip 94707  TYPE OF PROJECT  Well Construction General Cathodic Protection General Water Supply Contamination Monitoring Well Destruction  Soil Boring X  PROPOSED WATER SUPPLY WELL USE Domestic Industrial Other Municipal Imigation  DRILLING METHOD: Mud Rotary Air Rotary Auger Cable Other X (GeoProbe)	A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.  Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.  Permit is void if project not begun within 90 days of approval date.  B. WATER WELLS, INCLUDING PIEZOMETERS  1. Minimum surface seal thickness is two inches of cement grout placed by tremie.  2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.  C. GEOTECHNICAL Backfill bore hole with compacted material. In areas of known or suspected contamination, tremied cement grout
WELL PROJECTS  Orill Hole Diameter Casing Diameter Surface Seal Depth  DRILLER'S LICENSE NO. 683865 (Fisch Environmental)  Maximum In. Depth 22 tt. Number 16	shall be used in place of compacted cuttings.  D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.  E. WELL DESTRUCTION. See attached.
GEOTECHNICAL PROJECTS  Number of Borings Hole Diameter in. Depth ft.	
ESTIMATED STARTING DATE ESTIMATED COMPLETION DATE  I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.	Approved Uncher Souffey Date 3/12/99
PPLICANTS & B. Wet Date 26 Februar	v 1999 91982

Date 26 February 1999

ID#361,From:510-238-3000, To:510 238 6633.

Keg Alexander, Streamborn, Phone 510/528-4234

*STREAMBORN* 

01JUL99,10:27,Page002of006

**7** 510/528-2613

**G**D6/30/99 © 3:39 PM D 1/5

Fax 528-2613

Joe Levine City of Oakland Department of Public Works 250 Frank Ogawa Building Oakland CA 94612

30 June 1999

Project No. P214

Request for Permit Extension Excavation Permit Numbers X9900213 and X9900214 4401 Market Street Oakland CA

Dear Mr. Levine:

Streamborn is performing a soil and groundwater investigation for the owners of 4401 Market Street, Josephine and Casimiro Damele. On behalf of the Dameles, we obtained excavation permits (numbers X9900213 and X9900214) on 23 March 1999. The permits expired on 23 June 1999. We are requesting a 30-day extension for the two excavation permits.

We will be drilling 2 additional borings near the intersection of 44th and Market Streets. Our fieldwork is tentatively scheduled for Friday, July 9th.

Thanks for your help. If you have any questions or comments, please call me at 510/528-4234.

Sincerely,

STREAMBORN

Kenneth B. Alexander, RG, CH

Certified Hydrogeologist

EXTENSION GRANTED 7/7/99 J. LEVING

128-6540

**EXCAVATION:** 

I to Site 4401 MARKET ST

Parcel# 013 -1987-004-00

- Appl# X9900213

Cesur 4 soil buningsmarket it side of property)

Permit Issued 03/23/99

York Type EXCAVATION PRIVATE PT

USA #

Util Co. Job #

Х

Util Fund #:

Comer GUISEPPINA DAMELE

(510)531-0778

Applicnt Phone# Lic# -- License Classes--

Contractor Arch/Engr

Agent Applic Addr

\$246.00 TOTAL FEES PAID AT ISSUANCE

\$41.00 Applic \$205.00 Permit

\$.00 Process

\$.00 Rec Mgmt \$.00 Gen Plan \$.00 Invstq

Date: 93/23/99 fint Paid: \$492.59 By: AM. Sequator ABS Recoupid Hidaid



# **EXCAVATION PERMIT**

CIVIL ENGINEERING

TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK

PAGE 2 of 2

PERMIT NUMBER X990	02/3	SITE ADDRESS/LOCATION 4401 Market Street, Oakland / Market Street					
APPROX. START DATE APPROX.	. END DATE	24-HOUR EMERGENCY PHONE NUMBER					
		(Permit not valid without 24-Hour number)					
contractor's license # and class Kenneth B. Alexander 5-11 Certified Hydrogeologist	teamborn #HG512_	CITY BUSINESS TAX #					
ATTENTION:							
State law requires that the contractor/or inquiry identification number issued by	waer call Underground Servi USA. The USA telephone	tics Alert (USA) two working days before excavating. This permit is not valid unless applicant has secured an number is 1 (800) 642-2444. UNDERGROUND SERVICE ALERT (USA) #: 420540					
2) 48 hours prior to starting	g work, YOU MUS	ST CALL (510) 238-3651 TO SCHEDULE AN INSPECTION.					
OWNER/BUILDER							
I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5 Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License law Chapter 9 (commencing with Sec. 7000) of Division 3 of the Business and Professions Code, or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than \$500):  [I as an owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale).  as owner of the property, an exempt from the sale requirements of the above due to: (1) I am improving my principal place of residence or appurements thereto, (2) the work will formed prior to sale, (3) I have resided in the residence for the 12 months prior to completion of the work, and (4) I have not claimed exemption on this subdivision on more than two structures more than once during any three-year period. (Sec. 7044 Business and Professions Code).  [I as owner of the property, an exclusively contracting with licensed contractors to construct the projects with a contractor(s) licensed pursuant to the Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who co							
WORKER'S COMPENSATION							
□ I hereby affirm that I have a certificate of conse		cate of Worker's Compensation Insurance, or a certified copy thereof (Sec. 3700, Labor Code).					
□ I hereby affirm that I have a certificate of conse	Company Name						
□ I hereby affirm that I have a certificate of conse	Company Name	I shall not complete any person in any manner to us to become subject to the Worker's Compensation I are					
Policy #  I hereby affirm that I have a certificate of consections #  I certify that in the performance of the work for of California (not required for work valued at one has been been been been been been been bee	Company Name which this permit is issued, nundred dollars (\$100) or less certificate of Exemption, you deemed revoked. This perm e shall be responsible for all mance. The permittee shall, claims, or actions brought by performed under the permit	I shall not complete any person in any manner to us to become subject to the Worker's Compensation I are					
Policy #  I certify that in the performance of the work for of California (not required for work valued at one h  NOTICE TO APPLICANT: If, after making this C comply with such provisions or this permit shall be granted upon the express condition that the permittee and employees, from and against my and all suits, or sustained or arising in the construction of the work; permit is void 90 days from the date of issuance uniteresting the construction of the work; permit is void 90 days from the date of issuance uniteresting the construction of the work; permit is void 90 days from the date of issuance uniteresting the construction of the work; permit is void 90 days from the date of issuance uniteresting the construction of the work; permit is void 90 days from the date of issuance uniteresting the construction of the work is permit in the construction of the work.	Company Name which this permit is issued, sundred dollars (\$100) or less certificate of Exemption, you deemed revoked. This perm e shall be responsible for all mance. The permittee shall, claims, or actions brought by performed under the permit of cess an extension is granted b	I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws s).  should become subject to the Worker's Compensation provisions of the Labor Code, you must forthwith nit is issued pursuant to all provisions of Title 12 Chapter 12.12 of the Oakland Municipal Code. It is claims and liabilities arising out of work performed under the permit or arising out of permittee's failure to and by acceptance of the permit agrees to defend, indemnify, save and hold harmless the City, its officers of any person for or on account of any bodily injuries, disease or illness or damage to persons and/or property or in consequence of permittee's failure to perform the obligations with respect to street maintenance. This by the Director of the Office of Planning and Building.					
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MARKET

#### EXCAVATION.

SI **Parcel# 0.13 -1.057-004-**00

4120021# X990021#

Nascr 7 coll borings(44th staside of property)

Permit Iosued 03/23/99

Work Type Excavation-PRIVATE P

1334 #

Util Co. Job # Util Fund #:

Owner GuisEPPINA DAMELE tractor ch/Engr Contractor Arch/Engr ∴qent

Applic Addr

Applicat Phone# Lic# -- bicense Classes--- X (510)531-0778

\$246,00 TOTAL FEES PAID AT ISSUANCE

**341.00** Applic \$205.00 Permit

\$.00 Rec Mgmt

\$.00 Process \$.00 Gen Plan \$.00 Invata \$.00 Other



# **EXCAVATION PERMIT**

TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK

CIVIL ENGINEERING

PAGE 2 of 2

PERMIT NUMBER	79002/4	SITE ADDRESS/LOCATION				
X ( / 5 - 2 / 7		4401 Market Street, Oakland / 44th Street				
APPROX. START DATE	APPROX. END DATÉ	24-HOUR EMERGENCY PHONE NUMBER				
		(Permit not valid without 24-Hour member)				
CONTRACTOR'S LICENSE # AND Kenneth B. Alexan	dec Streamborn	CITY BUSINESS TAX #				
Certified Hydrogeo	og ift # HG 512	1820818				
ATTENTION:						
State law requires that the inquiry identification num	contractor/owner call Underground Ser- ber issued by USA. The USA telephone	vice Alert (USA) two working days before excessing. This permit is not valid unless applicant has secured an animber is 1 (800) 642-2444. UNDERGROUND SERVICE ALERT (USA) #: 42.0540				
• • • • • • • • • • • • • • • • • • • •		THE STATE OF THE PROPERTY OF T				
2) 48 hours prior to	starting work, YOU MU	ST CALL (510) 238-3651 TO SCHEDULE AN INSPECTION.				
OWNER/BUILDER						
I hereby affirm that I am exempt from	the Contractor's License Law for the fo	Howing reason (Sec. 7031.5 Business and Professions Code: Any city or county which requires a permit to				
bioximomi of residentiation, a Picense	LEW Chapter 9 (commencing with Sec. 7)	ce, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the 7000) of Division 3 of the Business and Professions Code, or that he is exempt therefrom and the basis for the				
I i, as an owner of the property, or :	needon /USL.3 by any applicant for a per my employees with wages as their sole e	mit subjects the applicant to a civil penalty of not more than \$500);				
LIGHTRADIT COOK: 1 De COULTECTOS, 1 1	LICERISE LAW does not apply to an owner.	of property who builds or improves thereon, and who does such work himself or through his own employees, wer, the building or improvement is sold within one year of completion, the owner-builder will have the				
pateer of blooking our pe are not with	l or unprove for the purpose of sale).					
intomied prior to sale, (3) I have	resided in the residence for the 12 month	bove due to: (1) I am improving my principal place of residence or appurtuamnes thereto, (2) the work will as prior to completion of the work, and (4) I have not claimed exemption on this subdivision on more than two				
structures more than once during any	Drec-year period. (Sec. 7044 Business at	nd Professions Code).  actors to construct the project, (Sec. 7044, Business and Professions Code: The Contractor's License Law				
coes nor abbit, to so council or blobetti	y who builds or improves thereon, and w	the contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License Law.				
1 am exempt under Sec.	, B&PC for this reason					
WORKER'S COMPENSATION						
☐ I hereby affirm that I have a certifi	cate of consent to self-insure, or a certifi	cate of Worker's Compensation Insurance, or a certified copy thereof (Sec. 3700, Labor Code).				
		I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws				
of California (not required for work va	shand at one hundred dollars (\$100) or le	1 small not employ my person in any manner so as to become subject to the Worker's Compensation Laws 18).				
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permit is void 90 days from the date of	issuance unices an extension is granted	by the Director of the Office of Planning and Building.				
I hereby affirm that I am licensed under this permit and agree to its requirement	of provisions of Chapter 9 of Division 3 ( is, and that the above information is true	of the Business and Professions Code and my license is in full force and effect (if contractor), that I have fend				
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	Agent for C Contractor W Owner	Date				
STREET LAST	SPECIAL PAVING DETAIL	HOLIDAY RESTRICTIONS LIMITED OPERATION AREAS				
ISSUED BY	REQUIREDT OYES ONO	(NOV I - JAN I) GYES ANO (7AM-9AM-8-4PM-6PM) GYES ANO				
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Christopher and Cynthia Fleming 15133 Flying Mist Road San Leandro CA 94579-2601

510/351-3039 wk 408/756-3743 27 May 1999

# Access Agreement for Groundwater Sampling 903 44th Street Oakland CA

Dear Mr. and Mrs. Fleming:

My husband and I are the owners of the property located at 4401 Market Street, Oakland CA (George's Auto Repair). We understand that you own the property located at 903 44th Street, immediately south and across 44th Street from our property. As required by Alameda County Environmental Health Services, we are conducting a subsurface investigation to evaluate the extent of groundwater contamination associated with releases of gasoline from underground storage tanks formerly located on our property. Because your property at 903 44th Street is downgradient from the release site, we are requesting access to your property for the purpose of collecting groundwater samples. This letter agreement outlines the work that will be performed.

We have retained Streamborn, an environmental consulting firm, to perform the investigation. Streamborn will collect the groundwater samples by punching a 2-inch diameter hole through the ground to the water table. After collecting samples of the groundwater, the hole will be sealed and resurfaced. No monitoring wells or permanent structures will be constructed. Streamborn estimates that it will take less than 4 hours to collect the groundwater samples. Any wastes generated during sampling will be containerized by Streamborn and transferred to our property for storage and subsequent disposal. We will act as generator with respect to the wastes produced during the investigation. We will also pay Streamborn's fees. The results of the investigation will be reported to Alameda County, with a copy to you.

The sampling work at your property will be scheduled and conducted so that your tenants are not disturbed. As shown on the attached figure, Streamborn proposes to perform two test holes in the front yard of your property (B-14 and B-15). Streamborn will meet with you and/or your tenant before the proposed field work to (1) discuss the exact locations of the test holes, and (2) identify convenient times during the day to complete the work. Streamborn will provide you and your tenant at least 48-hours advance notice prior to the sampling. The sampling is tentatively scheduled for late June 1999.

It enant at least 48-hours advance nonce produce leduled for late June 1999.

Contractor - Steamborn is responsible for # All dirt, waste and debn's to be removed from property that is created as a result of sample drilling.

**No drilling to be done in new concrete slab parking area, 903 44454

If you have any questions or comments, please call Keg Alexander of Streamborn at 510/528-4234. Alternatively, you can call me at 510/531-0778. Otherwise, please indicate your agreement by signing below and returning a copy to us.

Sincerely, Gircoppina Daecelle

Losephine and Casimiro Damele

3750 Victor Avenue Oakland CA 94619 510/531-0778 Christopher and Cynthia Fleming

Signed

Signed Cyrothia L. Flemen

Date 6 - 10 - 99

cc: Don Hwang/Alameda County Environmental Health Services, Alameda CA

### STANDARD OPERATING PROCEDURE (SOP) 29 SOIL SAMPLING USING DIRECT-PUSH TECHNIQUES

### 1.0 INTRODUCTION AND SUMMARY

This SOP describes methods for collecting soil samples in conjunction with field investigations using "Direct-Push" (DP) techniques. DP techniques, such as Enviro-Core®, Geoprobe®, and cone penetrometer testing (CPT), utilize small-diameter probes which are pushed, driven, or vibrated into the ground to the desired sampling depth. As the DP probes are being advanced, soil samples may be collected using stainless steel liners or clear plastic tubes. Soil samples may be collected continuously or at designated intervals. The soil sampling techniques described in this SOP are generally suitable for chemical characterization and physical classification tests. However, because of the narrow diameter of the DP probe, the resulting soil samples should generally be considered "disturbed" with respect to physical structure and may not be suitable for measuring sensitive physical parameters, such as strength and compressibility.

The DP techniques described in this SOP generally produce a borehole with: (1) a diameter of approximately 1.5- to 2.5-inches corresponding to the outside diameter of the DP probe, and (2) limited capability for cross-contamination between subsurface strata as the DP probe passes from contaminated strata to uncontaminated underlying strata. However, should conditions require strict measures to help prevent cross-contamination or maintain the integrity of an aquitard, consideration should be given to augmenting the procedures of this SOP, for example, by using pre-drilled and grouted isolation casing.

The procedures for soil sampling using DP techniques generally consist of initial decontamination, advancement of the DP probe, recovering the core sampler, logging and packaging of the soil samples, decontamination of the core sampler (for chemical characterization samples), and continued sampling until the total depth of the borehole is reached. Withdrawal of the DP probe upon reaching the total depth requires completion of the borehole by grouting.

### 2.0 EQUIPMENT AND MATERIALS

- Equipment to make a borehole and/or push the DP probe to the desired depth. Methods include DP rig or CPT rig.
- Core sampler. The sampler type, material of construction, outside diameter, and length should be noted. Sampler lengths are typically 3- to 5-feet.
- Liners may or may not be required depending on the type of DP technique. The liner type, material of construction, outside diameter, and length should be noted.
- Plastic end caps of appropriate diameter for liner type.
- Teflon sheets, approximate 6-mil thickness, precut to a diameter or width of the liner diameter plus approximately 1 inch.
- 1/2-pint widemouth glass jars, laboratory cleaned.
- Kimwipes, certified clean silica sand, or deionized water (for blank sample preparation).

- · Duct tape.
- Sample labels, boring log forms, chain-of-custody forms, hazardous waste labels, and daily report forms.
- Ziploc plastic bags of size to accommodate sample.
- Stainless steel spatula and knife.
- Cooler with ice (do not use blue ice).
- Field organic vapor monitor. The make, model, and calibration information of the field organic vapor monitor (including compound and concentration of calibration gas) should be noted.
- Equipment and materials necessary to decontaminate the DP equipment and groundwater sampling tool. Equipment may include, buckets, bristle brushes, and low-residue organic-free soap (such as Alconox or Liquinox)
- Equipment to capture decontamination wastewater such as 55-gallon, steel drums.
- Distilled water.

As specified in the Site Safety Plan, additional safety and personnel decontamination equipment and materials may be needed.

#### 3.0 TYPICAL PROCEDURES

The following typical procedures are intended to cover the majority of soil sampling conditions using DP techniques. However, normal field practice requires re-evaluation of these procedures and implementation of alternate procedures upon encountering unusual or unexpected subsurface conditions. Deviations from the following procedures may be expected and should be noted.

- 1. Decontaminate the downhole equipment (push rods, DP probe tips, and core sampler).
- 2. Investigate the location of the proposed boreholes for buried utilities and obstructions. At least 72 hours before drilling, contact known or suspected utility services individually or collectively through services such as "Underground Service Alert". As appropriate, retain private buried utility location services or geophysical investigation services to search for buried utilities and obstructions. Also, as appropriate, pothole suspect utility locations prior to drilling or relocate boreholes. During initial advancement of each borehole, use post-hole diggers to break the ground surface and cautiously explore the first 1- to 2-feet for buried utilities. Continue boring with DP probe and exercise caution by having the operator pay particular attention to the "feel" of the probe. The suspected presence of an obstruction, buried pipeline or cable, utility trench backfill, or similar may be cause for suspension of drilling, subject to further investigation.
- 3. Advance the DP probe to the desired sampling depth. Samples should be taken at intervals of 5-feet or less in homogeneous strata and at detectable changes of strata. For continuous sampling, the core sampler will be advanced 3- to 5-feet depending on the DP technique. Note depth interval, subsurface conditions, and operator's comments on the boring log.

- 4. Retrieve the core sampler. Remove the liner from the core sampler for purposes of chemical characterization and/or physical parameter testing. Observe soil at each end of liner(s) for purposes of completing sample description. Place Teflon sheet at each end of liner, cover with plastic caps, and tape plastic caps with duct tape (do not use electrical tape) to further minimize potential loss of moisture or volatile compounds. Label liner(s) and place in ziploc bag on ice inside cooler. Enter samples on chain-of-custody form.
- 5. If headspace screening to be performed, place subsample of soil in a ziploc plastic bag. After allowing the soil in the bag to equilibrate for 5 minutes, screen for organic vapors with the field organic vapor monitor by inserting the probe into the bag. Record depth interval, observed sample reading, and ambient (background) reading on the boring log.
- 6. Visually classify soil sample in approximate accordance with ASTM D 2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). Descriptions should include moisture content, color, textural information, group symbol, group name, and odor. Optional descriptions, especially if classification is performed with protective gloves, include particle angularity and shape, clast composition, plasticity, dilatancy, dry strength, toughness, and reaction with HCl. Add notes pertaining to geologic structure of sample, as appropriate. Record depth interval, visual classification, and other notes to the boring log.
- 7. Repeat steps 3 through 6 until total depth of borehole is reached.
- 8. Complete the boring by backfilling with grout. Unless otherwise delineated in the Workplan, Quality Assurance Project Plan, or Sampling Plan, grout may consist of:
  - neat cement grout, using 1 sack (94 pounds dry weight) of Type I/II Portland cement to 5 gallons of water, or
  - cement-bentonite grout using the same basic formula but substituting approximately 5% powdered bentonite for part of the cement.

Local requirements may require inspection of grout seal placement by the regulating authority.

- 9. Decontaminate the downhole equipment between boreholes. Decontaminate all equipment prior to leaving the site.
- 10. Containerize decontamination wastewater in steel drums. Affix labels to the drums identifying date, description of contents, generator name, and generator address.

#### 4.0 QUALITY ASSURANCE AND QUALITY CONTROL

Optional quality control samples may be collected, including: field blanks to check for field-induced cross-contamination, travel/trip blanks to check for non-field induced cross-contamination, and replicates.

The comparability of the field visual classification may be checked by conducting laboratory classification tests.

#### 5.0 DOCUMENTATION

Observations, measurements, and other documentation of soil sampling should be recorded on the following:

- Field Notebook or Drilling Log
- Chain-of-Custody

Documentation should include any deviations from this SOP, as well as documentation of the containerization and disposition of investigation-derived waste.

#### 6.0 DECONTAMINATION

Prior to entering the site, the DP rig and appurtenant items (push rod, probe tips, sampling tools, etc.) should be decontaminated by steam cleaning or pressure washing. Between each borehole, appurtenant items that contacted downhole soil/water should be decontaminated by steam cleaning or pressure washing. Prior to leaving the site, the DP rig and appurtenant items should be decontaminated by steam cleaning and pressure washing. Decontamination water should be captured and containerized.

Prior to each sample, the core sampler and other equipment or materials that may directly contact the sample should be decontaminated. Decontamination for these items should consist of a soap wash (Alconox, Liquinox, or other organic free - low residue soap), followed by a tap water rinse, followed by a distilled water rinse. Wastewater from the soap wash should be captured and containerized. Wastewater from the tap water and distilled water rinses may be discharged to the ground surface or a sanitary sewer.

#### 7.0 INVESTIGATION-DERIVED WASTE

Wastes resulting from the activities of this SOP may include excess soil sample, decontamination wastewater, and miscellaneous waste (paper, plastic, gloves, jars, aluminum foil, site safety disposable, etc.) Unless otherwise prohibited by the Site Safety Plan, miscellaneous waste should be disposed of as municipal waste.

Excess soil sample should be placed in individual steel drums or 5-gallon plastic buckets with waste labels affixed. Decontamination wastewater for each borehole should be placed in individual steel drums with waste labels affixed. Wastewaters from multiple boreholes may be combined.

#### 8.0 SAFETY

Normal and special safety precautions are described in the Site Safety plan. Physical hazards typically prevail because the DP rig contains exposed hydraulic equipment and because push rods consist of heavy material with sharp edges.

Chemical hazards are typically discovered upon raising the push rods and exposing the sampling tool. Opportune monitoring for volatile chemicals may be conducted at these times. Splash protection and direct contact protection are also essential measures to minimize the potential for chemical exposure.

#### 9.0 REFERENCES

- American Society for Testing and Materials, 1989. 1989 Annual Book of ASTM Standards, Section 4 Construction, Volume 4.08 Soil and Rock, Building Stones; Geotextiles. ASTM, Philadelphia, PA. 1989.
- Einarson, M.D., 1995. Enviro-Core® A New Direct-Push Technology for Collecting Continuous Soil Cores. Presented at the 9th National Outdoor Action Conference, Las Vegas, NV. Prepared by Murray D. Einarson, Einarson Geoscience, Inc., Palo Alto CA. May 1995.
- U.S. Environmental Protection Agency, 1989a. A Compendium of Superfund Field Operations Methods, EPA/540/P-87/001, OSWER Directive 9355.0-14. USEPA, Office of Emergency and Remedial Response, Washington, DC. December 1989.
- U.S. Environmental Protection Agency, 1989b. Soil Sampling Quality Assurance User's Guide -Second Edition. National Technical Information Service, PB 89-189 864/AS, Springfield, VA. 1989.

# STANDARD OPERATING PROCEDURE (SOP) 33 GRAB GROUNDWATER SAMPLING IN A BOREHOLE WITH TEMPORARY CASING

### 1.0 INTRODUCTION AND SUMMARY

This SOP describes methods for collecting grab groundwater samples using a bailer in a borehole, with temporary casing, without purging. Boreholes are typically created using handauger equipment, hollow-stem auger equipment, or direct push techniques.

The procedures for grab groundwater sampling generally consist of initial decontamination of sampling equipment, insertion of a teflon bailer to the desired depth within the temporary casing, capturing the sample, raising the bailer, and decanting the groundwater sample into appropriate containers.

#### 2.0 EQUIPMENT AND MATERIALS

- · Water level meter.
- Tap water, buckets, bristle brushes, low-residue organic-free soap (such as Alconox or Liquinox) for decontamination of sampling equipment. Containers to store decontamination wastewater.
- Distilled water (for decontamination and when necessary, quality control blank samples).
- Laboratory-cleaned containers of proper type and size for the analytical parameters (refer to Table 1).
- Reagent-grade chemicals for sample preservation, as required for the analytical parameters (refer to Table 1).
- If field filtration will be performed for dissolved metals analyses, 45-micron cellulose acetate filters and filtering device. Alternate filter type and size (cellulose nitrate, Teflon, or glass-fiber pre-filters) may be required. The make, type, and size of filter, including disposable filters, should be documented.
- Sample labels and chain-of-custody forms.
- Ziploc plastic bags of size to accommodate sample containers.
- Cooler with ice (do not use blue ice or dry ice).
- Field organic vapor monitor (for volatile organic compounds). The make, model, and calibration information of the field organic vapor monitor (including compound and concentration of calibration gas) should be noted.
- If water quality parameters are to be measured, use glass beaker, ±250 milliliter for measurement of field parameters. A similar flow-through cell may also be used.
- If water quality parameters are to be measured, use pH, temperature, and specific conductivity instruments, including pH and specific conductivity standards approximating or spanning the natural groundwater parameters. Oxidation-reduction potential (ORP) or dissolved oxygen meters may also be required.

- SCH 40 PVC casing. Casing should be of a diameter and length suitable for placement and removal from the borehole and include a slotted section to allow groundwater to collect within the casing.
- Teflon sampling bailer. Dedicated or new bailer rope. If samples are collected for volatile organic compound analysis, bailer should also be fitted with bottom-emptying device.

As specified in the Site Safety Plan, additional decontamination equipment and materials may be needed.

#### 3.0 TYPICAL PROCEDURES

The following typical procedures are intended to cover the majority of sampling conditions wherein a borehole is made using hand-auger equipment, hollow-stem augers, or direct push equipment. Deviations from the following procedures may be expected and should be noted.

- 1. Decontaminate temporary casing and sampling equipment (see DECONTAMINATION section in this SOP).
- 2. Lower the temporary casing into the borehole.
- Measure depth to water within the temporary casing.
- 4. Lower Teflon bailer into the temporary casing and collect sample. Sample from mid-depth of water column.
- 5. Fill sample containers and add preservative according to the requirements of Table 1. Containers should generally be filled to capacity. 40 milliliter glass vials should be filled from the bottom using a bottom-emptying device for the bailer. 40 milliliter vials should not have headspace.
- 6. If field filtration will be performed for dissolved metals analyses, filter sample. If the sample is moderately turbid or very turbid, collect companion filtered and unfiltered samples. When performed, it is important to field-filter samples before adding preservative.
- 7. Label sample containers, place in ziplock bag, and place on ice in cooler.
- 8. Log samples onto chain-of-custody form and maintain sample custody until shipped to laboratory.
- 9. Remove the temporary casing from the borehole.
- Containerize decontamination wastewaters in buckets or drums for eventual discharge to the sanitary sewer. Affix labels to the containers identifying date, description of contents, generator name, and generator address.

### 4.0 QUALITY ASSURANCE AND QUALITY CONTROL

Depending on the level of data validation required on a given project, quality control sampling may consist of none, one, or any combination of the following samples, to be collected at a pre-established frequency (i.e., one quality control sample for every 10 natural samples):

Duplicate samples.

- Cross-contamination blank prepared by collecting a sample of deionized water which has been passed over and through decontaminated sampling equipment.
- Travel blanks typically if analyses require collection of samples in 40 milliliter vials (typical frequency of 1 per day of sampling).
- Other quality control samples include standard reference materials and natural matrix spikes.

If used, meters for measurement of field parameters should be calibrated at least once per day. Calibration standards should generally approximate or span natural groundwater characteristics. Recalibration may be appropriate if unusual measurements are noticed. Calibration activities should be documented on the instrument calibration log.

#### 5.0 DOCUMENTATION

Observations, measurements, and other documentation of grab groundwater sampling should be recorded on the following:

- Field Notebook
- Chain-of-Custody

Documentation should include any deviations from this SOP, as well as documentation of the containerization and disposition of investigation-derived waste.

#### 6.0 DECONTAMINATION

Prior to collecting each sample, the temporary casing, bailer and other equipment or materials that may contact the sample should be decontaminated. Decontamination for these items should consist of a soap wash (Alconox, Liquinox, or other organic free - low residue soap), followed by a tap water rinse, followed by a distilled water rinse. Wastewater from the soap wash should be captured and containerized. Wastewater from the tap water and distilled water rinses may be discharged to the ground surface or a sanitary sewer.

Prior to sampling each borehole, fresh decontamination solutions should be prepared.

#### 7.0 INVESTIGATION-DERIVED WASTE

Wastes resulting from the activities of this SOP may include decontamination wastewater and miscellaneous waste (paper, plastic, gloves, jars, etc.). Unless otherwise prohibited by the Site Safety Plan, miscellaneous waste should be disposed of as municipal waste.

Decontamination wastewater for each borehole should be placed in buckets or steel drums with waste labels affixed for eventual discharge to the sanitary sewer or, if necessary, alternate means of disposal.

#### 8.0 SAFETY

Primary chemical hazards during grab groundwater sampling are associated with dermal exposure. Acids used for decontamination and sample preservation may also present chemical hazards. Primary protection against dermal exposure includes splash protection and gloves. Special chemical hazards may be associated with the presence of product, if discovered during sampling. Water quality samples are not generally considered representative in the presence of product. Accordingly, it may be appropriate to abandon sampling efforts if product is discovered.

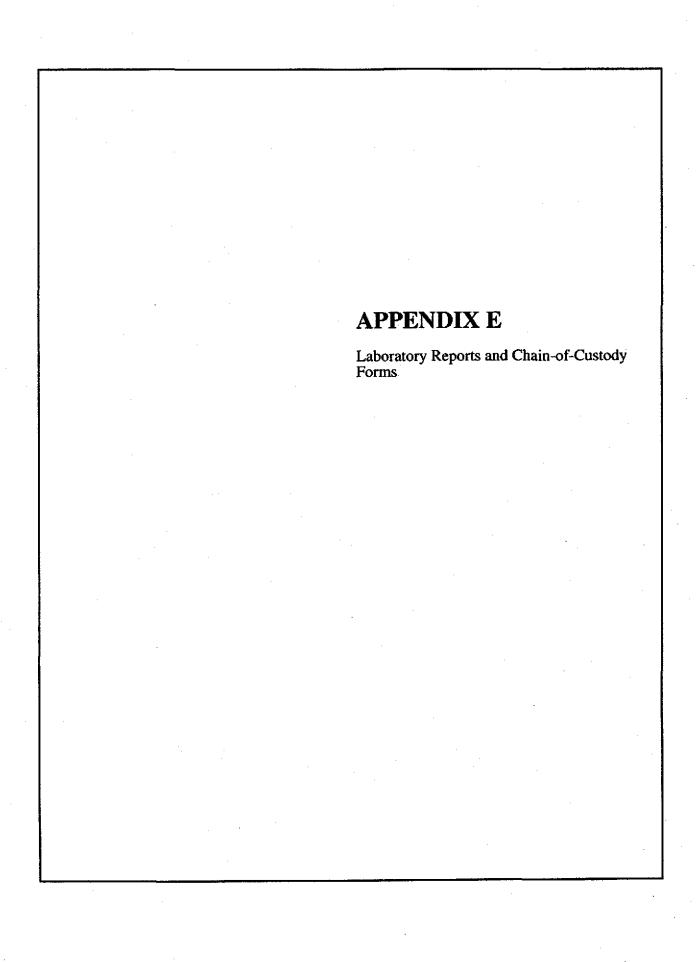
Other specific site safety guidance is provided in the Site Safety Plan.

#### 9.0 REFERENCES

- Aller, L., T.W. Bennett, G. Hackett, R.J. Petty, J.H. Lehr, H. Sedoris, and D.M. Nielsen, 1989. Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells. National Water Well Association, Dublin, OH. 1989.
- U.S. Environmental Protection Agency, 1989a. A Compendium of Superfund Field Operations Methods, EPA/540/P-87/001, OSWER Directive 9355.0-14. USEPA, Office of Emergency and Remedial Response, Washington, DC. December 1989.

Table 1
Sampling and Preservation for Groundwater Samples

Parameter	Analytical Method	Container	Preservation	Maximum Holding Time
Purgeable Halocarbons by GC	EPA 8010	Three 40-ml glass vials	HCl to pH<2, cool to 4 degrees Celsius	14 days after collection
Purgeable Aromatics by GC	EPA 8020	Three 40-ml glass vials	HCl to pH<2, cool to 4 degrees Celsius	14 days after collection
Organochlorine Pesticides and PCB's	EPA 8080	Two 1-liter amber glass	Cool to 4 degrees Celsius	Extract 7 days after collection Analyze 40 days after extraction
Organophosphorus Pesticides	EPA 8140	Two 1-liter amber glass	Cool to 4 degrees Celsius	Extract 7 days after collection Analyze 40 days after extraction
Chlorinated Herbicides (Phenoxy Herbicides)	EPA 8150	Two 1-liter amber glass	Cool to 4 degrees Celsius	Extract 7 days after collection Analyze 40 days after extraction
Volatile Organic Compounds by GC/MS	EPA 8240 or 8260	Three 40-ml glass vials	Cool to 4 degrees Celsius	14 days after collection
Fuel Oxygenates (MTBE, TAME, ETBE, DIPE)	EPA SW846 8260 Modified	Three 40-ml glass vials	Cool to 4 degrees Celsius	14 days after collection
Semi-Volatile Organic Compounds by GC/MS (Base/Neutral/Acid Extractable Organics)	EPA 8270	Two 1-liter amber glass	Cool to 4 degrees Celsius	Extract 7 days after collection Analyze 40 days after extraction
Dibromoethane (EDB) and 1,2-Dibromo- 3-Chloropropane (DBCP)	EPA 504	Two 1-liter amber glass	Cool to 4 degrees Celsius	Extract 7 days after collection Analyze 40 days after extraction
Total Petroleum Hydrocarbons Gasoline/BTEX	Extract by EPA 5030, analyze by EPA 8015	Three 40-ml glass vials	HCl to pH<2, cool to 4 degrees Celsius	Extract 7 days after collection Analyze 7 days after extraction
Total Petroleum Hydrocarbons Diesel, Kerosene, or Motor Oil	Extract by EPA 3510, analyze by EPA 8015	One 1-liter amber glass	HCl to pH<2, cool to 4 degrees Celsius	Extract 7 days after collection Analyze 7 days after extraction
Oil & Grease	SM 503	One 1-liter glass with aluminum foil-lined cap	H ₂ SO ₄ to pH<2, cool to 4 degrees Celsius	28 days after collection
Total Metals	EPA 7000 Series	One 1/2 liter poly	HNO3 to pH<2, cool to 4 degrees Celsius	6 months after collection (28 days for mercury)
Dissolved Metals	EPA 7000 Series	One 1/2 liter poly	HNO3 to pH<2, cool to 4 degrees Celsius	6 months after collection (28 days for mercury)
General Minerals	Various	Two 1-liter poly	Cool to 4 degrees Celsius	7 days after collection



Environmental Services (SDB)

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: B8(11.5-12)

*Spl#*. 236163

Matrix: SOIL

Sampled: April 8, 1999

Run#:18283

Analyzed: April 12, 1999

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	1.0	N.D.	106	1
MTBE	N.D.	0.0050	N.D.	107	1
BENZENE	N.D.	0.0050	N.D.	97	1
TOLUENE	N.D.	0.0050	N.D.	96	1
ETHYL BENZENE	N.D.	0.0050	N.D.	94	1
XYLENES	N.D.	0.0050	N.D.	94	1

Craig Huntzinger

Analyst

Michael Verona

**Environmental Services (SDB)** 

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **B8(15-15.5)** 

Spl#: 236164

*Matrix:* SOIL

Sampled: April 8, 1999

Run#:18283

Analyzed: April 12, 1999

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	1.0	N.D.	106	1
MTBE	N.D.	0.0050	N.D.	107	1
BENZENE	N.D.	0.0050	N.D.	97	1
TOLUENE	N.D.	0.0050	N.D.	96	1
ETHYL BENZENE	Ŋ.D.	0.0050	N.D.	94	ļ
XYLENES	N.D.	0.0050	N.D.	94	1

Craig Huntzinger

Analyst

Michael Verona

Environmental Services (SDB)

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: B8(8APR99)

Spl#: 236173

Matrix: WATER

Sampled: April 8, 1999

Run#:18300

Analyzed: April 14, 1999

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK I SPIKE (%)	DILUTION FACTOR
GASOLINE MTBE	N.D. N.D.	50 5.0	N.D. N.D.	104 96	1
BENZENE	N.D.	0.50	N.D.	89	i
TOLUENE ETHYL BENZENE	N.D. N.D.	0.50 0.50	N.D.	88	1
XYLENES	N.D.	0.50	N.D. N.D.	85 85	1

Craig Huntzinger

Analyst

Michael Verona

Environmental Services (SDB)

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: B9(11.5-12)

Spl#: 236172 Sampled: April 8, 1999 *Matrix:* SOIL

Run#:18318

Analyzed: April 14, 1999

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mq/Kq)	BLANK SPIKE (%)	DILUTION FACTOR	
GASOLINE	N.D.	1.0	N.D.	103	1	
MTBE	N.D.	0.0050	N.D.	100	1	f
BENZENE	N.D.	0.0050	N.D.	92	1	
TOLUENE	N.D.	0.0050	N.D.	91	1	ŀ
ETHYL BENZENE	N.D.	0.0050	N.D.	89	1	
XYLENES	N.D.	0.0050	N.D.	89	1	- (

Craig Huntzinger

Analyst

Michael Verona

**Environmental Services (SDB)** 

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: B9(15-15.5)

Spl#: 236171 Sampled: April 8, 1999 *Matrix:* SOIL

Run#:18330

Analyzed: April 14, 1999

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	110	10	N.D.	118	1
MTBE	N.D.	0.62	N.D.	93	1
BENZENE	N.D.	0.62	N.D.	100	1
TOLUENE	N.D.	0.62	N.D.	102	1
ETHYL BENZENE	N.D.	0.62	N.D.	99	1
XYLENES	N.D.	0.62	N.D.	99	ī

Note: Hydrocarbon found in Gasoline Range is uncharacteristic of Gasoline Profile.

Vincent Vancil

Analyst

Michael Verona

Operations Manager

Environmental Services (SDB)

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: B9(8APR99)

Matrix: WATER

Spl#: 236174 Sampled: April 8, 1999

Run#:18300

Analyzed: April 14, 1999

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	850	50	N.D.	104	1
MTBE	N.D.	5.0	N.D.	96	1
BENZENE	9.5	0.50	N.D.	89	1
TOLUENE	2.4	0.50	N.D.	88	1
ETHYL BENZENE	3.5	0.50	N.D.	85	1
XYLENES	48	0.50	N.D.	. 85	1

Analyst

Michael Verona

**Environmental Services (SDB)** 

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: B10(11.5-12)

Spl#: 236169 Sampled: April 8, 1999

Matrix: SOIL

Run#:18283

Analyzed: April 13, 1999

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	SPIKE FACT (%)	
GASOLINE	N.D.	1.0	N.D.	106 1	
MTBE	N.D.	0.0050	N.D.	107 1	
BENZENE	N.D.	0.0050	N.D.	97 1	
TOLUENE	N.D.	0.0050	N.D.	96 1	
ETHYL BENZENE	N.D.	0.0050	N.D.	94 1	
XYLENES	N.D.	0.0050	N.D.	94 1	

Craig Huntzinger

Analyst

Michael Verona

**Environmental Services (SDB)** 

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **B10(15-15.5)** 

*Spl#*: 236170

Matrix: SOIL

Sampled: April 8, 1999

Run#:18330

Analyzed: April 15, 1999

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR	1
GASOLINE	1300	50	N.D.	118	5	
MTBE	N.D.	3.1	N.D.	93	5	
BENZENE	12	3.ī	N.D.	100	5	
TOLUENE	22	3.1	N.D.	102	5	
ETHYL BENZENE	25	3.1	N.D.	99	5	
XYLENES	100	3.1	N.D.	99	5	

Vincent Vancil

Analyst

Michael Verona

Operations Manager

Environmental Services (SDB)

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: B11(11.5-12)

*Spl#:* 236168

*Matrix:* SOIL

Sampled: April 8, 1999

Run#:18283

Analyzed: April 13, 1999

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mq/Kq)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	FACTOR	,
GASOLINE	N.D.	1.0	N.D.	106	1	
MTBE	N.D.	0.0050	N.D.	107	1	
BENZENE	N.D.	0.0050	N.D.	97	1	
TOLUENE	N.D.	0.0050	N.D.	96	ī	
ETHYL BENZENE	N.D.	0.0050	N.D.	94	ī	
XYLENES	N.D.	0.0050	N.D.	94	$ar{ exttt{1}}$	

Coffee

Craig Huntzinger

Analyst

Michael Verona

**Environmental Services (SDB)** 

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **B11(15-15.5)** 

*Matrix:* SOIL

*Spl#:* 236167 *Sampled:* April 8, 1999

Run#:18330

Analyzed: April 14, 1999

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE MTBE	140 N.D.	10	N.D.	118	1
BENZENE	N.D. N.D.	0.62 0.62	N.D. N.D.	93 100	1
TOLUENE ETHYL BENZENE	N.D.	0.62	N.D.	102	ļ
XYLENES	1.8 8.9	0.62 0.62	N.D. N.D.	99 99	1

Vincent Vancil

Analyst

Operations Manager

**Environmental Services (SDB)** 

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: B11(8APR99)

Spl#: 236177

Matrix: WATER

Sampled: April 8, 1999

Run#:18339

Analyzed: April 14, 1999

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK : SPIKE (%)	DILUTION FACTOR	
GASOLINE	2600	100	6700	94	2	-
MTBE	N.D.	10	N.D.	101	2	
BENZENE	34	1.0	N.D.	97	2	
TOLUENE	4.6	1.0	N.D.	97	2	
ETHYL BENZENE	92	1.0	N.D.	93∿	2	
XYLENES	440	1.0	N.D.	93	2	

Craig Huntzinger

Analyst

Michael Verona

**Environmental Services (SDB)** 

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: B12(11.5-12)

 Sp1#: 236165
 Matrix: SOIL

 Sampled: April 8, 1999
 Run#:18283

Run#:18283 Analyzed: April 13, 1999

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	1.0	N.D.	106	1
MTBE BENZENE	N.D.	0.0050	N.D.	107	1
TOLUENE	N.D. N.D.	0.0050 0.0050	N.D.	97 0.6	1
ETHYL BENZENE	N.D.	0.0050	N.D. N.D.	96 94	1
XYLENES	N.D.	0.0050	N.D.	94	i

Craig Huntzinger

Analyst

Michael Verona

Environmental Services (SDB)

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: B12(15-15.5)

Spl#: 236166 Sampled: April 8, 1999 Matrix: SOIL

Run#:18318

Analyzed: April 13, 1999

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLÎNE	N.D.	1.0	N.D.	103	1
MTBE	N.D.	0.0050	N.D.	100	1
BENZENE	N.D.	0.0050	N.D.	92	1
TOLUENE	N.D.	0.0050	N.D.	91	1
ETHYL BENZENE	N.D.	0.0050	N.D.	89	<u> 1</u>
XYLENES	N.D.	0.0050	N.D.	89	ī

Craig Huntzinger

Analyst

Michael Verona

Environmental Services (SDB)

April 16, 1999

Submission #: 9904134

STREAMBORN

Atten: Keg Alexander

Project: 4401 MARKET STREET

Project#: P214

Received: April 9, 1999

re: One sample for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: B12(8APR99)

*Spl#:* 236178

*Matrix:* WATER

Sampled: April 8, 1999

Run#:18329

Analyzed: April 14, 1999

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (uq/L)	BLANK SPIKE (%)	FACTOR	
GASOLINE	N.D.	50	N.D.	95	1	
MTBE	Ŋ.D.	5.0	N.D.	89	1	
BENZENE	N.D.	0.50	N.D.	102	1	
TOLUENE ETHYL BENZENE	N.D.	0.50	N.D.	106	1.	
XYLENES	N.D. N.D.	0.50 0.50	N.D. N.D.	102 100	1	i

Vincent Vancil

Analyst

Michael Verona

Operations Manager

7904/34/206/6 STREAMBORN CHAIN-OF-CUSTODY

45464

	Project Name:	4401 Mark	et Stree	t						P	roject Loc	ation:	Oak	cland	CA						-	Project Number	: P214	
	Sampler:	K. Alexand	ler								Labora	atory:	Chr	omal	ab							Laboratory Number	:	
Ī		1			Matri		т,	/pe	Cor	ntainers	·····		Typ	naro	und			Ana	lyse					1
					Tail	È	1,	l l		The state of the s			14	Пато	unu	ļ	F	Alla	I ysc.	, 	1			ĺ
	Sample Designation	Date	Time	Soil	Water	Vapor	Grab	Composite	Quantity	Type	Preservative	Filtration (0.45-µm)	24-Hour	5 Working Days	7-10 Working Days	TPH-gasoline (EPA 8015)	BTEX (EPA 8020)	MtBE (EPA Method 8020)				Sampler Comments	Laboratory Comments	
$\dashv$	B8(11.5-12)	8-Apr-99	8:00	X			X		ļ	liner	cold				X	X	X	X						1
1	B8(15-15.5)	8-Apr-99	8:30	X			X		1	liner	cold				X	X	X	X						
~[	B8(8Apr99)	8-Apr-99	9:00		X		X		3	VØAs	HCl, cold				X	X	Х	X						
-[	B12(11.5-12)	8-Apr-99	10:00	X			X		1	liner	cold				X	х	X	х				,		
닉	B12(15-15.5)	8-Apr-99	10:20	X			X		1	liner	cold				Х	X	X	х						
	B12(8Apr99)	8-Apr-99	10:40		X		X		3	VOAs	HCl, cold				X	X	X	X						
-	B11(11.5-12)	8-Арг-99	11:30	X			X		1	liner	cold				X	X	X	х						- 0
-	B11(15-15.5)	8-Арг-99	12:10	X			X		1	liner	cold				X	X	X	X						C. S MO
- [	B11(8Apr99)	8-Apr-99	15:00		X		X		3	VOAs	HCl, cold				X	X	X	X						
-[	B10(11.5-12)	8-Apr-99	12:50	X			X		1	liner	cold				Х	X	X	х					/4	750 / tules
-	B10(15-15.5)	8-Apr-99	13:10	X			x		ļ	liner	cold				Х	Х	X	х					,	L , ' , '
$\dashv$	B10(8Apr99)	8-Apr-99	13.30		X	$\sqsubseteq$	X		3	- VOAs	HCl, cold				<del>-X</del> -	X	X	X		-		High concentration of TPH g	<u> </u>	5.5 CARP 50 / fulls 500AS
_	B9(11.5-12)	8-Apr-99	15:50	X			X		1	liner	cold				X	Х	X	X						
_	B9(15-15.5)	8-Apr-99	16:10	х			х		1	liner	cold				Х	х	Х	х						
	B9(8Apr99)	8-Apr-99	16:50		X		X		3	VOAs	HCl, cold				X	х	Х	х						

Note: Sampler and laboratory to observe preservative, condition, integrity, etc. of samples and record (under "Comments") any exceptions from standard protocols.

Relinquished By: K. B. alg.	Received By:	Date: 4- 9- 99	Time:
Relinquished By:	Received By: aparts	Date: 4/9/99	Time: 172/

STREAMBORN Mail: PO Box 8330, Berkeley CA 94707-8330 Office: 900 Santa Fe Ave Albania CA 04704 510/500 4024 Fam 500 0412

Sumi A: 9984134 REP: FR

CLIENT: STREAM DUE: 04/16/59 REF #:45464 **Environmental Services (SDB)** 

Submission #: 1999-07-0174

Date: July 22, 1999

**Streamborn Consulting Services** 

900 Sante Fe Avenue Albany, CA 94706

Attn.: Mr. Keg Alexander

Project: P214

4401 Market Street

Dear Keg,

Attached is our report for your samples received on Monday July 12, 1999. This report has been reviewed and approved for release. Reproduction of this report is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after August 11, 1999 unless you have requested otherwise. We appreciate the opportunity to be of service to you. If you have any questions, please call me at (925) 484-1919.

Sincerely,

Pierre/Monette

Environmental Services (SDB)

**Streamborn Consulting Services** 

Albany, CA 94706

Attn: Keg Alexander

Phone: (510) 528-4234 Fax: (510) 528-2613

Submission #: 1999-07-0174

Project #: P214

Project: 4401 Market Street

#### **Samples Reported**

Gas/BTEX and MTBE

Sample ID	Matrix	Date Sampled	Lab#
B13(11.5-12)	Soil	07/09/1999 08:30	1
B13(15-15.5)	Soil	07/09/1999 09:10	2
B13(9JUL99)	Water	07/09/1999 09:50	3
B15(11.5-12)	Soil	07/09/1999 10:30	4
B15(15-15.5)	Soil	07/09/1999 10:40	5
B15(17.5-18)	Soil	07/09/1999 10:50	6
B15(9JUL99)	Water	07/09/1999 11:10	7
B14(11.5-12)	Soil	07/09/1999 11:55	8
B14(15-15.5)	Soil	07/09/1999 12:00	9
B14(21-21.5)	Soil	07/09/1999 12:40	10
B16(11.5-12)	Soil	07/09/1999 14:50	11
B16(15-15.5)	Soil	07/09/1999 15:00	12
B16(19.5-20)	Soil	07/09/1999 15:15	13
B16(9JUL99)	Water	07/09/1999 16:00	14

Environmental Services (SDB)

**Streamborn Consulting Services** 

Test Method:

8020

8015M

Submission #: 1999-07-0174

Attn.: Keg Alexander

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B13(11.5-12)

Lab Sample ID: 1999-07-0174-001

Project:

To:

P214

Received:

07/12/1999 14:12

4401 Market Street

Sampled:

07/09/1999 08:30

Extracted:

07/20/1999 17:35

QC-Batch:

1999/07/20-01.02

Matrix:

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	07/20/1999 17:35	
Benzene	ND	0.0050	mg/Kg	1.00	07/20/1999 17:35	
Toluene	ND	0.0050	mg/Kg	1.00	07/20/1999 17:35	
Ethyl benzene	ND	0.0050	mg/Kg	1.00	07/20/1999 17:35	
Xylene(s)	ND	0.0050	mg/Kg	1.00	07/20/1999 17:35	
MTBE	ND	0.0050	mg/Kg	1.00	07/20/1999 17:35	
Surrogate(s)						
Trifluorotoluene	98.1	53-125	%	1.00	07/20/1999 17:35	
4-Bromofluorobenzene-FID	84.5	58-124	%	1.00	07/20/1999 17:35	

**Environmental Services (SDB)** 

**Streamborn Consulting Services** 

Test Method:

8020

Submission #: 1999-07-0174

8015M

Attn.: Keg Alexander

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B13(15-15.5)

Lab Sample ID: 1999-07-0174-002

Project:

To:

P214

Received:

07/12/1999 14:12

4401 Market Street

07/20/1999 19:58

Sampled:

07/09/1999 09:10

Extracted: QC-Batch:

Matrix:

Soil

1999/07/20-01.02

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	07/20/1999 19:58	
Benzene	ND	0.0050	mg/Kg	1.00	07/20/1999 19:58	
Toluene	ND	0.0050	mg/Kg	1.00	07/20/1999 19:58	
Ethyl benzene	ND	0.0050	mg/Kg	1.00	07/20/1999 19:58	
Xylene(s)	ND	0.0050	mg/Kg	1.00	07/20/1999 19:58	
MTBE	ND	0.0050	mg/Kg	1.00	07/20/1999 19:58	
Surrogate(s)						
Trifluorotoluene	72.1	53-125	%	1.00	07/20/1999 19:58	
4-Bromofluorobenzene-FID	69.2	58-124	%	1.00	07/20/1999 19:58	

**Environmental Services (SDB)** 

**Streamborn Consulting Services** 

Test Method:

8020

8015M

Submission #: 1999-07-0174

Attn.: Keg Alexander

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B13(9JUL99)

Lab Sample ID: 1999-07-0174-003

Project:

To:

P214

Received:

07/12/1999 14:12

4401 Market Street

Extracted:

07/19/1999 21:15

Sampled:

07/09/1999 09:50

QC-Batch:

1999/07/19-01.03

Matrix:

Water

Result	Rep.Limit	Units	Dilution	Analyzed	Flag
ND	50	ug/L	1.00	07/19/1999 21:15	
ND	0.50	ug/L	1.00	07/19/1999 21:15	
; ND	∣ 0.50	· ·	1.00	07/19/1999 21:15	
ND	0.50	ug/L	1.00	07/19/1999 21:15	
ND	0.50	1	1.00	07/19/1999 21:15	
ND	5.0	ug/L	1.00	07/19/1999 21:15	
92.5	58-124	%	1.00	07/19/1999 21:15	
131.6	50-150	%	1.00	07/19/1999 21:15	
	ND ND ND ND ND ND ND	ND 50 ND 0.50 ND 0.50 ND 0.50 ND 0.50 ND 5.0 92.5 58-124	ND     50     ug/L       ND     0.50     ug/L       ND     0.50     ug/L       ND     0.50     ug/L       ND     0.50     ug/L       ND     5.0     ug/L       92.5     58-124     %	ND     50     ug/L     1.00       ND     0.50     ug/L     1.00       ND     0.50     ug/L     1.00       ND     0.50     ug/L     1.00       ND     0.50     ug/L     1.00       ND     5.0     ug/L     1.00       92.5     58-124     %     1.00	ND       50       ug/L       1.00       07/19/1999 21:15         ND       0.50       ug/L       1.00       07/19/1999 21:15         ND       5.0       ug/L       1.00       07/19/1999 21:15         92.5       58-124       %       1.00       07/19/1999 21:15

Submission #: 1999-07-0174

**Environmental Services (SDB)** 

To: Streamborn Consulting Services Test Method:

8020

8015M

Attn.: Keg Alexander

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B15(11.5-12)

Lab Sample ID: 1999-07-0174-004

Project:

P214

Received:

07/12/1999 14:12

4401 Market Street

07/21/1999 10:45

Sampled:

07/09/1999 10:30

Extracted: QC-Batch:

1999/07/21-01.04

Matrix:

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	07/21/1999 10:45	
Benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 10:45	
Toluene	ND	0.0050	mg/Kg	1.00	07/21/1999 10:45	
Ethyl benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 10:45	
Xylene(s)	ND	0.0050	mg/Kg	1.00	07/21/1999 10:45	
MTBE	ND	0.0050	mg/Kg	1.00	07/21/1999 10:45	
Surrogate(s)						
Trifluorotoluene	94.4	53-125	%	1.00	07/21/1999 10:45	
4-Bromofluorobenzene-FID	85.4	58-124	%	1.00	07/21/1999 10:45	

Submission #: 1999-07-0174

**Environmental Services (SDB)** 

To: **Streamborn Consulting Services**  Test Method:

8020 8015M

Attn.: Keg Alexander

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B15(15-15.5)

Lab Sample ID: 1999-07-0174-005

Project:

P214

Received:

07/12/1999 14:12

4401 Market Street

Extracted:

07/21/1999 10:18

Sampled:

07/09/1999 10:40

QC-Batch:

1999/07/21-01.04

Matrix:

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	07/21/1999 10:18	
Benzene	· ND	0.0050	mg/Kg	1.00	07/21/1999 10:18	
Toluene	ND	0.0050	mg/Kg	1.00	07/21/1999 10:18	
Ethyl benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 10:18	
Xylene(s)	ND	0.0050	mg/Kg	1.00	07/21/1999 10:18	
MTBE	ND	0.0050	mg/Kg	1.00	07/21/1999 10:18	
Surrogate(s)	1			i		
Trifluorotoluene	87.9	53-125	%	1.00	07/21/1999 10:18	
4-Bromofluorobenzene-FID	79.5	58-124	%	1.00	07/21/1999 10:18	

P214

Environmental Services (SDB)

4401 Market Street

**Streamborn Consulting Services** Test Method:

8020 8015M

Submission #: 1999-07-0174

Prep Method: 5030 Attn.: Keg Alexander

Gas/BTEX and MTBE

B15(17.5-18) Sample ID:

Lab Sample ID: 1999-07-0174-006

07/12/1999 14:12 Received:

07/20/1999 20:54 Extracted:

QC-Batch: 1999/07/20-01.02 07/09/1999 10:50

Matrix: Soil

Project:

Sampled:

To:

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	07/20/1999 20:54	-
Benzene	ND	0.0050	mg/Kg	1.00	07/20/1999 20:54	
Toluene	ND	0.0050	mg/Kg	1.00	07/20/1999 20:54	
Ethyl benzene	ND	0.0050	mg/Kg	1.00	07/20/1999 20:54	
Xylene(s)	ND	0.0050	mg/Kg	1.00	07/20/1999 20:54	
MTBE	ND	0.0050	mg/Kg	1.00	07/20/1999 20:54	
Surrogate(s)						
Trifluorotoluene	90.8	53-125	%	1.00	07/20/1999 20:54	
4-Bromofluorobenzene-FID	109.9	58-124	%	1.00	07/20/1999 20:54	

**Environmental Services (SDB)** 

Streamborn Consulting Services

Test Method:

8020

8015M

Submission #: 1999-07-0174

Attn.: Keg Alexander

To:

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B15(9JUL99)

Lab Sample ID: 1999-07-0174-007

Project:

P214

Received:

07/12/1999 14:12

4401 Market Street

Extracted:

07/21/1999 10:54

Sampled:

07/09/1999 11:10

QC-Batch:

1999/07/21-01.03

Matrix:

Water

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	5100	500	ug/L	10.00	07/21/1999 10:54	g
Benzene	ND	5.0	ug/L	10.00	07/21/1999 10:54	
Toluene	ND	5.0	ug/L	10.00	07/21/1999 10:54	
Ethyl benzene	ND	5.0	ug/L	10.00	07/21/1999 10:54	
Xylene(s)	ND	5.0	ug/L	10.00	07/21/1999 10:54	
MTBE	ND	50	ug/L	10.00	07/21/1999 10:54	
Surrogate(s)					1	
Trifluorotoluene	123.7	58-124	%	1.00	07/21/1999 10:54	
4-Bromofluorobenzene-FID	119.1	50-150	%	1.00	07/21/1999 10:54	

**Environmental Services (SDB)** 

**Streamborn Consulting Services** 

Test Method:

8020

8015M

Submission #: 1999-07-0174

Attn.: Keg Alexander

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B14(11.5-12)

Lab Sample ID: 1999-07-0174-008

To:

P214

Received:

07/12/1999 14:12

Project:

4401 Market Street

Sampled:

07/09/1999 11:55

Extracted:

07/20/1999 21:22

Matrix:

Soil

QC-Batch:

1999/07/20-01.02

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	07/20/1999 21:22	
Benzene	ND	0.0050	mg/Kg	1.00	07/20/1999 21:22	
Toluene	ND	0.0050	⊹mg/Kg	1.00	07/20/1999 21:22	
Ethyl benzene	ND	0.0050	mg/Kg	1.00	07/20/1999 21:22	
Xylene(s)	ND	0.0050	mg/Kg	1.00	07/20/1999 21:22	
MTBE	ND	0.0050	mg/Kg	1.00	07/20/1999 21:22	
Surrogate(s)						
Trifluorotoluene	92.5	53-125	%	1.00	07/20/1999 21:22	
4-Bromofluorobenzene-FID	78.7	58-124	%	1.00	07/20/1999 21:22	

**Environmental Services (SDB)** 

Streamborn Consulting Services

Test Method:

8020

8015M

Submission #: 1999-07-0174

Attn.: Keg Alexander

To:

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B14(15-15.5)

Lab Sample ID: 1999-07-0174-009

Project:

07/12/1999 14:12

P214

Received:

Sampled:

4401 Market Street

Extracted:

07/21/1999 15:59

07/09/1999 12:00

QC-Batch:

1999/07/21-01.04

Matrix:

Soil

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	3.6	1.0	mg/Kg	1.00	07/21/1999 15:59	g
Benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 15:59	
Toluene	ND	0.0050	mg/Kg	1.00	07/21/1999 15:59	
Ethyl benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 15:59	
Xylene(s)	0.036	0.0050	mg/Kg	1.00	07/21/1999 15:59	
MTBE	ND	0.0050	mg/Kg	1.00	07/21/1999 15:59	
Surrogate(s)						
Trifluorotoluene	100.5	53-125	%	1.00	07/21/1999 15:59	
4-Bromofluorobenzene-FID	98.0	58-124	%	1.00	07/21/1999 15:59	

Printed on: 07/22/1999 17:44

Page 10 of 27

Submission #: 1999-07-0174

Environmental Services (SDB)

To: **Streamborn Consulting Services**  Test Method:

8020 8015M

Attn.: Keg Alexander

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B14(21-21.5)

Lab Sample ID: 1999-07-0174-010

Project:

Received:

07/12/1999 14:12

P214

Sampled:

4401 Market Street

Extracted:

07/21/1999 11:12

07/09/1999 12:40

QC-Batch:

1999/07/21-01.04

Matrix:

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	2.1	1.0	mg/Kg	1.00	07/21/1999 11:12	g
Benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 11:12	-
Toluene	ND	; 0.0050	mg/Kg	1.00	07/21/1999 11:12	
Ethyl benzene	0.059	0.0050	mg/Kg	1.00	07/21/1999 11:12	
Xylene(s)	0.32	0.0050	mg/Kg	1.00	07/21/1999 11:12	
MTBE	ND	0.0050	mg/Kg	1.00	07/21/1999 11:12	
Surrogate(s)						
Trifluorotoluene	93.2	53-125	%	1.00	07/21/1999 11:12	
4-Bromofluorobenzene-FID	91.5	58-124	%	1.00	07/21/1999 11:12	

Submission #: 1999-07-017

Environmental Services (SDB)

To: **Streamborn Consulting Services** 

8020 Test Method:

8015M

Attn.: Keg Alexander

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B16(11.5-12)

Lab Sample ID: 1999-07-0174-011

Project:

P214

Received:

07/12/1999 14:12

4401 Market Street

Extracted:

07/21/1999 13:47

Sampled:

07/09/1999 14:50

QC-Batch:

1999/07/21-01.04

Matrix:

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag		
Gasoline	ND	1.0	mg/Kg	1.00	07/21/1999 13:47			
Benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 13:47			
Toluene	ND	0.0050	mg/Kg	1.00	07/21/1999 13:47			
Ethyl benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 13:47			
Xylene(s)	ND	0.0050	mg/Kg	1.00	07/21/1999 13:47			
MTBE	ND	0.0050	mg/Kg	1.00	07/21/1999 13:47			
Surrogate(s)		Į.						
Trifluorotoluene	81.7	53-125	%	1.00	07/21/1999 13:47			
4-Bromofluorobenzene-FID	72 4	58-124	%	1.00	07/21/1999 13:47			

Environmental Services (SDB)

**Streamborn Consulting Services** 

Test Method:

8020

8015M

Submission #: 1999-07-0174

Attn.: Keg Alexander

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

To:

B16(15-15.5)

Lab Sample ID: 1999-07-0174-012

Project:

P214

Received:

07/12/1999 14:12

4401 Market Street

Sampled:

07/09/1999 15:00

Extracted:

07/21/1999 10:46

Matrix:

QC-Batch:

1999/07/21-01.02

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	07/21/1999 10:46	
Benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 10:46	
Toluene	ND	0.0050	mg/Kg	1.00	07/21/1999 10:46	
Ethyl benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 10:46	
Xylene(s)	ND	0.0050	mg/Kg	1.00	07/21/1999 10:46	
MTBE	ND	0.0050	mg/Kg	1.00	07/21/1999 10:46	
Surrogate(s)						
Trifluorotoluene	86.4	53-125	%	1.00	07/21/1999 10:46	
4-Bromofluorobenzene-FID	80.0	58-124	%	1.00	07/21/1999 10:46	

**Environmental Services (SDB)** 

Streamborn Consulting Services To:

Test Method:

8020

8015M

Submission #: 1999-07-0174

Attn.: Keg Alexander

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B16(19.5-20)

Lab Sample ID: 1999-07-0174-013

Project:

P214

07/12/1999 14:12

Received:

4401 Market Street

Extracted:

07/21/1999 15:32

Sampled:

07/09/1999 15:15

01.04

Matrix:

QC-Batch:	1999/07/21-0

Compound	Result	Result Rep.Limit		Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	07/21/1999 15:32	
Benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 15:32	
Toluene	ND	0.0050	mg/Kg	1.00	07/21/1999 15:32	
Ethyl benzene	ND	0.0050	mg/Kg	1.00	07/21/1999 15:32	
Xylene(s)	ND	0.0050	mg/Kg	1.00	07/21/1999 15:32	
MTBE	ND	0.0050	mg/Kg	1.00	07/21/1999 15:32	
Surrogate(s)		1				
Trifluorotoluene	86.7	53-125	%	1.00	07/21/1999 15:32	
4-Bromofluorobenzene-FID	80.4	58-124	%	1.00	07/21/1999 15:32	

Environmental Services (SDB)

Streamborn Consulting Services

Test Method:

8020

8015M

Submission #: 1999-07-0174

Attn.: Keg Alexander

Prep Method:

5030

Gas/BTEX and MTBE

Sample ID:

B16(9JUL99)

Lab Sample ID: 1999-07-0174-014

Project:

To:

P214

Received:

07/12/1999 14:12

4401 Market Street

Extracted:

07/19/1999 21:42

Sampled:

07/09/1999 16:00

QC-Batch:

1999/07/19-01.03

Matrix:

Water

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	50	ug/L	1.00	07/19/1999 21:42	
Benzene	ND	0.50	ug/L	1.00	07/19/1999 21:42	
Toluene	ND	0.50	ug/L	1.00	07/19/1999 21:42	
Ethyl benzene	ND	0.50	ug/L	1.00	07/19/1999 21:42	
Xyiene(s)	ND	0.50	ug/L	1.00	07/19/1999 21:42	
MTBE	6.5	5.0	ug/L	1.00	07/19/1999 21:42	
Surrogate(s)						
Trifluorotoluene	105.3	58-124	%	1.00	07/19/1999 21:42	
4-Bromofluorobenzene-FID	106.1	50-150	%	1.00	07/19/1999 21:42	

**Environmental Services (SDB)** 

To: Streamborn Consulting Services

Test Method:

8020

8015M

Attn.: Keg Alexander

Prep Method:

5030

Batch QC Report Gas/BTEX and MTBE

Method Blank

Water

QC Batch # 1999/07/19-01.03

Submission #: 1999-07-0174

MB:

1999/07/19-01.03-001

Date Extracted: 07/19/1999 10:29

Compound	Result Rep.Limit		Units	Analyzed	Flag
Gasoline	ND	50	ug/L	07/19/1999 10:29	
Benzene	ND	0.5	ug/L	07/19/1999 10:29	
Toluene	ND	0.5	ug/L	07/19/1999 10:29	
Ethyl benzene	ND	0.5	ug/L	07/19/1999 10:29	
Xylene(s)	ND	0.5	ug/L	07/19/1999 10:29	
MTBE	ND	5.0	ug/L	07/19/1999 10:29	
Surrogate(s)					
Trifluorotoluene	106.0	58-124	%	07/19/1999 10:29	
4-Bromofluorobenzene-FID	99.4	50-150	%	07/19/1999 10:29	

Environmental Services (SDB)

To: Streamborn Consulting Services

Test Method: 80

8020

8015M

Attn.: Keg Alexander

Prep Method:

5030

Batch QC Report
Gas/BTEX and MTBE

Method Blank

Soil

QC Batch # 1999/07/20-01.02

Submission #: 1999-07-0174

MB:

1999/07/20-01.02-001

Date Extracted: 07/20/1999 11:08

Compound	Result Rep.Limit		Units	s Analyzed			
Gasoline	ND	1.0	mg/Kg	07/20/1999 11:08			
Benzene	ND	0.0050	mg/Kg	07/20/1999 11:08			
Toluene	ND	0.0050	mg/Kg	07/20/1999 11:08			
Ethyl benzene	ND	0.0050	mg/Kg	07/20/1999 11:08			
Xylene(s)	ND	0.0050	mg/Kg	07/20/1999 11:08			
MTBE	ND	0.0050	mg/Kg	07/20/1999 11:08			
Surrogate(s)							
Trifluorotoluene	101.2	53-125	%	07/20/1999 11:08			
4-Bromofluorobenzene-FID	98.4	58-124	%	07/20/1999 11:08			

Submission #: 1999-07-0174

Environmental Services (SDB)

To: Streamborn Consulting Services

Test Method: 80:

8020 8015M

Attn.: Keg Alexander

Prep Method:

5030

Batch QC Report
Gas/BTEX and MTBE

Method Blank

Soil

QC Batch # 1999/07/21-01.04

MB:

1999/07/21-01.04-001

Date Extracted: 07/21/1999 06:42

Compound	Result	Result Rep.Limit		Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	07/21/1999 06:42	
Benzene	ND	0.0050	mg/Kg	07/21/1999 06:42	
Toluene	ND	0.0050	mg/Kg	07/21/1999 06:42	
Ethyl benzene	ND	0.0050	mg/Kg	07/21/1999 06:42	
Xylene(s)	ND	0.0050	mg/Kg	07/21/1999 06:42	
MTBE	ND	0.0050	mg/Kg	07/21/1999 06:42	
Surrogate(s)					
Trifluorotoluene	96.4	53-125	%	07/21/1999 06:42	
4-Bromofluorobenzene-FiD	86.4	58-124	%	07/21/1999 06:42	

Submission #: 1999-07-0174

**Environmental Services (SDB)** 

**Streamborn Consulting Services** To:

Test Method:

8020

8015M

Attn.: Keg Alexander

Prep Method:

5030

Batch QC Report Gas/BTEX and MTBE

Method Blank

Soil

QC Batch # 1999/07/21-01.02

MB:

1999/07/21-01.02-001

Date Extracted: 07/21/1999 07:31

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	07/21/1999 07:31	
Benzene	ND	0.0050	mg/Kg	07/21/1999 07:31	
Toluene	ND	0.0050	mg/Kg	07/21/1999 07:31	
Ethyl benzene	ND	0.0050	mg/Kg	07/21/1999 07:31	
Xylene(s)	ND	0.0050	mg/Kg	07/21/1999 07:31	
MTBE	ND	0.0050	mg/Kg	07/21/1999 07:31	
Surrogate(s)					
Trifluorotoluene	100.6	53-125	%	07/21/1999 07:31	
4-Bromofluorobenzene-FID	98.0	58-124	%	07/21/1999 07:31	

Submission #: 1999-07-0174

**Environmental Services (SDB)** 

To: Streamborn Consulting Services Test Method:

8020 8015M

Attn.: Keg Alexander

Prep Method:

5030

**Batch QC Report** Gas/BTEX and MTBE

Method Blank

Water

QC Batch # 1999/07/21-01.03

MB:

1999/07/21-01.03-001

Date Extracted: 07/21/1999 09:31

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Gasoline	ND	50	ug/L	07/21/1999 09:31	
Benzene	ND	0.5	ug/L	07/21/1999 09:31	
Toluene	ND	0.5	ug/L	07/21/1999 09:31	
Ethyl benzene	ND	0.5	ug/L	07/21/1999 09:31	
Xylene(s)	ND	0.5	ug/L	07/21/1999 09:31	
МТВЕ	ND	5.0	ug/L	07/21/1999 09:31	
Surrogate(s)					
Trifluorotoluene	118.8	58-124	%	07/21/1999 09:31	
4-Bromofluorobenzene-FID	112.6	50-150	%	07/21/1999 09:31	

Environmental Services (SDB)

To: Streamborn Consulting Services

Test Method: 8015M

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Submission #: 1999-07-0174

8020

Attn: Keg Alexander

Prep Method:

5030

#### **Batch QC Report**

Gas/BTEX and MTBE

Laboratory Control Spike (LCS/LCSD)

Water

QC Batch # 1999/07/19-01.03

LCS:

1999/07/19-01.03-002

Extracted: 07/19/1999 08:40

Analyzed: 07/19/1999 08:40

LCSD:

1999/07/19-01.03-003

Extracted: 07/19/1999 09:34

Analyzed: 07/19/1999 09:36

Compound	Conc.	[ ug/L ]	[ ug/L ] Exp.Conc.	[ ug/L ]	Recov	covery [%] RPD Ctrl. Lin		Ctrl. Lim	its [%]	s [%] Flags	
LC	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
Gasoline	453	458	500	500	90.6	91.6	1.1	75-125	20		i
Benzene	97.9	106	100.0	100.0	97.9	106.0	7.9	77-123	20	į	
Toluene	96.6	106	100.0	100.0	96.6	106.0	9.3	78-122	20		
Ethyl benzene	94.9	105	100.0	100.0	94.9	105.0	10.1	70-130	20	: 	ì
Xylene(s)	271	302	300	300	90.3	100.7	10.9	75-125	20	1	
Surrogate(s)	:				!	İ		1		:	
Trifluorotoluene	506	517	500	500	101.2	103.4		58-124	1		
4-Bromofluorobenzene-Fl	495	515	500	500	99.0	103.0		50-150		İ	ļ

**Environmental Services (SDB)** 

To: Streamborn Consulting Services

Test Method: 8015M

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8020

Submission #: 1999-07-0174

Attn: Keg Alexander

Prep Method:

5030

**Batch QC Report** 

Gas/BTEX and MTBE

Laboratory Control Spike (LCS/LCSD)

Soil

QC Batch # 1999/07/20-01.02

LCS:

1999/07/20-01.02-002

Extracted: 07/20/1999 11:36

Analyzed: 07/20/1999 11:36

LCSD:

1999/07/20-01.02-003

Extracted: 07/20/1999 12:32

Analyzed: 07/20/1999 12:32

Compound	Conc.	[ mg/Kg ]	Exp.Conc.	[ mg/Kg ]	Recov	ery [%]	RPD	Ctrl. Lim	its [%]	Flags		
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD	
Gasoline	0.495	0.488	0.500	0.500	99.0	97.6	1.4	75-125	35			
Benzene	0.103	0.0950	0.1000	0.1000	103.0	95.0	8.1	77-123	35		İ	
Toluene	0.101	0.0950	0.1000	0.1000	101.0	95.0	6.1	78-122	35			
Ethyl benzene	0.0980	0.0930	0.1000	0.1000	98.0	93.0	5.2	70-130	35		İ	
Xylene(s)	0.296	0.284	0.300	0.300	98.7	94.7	4.1	75-125	35			
Surrogate(s)												
Trifluorotoluene	411	387	500	500	82.2	77.4		53-125			İ	
4-Bromofluorobenzene-Fl	535	537	500	500	107.0	107.4		58-124			-	

**Environmental Services (SDB)** 

To: Streamborn Consulting Services Test Method:

8015M

Submission #: 1999-07-0174

8020

Attn: Keg Alexander

Prep Method:

5030

**Batch QC Report** 

Gas/BTEX and MTBE

Laboratory Control Spike (LCS/LCSD)

Soil

QC Batch # 1999/07/21-01.04

LCS:

1999/07/21-01.04-002

Extracted: 07/21/1999 07:09

Analyzed: 07/21/1999 07:09

LCSD:

1999/07/21-01.04-003

Extracted: 07/21/1999 08:02

Analyzed: 07/21/1999 08:02

Compound	Conc.	[ mg/Kg ]	Exp.Conc.	[ mg/Kg ]	Recov	ery [%]	RPD	Ctrl. Limi	its [%]	Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
Gasoline	0.478	0.483	0.500	0.500	95.6	96.6	1.0	75-125	35		}
Benzene	0.0910	0.0900	0.1000	0.1000	91.0	90.0	1.1	77-123	35		İ
Toluene	0.0880	0.0860	0.1000	0.1000	88.0	86.0	2.3	78-122	35	i    -	1
Ethyl benzene	0.0910	0.0880	0.1000	0.1000	91.0	88.0	3.4	70-130	35		: 1
Xylene(s)	0.254	0.245	0.300	0.300	84.7	81.7	3.6	75-125	35		
Surrogate(s)	į				j			1		<u>{</u>	
Trifluorotoluene	472	460	500	500	94.4	92.0		53-125			
4-Bromofluorobenzene-FI	447	457	500	500	89.4	91.4		58-124	!		İ

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Submission #: 1999-07-0174

Environmental Services (SDB)

Streamborn Consulting Services

Test Method:

8015M

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Attn: Keg Alexander

Prep Method:

5030

#### **Batch QC Report**

Gas/BTEX and MTBE

Laboratory Control Spike (LCS/LCSD)

Soil

QC Batch # 1999/07/21-01.02

LCS:

1999/07/21-01.02-002

Extracted: 07/21/1999 07:59

Analyzed: 07/21/1999 07:59

LCSD:

1999/07/21-01.02-003

Extracted: 07/21/1999 08:53

Analyzed: 07/21/1999 08:53

Compound	Conc.	[ mg/Kg ]	Exp.Conc.	[ mg/Kg ]	Recov	/егу [%]	RPD	Ctrl. Lim	its [%]	Flags		
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD	
Gasoline	0.469	0.482	0.500	0.500	93.8	96.4	2.7	75-125	35		i	
Benzene	0.0990	0.0910	0.1000	0.1000	99.0	91.0	8.4	77-123	35		1	
Toluene	0.0970	0.0910	0.1000	0.1000	97.0	91.0	6.4	78-122	35		i	
Ethyl benzene	0.0920	0.0880	0.1000	0.1000	92.0	88.0	4.4	70-130	35		:	
Xylene(s)	0.279	0.265	0.300	0.300	93.0	88.3	5.2	75-125	35			
Surrogate(s)	! ! :										!	
Trifluorotoluene	392	365	500	500	78.4	73.0		53-125			İ	
4-Bromofluorobenzene-FI	487	492	500	500	97.4	98.4		58-124			ì	

**Environmental Services (SDB)** 

To: Streamborn Consulting Services

Test Method:

8015M

8020

Submission #: 1999-07-0174

Attn: Keg Alexander

Prep Method:

5030

Batch QC Report

Gas/BTEX and MTBE

Laboratory Control Spike (LCS/LCSD)

Water

QC Batch # 1999/07/21-01.03

LCS:

1999/07/21-01.03-002

Extracted: 07/21/1999 07:07

Analyzed: 07/21/1999 07:07

LCSD:

1999/07/21-01.03-003

Extracted: 07/21/1999 08:01

Analyzed: 07/21/1999 08:01

Flags Exp.Conc. Recovery [%] RPD Ctrl. Limits [%] [ ug/L ] [ ug/L ] Compound Conc. Recovery RPD LCS LCSD LCS LCSD LCSD [%] LCS LCSD LCS 75-125 3.7 20 500 500 95.4 99.0 477 495 Gasoline 93.7 11.4 77-123 20 100.0 100.0 105.0 93.7 105 Benzene 104.0 11.1 78-122 20 104 100.0 100.0 93.1 Toluene 93.1 20 102.0 13.8 70-130 100.0 100.0 88.8 102 88.8 Ethyl benzene 100.0 12.0 75-125 20 300 88.7 Xylene(s) 266 300 300 Surrogate(s) 500 500 96.2 98.0 58-124 481 490 Trifluorotoluene 104.4 97.0 50-150 500 500 485 4-Bromofluorobenzene-FI 522

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Environmental Services (SDB)

Streamborn Consulting Services

Test Method:

8020

Submission #: 1999-07-01

8015M

Attn.: Keg Alexander

Prep Method: 5030

**Batch QC Report** 

Gas/BTEX and MTBE

Matrix Spike (MS/MSD)

Soil

QC Batch # 1999/07/20-01.02

Sample ID: B13(11.5-12)

Lab Sample ID: 1999-07-0174-001

MS:

1999/07/20-01.02-004 Extracted: 07/20/1999 18:04 Analyzed: 07/20/1999 18:04 Dilution: 1.0

MSD:

1999/07/20-01.02-005 Extracted: 07/20/1999 19:01 Analyzed: 07/20/1999 19:01 Dilution: 1.0

Compound	Conc	[ 11	ig/Kg ]	Exp.Conc.	Recov	ery [%]	RPD	Ctrl. Limit	Flags			
·	MS	MSD	Sample	MS	MSD	MS	MSD	[%]	Recovery	RPD	MS	MSD
Gasoline	0.452	0.352	ND	0.489	0.466	92.4	75.5	20.1	65-135	35		
Benzene	0.0880	0.0780	ND	0.0978	0.0931	90.0	83.8	7.1	65-135	35		
Toluene	0.0880	0.0790	ND	0.0978	0.0931	90.0	84.9	5.8	65-135	35		i
Ethyl benzene	0.0840	0.0760	ND	0.0978	0.0931	85.9	81.6	5.1	65-135	35		
Xylene(s)	0.248	0.222	ND	0.294	0.279	84.4	79.6	5.9	65-135	35		
Surrogate(s)	1								,			Ì
Trifluorotoluene	377	346		500	500	75.4	69.2		53-125			İ
4-Bromofluorobenzene-	423	405		500	500	84.6	81.0		58-124			!

Environmental Services (SDB)

To: Streamborn Consulting Services

Test Method:

8015M

Submission #: 1999-07-0174

8020

Attn:Keg Alexander

Prep Method: 5030

Legend & Notes

Gas/BTEX and MTBE

**Analyte Flags** 

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Hydrocarbon reported in the gasoline range does not match our gasoline standard.

1220 Quarry Lane * Pleasanton, CA 94566-4756 Telephone: (925) 484-1919 * Facsimile: (925) 484-1096

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# 99.07 0174

#### 46896

#### STREAMBORN CHAIN-OF-CUSTODY

Project Name: 4401 Market Street	Project Location: Oakland CA	Project Number: P214
Sampler: K. Alexander	Laboratory: Chromalab	Laboratory Number:

<u> </u>		1	<del>,</del>			,		_				_			7					 	
				Matr	ix	T	/pe	Co	ntainers			Tu	rnaro	und			Ana	lyses	3		
Sample Designation	Date	Time	Soil	Water	Vapor	Grab	Composite	Quantity	Туре	Preservative	Filtration (0.45-µm)	24-Hour	5 Working Days	7-10 Working Days	TPH-gasoline (EPA 8015)	BTEX (EPA Method 8020)	MGBE (EPA Method 8020)			Sampler Comments	Laboratory Comments
B13(11.5-12)	9-Jul-99	8:50	X			Х		-	liner	cold				х	x	Х	x				
B13(15-15.5)	9-Jul-99	9:10	X			<b>x</b> :		1	liner	cold				х	х	х	х				
B13(9Jul99)	9-Jul-99	9:50		X		X		3	VOAs	HCi, cold				Х	Х	х	х				
B15(11.5-12)	9-Jul-99	10:30	X			x		Į.	liner	cold				X	Х	х	х			 	
B15(15-15,5)	9-Jul-99	10:40	х			х		1	liner	cold				X	х	х	х				
B15(17.5-18)	9-Jul-99	10:50	X			х		1	liner	cold				х	X	х	х				·
B15(9Jul99)	9-Jul-99	11:10		X		Х		3	VOAs	HCl, cold				х	х	х	х				
B14(11.5-12)	9-Jul-99	11:55	х			X		1	liner	cold				х	х	х	X				
B14(15-15.5)	9-Jul-99	12:00	x			x		1	liner	cold				х	х	х	х				
B14(21-21.5)	9-Jul-99	12:40	х			х		1	liner	cold				Х	Х	х	х				
B16(11.5-12)	9-Jul-99	14:50	х			x		1	liner	cold				х	х	x	x				
B16(15-15.5)	9-Jul-99	15:00	х			х		. 1	liner	coid				х	х	х	х				
B16(19,5-20)	9-Jul-99	15:15	х			х		1	liner	cold				х	х	х	x				
B16(9Jul99)	9-Jul-99	16:00		X		X		3	VOAs	HCI, cold				х	Х	х	X				

Note: Sampler and laboratory to observe preservative, condition, integrity, etc. of samples and record (under "Comments") any exceptions from standard protocols.

Relinquished By: J. B. Olef	Received By:	Date: 7./2 - Time:///
Relinquished By:	Received By: Alm Juny	Date: 7/7. 89 Time: 14:17
10 10		·

STREAMBORN Mail: PO Box 8330, Berkeley CA 94707-8330 Office: 900 Santa Fe Ave, Albany CA 94706 510/528-4234 Fax: 528-2613