Subsurface Consultants, Inc.

FAX TRANSMITTAL

Date: 3/2/00
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To: ~~[redacted]~~ Don Huang
Phone:
Fax: (510) 337-9335
cc:

From: Gene Ng
Sent From: Lafayette
SCI Job #: 1039.007
Re: 327 34th St.

REMARKS: ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please comment
☐ For your use ☐ Original in mail ☒ As requested

Don -

Here's a draft copy of the Quarterly groundwater monitoring report and Scope of Work for Additional Plume Characterization.

Please call if there are any questions.

-Gene Ng

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301 River Street ■ Suite 9 ■ Napa, California 94559-3416 ■ (707) 257-6993 ■ Fax (707) 257-6995

Subsurface Consultants, Inc.

February 7, 2000
SCI 1039.007

Mr. Tom Peacock
Senior Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Groundwater Monitoring Report and Scope of Work for Additional Plume Characterization
327 34th Street
Oakland, California

Dear Mr. Peacock:

This letter records the results of the December 1999 groundwater monitoring and quarterly free product removal events performed by Subsurface Consultants, Inc. (SCI) at 327 34th Street in Oakland, California. The location of the property, herein referred to as the Site, is shown on the Vicinity Map, Plate 1. The Site configuration is shown on the Site Plan, Plate 2. In addition, this letter presents the scope for additional plume characterization work as requested by Alameda County Health Care Services Agency (ACHCSA).

BACKGROUND

On March 4 and 5, 1993, one 1,000-gallon underground storage tank (UST) containing unleaded gasoline and one 1,000-gallon UST containing waste oil were removed by KTW & Associates/ Subsurface Environmental Corporation under the direction ACHCSA. Results of chemical analyses on soil samples collected beneath the ends of the gasoline UST indicated impacts by total petroleum hydrocarbons (TPH) as gasoline, and toluene, ethylbenzene, and xylenes. Soil samples from the waste oil UST excavation showed only relatively low concentrations of TPH as diesel, ethylbenzene, and xylenes.

GeoPlexus, Inc. conducted a soil and groundwater investigation in 1993 to assess petroleum hydrocarbon impacts to groundwater. GeoPlexus, Inc. installed three groundwater monitoring wells (MW-1 through MW-3, see Plate 2). Analytical testing of soil and groundwater samples from the wells identified impacts from gasoline-range hydrocarbons at two of the wells (MW-2

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and MW-3) located downgradient of the former gasoline UST. Approximately 1/4 inch of free product was observed in well MW-3. The product was reportedly gasoline.

SCI was retained in September 1997 to evaluate the presence of free floating and dissolved phase petroleum hydrocarbons in existing wells MW-1 through MW-3. SCI installed two additional wells, MW-4 and MW-5, in June 1998. Results of the June 1998 subsurface investigation were presented in the Report of Groundwater Monitoring Activities and Additional Subsurface Investigation, dated November 17, 1998. Quarterly groundwater monitoring of the 5 onsite wells was performed by SCI from June 1998 to January 1999. In March 1999, SCI petitioned the ACHCSA to allow a reduction in the testing and sampling program. In May 1999 the ACHCSA verbally approved modifying the monitoring program to include semi-annual sampling of all the wells and free product removal on a quarterly basis.

Ms. Juliet Shin of ACHCSA contacted SCI in November 1999 regarding the status of Site monitoring. Ms. Shin issued a letter dated November 8, 1999 requesting the continuation of groundwater monitoring, and the preparation of a work plan to (1) further characterize the downgradient extent of the contaminant plume, and to (2) evaluate the likelihood of contaminant plume migration via an existing concrete box culvert which has been shown on historic maps of the area to transect the east side of the Site. The approximate location of the concrete box culvert is shown on Plate 2.

MONITORING ACTIVITIES

Quarterly Free Product Removal

On December 15, 1999, Site wells were checked for free floating product. Free floating product was found in wells MW-2 and MW-3 at thicknesses of 0.025 feet (3/10") and 0.0083 feet (1/10"), respectively. Approximately 3 gallons of water/product mixture were bailed from each of these two wells with new disposable bailers until visible free product was no longer observed in the purge water. The water/product mixture was placed in a labeled 55-gallon steel drum and left onsite for later disposal. No free product was observed in wells MW-1, MW-4, or MW-5.

Groundwater Monitoring Event

On December 15 and 16, 1999, the semi-annual monitoring event was performed. Depth-to-water was measured in all Site wells concurrent with checking the wells for the presence of free product. Groundwater elevation data and free product data are summarized in Table 1. Wells which did not contain free product (MW-1, MW-4, and MW-5) were then purged by removing water with new disposable bailers until measurements of pH, temperature, and conductivity had stabilized. After the wells recharged to within 80 percent of their initial level, they were sampled

with new disposable bailers. Purge water was placed in labeled 55-gallon steel drums and left onsite for later disposal.

Groundwater samples were decanted into pre-cleaned containers, placed in ice-filled coolers, and remained iced until delivery to the analytical laboratory. Chain-of-custody documentation accompanied the samples to the laboratory.

CHEMICAL ANALYSES

Curtis & Tompkins, Ltd., a state-certified chemical testing laboratory, performed chemical analyses on groundwater samples. Samples were analyzed using the following methods:

Analysis	Sample Preparation Method	Analysis Method
Total Volatile Hydrocarbons as gasoline (TVHg)	EPA 5030	EPA 8015m
Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)	EPA 5030	EPA 8021b
Methyl Tertiary Butyl Ether (MtBE)	EPA 5030	EPA 8260b

Groundwater analytical test results are summarized in Table 2. Field and laboratory measurements of various bioparameters are summarized in Table 3. Field measurement and sampling forms, analytical test reports, and chain-of-custody documents are attached.

DISCUSSION OF RESULTS

Groundwater Gradient and Flow Direction

The gradient near wells MW-1, MW-2, MW-3, and MW-4 is relatively flat with a 0.17-foot difference in elevation among the four points. Well MW-5, located approximately 100 feet southwest of these wells, has a groundwater surface elevation about 2 feet lower than those of wells MW-1 through MW-4, which would infer a flow direction to the southwest. However, we do not believe that the direction of groundwater flow can be estimated based solely on this data. Studies conducted by SCI at other sites in the area suggest that the regional groundwater flow direction in the Site vicinity is easterly. Moreover, the change in topography from Pill Hill to Glen Echo Creek, located approximately 700 feet east of the Site, also suggests the groundwater flow direction is toward the east-southeast. Finally, a review of the analytical data for petroleum hydrocarbons shows a decreasing trend to the east from the source area (MW-2) to MW-4. Accordingly, given the apparent preferential transport of petroleum hydrocarbons in groundwater

and the absence of petroleum hydrocarbons in wells MW-1 and MW-5, it is our professional opinion that groundwater likely moves from the Site in an easterly or east-southeasterly direction. Contour lines have not been presented, as we believe they would misrepresent the flow direction. Additional wells would be required to better define groundwater flow at the Site.

Free Product

Historically, free product has been detected in wells MW-2 and MW-3. Free product was measured in these wells during this event at thicknesses of 3/10" and 1/10", respectively. Historical data indicate that free product thickness in MW-2 and MW-3 have fluctuated over time.

Groundwater Test Results

Wells MW-2 and MW-3 contained free product, and as a result were not sampled for chemical testing. Other than 5.8 micrograms per liter (ug/L) of benzene and 1,400 ug/L of MtBE detected in groundwater sample MW-4, no TVHg, TEHd, BTEX, or MtBE were detected in samples from MW-1, MW-4, and MW-5.

Field measurements indicate groundwater DO levels ranging from 1.75 to 3.31 milligrams per liter (mg/L), which are lower than those observed in January 1999 (Table 3). Measured pH levels ranged from 6.52 to 7.19, which are similar to those measured during previous events.

CONCLUSIONS

Based on the data generated to date, the contaminant plume appears relatively stable. Free product measurements are similar to those observed in December 1998. Seasonal fluctuation in groundwater levels mobilizes and allows the accumulation of free product in wells MW-2 and MW-3 in the vicinity of the UST release.

Previous investigations have indicated that no hydrocarbons were detected in capillary fringe soil samples from the boring for well MW-4. This finding may explain the continued decreasing TVHg and BTEX concentrations in groundwater sampled from MW-4.

MtBE concentrations have not significantly changed since testing began in October 1997. The MtBE plume characteristically extends in front of the gasoline plume.

DO readings measured at the Site appear to be high enough to support aerobic degradation. These readings are lower than those observed in January 1999, suggesting that aerobic microbes may be depleting DO levels. In addition, DO levels in MW-4, where benzene was detected, appear to be

depleted relative to those of MW-1 and MW-5, where no gasoline constituent hydrocarbons were detected. It therefore appears likely that aerobic degradation of gasoline constituent hydrocarbons is occurring at the Site.

ONGOING MONITORING

In accordance with the current monitoring program, the next quarterly free product removal event will be conducted during the month of March 2000. The next semi-annual monitoring event and sequential quarterly free product removal event will be conducted during the month of June 2000.

SCOPE OF ADDITIONAL SITE CHARACTERIZATION

As required by ACHCSA in their letter date November 8, 1999, the proposed scope of additional site characterization will include (1) conducting research and investigation regarding the presence of a buried culvert beneath the east side of the Site, and (2) installing two additional monitoring wells to further evaluate the downgradient extent of the plume. SCI will contact Underground Service Alert to initially mark the location of the culvert as it crosses below 34th Street. A site visit will be conducted to confirm the location of manholes and drop inlets associated with the buried culvert as shown on historic maps. The location of the manholes and drop inlets will be measured relative to the existing buildings and the field investigation Site Plan will be modified, as necessary. The depth to the flow line of the culvert will be measured and compared to the change in groundwater depths across the Site. The flow line depth data will be used to determine whether there is exfiltration from the culvert or infiltration into the culvert.

Once the culvert is appropriately located, two new wells will be installed, one on either side of the culvert as schematically shown on Plate 2. Actual locations of the wells will be dependent on the layout and usage of the dealer lot. Locations that result in the least amount of disturbance will be selected. Prior to well installation, permits will be obtained from Alameda County Zone 7. The monitoring wells will be constructed inside 8-inch diameter borings drilled with hollow-stem auger equipment. The wells will be comprised of 20 feet of 2-inch-diameter machine-slotted (0.020-inch), threaded to an upper 15 feet of 2-inch-diameter blank Schedule 40 PVC casing. The annular space between the casing and the boring will be backfilled with No. 3 Lonestar sand to approximately 1.5 feet above the top of the well screen. A 1-foot layer of bentonite pellets will be placed on top of the sand pack, and the remainder of the annular space will be backfilled with cement. The top of the well will be secured with a water-tight locking cap, and housed within a flush-mounted traffic-rated well box.

The new wells will be developed by bailing, or by using a surge block, until the water is relatively free of turbidity. Once the wells recharge, they will be sampled using disposable plastic bailers. The well samples and up to 3 soil samples from each well boring will be submitted to Curtis & Tompkins for analytical testing. The samples will be analyzed for TVHg, BTEX and MTBE. The new wells will also be sampled during subsequent semi-annual monitoring events.

The results of the culvert research and well installation will be summarized in a written report. The report will include an updated site plan, tabulated chemical data, analytical test reports and chain-of-custody documents.

PETITION OF WORK PLAN APPROVAL

The responsible party, Strough Family Trust, is eager to pursue eventual closure of the Site. To this end we believe that the scope of additional site characterization study proposed herein, is reasonable and necessary to further our understanding of the contaminant plume. Please provide a letter of approval and/or comment regarding the scope of work described herein at your earliest convenience.

Yours very truly,

Subsurface Consultants, Inc.

Gene Y. Ng
Staff Engineer

Jeriann N. Alexander, PE, REA
Civil Engineer 40469 (expires 3/31/03)
Registered Environmental Assessor 03130 (expires 6/30/00)

GYN:JNA:rm 1039.007\qtr1299.doc

Attachments:

Table 1 - Groundwater and Free Product Elevation Data
Table 2 - Summary of Petroleum Hydrocarbon Concentrations in Groundwater
Table 3 - Summary of Bioparameter Data
Plate 1 - Vicinity Map
Plate 2 - Site Plan
Field Measurement and Sampling Forms - December 1999
Analytical Test Reports
Chain-of-Custody Documents

cc: Strough Family Trust of 1983
c/o Mr. Don Strough
2 Sea View Avenue
Piedmont, California 94611

Mr. Jonathan Redding, Esq.
Wendel, Rosen, Black & Dean, LLP
1111 Broadway, 24th Floor
Oakland, California 94612

TABLE 1
GROUNDWATER AND FREE PRODUCT ELEVATION DATA
327 34TH STREET
OAKLAND, CALIFORNIA

Monitoring Well	Date	Elevation[1]	Depth to Groundwater (feet)	Product Thickness (feet)	Groundwater Elevation (feet)	Product Elevation (feet)
MW-1	7/27/93	100.00	20.79[2]	NA	79.21	NA
	10/2/97		21.22	--	78.78	--
	6/30/98		18.21	--	81.79	--
	7/29/98		18.74	--	81.26	--
	8/26/98		19.28	--	80.72	--
	10/1/98		19.93	--	80.07	--
	10/30/98		20.22	--	79.78	--
	11/30/98		19.99	--	80.01	--
	12/28/98		19.81	--	80.19	--
	1/25/99		19.62	--	80.38	--
	2/26/99		17.18	--	82.82	--
	12/15/99		21.01	--	78.99	--
MW-2	7/27/93	101.27	22.10[2]	NA	79.17	NA
	10/2/97		22.91	0.43	78.36	78.79
	6/30/98		19.69	0.45	81.58	82.03
	7/29/98		20.11	0.29	81.16	81.45
	8/26/98		20.54	0.08	80.73	80.81
	10/1/98		21.52	0.42	79.75	80.17
	10/30/98		21.54	0.10	79.73	79.83
	11/30/98		21.21	0.04	80.06	80.10
	12/28/98		21.10	0.02	80.17	80.19
	1/25/99		20.80	0.01	80.47	80.48
	2/26/99		18.00	sheen	83.27	--
	12/15/99		22.42	0.025	78.85	78.88
MW-3	7/27/93	101.29	22.28[2]	0.02	79.01	79.03
	10/2/97		22.71	0.03	78.58	78.61
	6/30/98		19.47	--	81.82	--
	7/29/98		20.01	--	81.28	--
	8/26/98		20.62	--	80.67	--
	10/1/98		21.33	--	79.96	--
	10/30/98		21.62	--	79.67	--
	11/30/98		21.31	--	79.98	--
	12/28/98		21.15	0.06	80.14	80.20

TABLE 1
GROUNDWATER AND FREE PRODUCT ELEVATION DATA
327 34TH STREET
OAKLAND, CALIFORNIA

Monitoring Well	Date	Elevation[1]	Depth to Groundwater (feet)	Product Thickness (feet)	Groundwater Elevation (feet)	Product Elevation (feet)
MW-3	1/25/99		20.79	--	80.50	--
(cont.)	2/26/99		18.02	--	83.27	--
	12/15/99		22.43	0.0083	78.86	78.87
MW-4	6/30/98	98.65	16.93	--	81.72	--
	7/29/98		17.48	--	81.17	--
	8/26/98		18.65	--	80.00	--
	10/1/98		18.74	--	79.91	--
	10/30/98		19.02	--	79.63	--
	11/30/98		18.74	--	79.91	--
	12/28/98		18.60	--	80.05	--
	1/25/99		18.32	--	80.33	--
	2/26/99		15.81	--	82.84	--
	12/15/99		19.83	--	78.82	--
MW-5	6/30/98	100.9	20.60	--	80.30	--
	7/29/98		21.52	--	79.38	--
	8/26/98		22.21	--	78.69	--
	10/1/98		22.95	--	77.95	--
	10/30/98		23.23	--	77.67	--
	11/30/98		23.13	--	77.77	--
	12/28/98		23.18	--	77.72	--
	1/25/99		22.61	--	78.29	--
	2/26/99		19.78	--	81.12	--
	12/15/99		24.19	--	76.71	--

[1] Elevations are referenced to monitoring well MW-1, with an assumed datum of 100.00 feet.

[2] Measurements by others

-- Product not observed

NA = Data not available

TABLE 2
SUMMARY OF PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUNDWATER
327 34TH STREET
OAKLAND, CALIFORNIA

Location	Date	Groundwater Elevation† (feet)	TVHg (µg/L)	TEHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Oil & Grease (mg/L)
MW-1	7/27/93	79.21	<50	<50	<0.5	<0.5	<0.5	<0.5	--	<5
	10/2/97	78.78	<50	--	<0.5	<0.5	<0.5	<0.5	<2	--
	6/30/98	81.79	84	--	<0.5	<0.5	2.1	0.55	2.1	--
	10/1/98	80.07	<50	--	<1.0	<1.0	<1.0	<1.0	<2.0	--
	1/25/99	80.38	<50	--	<1.0	<1.0	<1.0	<1.0	<2.0	--
	12/16/99	78.99	<50	--	<0.50	<0.50	<0.50	<0.50	<0.50	--
MW-2	7/27/93	79.17	120,000	--	10,000	27,000	2,900	20,000	--	--
	10/2/97	78.36	*	--	*	*	*	*	*	*
	6/30/98	81.58	72,000	--	7,300	18,000	2,500	15,600	5,500	--
	10/1/98	79.75	84,000	--	6,400	17,000	2,600	17,000	2,000	--
	1/25/99	80.48	130,000	--	9,000	26,000	3,800	27,500	5,800	--
	12/16/99	78.85	*	--	*	*	*	*	*	--
MW-3	7/27/93	79.01	330,000	--	9,100	24,000	5,300	33,000	--	--
	10/2/97	78.58	36,000	--	4,200	11,000	1,800	10,600	3,500	--
	6/30/98	81.82	51,000	--	4,800	11,000	1,200	7,100	3,900	--
	10/1/98	79.96	38,000	--	3,900	8,500	1,200	6,000	2,300	--
	1/25/99	80.50	51,000	--	4,000	10,000	1,200	6,700	2,900	--
	12/16/99	78.86	*	--	*	*	*	*	*	--
MW-4	6/30/98	81.72	10,000	--	2,200	930	850	2,100	1,800	--
	10/1/98	79.91	1,100	--	570	46	130	36	1,300	--
	1/26/99	80.33	290	--	230	<8.3	<8.3	<8.3	1,300	--
	12/16/99	78.82	<50	--	5.8	<0.50	<0.50	<0.50	1,400	--

TABLE 2
SUMMARY OF PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUNDWATER
327 34TH STREET
OAKLAND, CALIFORNIA

Location	Date	Groundwater Elevation† (feet)	TVHg (µg/L)	TEHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Oil & Grease (mg/L)
MW-5	6/30/98	78.69	<50	--	<0.5	<0.5	<0.5	<0.5	23	--
	10/1/98	77.95	<50	--	<1.0	<1.0	<1.0	<1.0	<2.0	--
	1/26/99	78.29	<50	--	<1.0	<1.0	<1.0	<1.0	<2.0	--
	12/16/99	76.71	<50	--	<0.50	<0.50	<0.50	<0.50	<0.50	--

NOTES:
TVHg = Total Volatile Hydrocarbons as gasoline
TEHd = Total Extractable Hydrocarbons as diesel
MtBE= Methyl Tertiary Butyl Ether
-- = Not analyzed
mg/L = milligrams per liter
µg/L = micrograms per liter
<50 = not detected at or above listed analytical reporting limit
* = This sample contained free-product and was not analyzed.
†= Arbitrary datum (see Table 1)

TABLE 3
SUMMARY OF BIOPARAMETER DATA
327 34TH STREET
OAKLAND, CALIFORNIA

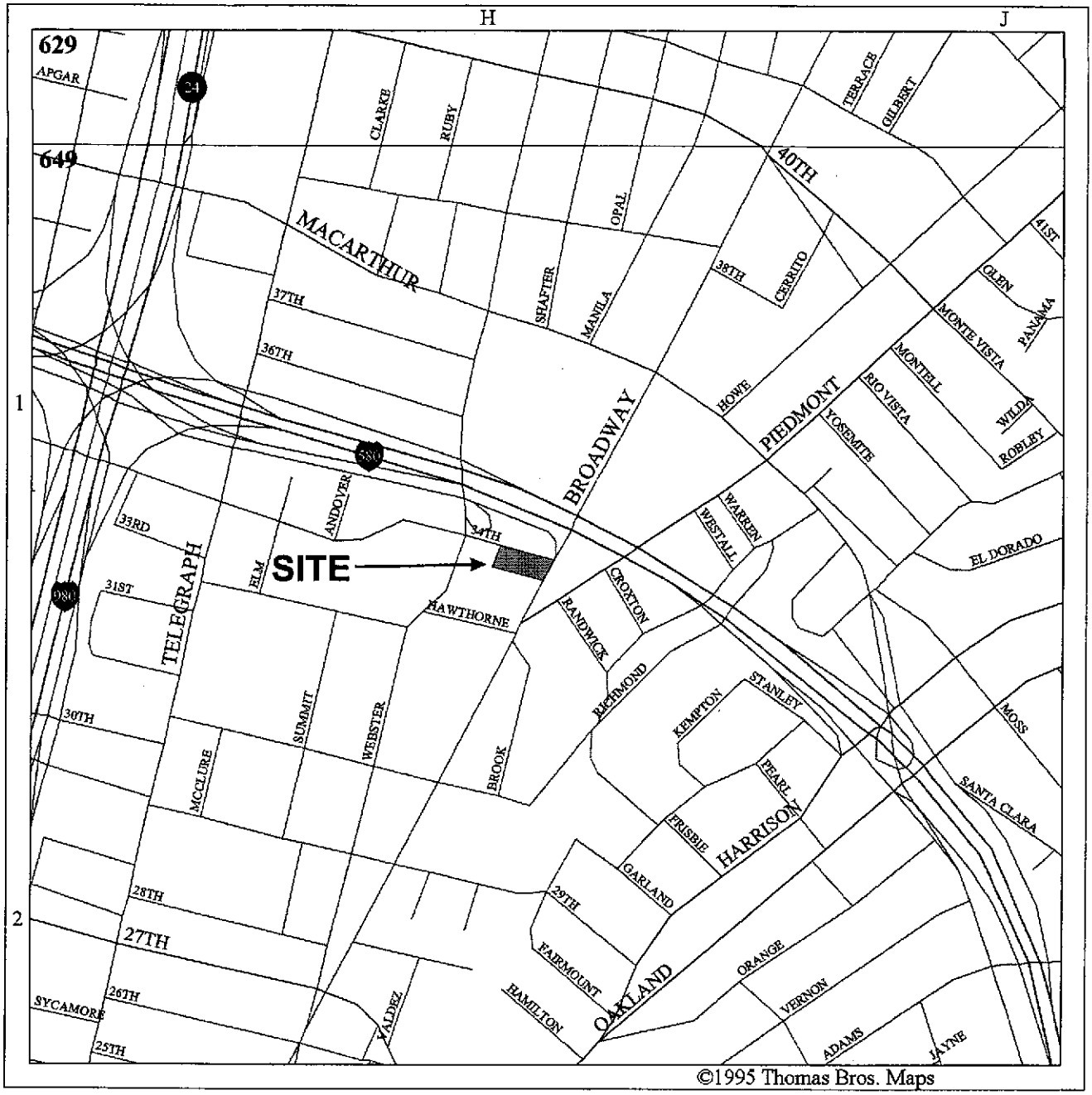
Location	Date	CO_2 Field (mg/L)	DO Field (mg/L)	DO Laboratory (mg/L)	pH Field (mg/L)	pH Laboratory (mg/L)
MW-1	6/30/98	204	5	5.1	6.16	6.4
	10/1/98	192	3.6	--	6.49	--
	1/25/99	--	3.4	--	6.72	--
	12/15/99	--	3.31	--	6.52	--
MW-2	6/30/98	185	2.2	--	5.98	--
	10/1/98	230	2.7	--	6.47	--
	1/25/99	386	0.3	--	6.69	--
	12/15/99	--	*	--	*	--
MW-3	6/30/98	300	2.2	3.2	6.03	6.6
	10/1/98	240	2.1	--	6.65	--
	1/25/99	238	1.2	--	7.01	--
	12/15/99	--	*	--	*	--
MW-4	6/30/98	222	2.6	3.5	6.18	6.6
	10/1/98	320	3.4	--	6.71	--
	1/26/99	475	6.7	--	7.00	--
	12/15/99	--	1.75	--	7.02	--
MW-5	6/30/98	220	4.3	--	6.1	--
	10/1/98	256	4.8	--	6.71	--
	1/26/99	305	9.7	--	7.04	--
	12/15/99	--	2.72	--	7.19	--

NOTES:

mg/L = milligrams per liter

-- = test not requested

* = This sample contained free-product and was not analyzed.



N

APPROXIMATE SCALE (feet)

0 800 1600

VICINITY MAP

Subsurface Consultants, Inc.
Geotechnical & Environmental Engineers

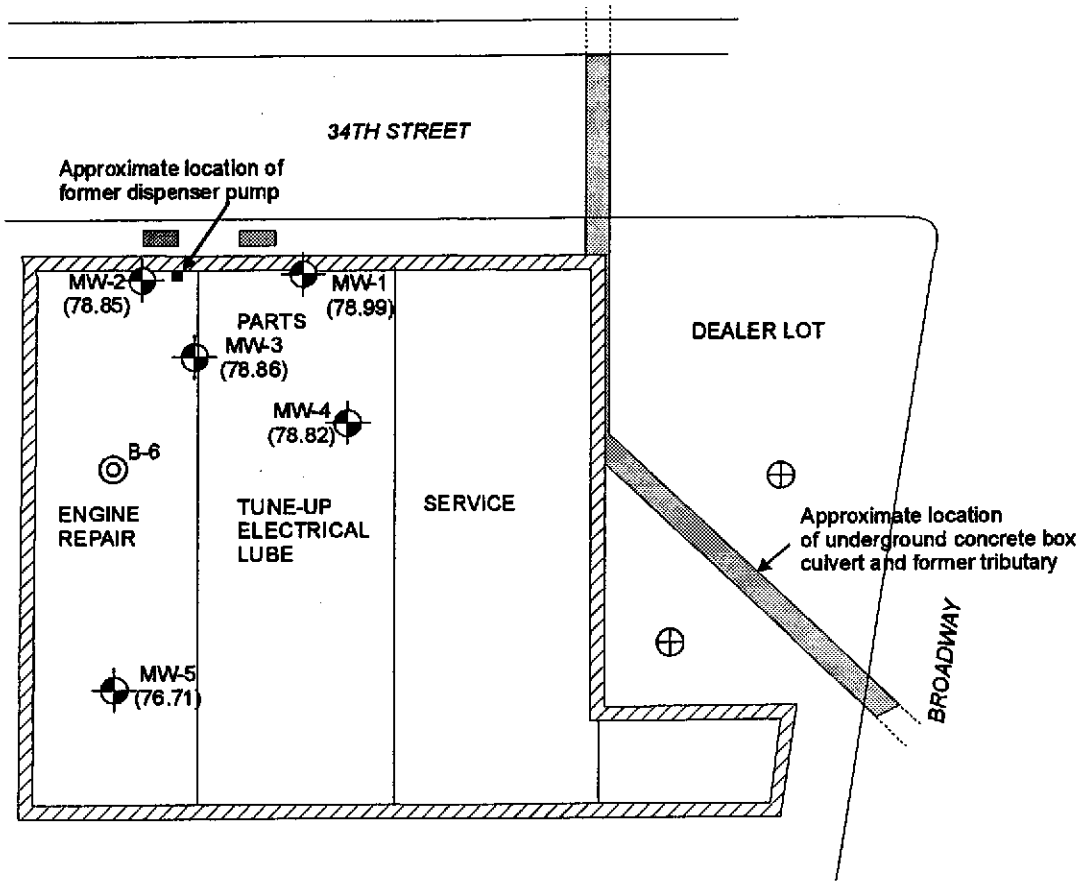
327 34TH STREET
OAKLAND, CALIFORNIA

JOB NUMBER	DATE	APPROVED
1039.007	2/00	GN

PLATE 1

LEGEND

- Limits of site structures
- Monitoring well location
- (81.58) Groundwater elevation (12/15/99)
- Proposed monitoring well location*
- Boring location
- Approximate location of former underground storage tank



* Scematic locations only: More precise locations will be determined based on consultation with appropriate representatives of facility.

N

APPROXIMATE SCALE (feet)

0 60 120

SITE PLAN

Subsurface Consultants, Inc.
Geotechnical & Environmental Engineers

327 34TH STREET
OAKLAND, CALIFORNIA

JOB NUMBER	DATE	APPROVED
1039.007	2/00	GN

PLATE 2

GROUNDWATER DEPTHS

Project Name: 327 34th Street

Job No.: 1039.007

Measured by: Stu Dalie

Well	Date	Time	Groundwater Depth (feet)	Comments
MW-1	12/15/99	11:00	21.01	No oder no product
* MW-2		11:15	22.42	very strong hydrocarbon oder 3/10" product
* MW-3		11:45	22.43	very strong hydrocarbon oder 1/10" product
MW-4		12:15	19.83	No oder, no product
MW-5		1:30	24.19	No oder, no product

WELL SAMPLING FORM

Project Name: 327 34th Street
Well Number: MW-1
Job No.: 1039.007
Well Casing Diameter: 2 inch
Sampled By: Shu Dai (SD)
Date: 12/16/99
TOC Elevation: —
Weather: (indoors)

Depth to Casing Bottom (below TOC) 32.00 feet
Depth to Groundwater (below TOC) 21.01 feet
Feet of Water in Well 10.99 feet
Depth to Groundwater When 80% Recovered 23.21 feet
Casing Volume (feet of water x Casing DIA ² x 0.0408) 5.38 gallons
Depth Measurement Method Tape & Paste / Electronic Sounder / Other
Free Product No
Purge Method disposable bailer
YSI-600 XL multi-parameter meter

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	ORP / DO ~~Salinity~~ %	Comments
@ downhole	6.37	19.9	1570.0	3.31	clear no odor
1.5	6.41	18.8	1,501.0	3.01	" "
3.5	6.51	18.7	1,211.0	2.22	" "
5.5	6.52	18.4	1,110.0	2.11	clear no odor

Total Gallons Purged 5.5 gal gallons
Depth to Groundwater Before Sampling (below TOC) 20.89 feet
Sampling Method disposable bailer
Containers Used 4 VOA HCl (40 ml) 2 1 L Ambers (liter) (pint)
TVHg 8015 M
BTEX 8021
MTBE 8260

Subsurface Consultants

JOB NUMBER 1039.007
DATE 12/16/99
APPROVED
PLATE

WELL SAMPLING FORM

Project Name: 327 34th Street
Well Number: MW-4
Job No.: 1039.007
Well Casing Diameter: 2 inch
Sampled By: Shu Dai (SCI)
Date: 12/16/99
TOC Elevation: —
Weather: (indoors)

Depth to Casing Bottom (below TOC) 31.00 feet
Depth to Groundwater (below TOC) 19.83 feet
Feet of Water in Well 11.17 feet
Depth to Groundwater When 80% Recovered 22.07 feet
Casing Volume (feet of water x Casing DIA ^{2} x 0.0408) 5.46 gallons
Depth Measurement Method Tape & Paste / Electronic Sounder / Other
Free Product No
Purge Method disposable bailer
YSI-600 XL multi-parameter meter

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°c)	Conductivity (micromhos/cm) / ORP / DO	~~Salinity~~ %	Comments
0 downhole	6.59	19.65	680.0	1.75	clear, weak odor
1.5	6.66	19.81	700.0	1.69	yellowish white turbid
3.5	6.95	20.01	1100	1.71	yellow, slight odor, turbid
5.5	7.02	20.05	722.0	1.68	slight sheen!

Total Gallons Purged 5.5 gal gallons
Depth to Groundwater Before Sampling (below TOC) 20.01 feet
Sampling Method disposable Bailer
Containers Used 4 VOA HCl (40 ml) 2 1 L Ambers (liter) pint

TVHg 8015 M
BTEX 8021
MTBE 8260

Subsurface Consultants

JOB NUMBER 1039.007 DATE 12/16/99 APPROVED

PLATE

WELL SAMPLING FORM

Project Name: 327 34th Street
Well Number: MW-5
Job No.: 1039.007
Well Casing Diameter: 2 inch
Sampled By: Stu Dalziel (SCI)
Date: 12/16/99
TOC Elevation: —
Weather: (indoors)

Depth to Casing Bottom (below TOC) 31.00 feet
Depth to Groundwater (below TOC) 24.19 feet
Feet of Water in Well 6.81 feet
Depth to Groundwater When 80% Recovered 25.60 feet
Casing Volume (feet of water x Casing DIA ² x 0.0408) 3.33 gallons
Depth Measurement Method (Tape & Paste) / (Electronic Sounder) / Other
Free Product No
Purge Method disposable bailer
YSI-600 XL multi-parameter meter

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°c)	Conductivity (micromhos/cm)	~~Salinity~~ ORP / DO	Comments
Ø downhole	7.54	18.65	311.0	2.70	clear no odor
1	7.41	18.92	325.0	3.71	cleary
2	7.33	19.01	355.0	2.59	" no odor
3	7.19	19.07	372.0	2.68	yellowish cloudy slight petroleum odor

Total Gallons Purged 3 gal gallons
Depth to Groundwater Before Sampling (below TOC) 25.15 feet
Sampling Method disposable bailer
Containers Used 4 VOA HCl (40 ml) 2 1 L Ambers (liter) pint
TVHg 8015 M
BTEX 8021
MTBE 8260

Subsurface Consultants	JOB NUMBER 1039.007	DATE 12/16/99	APPROVED	PLATE

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900, Fax (510) 486-0532

A N A L Y T I C A L R E P O R T

Prepared for:

Subsurface Consultants
3736 Mt. Diablo Blvd.
Suite 200
Lafayette, CA 94549

Date: 10-JAN-00
Lab Job Number: 143064
Project ID: 1039.007
Location: 327 34th St.

Reviewed by:

Reviewed by:

CHAIN OF CUSTODY FORM

1430864

PAGE 1 OF 1

PROJECT NAME: 327 54th Street

JOB NUMBER: 1039.007

PROJECT CONTACT: Gene Ng

SAMPLED BY: Stu Dalie

LAB: C&T

TURNAROUND: Standard

REQUESTED BY: Stu Dalie

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX: WATER	SOIL	WASTE	AIR			CONTAINERS: VOA	LITER	PINT	TUBE			METHOD PRESERVED: HCL	H_2SO_4	HNO_3	ICE	NONE	SAMPLING DATE: MONTH	DAY	YEAR	TIME	NOTES	ANALYSIS REQUESTED: TVH (8015M)	BTEX (8021)	MTBE (8260)
1	MW-1	X						X	X					X			X	X	12	16	99	1006		X	X	X
2	MW-4	X						X	X					X			X	X	12	16	99	1108		X	X	X
3	MW-5	X						X	X					X			X	X	12	16	99	1208		X	X	X

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
[signature]	12/6/99 1245	[signature]	12-6-99 1247
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME

COMMENTS & NOTES:

Subsurface Consultants, Inc.
171 - 12th Street, Suite 202, Oakland, CA 94607
(510) 268-0461 - FAX: (510) 268-0137
3736 Mt. Diablo Blvd., Ste. 200, Lafayette, CA 94549
(925) 299-7960 - (925) 299-7970

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8015M
Project#:	1039.007	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	16-DEC-1999
Units:	ug/L	Received:	16-DEC-1999
Diln Fac:	1.000	Prepared:	17-DEC-1999
Batch#:	52707	Analyzed:	18-DEC-1999

Field ID: MW-1 Lab ID: 143064-001
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene	106	53-150
Bromofluorobenzene	112	53-149

Field ID: MW-4 Lab ID: 143064-002
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene	108	53-150
Bromofluorobenzene	113	53-149

Field ID: MW-5 Lab ID: 143064-003
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene	109	53-150
Bromofluorobenzene	114	53-149

Type: BLANK Lab ID: QC103844

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene	108	53-150
Bromofluorobenzene	107	53-149

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8015M
Project#:	1039.007	Prep Method:	EPA 5030
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC103842	Batch#:	52707
Matrix:	Water	Prepared:	17-DEC-1999
Units:	ug/L	Analyzed:	18-DEC-1999

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,071	104	77-117

Surrogate	%REC	Limits
Trifluorotoluene	130	53-150
Bromofluorobenzene	118	53-149

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8015M
Project#:	1039.007	Prep Method:	EPA 5030
Field ID:	ZZZZZZZZZZ	Batch#:	52707
MSS Lab ID:	143084-001	Sampled:	16-DEC-1999
Matrix:	Water	Received:	17-DEC-1999
Units:	ug/L	Prepared:	17-DEC-1999
Diln Fac:	1.000	Analyzed:	18-DEC-1999

Type: MS Lab ID: QC103845

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<50.00	2,000	1,516	76	69-131

Surrogate	%REC	Limits
Trifluorotoluene	130	53-150
Bromofluorobenzene	120	53-149

Type: MSD Lab ID: QC103846

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,609	80	69-131	6	13

Surrogate	%REC	Limits
Trifluorotoluene	132	53-150
Bromofluorobenzene	122	53-149

RPD= Relative Percent Difference

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BTXE Compounds by GC/PID

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8021B
Project#:	1039.007	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	16-DEC-1999
Units:	ug/L	Received:	16-DEC-1999
Diln Fac:	1.000	Prepared:	17-DEC-1999
Batch#:	52707	Analyzed:	18-DEC-1999

Field ID: MW-1 Lab ID: 143064-001
Type: SAMPLE

Analyte	Result	RL
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene	111	51-143
Bromofluorobenzene	116	37-146

Field ID: MW-4 Lab ID: 143064-002
Type: SAMPLE

Analyte	Result	RL
Benzene	5.8	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene	115	51-143
Bromofluorobenzene	119	37-146

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

BTXE Compounds by GC/PID

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8021B
Project#:	1039.007	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	16-DEC-1999
Units:	ug/L	Received:	16-DEC-1999
Diln Fac:	1.000	Prepared:	17-DEC-1999
Batch#:	52707	Analyzed:	18-DEC-1999

Field ID: MW-5 Lab ID: 143064-003
Type: SAMPLE

Analyte	Result	RL
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene	115	51-143
Bromofluorobenzene	120	37-146

Type: BLANK Lab ID: QC103844

Analyte	Result	RL
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene	112	51-143
Bromofluorobenzene	115	37-146

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

BTXE Compounds by GC/PID

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8021B
Project#:	1039.007	Prep Method:	EPA 5030
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC103843	Batch#:	52707
Matrix:	Water	Prepared:	17-DEC-1999
Units:	ug/L	Analyzed:	18-DEC-1999

Analyte	Spiked	Result	%REC	Limits
Benzene	20.00	17.11	86	65-111
Toluene	20.00	16.90	85	76-117
Ethylbenzene	20.00	17.89	89	71-121
m,p-Xylenes	40.00	37.15	93	80-123
o-Xylene	20.00	18.10	91	75-127

Surrogate	%REC	Limits
Trifluorotoluene	114	51-143
Bromofluorobenzene	116	37-146

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Purgeable Aromatics by GC/MS

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	1039.007	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	16-DEC-1999
Units:	ug/L	Received:	16-DEC-1999

Field ID:	MW-1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	52720
Lab ID:	143064-001	Analyzed:	21-DEC-1999

Analyte	Result	RL
MTBE	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	67-140
1,2-Dichloroethane-d4	104	80-129
Toluene-d8	103	88-111
Bromofluorobenzene	98	76-128

Field ID:	MW-4	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	52778
Lab ID:	143064-002	Analyzed:	22-DEC-1999

Analyte	Result	RL
MTBE	1,400	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	105	67-140
1,2-Dichloroethane-d4	102	80-129
Toluene-d8	102	88-111
Bromofluorobenzene	101	76-128

Field ID:	MW-5	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	52778
Lab ID:	143064-003	Analyzed:	22-DEC-1999

Analyte	Result	RL
MTBE	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	104	67-140
1,2-Dichloroethane-d4	103	80-129
Toluene-d8	103	88-111
Bromofluorobenzene	99	76-128

Type:	BLANK	Batch#:	52720
Lab ID:	QC103895	Analyzed:	20-DEC-1999
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	67-140
1,2-Dichloroethane-d4	102	80-129
Toluene-d8	101	88-111
Bromofluorobenzene	99	76-128

ND = Not Detected
RL = Reporting Limit

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Purgeable Aromatics by GC/MS

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	1039.007	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	16-DEC-1999
Units:	ug/L	Received:	16-DEC-1999

Type: BLANK
Lab ID: QC103896
Diln Fac: 1.000
Batch#: 52720
Analyzed: 20-DEC-1999

Analyte	Result	RL
MTBE	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	67-140
1,2-Dichloroethane-d4	103	80-129
Toluene-d8	102	88-111
Bromofluorobenzene	101	76-128

Type: BLANK
Lab ID: QC104131
Diln Fac: 1.000
Batch#: 52778
Analyzed: 22-DEC-1999

Analyte	Result	RL
MTBE	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	104	67-140
1,2-Dichloroethane-d4	104	80-129
Toluene-d8	104	88-111
Bromofluorobenzene	97	76-128

Type: BLANK
Lab ID: QC104132
Diln Fac: 1.000
Batch#: 52778
Analyzed: 22-DEC-1999

Analyte	Result	RL
MTBE	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	105	67-140
1,2-Dichloroethane-d4	103	80-129
Toluene-d8	105	88-111
Bromofluorobenzene	99	76-128

ND = Not Detected
RL = Reporting Limit

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Purgeable Aromatics by GC/MS

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	1039.007	Prep Method:	EPA 5030
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC103894	Batch#:	52720
Matrix:	Water	Analyzed:	20-DEC-1999
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	51.75	104	62-115

Surrogate	%REC	Limits
Dibromofluoromethane	104	67-140
1,2-Dichloroethane-d4	103	80-129
Toluene-d8	103	88-111
Bromofluorobenzene	96	76-128

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Purgeable Aromatics by GC/MS

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	1039.007	Prep Method:	EPA 5030
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC104130	Batch#:	52778
Matrix:	Water	Analyzed:	22-DEC-1999
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	51.45	103	62-115

Surrogate	%REC	Limits
Dibromofluoromethane	104	67-140
1,2-Dichloroethane-d4	104	80-129
Toluene-d8	104	88-111
Bromofluorobenzene	97	76-128

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Purgeable Aromatics by GC/MS

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	1039.007	Prep Method:	EPA 5030
Field ID:	ZZZZZZZZZZ	Batch#:	52720
MSS Lab ID:	143028-001	Sampled:	10-DEC-1999
Matrix:	Water	Received:	10-DEC-1999
Units:	ug/L	Analyzed:	20-DEC-1999
Diln Fac:	1.000		

Type: MS Lab ID: QC103904

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.5000	50.00	50.52	101	62-115

Surrogate	%REC	Limits
Dibromofluoromethane	105	67-140
1,2-Dichloroethane-d4	102	80-129
Toluene-d8	102	88-111
Bromofluorobenzene	98	76-128

Type: MSD Lab ID: QC103905

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	49.83	100	62-115	1	15

Surrogate	%REC	Limits
Dibromofluoromethane	105	67-140
1,2-Dichloroethane-d4	102	80-129
Toluene-d8	102	88-111
Bromofluorobenzene	99	76-128

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	143064	Location:	327 34th St.
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	1039.007	Prep Method:	EPA 5030
Field ID:	ZZZZZZZZZZ	Batch#:	52778
MSS Lab ID:	143054-001	Sampled:	11-DEC-1999
Matrix:	Water	Received:	13-DEC-1999
Units:	ug/L	Analyzed:	22-DEC-1999
Diln Fac:	1.000		

Type: MS Lab ID: QC104146

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.5000	50.00	48.96	98	62-115

Surrogate	%REC	Limits
Dibromofluoromethane	104	67-140
1,2-Dichloroethane-d4	102	80-129
Toluene-d8	103	88-111
Bromofluorobenzene	97	76-128

Type: MSD Lab ID: QC104147

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	50.18	100	62-115	2	15

Surrogate	%REC	Limits
Dibromofluoromethane	104	67-140
1,2-Dichloroethane-d4	103	80-129
Toluene-d8	103	88-111
Bromofluorobenzene	97	76-128

RPD= Relative Percent Difference