DEPARTMENT OF ECOLOGY
NWRO/TCP TANK UNIT
Inc #2241
INTERIM CLEANUP REPORT ☑
SITE CHARACTERIZATION ☑
FINAL CLEANUP REPORT ☐
OTHER _____ ☐
AFFECTED MEDIA: SOIL ☑
OTHER _____ GW ☑
INSPECTOR (INIT.) RN DATE 1/29/94

REPORT OF PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT SR 522 and NE 180th STREET RIVERSIDE PROPERTY BOTHELL, WASHINGTON

September 18, 1992

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GROUNDWATER TECHNOLOGY

EXECUTIVE SUMMARY

Groundwater Technology, Inc. conducted a preliminary groundwater assessment at the property located near the intersection of State Route (SR) 522 and NE 180th Street in Bothell, Washington, known as the Riverside Property. The purpose of the investigation was to preliminarily assess the groundwater for the presence of substances regulated under the Model Toxics Control Act[1] (MTCA). Tasks performed during the assessment included: 1) drilling three soil borings to a depth of approximately 19 feet below grade (bg) at strategic locations; 2) drilling three soil borings to a depth of approximately 8.5 feet bg within five feet of the deeper borings; 3) collecting soil samples from the deeper soil borings at approximately 5-foot intervals; 4) installing six groundwater monitoring wells in the borings at the depth drilled; 5) gauging the depth to water in the wells on three occasions; 6) collecting groundwater samples from the three deep wells and from one shallow well; 7) performing quantitative chemical analyses on selected soil and groundwater samples; 8) surveying the relative wellhead elevations; 9) interpreting the information obtained; and 10) compiling and arranging the data for this report.

Observations and findings:

- Sediments observed underlying the site included interbedded sand silt and clay. A thin organic-rich clay zone was observed at approximately eight to nine feet bg in each of the deeper borings.

- Groundwater was encountered at approximately 8 feet bg during drilling. Water level measurements ranged from approximately 8 to 10 feet bg in the deeper monitoring wells during groundwater monitoring on July 15, 1992, and from approximately 9 to 10 feet bg during groundwater monitoring on August 24 and August 31, 1992.

- The apparent groundwater flow direction is toward the south and, based on observed data, is approximately 2 percent. The apparent groundwater flow direction may be influenced by the presence of the large excavation at the site.

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[1] Washington Department of Ecology (WAC 173-340)

- Benzene, toluene, ethylbenzene, and xylenes (BTEX), total petroleum hydrocarbons (TPH)-as-gasoline, TPH, metals and volatile organic compounds were not detected at concentrations above the Compliance Cleanup Levels (CCLs) in the soil samples analyzed.

- TPH was detected at its CCL in a groundwater sample from MW-1. Trichloroethene in groundwater was detected above the CCL in MW-3A. Lead was detected above the CCL for water in groundwater samples from MW-2, MW-3 and MW-3A.

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REPORT OF PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT SR 522 and NE 180th STREET RIVERSIDE PROPERTY BOTHELL, WASHINGTON

1.0 INTRODUCTION

This report presents the worksteps and results associated with preliminary subsurface investigation work conducted by Groundwater Technology, Inc. at the Riverside Property located at SR 522 and NE 180th Street, Bothell, Washington (See Figure 1, Site Location Map). The work was performed to assess the extent and concentration of gasoline hydrocarbons, total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semi-volatile organic compounds, polynuclear aromatics hydrocarbons (PAHs) and selected metals in groundwater and soil underlying the site. This investigation was conducted to preliminarily assess the site subsurface for the presence of the above compounds, which were regulated under the Washington Department of Ecology (WDOE) Model Toxics Control Act[2] (MTCA).

2.0 SCOPE OF WORK

The following outline summarizes the specific worksteps involved:

- Drilled and sampled three, 19 foot soil borings;
- Drilled three 8-foot soil borings;
- Installed a groundwater monitoring well in each boring;
- Surveyed each well to a common site elevation datum;
- Developed, purged and sampled 4 of the 6 installed groundwater monitoring wells;
- Gauged the depth to water in each of the monitoring wells on three occasions;
- Gauged the elevation of excavation water on two occasions;
- Analyzed three soil samples from each 19-foot boring for benzene, toluene, ethylbenzene and xylenes (BTEX), TPH-as-gasoline, TPH, VOCs, SVOCs and metals.
- Analyzed one water sample from monitoring wells MW-1, MW-2, MW-3 and MW-3A for BTEX, TPH-as-gasoline, TPH, VOCs, SVOCs, PAHs and five metals (cadmium, lead, chromium, nickel and zinc);
- Analyzed, summarized and presented the information obtained in report form.

[2] Washington Department of Ecology (WAC 173-340)

3.0 SITE SETTING AND BACKGROUND

The site is roughly triangular in shape, and occupies approximately 1.9 acres. It is bordered on the north by SR 522, on the south and east by NE 180th Street, and on the west by a strip mall and restaurant. The southeastern edge of the property is approximately 100 feet from the Sammamish River. A previous investigation of the site by SEACOR, for the City of Bothell, determined that a Flying A gasoline retail facility operated on a portion of the property adjacent to SR 522 from the late 1940's until the early 1960's. It was reported that automobiles were serviced on the property for at least a portion of that time. Currently the site is unpaved and prior to this work was used by the City of Bothell for automobile parking.

Previous investigations by environmental consulting firms, SEACOR and RZA AGRA, Inc. (RZA) in 1990 and 1991, identified soil and water with hydrocarbon concentrations above MTCA Method A Compliance Cleanup Levels (CCLs). Subsequent corrective actions at the site were conducted by RZA from August through October, 1991. Approximately 4,500 cubic yards (yds) of soil and debris purported to contain petroleum hydrocarbons and approximately 700 yds of purportedly clean material were excavated and stockpiled on site in August, 1991. The resultant excavation dimensions were approximately 120 feet by 130 feet in plan dimensions and 8 to 9 feet in depth. The excavation was mostly dry during digging operations; however, about three to four feet of water soon accumulated in the open excavation. The accumulated water was reported to be the result of perched groundwater infiltration and precipitation. Reported hydrocarbon concentrations in water samples taken from the excavation exceeded the CCL for TPH. A bioremediation/aeration system was installed by RZA to treat dissolved hydrocarbons. This system operated from late August through October, 1991.

4.0 SOIL BORINGS AND WELL INSTALLATION

On July 9, 1992, three borings, designated MW-1, MW-1A, and MW-2, were drilled at the site. On July 10, 1992, three borings, designated MW-2A, MW-3 and MW-3A were drilled. The borings were drilled using truck-mounted, 9 and 5/8-inch outside diameter, hollow-stem auger drilling equipment. Each boring was sampled using a 2-inch inside-diameter, split-barrel sampler. A geologist supervised the drilling and maintained a log of the materials encountered in accordance with the Unified Soil Classification System (See Appendix A, Drill Logs). Soil samples were collected in borings MW-1, MW-2 and MW-3 at approximately five-foot intervals beginning at three feet below grade (bg) level and continuing to the depth of exploration. The collected soil samples were screened for volatile hydrocarbons in the field using a photo-ionization detector (PID) calibrated to a 100 ppm isobutylene standard and the results were noted on the drill logs. Three soil samples from the sampled borings were selected and submitted for laboratory analysis.

No soil samples were collected for laboratory testing from the three shallow (8-foot) borings due to their proximity the the deeper borings. The drilling and soil sampling activities were conducted in accordance with the Standard Operating Procedures (SOP) presented in Appendix B. The drill cuttings were placed on and covered with plastic pending laboratory analyses results. The laboratory analyses were conducted by GTEL Environmental Laboratories, Inc. (GTEL), Concord, California, an Environmental Protection Agency (EPA) certified laboratory.

Borings MW-1, MW-2 and MW-3 were drilled to a depth of approximately 19 feet bg. Borings MW-1A, MW-2A and MW-3A were drilled to depths of approximately 8 feet bg. The drilling locations were chosen based on accessibility to best define the site gradient and evaluate the water quality at the site (Figure 2, Site Plan). Generally, the materials encountered during drilling include a brown-gray sand to a depth of approximately eight (8) feet. A highly organic brown-black and grey-green clay was observed approximately eight to nine feet bg in each of the deeper borings, overlying interbedded sand, silt and clay.

A groundwater monitoring well was installed in each boring at the depth drilled. Each well was constructed with four inch diameter machine slotted (0.020-inch) PVC well screen, and blank pipe. The wells were completed with a traffic rated street box and locking cap as shown on the drill logs in Appendix A. On July 13, 1992, each well was developed by surging and hand bailing approximately two well volumes of water. Due to the lengthy recovery period required by the wells, the process was repeated on July 14, 1992. Monitoring wells MW-1A and MW-2A were bailed dry on July 13, 1992. By July 14, 1992, the water levels in MW-1A and MW-2A had not recovered sufficiently to allow further development. The development water was stored on site in Department of Transportation (DOT) approved, 55-gallon drums pending laboratory analyses results.

5.0 WELL SURVEYING, MONITORING AND SAMPLING

On July 15, 1992 wells MW-1, MW-1A, MW-2, MW-2A, MW-3 and MW-3A were surveyed to an arbitrary elevation datum to obtain relative well-head elevations. Water levels were measured on July 15, August 24, and August 31, 1992 to evaluate groundwater flow direction and gradient. The water level in the excavation was surveyed on July 15 and August 31, 1992. Table 1 shows the measured well-head and relative groundwater elevations in the monitoring wells and the relative water level elevations in the excavation. The data was used to determine approximate groundwater gradients on each date. The approximate groundwater flow direction, when the water elevation in the pit was used as an additional data point, was to the south on July 15 and August 31, 1992. The gradient was approximately 2 feet per 100 feet on both occasions.

Table 1 Groundwater Monitoring Data							
Well Number	MW-1	MW-1A	MW-2	MW-2A	MW-3	MW-3A	PIT
Well-Head Elevation (Feet)	101.82	101.74	101.57	101.47	100.22	100.34	-
Date: July 15, 1992							
DTW	8.57	7.63	9.16	7.70	10.02	5.63	-
Elevation (Feet)	93.25	94.11	94.41	93.77	90.22	94.71	94.79*
Date: August 24, 1992							
DTW	9.08	7.89	9.64	7.69	10.29	NM	-
Relative Elev. (Ft)	92.74	93.85	91.93	93.78	89.93	--	NM
Date: August 31, 1992							
DTW	9.18	7.88	9.75	7.70	10.32	6.59	-
Relative Elev. (Ft)	92.64	93.86	91.85	93.77	89.90	93.75	93.26

DTW = Depth to Water
NM = Not Measured (inaccessible)
Note: Elevations are relative based on an arbitrary common datum of 100 feet.
* Measured before pumping water from the excavation.

Following groundwater monitoring on July 15, 1992, wells MW-1, MW-2, MW-3 and MW-3A were purged of approximately two well volumes and water samples were collected in accordance with the Standard Operating Procedures in Appendix B. Samples collected were designated MW-1, MW-2, MW-3 and MW-3A and sent to GTEL with the sample Chain-of-Custody. Wells MW-1A and MW-2A were not sampled, due to insufficient volume of water in either well. Purged water was stored on site pending laboratory analysis.

6.0 LABORATORY ANALYSIS

Soil and groundwater samples collected during the preliminary assessment were analyzed at GTEL Environmental Laboratories in Concord, California.

6.1 Soil Analyses

Three soil samples collected from the borings for monitoring wells MW-1, MW-2 and MW-3 were analyzed for BTEX and TPH-as-gasoline by EPA Methods 8020 and modified 8015, TPH by Method WTPH 418.1, VOCs by EPA Method 8240, SVOCs by EPA Method 8270, and metals (cadmium, chromium, lead, nickel, and zinc) by EPA Method 6010. Laboratory soil analyses results for compounds or metals detected are summarized in Table 2. Complete laboratory reports for soil samples are contained in Appendix C.

Xylene, TPH, chromium, lead, nickel and zinc were detected in the soil samples from borings MW-1, MW-2 and MW-3. No compounds were detected in concentrations above their respective CCL in the soil samples.

Table 2
Summary of Laboratory Results - Soil
(Only detected compounds listed)
Results in mg/kg

Well No.	Sample No.	Sample Depth (feet below grade)	Xylene	TPH	Chromium	Lead	Nickel	Zinc
Analytical Method			EPA Method 8240	WTPH 418.1	EPA Method 6010			
MDL			0.005	5	1	5	2.5	5
MW-1	MW-1A	4-4.5	0.021	10	36	17	44	64
	MW-1B	9-9.5	ND	ND	29	13	35	67
	MW-1C	14-14.5	ND	ND	30	12	48	86
MW-2	MW-2A	4-4.5	ND	5	20	18	30	43
	MW-2B	9-9.5	0.016	6	59	36	73	100
	MW-2C	14-14.5	ND	ND	32	15	70	52
MW-3	MW-3A	4-4.5	ND	ND	9	5	15	19
	MW-3B	9-9.5	ND	14	37	21	33	86
	MW-3C	14-14.5	ND	ND	39	18	20	57
CCL			20	200	100	250	--	--

MDL = Method Detection Limit
ND = Not Detected at MDL
CCL = WAC 173.340, Model Toxics Control Act, Method A Compliance Cleanup Levels - Soil
-- = CCL not listed in WAC 173.340, Method A Compliance Cleanup Levels - Soil

6.2 Groundwater Analyses

Water samples from MW-1, MW-2, MW-3 and MW-3A were analyzed for BTEX and TPH-as-gasoline by EPA Methods 8020 and modified 8015, TPH by WTPH 418.1, VOCs by EPA Method 8240, SVOCs by EPA Method 8270, PAHs by EPA Method 8310 and metals by EPA Method 6010 (cadmium, chromium, nickel and zinc) and 7421 (lead). Water analyses results are summarized in Table 3. Complete laboratory results for water samples are contained in Appendix C.

Total petroleum hydrocarbons in MW-1, trichloroethene (TCE) in MW-3A and lead in MW-2, MW-3 and MW-3A were reported in concentrations above the respective CCLs.

Table 3
Summary of Laboratory Results - Groundwater
Sample Date: July 15, 1992
Only Detected Compounds are listed (Results in µg/L)

ANALYTE	EPA METHOD	MDL	MW-1	MW-2	MW-3	MW-3A	CCL
Benzene	8020	0.3	ND	ND	ND	ND	5
Toluene	8020	0.3	ND	0.3	ND	ND	40
Ethylbenzene	8020	0.3	ND	ND	ND	ND	30
Xylene	8020	0.5	ND	3	ND	ND	20
TPH-as-Gasoline	Mod. 8015	10	ND	200	ND	ND	1000
TPH	WTPH 418.1	1000	1000	ND	ND	ND	1000
Chloroform	8240	5	ND	ND	ND	6.5	--
Cis-1,3-dichloro-propene	8240	5	7.5	ND	ND	ND	--
Trichloroethene	8240	5	ND	ND	ND	110	5
Chromium	6010	10	ND	ND	ND	33	50
Lead	7421	5	ND	6	40	240	5
Nickel	6010	50	ND	ND	ND	94	--
Zinc	6010	10	20	27	58	260	--

MDL = Method Detection Limit
ND = Not Detected at MDL
CCL = WAC-340, Model Toxics Act, Method A Compliance Cleanup Levels - Groundwater
-- = CCL not listed in WAC 173-340, Method A Compliance Cleanup Levels - Groundwater

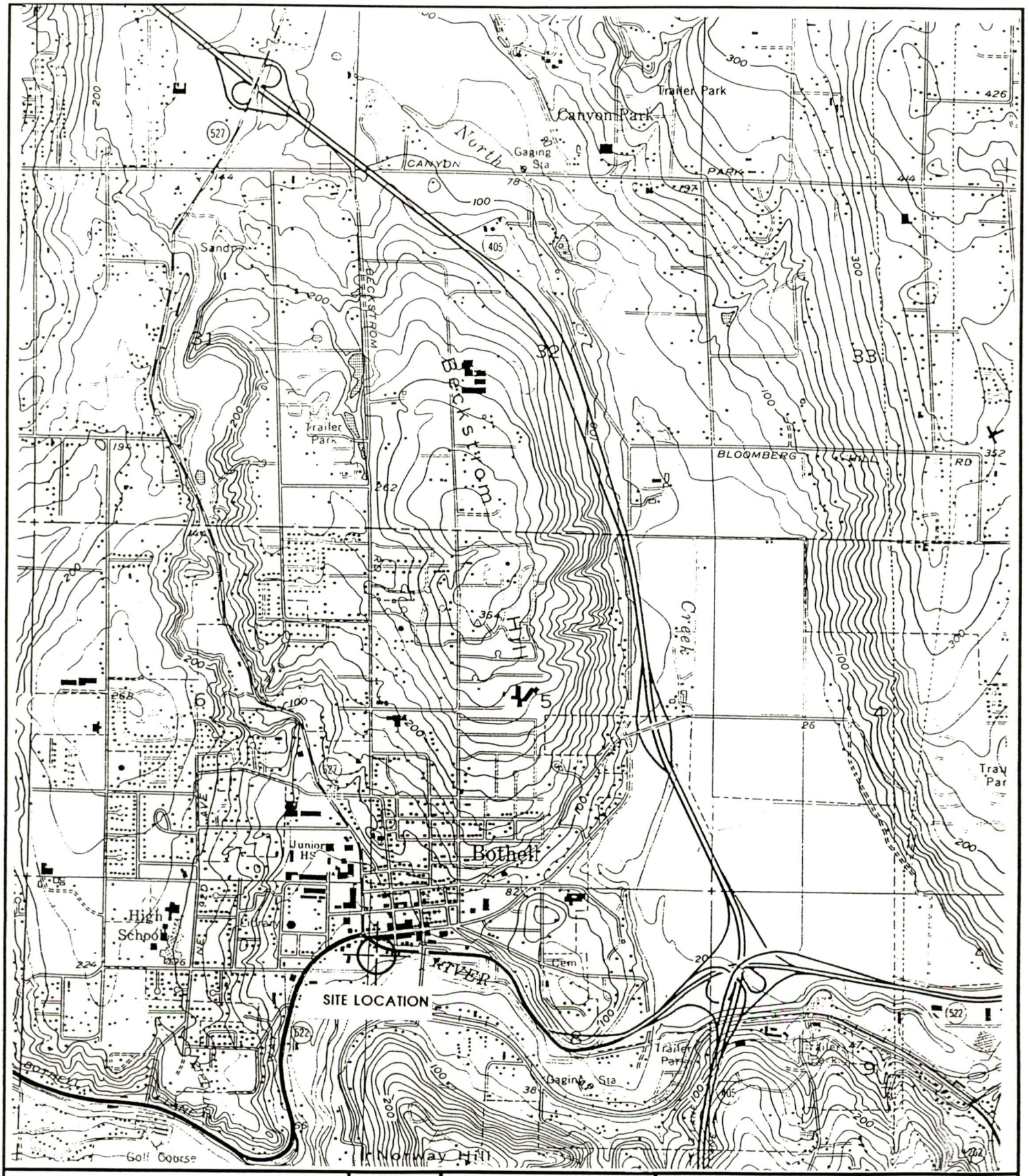
7.0 CONCLUSIONS AND RECOMMENDATIONS

A preliminary site assessment was conducted at the Riverside Property, Bothell, Washington in July and August, 1992. The activities included drilling and installing six groundwater monitoring wells, soil and water sampling and analysis, groundwater monitoring and data evaluation. The organic rich clay found at approximately eight feet below grade appears to act as a confining layer between the permeable soils above and below it. The excavation appears to have penetrated this layer allowing water from the lower zone to infiltrate and accumulate inside the excavation. Once inside the excavation the water appears to exit through the permeable sand above the clay and flow south from the excavation (Figure 3). Monitoring well MW-3A may have encountered this water bearing zone. No compound concentrations above CCLs were reported in soil samples analyzed. Compound concentrations at or above groundwater CCLs were reported in samples collected from monitoring wells MW-1 (TPH), MW-2 (lead), MW-3 (lead) and MW-3A (lead and TCE).

FIGURES

GROUNDWATER TECHNOLOGY

FIGURES



GROUNDWATER TECHNOLOGY

19033 W VALLEY HWY, D-104
KENT, WA
(206) 251-5441

N

SCALE: 0 FEET 2000

SITE LOCATION MAP

CLIENT: TEXACO ENVIRONMENTAL SERVICES

DATE: 5/21/92

LOCATION: RIVERSIDE/SR 522 & SR 527
BOTHELL, WA

FIGURE: 1

STATE ROUTE 522

8' WIDE CINDER WALKWAY

COBBLE PILE

ECOLOGY BLOCKS

MW-1

MW-1A

APPROXIMATE LOCATION
OF LOWER ZONE PENETRATIONS

POWER POLE

CLASS 3 SOIL

CLASS 2 SOIL

MW-2A

MW-2

LIMITS OF
EXCAVATION

CLASS 3 SOIL

HORSE CREEK

BLACKBERRIES

MW-3

MW-3A

ECOLOGY BLOCKS

APPROXIMATE PROPERTY LINE

NE 180TH STREET

LEGEND

GROUNDWATER MONITORING WELL LOCATION

N

FENCE

0 40 80

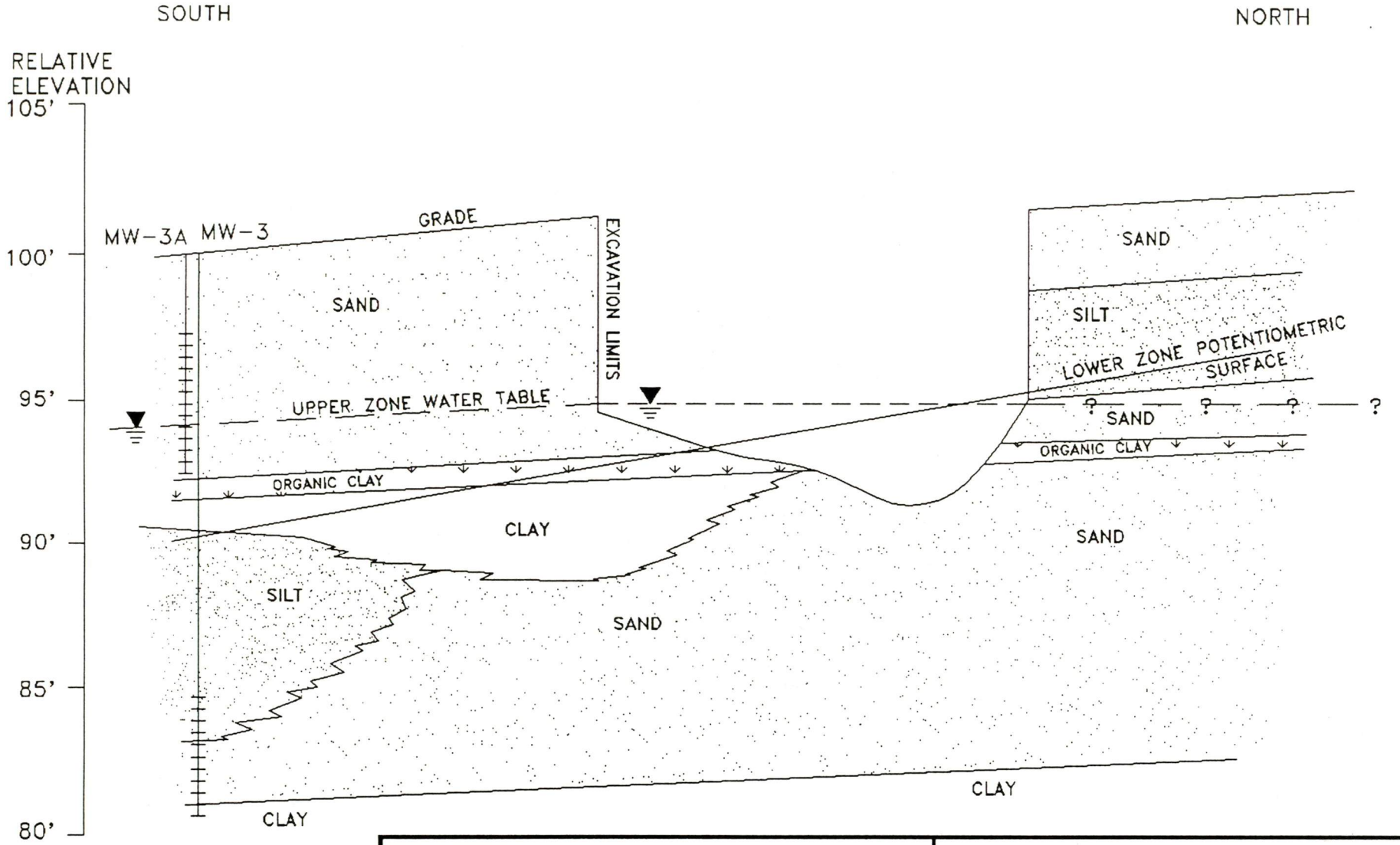
SCALE FEET

GROUNDWATER TECHNOLOGY
19033 W VALLEY HWY, D-104
KENT, WA
(206) 251-5441

REV. NO.:	DATE:	ACAD FILE:
2	8/28/92	TRMI\RIVERBM3

SITE PLAN

CLIENT: TEXACO ENVIRONMENTAL SERVICES			PM
LOCATION: RIVERSIDE PROPERTY HIGHWAY 522 AND 527 BOTHELL, WASHINGTON			PE/RG
DESIGNED: SH	DETAILED: CSY	PROJECT NO.: 02060	FIGURE: 2



GROUNDWATER TECHNOLOGY
19033 WEST VALLEY HWY
BUILDING D/SUITE 104
KENT, WA 98032
(206) 251-5441

GENERALIZED CROSS SECTION

CLIENT:	LOCATION:	REV. NO.:	DATE:
TEXACO ENVIRONMENTAL SERVICES	RIVERSIDE PROPERTY BOTHELL, WASHINGTON	1	9/16/92

PM	PE/RG	DESIGNED	DETAILED	ACAD FILE:	PROJECT NO.:	FIGURE:
		SH	CSY	RIVSECGW	020602805	3

A

GROUNDWATER
TECHNOLOGY

APPENDIX A
DRILL LOGS

Drilling Log

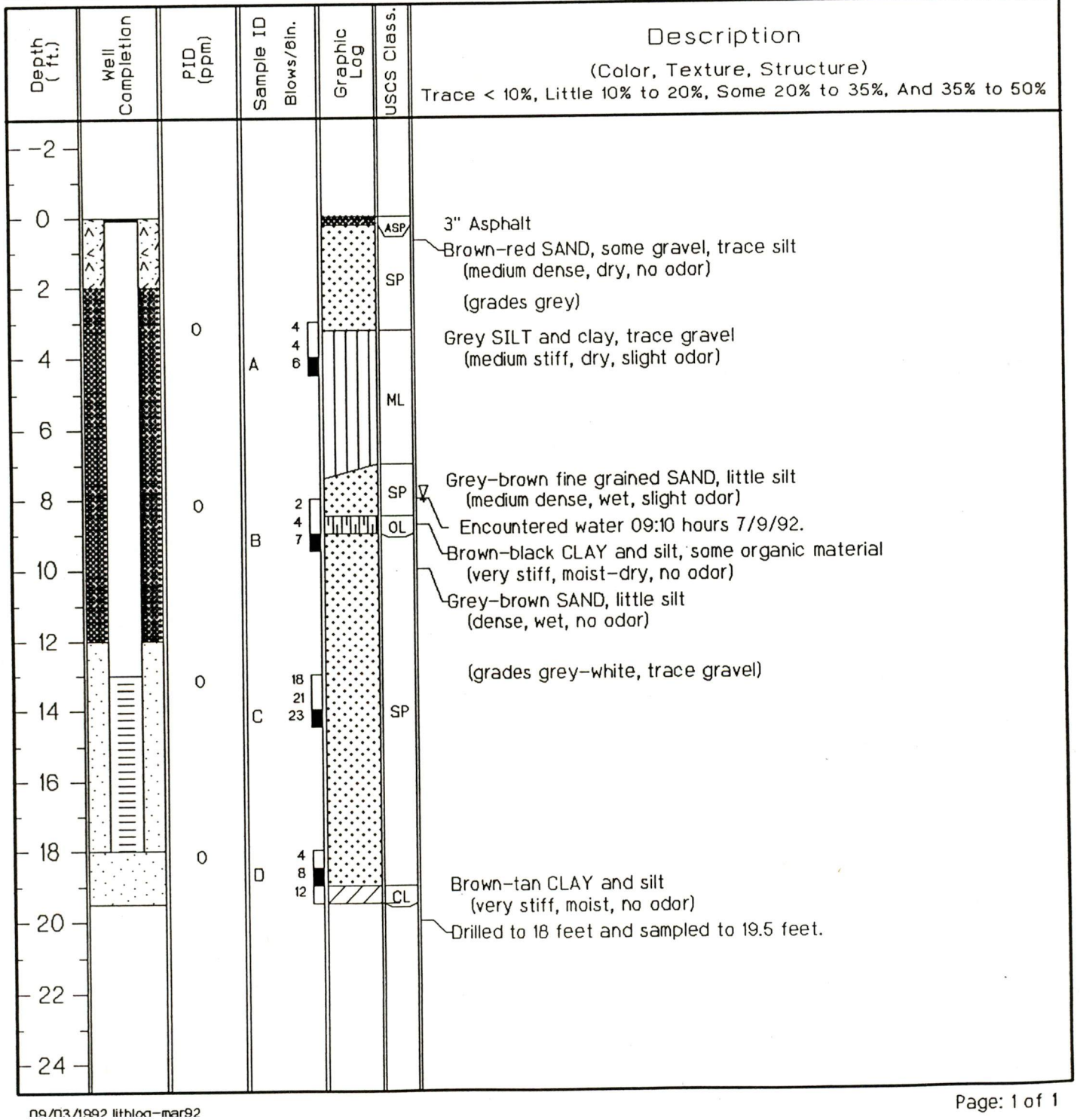
GROUNDWATER TECHNOLOGY

Monitoring Well **MW-1**

Project *BOTHELL/RIVERSIDE* Owner *TEXACO ENVIRONMENTAL SERVICES*
Location *SR 522 AND NE 180TH ST.* Project No. *020602805* Date drilled *7/9/92*
Surface Elev. _____ Total Hole Depth *19.5 ft.* Diameter *10 INCHES - 0.83 ft.*
Top of Casing _____ Water Level Initial *8 ft.* Static _____
Screen: Dia *4 in.* Length *5 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *13 ft.* Type *PVC*
Filter Pack Material *SILICA SAND* Rig/Core Type *TRUCK MOUNTED*
Drilling Company *MCGARRET DRILLING* Method *HOLLOW STEM AUGER* Permit # _____
Driller *KEN McCLANAHAN* Log By *STAN HASKINS*
Checked By *MARK NICHOLS* License No. _____

See Site Map For Boring Location

COMMENTS:



Drilling Log

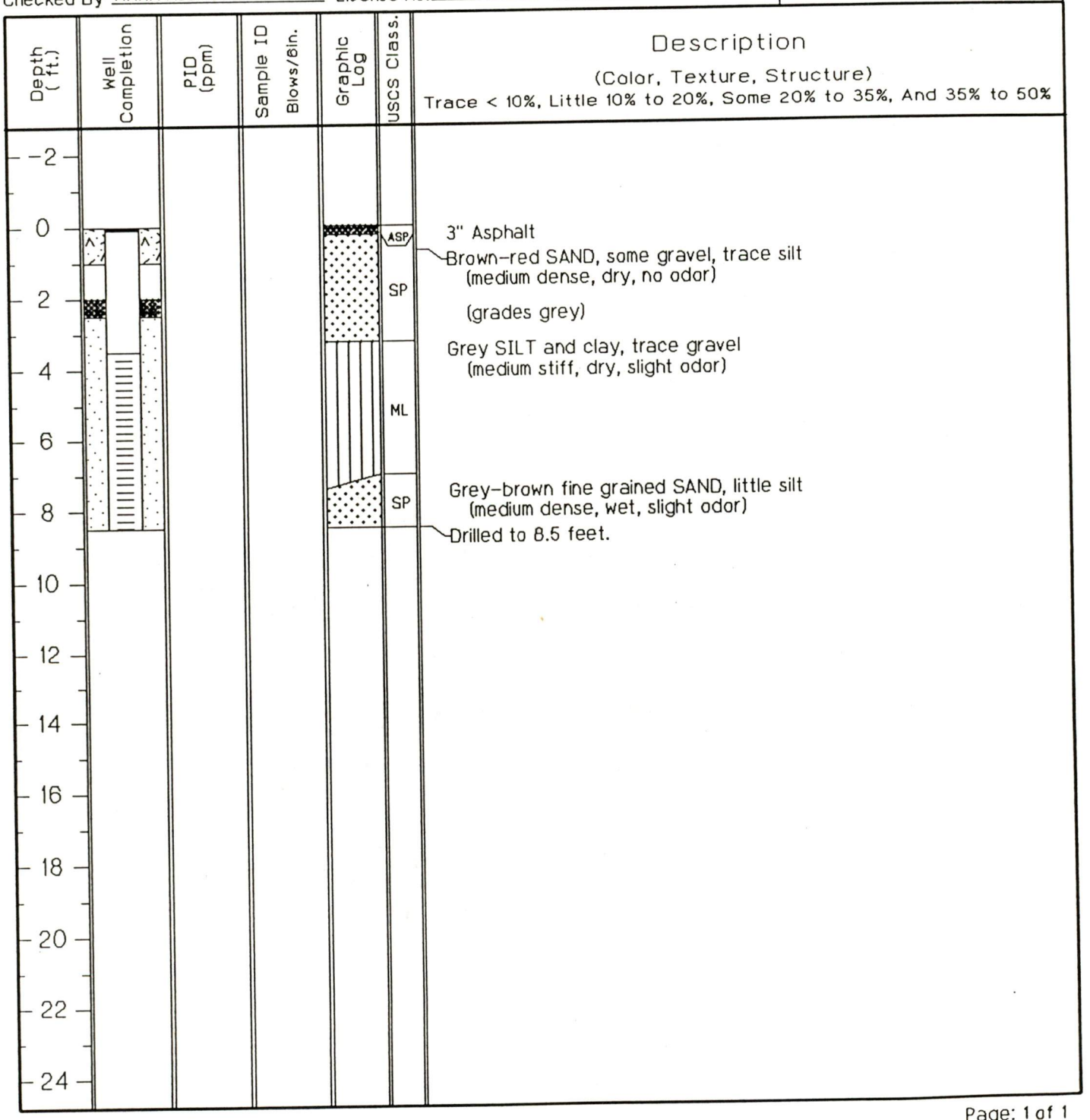
GROUNDWATER TECHNOLOGY

Monitoring Well **MW-1A**

Project *BOTHELL/RIVERSIDE* Owner *TEXACO ENVIRONMENTAL SERVICES*
Location *SR 522 AND NE 180TH ST.* Project No. *020602805* Date drilled *7/9/92*
Surface Elev. _____ Total Hole Depth *8.5 ft.* Diameter *10 INCHES - 0.83 ft.*
Top of Casing _____ Water Level Initial _____ Static _____
Screen: Dia *4 in.* Length *5 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *3.5 ft.* Type *PVC*
Filter Pack Material *SILICA SAND* Rig/Core Type *TRUCK MOUNTED*
Drilling Company *MCGARRET DRILLING* Method *HOLLOW STEM AUGER* Permit # _____
Driller *KEN McCLANAHAN* Log By *STAN HASKINS*
Checked By *MARK NICHOLS* License No. _____

See Site Map For Boring Location

COMMENTS:



Drilling Log

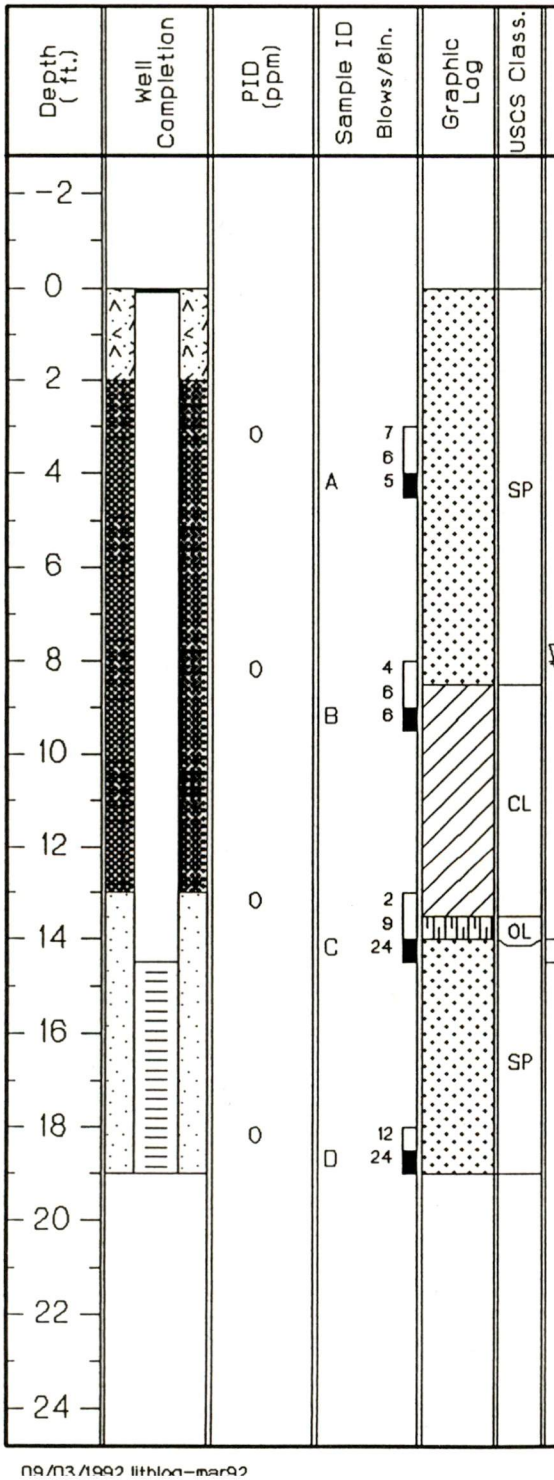
GROUNDWATER TECHNOLOGY

Monitoring Well **MW-2**

Project *BOTHELL/RIVERSIDE* Owner *TEXACO ENVIRONMENTAL SERVICES*
Location *SR 522 AND NE 180TH ST.* Project No. *020602805* Date drilled *7/9/92*
Surface Elev. _____ Total Hole Depth *19 ft.* Diameter *10 INCHES - 0.83 ft.*
Top of Casing _____ Water Level Initial *8 ft.* Static _____
Screen: Dia *4 in.* Length *5 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *14 ft.* Type *PVC*
Filter Pack Material *SILICA SAND* Rig/Core Type *TRUCK MOUNTED*
Drilling Company *MCGARRET DRILLING* Method *HOLLOW STEM AUGER* Permit # _____
Driller *KEN McCLANAHAN* Log By *STAN HASKINS*
Checked By *MARK NICHOLS* License No. _____

See Site Map For Boring Location

COMMENTS:



Description

(Color, Texture, Structure)
Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

Brown-grey fine grained SAND, some gravel, trace silt (medium dense, dry, no odor)

(grades dark grey, slight odor)

(grades trace silt)

Encountered water 14:27 hours 7/9/92.

Grey-green CLAY, little organic material (stiff, dry, slight odor)

Brown-black CLAY, some organic material (very stiff, dry, no odor)

Encountered water 14:40 hours 7/9/92

Grey-green fine grained SAND, trace silt (hard, wet, no odor)

Drilled to 19 feet.

Drilling Log

GROUNDWATER TECHNOLOGY

Monitoring Well **MW-2A**

Project *BOTHELL/RIVERSIDE* Owner *TEXACO ENVIRONMENTAL SERVICES*
Location *SR 522 AND NE 180TH ST.* Project No. *020602805* Date drilled *7/10/92*
Surface Elev. _____ Total Hole Depth *8 ft.* Diameter *10 INCHES - 0.83 ft.*
Top of Casing _____ Water Level Initial _____ Static _____
Screen: Dia *4 in.* Length *5 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *3 ft.* Type *PVC*
Filter Pack Material *SILICA SAND* Rig/Core Type *TRUCK MOUNTED*
Drilling Company *MCGARRET DRILLING* Method *HOLLOW STEM AUGER* Permit # _____
Driller *KEN McCLANAHAN* Log By *STAN HASKINS*
Checked By *MARK NICHOLS* License No. _____

See Site Map For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blows/6in.	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						Brown-grey fine grained SAND, some gravel, trace silt (medium dense, dry, no odor)
2						(grades dark grey, slight odor)
4					SP	(grades trace silt)
6						
8						Drilled to 8 feet.
10						
12						
14						
16						
18						
20						
22						
24						

Drilling Log

GROUNDWATER TECHNOLOGY

Monitoring Well MW-3

Project BOTHELL/RIVERSIDE Owner TEXACO ENVIRONMENTAL SERVICES
Location SR 522 AND NE 180TH ST. Project No. 020602805 Date drilled 7/10/92
Surface Elev. _____ Total Hole Depth 19.5 ft. Diameter 10 INCHES - 0.83 ft.
Top of Casing _____ Water Level Initial 7 ft. Static _____
Screen: Dia 4 in. Length 5 ft. Type/Size 0.020 in.
Casing: Dia 4 in. Length 14.5 ft. Type PVC
Filter Pack Material SILICA SAND Rig/Core Type TRUCK MOUNTED
Drilling Company MCGARRET DRILLING Method HOLLOW STEM AUGER Permit # _____
Driller KEN McCLANAHAN Log By STAN HASKINS
Checked By MARK NICHOLS License No. _____

See Site Map For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blows/6in.	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0							Brown-grey fine grained SAND, some gravel, trace silt (medium dense, dry, no odor)
2		0	A	10 12 7		SP	
4							
6							Encountered water 09:20 hours 7/10/92. (grades wet)
8		0	B	2 4 8		OL	Grey-green CLAY, and organic material, trace sand (stiff, dry, slight odor)
10							Grey-green SILT and clay, little organics, some silt (stiff, dry, no odor)
12							(grades wet-moist)
14		0	C	3 6 18		ML	(very stiff, moist, no odor)
16							
18		0	D	4 4 4		SP	Grey-green and white fine grained SAND, trace silt (loose, wet, no odor)
20						CL	Grey-green CLAY and silt (medium stiff, wet, no odor)
22							Drilled to 19.5 feet.
24							

Drilling Log

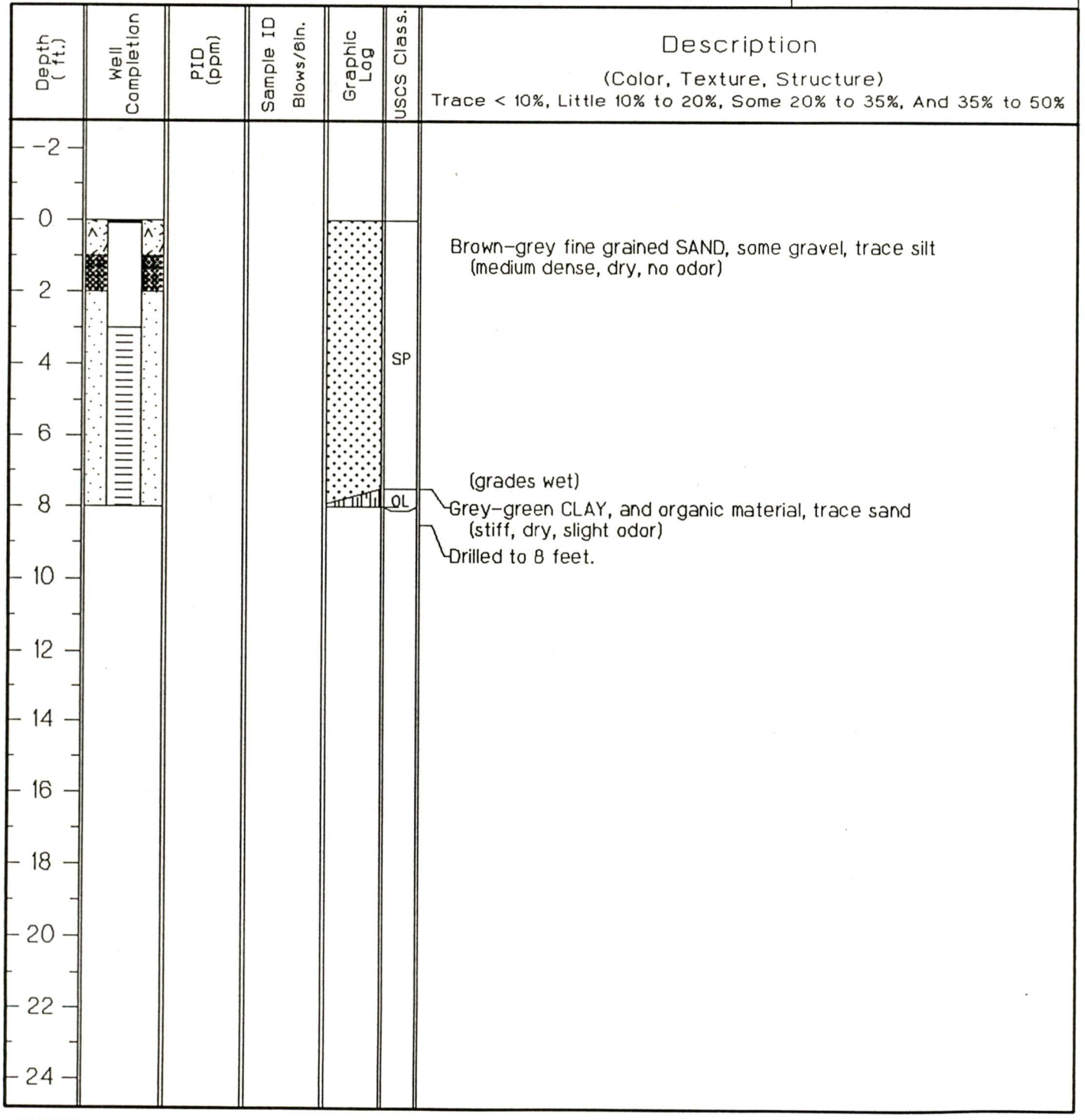
GROUNDWATER TECHNOLOGY

Monitoring Well **MW-3A**

Project *BOTHELL/RIVERSIDE* Owner *TEXACO ENVIRONMENTAL SERVICES*
Location *SR 522 AND NE 180TH ST.* Project No. *020602805* Date drilled *7/10/92*
Surface Elev. _____ Total Hole Depth *8 ft.* Diameter *10 INCHES - 0.83 ft.*
Top of Casing _____ Water Level Initial _____ Static _____
Screen: Dia *4 in.* Length *5 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *3 ft.* Type *PVC*
Filter Pack Material *SILICA SAND* Rig/Core Type *TRUCK MOUNTED*
Drilling Company *MCGARRET DRILLING* Method *HOLLOW STEM AUGER* Permit # _____
Driller *KEN McCLANAHAN* Log By *STAN HASKINS*
Checked By *MARK NICHOLS* License No. _____

See Site Map For Boring Location

COMMENTS:



Description

(Color, Texture, Structure)
Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

Brown-grey fine grained SAND, some gravel, trace silt
(medium dense, dry, no odor)

(grades wet)

Grey-green CLAY, and organic material, trace sand
(stiff, dry, slight odor)

Drilled to 8 feet.

B

GROUNDWATER
TECHNOLOGY

APPENDIX B
STANDARD OPERATING PROCEDURES

1.0 DRILLING

1.1 The principle reason for requiring on-site drilling supervision is to acquire reliable information.

1.2 While supervising a test boring or well installation, the geologist should always make certain that the driller is making accurate depth measurements by ruler and not by visually "eyeballing" the measurements (five foot auger lengths or drill rods may vary in length by +/- .75 feet.

1.3 Discrepancies between the driller's statements of depth and the geologist's should be immediately clarified by remeasurement so that the driller and geologist are in agreement.

1.4 Note lithologic changes that occur between sampling depths. Lithologic changes can be estimated by: noting changes in the rate of penetration of the drilling tools; noting color and/or soil-type changes in the drill cuttings; and, noting the soil on the auger flights.

1.5 Samples obtained by split-spoon sampler should follow the standard penetration test procedure (see Section 2.0).

1.6 For each soil sample taken, the following information must be recorded on the well/boring log:

- sample depth
- sample number
- sampling method: split-spoon (SS), wash sample, auger flight sample, drill cutting sample.
- blow counts for every 6 inches penetration of the split-spoon sampler
- sample description should follow the Unified Soil Classification System.

1.7 The sample brass tubes must be labeled with the following information

- job number
- date and time
- well/boring number
- sample number
- sample depth
- name of sampler

1.8 Insure that samples are sealed in brass tubes as nearly intact and undisturbed as possible. Soil structure can be an important feature in interpreting the subsurface geology.

1.9 Seal the ends of the brass tubes with aluminum foil or teflon tape prior to placing on the air tight cap. Place the sealed and labeled tube on ice in a cooler for shipment to the lab along with a chain-of-custody.

1.10 Seal the contents of a second brass tube in a plastic sample bag for vapor level measurements.

1.11 Measure vapor levels with a photoionization detector (PID) when the samples reach room temperature (70 degrees F). Otherwise keep the samples cool until an instrument is available. Bring the samples to room temperature prior to measuring the vapor levels.

1.12 Attempt to determine the depth to groundwater as drilling progresses. After a well has been installed, measure the initial groundwater level. If no well has been installed, measure the water level in the boring prior to removing all of the auger flights or casing and backfilling the borehole.

1.13 When drilling in soils such as loose sands and silts, which tend to run up into the borehole, whether it is stabilized with casing or augers or not, the driller should maintain a positive head of water in the borehole (that is above the water table) at ALL times.

1.14 All pertinent data concerning drilling method, groundwater, penetration resistance, soil description, etc. should be entered onto the well/boring log.

1.15 Locate each well/boring location by taping the distances to at least three permanent physical features at the site. These may include any feature that is shown on the site plan provided, such as building corners, pump island, light standards, fences, planters, etc. DO NOT measure to another well/boring as one of the three measurements unless it is absolutely necessary. DO include measurements between well/borings as additional location information. This information, entered onto the well/boring log, will be used in conjunction with survey data to complete the site map and to generate groundwater contour and petroleum distribution maps.

1.16 At the completion of drilling, arrange to survey the well/boring locations and elevations.

1.17 Groundwater Technology does not assume the responsibility of directing the operations of independent contractors or insuring the safety of their workmen. Inform the contractor of the project requirements. Do not drive contractor trucks or operate or borrow his equipment.

1.18 Comply with all applicable articles of the Occupational Safety and Health Act of 1970, (OSHA).

2.0 STANDARD PENETRATION TEST

2.1 The standard split-spoon sampler consists of a 2-inch O.D. by 1-3/8-inch I.D., 18-inch minimum length, heat treated, case hardened, steel head, split-spoon and shoe assembly.

2.2 The head is vented to prevent pressure buildup during sampling and must be kept clean. A ball check valve is located in the head to prevent downward water pressure during sampling and sample retrieval. Removal of the water check valve often results in sample loss.

2.3 The drive rods which connect the split-spoon must have a stiffness equal or greater than an A-rod. In order to reduce rod deflection, especially in deep holes, it may be preferable to use larger diameter rods. The size of the drive rods must be consistent throughout a specific exploration as the energy absorbed will vary with the size and the weight of the rods used. The type of drive rod should be noted on the well/boring log.

2.4 The drive head consists of a guide rod to give the drop hammer a free fall in order to strike the anvil attached to the lower end of the assembly. The rod must be a minimum of 3-1/2 feet in length to insure the correct 30-inch hammer drop.

2.5 The drop hammer must weigh 140 pounds and have a 2-1/2-inch diameter hole through the center for the passage of the drive head rod.

2.6 The hammer is raised with a rope activated by the drill rig cathead. No more than two turns of rope should be allowed on the cathead.

2.7 A 30-inch free hammer drop is mandatory and extreme care should be exercised to insure consistent results.

2.8 Automatic trip hammers are available which insure a 30-inch, free-fall drop. These are recommended when retaining soil-structure data is critical, such as in liquefaction studies.

2.9 Attach the split-spoon sampler to the drill rods and lower the assembly to the bottom of the hole. Measure the drill rod stickup to determine if the bottom of the sampler is resting on the bottom of the hole. If the sampler is not on the bottom (ex. blow-up of the stratum being sampled), remove the assembly and clean out the hole to the appropriate sampling depth.

2.10 Note any penetration of the sampler/rod assembly due to the weight of the rods. Do not drop the assembly to the bottom of the hole.

2.11 Raise the 140-pound hammer 30 inches above the drivehead anvil and then allow it to drop, free-fall, and strike the anvil. This procedure is repeated until the sampler has been driven 18 inches into the stratum at the bottom of the hole (a 24-inch sampler may be driven 24 inches).

2.12 The number of blows of the hammer required for each 6 inches of penetration of the sampler is counted and recorded.

2.13 A penetration rate of 100 blows per foot is normally considered refusal; however, this criterion may be varied depending on the nature of the project and the desired information.

2.14 The penetration resistance, density, is calculated by adding together the second and the third resistance blowcounts. (Ex: for blow counts 2-6-6, density = 12.)

2.15 The sampler is then withdrawn form the borehole, preferably by pulling the rope rather than by bumping it out using the cathead and hammer in reverse.

2.16 Keeping the casing/augers/borehole full of water when removing the sampler will enhance sample recovery. however, this practice may not be appropriate when drilling at contamination sites.

2.17 When sampling soils where recovery is poor, lining the sampler with a flexible material such as plastic wrap or placing a sand catch in the shoe will often increase sample recovery.

2.18 Careful measurement of all drilling tools, samplers, casing, etc. must be exercised throughout all phases of the test boring operation.

2.19 Carefully open the sampler and describe the contents, noting soil structure, color, characteristics, etc. following the Unified Soils Classification System.

2.20 All pertinent data concerning sampling activities including sampling, interval, blow counts and sample recovery should be entered on the well/boring log.

4.0 ACIDIFICATION PROCEDURE (EPA Methods 601,602, and 624)

4.1 At the start of each sampling round, the amount of acid required to lower a sampling container of water to be sampled to a pH of less than 2 should be determined.

4.2 After removing 3 to 5 well volumes from the first well to be sampled, put 5-10 drops of 50% HCL into a 40 ml sample vial (larger sampling container will require more acid) and fill the vial with water form the well; determine the pH of water in the vial with pH paper; if the pH is too high, repeat the procedure using 15-20 drops of acid in the vial; repeat until the pH of the water in the sample vial is a pH of less than 2 on the pH paper. Note the amount of acid required to lower the pH of the volume of water in the sampling vial. (pH paper should not be placed into sampling container. Pour sample onto pH paper to check for proper pH.)

4.3 Discard the practice acidified sample.

4.4 Once the amount of acid required to reach a pH of <2 is known, the acid can be routinely added to each sample container directly; the water to be analyzed is added to vial or container containing the appropriate amount of acid.

4.5 Note that the amount of acid required is site specific and should be noted on the Chain of Custody form.

4.6 The procedure should be repeated for each site at the start of each sampling round.

4.7 Equipment

- Bailer or other means to remove 3 to 5 well volumes
- Sampling bailer
- Polyethylene squirt bottle of 50% hydrochloric (HCL) acid
- Narrow range pH paper (1.0 - 2.5 pH range)
- Paper towels
- Waterproof pen
- Laboratory sample identification labels
- Cooler with ice
- Chain of custody forms
- Sample containers (usually 40 ml glass vials with teflon faced septums)
- Alconox solution and/or methanol
- Distilled water
- Safety equipment (gloves, etc.)
- Dissolved oxygen meter (sometimes used in limited biorec projects in conjunction with bacteriological testing)

5.0 SURVEYING

5.1 Equipment Handling

- The level/transit is a sensitive, expensive instrument, handle it accordingly. Keep it dry and clean as possible. Never carry the instrument in the back of the truck.

- Never leave the instrument on the tripod without securely attaching it.

- Make sure that the tripod is stable at all times.

- Always setup the tripod and instrument so that it is easily seen.

- Never leave a tripod and instrument unattended when surveying in an area with vehicular traffic. Place protective cones around the survey station.

- Keep an eye on the equipment at all times.

- Keep the survey rod free of dirt and grit.

5.2 Leveling the Instrument

- Center the level and screw it into the tripod.

- Firmly plant the tripod legs.

- Use foot screw to level the instrument. The bubble must be within the setting circle in order for the instrument the be level.

- Rotate the level 360 degrees, checking to be sure that the bubble remains inside the circle at every point.

5.3 Focusing the Cross Hairs and Siting

- To focus the cross hairs, look through the instrument and turn the ring around the eyepiece until the hairs come into focus.

- Relax your eye while looking through the eyepiece.

- Use a sun shade.

5.4 Rod

- Be careful when using a rod around overhead power and utility lines.

- The rod is graduated into hundredths of a foot. The bottom of each black line is an odd hundredth; the top of each black line is an even hundredth.

- When surveying to the rod, the rod should be slowly rocked forward and back to determine the lowest, and most accurate, reading.

5.5 Stadia Surveys

- Readings should be taken at the intersection of the vertical cross hair with the three horizontal cross hairs. (A level survey requires reading only the center cross hair.)

- Distance (D) calculation:

  D = (High Stadia - Low Stadia) x 100

  ex:
  High Stadia = 8.87 D = (8.87 - 8.29) x 100
  Low Stadia = 8.29 D = 58.0

- Check the accuracy of your readings as you survey. An acceptable error is .01 feet difference between calculations per siting.

- Check Readings: high - mid = mid - low

5.6 Bench Marks

- Clearly note the location and type of the bench mark used for each survey. The location should be marked permanently in the field so that it may be reused.

- If an existing bench mark with a known elevation is within a reasonable distance of the site, the surveyors should attempt to use it as the bench mark for the survey. possible existing bench marks are sewer manhole rims, storm drains, USGS (from topo map)

- If there is no known bench mark in the area, a bench mark must be created arbitrarily.

- Use the following guidelines for establishing an arbitrary bench mark:

  a) use permanent physical features such as the corner of a pump island, a cement floor slab, manhole or sewer rim.
  b) assign an elevation to the bench mark; if the nearest 10-foot contour is known, use it as the BM elevation; if the contour elevation is not known, assign an arbitrary elevation.
  c) clearly note the location and elevation of the BM in the field and on all site plans.
  d) DO NOT USE MONITORING OR RECOVERY WELLS AS BENCH MARKS.

5.7 Level Surveys

- When surveying wells, make certain to choose a survey point that can be used when gauging the well; if the top of the PVC casing is greater than 6 inches below the ground surface, do not use it as the survey point, instead use the lip or rim of the protective casing. Clearly note the survey point of each well in the survey notes.

- Obtain the following for each monitoring well survey location:

  a) the elevation of the top of the well casing (T.O.C.);
  b) the elevation of the lip or rim of the protective casing (T.O.R.)

- Permanently mark the survey point with paint or permanent marker.

- Place the rod on the survey point and hold it vertical; move it backwards and forwards to determine the most accurate reading.

- Calculate the elevation from the middle cross hair reading.

- Limit the number of times the instrument must be moved.

- After completing level readings at each set up, shoot back to two or more wells to close the level run.

- In a multiple-station survey, always shoot at least two known points for each station.

- Where there is a significant topographic change across a site, additional survey information will be required in order to document the ground surface elevation

differences; this information is critical when drawing cross-sections and in planning trenching and infiltration gallery installations.

- Calculate elevations before moving instrument to determine if there are any irregularities or errors.

5.8 Turning Points

- A TP (turning point) is used when all of the survey points cannot be seen form one instrument position and the instrument must be moved.

- The TP essentially establishes a new bench mark from which a new height of instrument is calculated.

- A TP can be a permanent structure, a PK, the original BM or a well. (A PK is a surveyor's nail driven into the ground/asphalt to create a hub for the rod to rest upon.)

- Complete the following steps to create a TP:

  a) take a FS (foresight) on the TP and record the measurement under the FS column in the field book;
  b) the FS is subtracted from the HI (height of instrument) for the current instrument location to determine the elevation of the TP;
  c) the instrument is then moved to a new location and leveled;
  d) a BS (backsight) reading is taken to the TP and entered in the BS column in the field book;
  e) the BS is added to the TP to determine the new HI elevation;
  f) NOTE: the TP entry in the survey data in the field book will always have 4 entries: BS, FS, HI, and elevation.

5.9 Taping locations

- Use a tape to verify distances that were surveyed with the instrument.

- Obtain three measurements for each location.

- Pull the tape tightly between points being measured.

- Measure dimensions of buildings on site to confirm base maps.

C

GROUNDWATER
TECHNOLOGY

APPENDIX C
LABORATORY ANALYTICAL RESULTS

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: SR522 & NEI80th
Work Order Number: C2-07-202

July 23, 1992

RECEIVED JUL 2 1 1992

Mark Nichols
Groundwater Technology, Inc.
19033 W. Valley Hwy., D-104
Kent, WA 98032

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 07/11/92, under chain of custody record 22995.

A formal Quality Control/Quality Assurance (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen
Laboratory Director

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and
Total Petroleum Hydrocarbons as Gasoline in Soil

EPA Methods 5030, 8020, and Modified 8015[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW-1A	MW-1B	MW-2A	MW-2B
Date Sampled		07/09/92	07/09/92	07/09/92	07/09/92
Date Extracted		07/17/92	07/22/92	07/17/92	07/17/92
Date Analyzed		07/17/92	07/22/92	07/17/92	07/17/92
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	<0.015	<0.015	<0.015	<0.015
BTEX, total	--	--	--	--	--
Gasoline	1	<1	<1	<1	<1
Detection Limit Multiplier		1	1	1	1
Percent solids		85	80	90	76

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision. Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS

Aromatic Volatile Organics and
Total Petroleum Hydrocarbons as Gasoline in Soil

EPA Methods 5030, 8020, and Modified 8015[a]

GTEL Sample Number		05	06	07	08
Client Identification		MW-3A	MW-3B	MW-1C	MW-2C
Date Sampled		07/10/92	07/10/92	07/09/92	07/09/92
Date Extracted		07/17/92	07/17/92	07/17/92	07/17/92
Date Analyzed		07/16/92	07/17/92	07/17/92	07/17/92
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	<0.015	<0.015	<0.015	<0.015
BTEX, total	--	--	--	--	--
Gasoline	1	<1	<1	<1	<1
Detection Limit Multiplier		1	1	1	1
Percent solids		91	69	88	79

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision. Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS

Aromatic Volatile Organics and
Total Petroleum Hydrocarbons as Gasoline in Soil

EPA Methods 5030, 8020, and Modified 8015[a]

GTEL Sample Number		09			
Client Identification		MW-3C			
Date Sampled		07/10/92			
Date Extracted		07/17/92			
Date Analyzed		07/17/92			
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	<0.005			
Toluene	0.005	<0.005			
Ethylbenzene	0.005	<0.005			
Xylene, total	0.015	<0.015			
BTEX, total	--	--			
Gasoline	1	<1			
Detection Limit Multiplier		1			
Percent solids		76			

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision. Results reported on a dry weight basis.

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Consultant Project Number: 020602805
Project ID: SR522 & NEI80th
Work Order Number: C2-07-204

July 27, 1992

RECEIVED JUL 3 1 1992

Mark Nichols
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Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen
Laboratory Director

Table 1

ANALYTICAL RESULTS

Volatile Organics in Soil

EPA Method 8240[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW-1A	MW-1B	MW-2A	MW-2B
Date Sampled		07/09/92	07/09/92	07/09/92	07/09/92
Date Extracted		07/17/92	07/17/92	07/17/92	07/17/92
Date Analyzed		07/17/92	07/17/92	07/17/92	07/17/92
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
Chloromethane	10	<10	<10	<10	<10
Bromomethane	10	<10	<10	<10	<10
Vinyl chloride	10	<10	<10	<10	<10
Chloroethane	10	<10	<10	<10	<10
Methylene chloride	5	<5	<5	<5	<5
Acetone	100	<100	<100	<100	<100
Carbon disulfide	5	<5	<5	<5	<5
1,1-Dichloroethene	5	<5	<5	<5	<5
1,1-Dichloroethane	5	<5	<5	<5	<5
1,2-Dichloroethene, total	5	<5	<5	<5	<5
Chloroform	5	<5	<5	<5	<5
1,2-Dichloroethane	5	<5	<5	<5	<5
2-Butanone	100	<100	<100	<100	<100
1,1,1-Trichloroethane	5	<5	<5	<5	<5
Carbon tetrachloride	5	<5	<5	<5	<5
Vinyl acetate	50	<50	<50	<50	<50
Bromodichloromethane	5	<5	<5	<5	<5
1,2-Dichloropropane	5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5	<5	<5	<5	<5
Trichloroethene	5	<5	<5	<5	<5
Dibromochloromethane	5	<5	<5	<5	<5

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS

Volatile Organics in Soil

EPA Method 8240[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW-1A	MW-1B	MW-2A	MW-2B
Date Sampled		07/09/92	07/09/92	07/09/92	07/09/92
Date Extracted		07/17/92	07/17/92	07/17/92	07/17/92
Date Analyzed		07/17/92	07/17/92	07/17/92	07/17/92
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
1,1,2-Trichloroethane	5	<5	<5	<5	<5
Benzene	5	<5	<5	<5	<5
trans-1,3-Dichloropropene	5	<5	<5	<5	<5
2-Chloroethylvinyl ether	10	<10	<10	<10	<10
Bromoform	5	<5	<5	<5	<5
4-Methyl-2-pentanone	50	<50	<50	<50	<50
2-Hexanone	50	<50	<50	<50	<50
Tetrachloroethene	5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5	<5	<5	<5	<5
Toluene	5	<5	<5	<5	<5
Chlorobenzene	5	<5	<5	<5	<5
Ethylbenzene	5	<5	<5	<5	<5
Styrene	5	<5	<5	<5	<5
1,2-Dichlorobenzene	5	<5	<5	<5	<5
1,3-Dichlorobenzene	5	<5	<5	<5	<5
1,4-Dichlorobenzene	5	<5	<5	<5	<5
Xylene, total	5	21	<5	<5	16
Trichlorofluoromethane	5	<5	<5	<5	<5
Quantitation Limit Multiplier		1	1	1	1
Percent solids		85	80	90	76

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS

Volatile Organics in Soil

EPA Method 8240[a]

GTEL Sample Number		05	06	07	08
Client Identification		MW-3A	MW-3B	MW-1C	MW-2C
Date Sampled		07/10/92	07/10/92	07/09/92	07/09/92
Date Extracted		07/17/92	07/17/92	07/20/92	07/20/92
Date Analyzed		07/17/92	07/17/92	07/20/92	07/20/92
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
Chloromethane	10	<10	<10	<10	<10
Bromomethane	10	<10	<10	<10	<10
Vinyl chloride	10	<10	<10	<10	<10
Chloroethane	10	<10	<10	<10	<10
Methylene chloride	5	<5	<5	<5	<5
Acetone	100	<100	<100	<100	<100
Carbon disulfide	5	<5	<5	<5	<5
1,1-Dichloroethene	5	<5	<5	<5	<5
1,1-Dichloroethane	5	<5	<5	<5	<5
1,2-Dichloroethene, total	5	<5	<5	<5	<5
Chloroform	5	<5	<5	<5	<5
1,2-Dichloroethane	5	<5	<5	<5	<5
2-Butanone	100	<100	<100	<100	<100
1,1,1-Trichloroethane	5	<5	<5	<5	<5
Carbon tetrachloride	5	<5	<5	<5	<5
Vinyl acetate	50	<50	<50	<50	<50
Bromodichloromethane	5	<5	<5	<5	<5
1,2-Dichloropropane	5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5	<5	<5	<5	<5
Trichloroethene	5	<5	<5	<5	<5
Dibromochloromethane	5	<5	<5	<5	<5

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS

Volatile Organics in Soil

EPA Method 8240[a]

GTEL Sample Number		05	06	07	08
Client Identification		MW-3A	MW-3B	MW-1C	MW-2C
Date Sampled		07/10/92	07/10/92	07/09/92	07/09/92
Date Extracted		07/17/92	07/17/92	07/20/92	07/20/92
Date Analyzed		07/17/92	07/17/92	07/20/92	07/20/92
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
1,1,2-Trichloroethane	5	<5	<5	<5	<5
Benzene	5	<5	<5	<5	<5
trans-1,3-Dichloropropene	5	<5	<5	<5	<5
2-Chloroethylvinyl ether	10	<10	<10	<10	<10
Bromoform	5	<5	<5	<5	<5
4-Methyl-2-pentanone	50	<50	<50	<50	<50
2-Hexanone	50	<50	<50	<50	<50
Tetrachloroethene	5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5	<5	<5	<5	<5
Toluene	5	<5	<5	<5	<5
Chlorobenzene	5	<5	<5	<5	<5
Ethylbenzene	5	<5	<5	<5	<5
Styrene	5	<5	<5	<5	<5
1,2-Dichlorobenzene	5	<5	<5	<5	<5
1,3-Dichlorobenzene	5	<5	<5	<5	<5
1,4-Dichlorobenzene	5	<5	<5	<5	<5
Xylene, total	5	<5	<5	<5	<5
Trichlorofluoromethane	5	<5	<5	<5	<5
Quantitation Limit Multiplier		1	1	1	1
Percent solids		91	69	88	79

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS

Volatile Organics in Soil

EPA Method 8240[a]

GTEL Sample Number		09			
Client Identification		MW-3C			
Date Sampled		07/10/92			
Date Extracted		07/20/92			
Date Analyzed		07/20/92			
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
Chloromethane	10	<10			
Bromomethane	10	<10			
Vinyl chloride	10	<10			
Chloroethane	10	<10			
Methylene chloride	5	<5			
Acetone	100	<100			
Carbon disulfide	5	<5			
1,1-Dichloroethene	5	<5			
1,1-Dichloroethane	5	<5			
1,2-Dichloroethene, total	5	<5			
Chloroform	5	<5			
1,2-Dichloroethane	5	<5			
2-Butanone	100	<100			
1,1,1-Trichloroethane	5	<5			
Carbon tetrachloride	5	<5			
Vinyl acetate	50	<50			
Bromodichloromethane	5	<5			
1,2-Dichloropropane	5	<5			
cis-1,3-Dichloropropene	5	<5			
Trichloroethene	5	<5			
Dibromochloromethane	5	<5			

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS

Volatile Organics in Soil

EPA Method 8240[a]

GTEL Sample Number		09			
Client Identification		MW-3C			
Date Sampled		07/10/92			
Date Extracted		07/20/92			
Date Analyzed		07/20/92			
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
1,1,2-Trichloroethane	5	<5			
Benzene	5	<5			
trans-1,3-Dichloropropene	5	<5			
2-Chloroethylvinyl ether	10	<10			
Bromoform	5	<5			
4-Methyl-2-pentanone	50	<50			
2-Hexanone	50	<50			
Tetrachloroethene	5	<5			
1,1,2,2-Tetrachloroethane	5	<5			
Toluene	5	<5			
Chlorobenzene	5	<5			
Ethylbenzene	5	<5			
Styrene	5	<5			
1,2-Dichlorobenzene	5	<5			
1,3-Dichlorobenzene	5	<5			
1,4-Dichlorobenzene	5	<5			
Xylene, total	5	<5			
Trichlorofluoromethane	5	<5			
Quantitation Limit Multiplier		1			
Percent solids		76			

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Results reported on a dry weight basis.

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(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: SR522 & NEI80th
Work Order Number: C2-07-203

July 24, 1992

RECEIVED JUL 31 1992

Mark Nichols
Groundwater Technology, Inc.
19033 W. Valley Hwy., D-104
Kent, WA 98032

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 07/11/92, under chain of custody record 22995.

A formal Quality Control/Quality Assurance (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Julia F Beaman /EB

Eileen F. Bullen
Laboratory Director

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: SR522 & NEI80th
Work Order Number: C2-07-203

Table 1

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons in Soil
by Infrared Spectrometry[1]

EPA 3550 (Mod.)/WTPH 418.1 (SM 5520 FC)[2]

GTEL Sample Number		01	02	03	04
Client Identification		MW-1A	MW-1B	MW-2A	MW-2B
Date Sampled		07/09/92	07/09/92	07/09/92	07/09/92
Date Prepared		07/23/92	07/23/92	07/23/92	07/23/92
Date Analyzed		07/24/92	07/24/92	07/24/92	07/24/92
Analyte	Quantitation Limit, mg/Kg	Concentration, mg/Kg			
Total Petroleum Hydrocarbons	5	10	<5	5	6
Quantitation Limit Multiplier		1	1	1	1
Percent solids		85	86	91	74

1. The sample is sonication extracted using a modification of EPA 3550. The extract is analyzed, as in EPA 418.1 (SM 5520 CF), to yield results reported as Total Petroleum Hydrocarbons. Modification in TPH Methods as per the state of Washington Department of Ecology, Appendix L, April, 1992. Results are reported on a dry weight basis.
2. Standard Methods for the Examination of Water and Wastewater, 17th ed., American Public Health Association, 1989.

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: SR522 & NEI80th
Work Order Number: C2-07-203

Table 1 (Continued)

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons in Soil
by Infrared Spectrometry[1]

EPA 3550 (Mod.)/WTPH 418.1 (SM 5520 FC)[2]

GTEL Sample Number		05	06	07	08
Client Identification		MW-3A	MW-3B	MW-1C	MW-2C
Date Sampled		07/10/92	07/10/92	07/09/92	07/09/92
Date Prepared		07/23/92	07/23/92	07/23/92	07/23/92
Date Analyzed		07/24/92	07/24/92	07/24/92	07/24/92
Analyte	Quantitation Limit, mg/Kg	Concentration, mg/Kg			
Total Petroleum Hydrocarbons	5	<5	14	<5	<5
Quantitation Limit Multiplier		1	1	1	1
Percent solids		90	70	79	84

1. The sample is sonication extracted using a modification of EPA 3550. The extract is analyzed, as in EPA 418.1 (SM 5520 CF), to yield results reported as Total Petroleum Hydrocarbons. Modification in TPH Methods as per the state of Washington Department of Ecology, Appendix L, April, 1992. Results are reported on a dry weight basis.
2. Standard Methods for the Examination of Water and Wastewater, 17th ed., American Public Health Association, 1989.

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: SR522 & NEI80th
Work Order Number: C2-07-203

Table 1 (Continued)

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons in Soil
by Infrared Spectrometry[1]

EPA 3550 (Mod.)/WTPH 418.1 (SM 5520 FC)[2]

GTEL Sample Number		09			
Client Identification		MW-3C			
Date Sampled		07/10/92			
Date Prepared		07/23/92			
Date Analyzed		07/24/92			
Analyte	Quantitation Limit, mg/Kg	Concentration, mg/Kg			
Total Petroleum Hydrocarbons	5	<5			
Quantitation Limit Multiplier		1			
Percent solids		76			

1. The sample is sonication extracted using a modification of EPA 3550. The extract is analyzed, as in EPA 418.1 (SM 5520 CF), to yield results reported as Total Petroleum Hydrocarbons. Modification in TPH Methods as per the state of Washington Department of Ecology, Appendix L, April, 1992. Results are reported on a dry weight basis.
2. Standard Methods for the Examination of Water and Wastewater, 17th ed., American Public Health Association, 1989.

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(510) 825-0720 (FAX)

Client Number: GTI70TEX0I
Consultant Project Number: 020602805
Project ID: SR522 & NE 180th
Work Order Number: C2-07-207

July 27, 1992

RECEIVED JUL 3 1 1992

Mark Nichols
Groundwater Technology, Inc.
19033 W. Valley Hwy., D-104
Kent, WA 98032

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Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen
Laboratory Director

Client Number: GTI70TEX0I
Consultant Project Number: 020602805
Project ID: SR522 & NE 180th
Work Order Number: C2-07-207

ANALYTICAL RESULTS

Matrix: Soil

				Sample Number	01	02	03	04
				Sample Identification	MW-1A	MW-1B	MW-2A	MW-2B
				Date Sampled	07/09/92	07/09/92	07/09/92	07/09/92
Test Description	Units	Detection Limit	Method	Date Analyzed	Test Result			
Cadmium	mg/Kg	1	EPA 6010	07/23/92	<1	<1	<1	<1
Chromium	mg/Kg	1	EPA 6010	07/23/92	36	29	20	59
Lead	mg/Kg	5	EPA 6010	07/23/92	17	13	18	36
Nickel	mg/Kg	2.5	EPA 6010	07/23/92	44	35	30	73
Zinc	mg/Kg	5	EPA 6010	07/23/92	64	67	43	100
Percent solids					85	80	90	76

Result reported on a dry weight basis.

Client Number: GTI70TEX0I
Consultant Project Number: 020602805
Project ID: SR522 & NE 180th
Work Order Number: C2-07-207

ANALYTICAL RESULTS

Matrix: Soil

				Sample Number	05	06	07	08
				Sample Identification	MW-3A	MW-3B	MW-1C	MW-2C
				Date Sampled	07/10/92	07/10/92	07/09/92	07/09/92
Test Description	Units	Detection Limit	Method	Date Analyzed	Test Result			
Cadmium	mg/Kg	1	EPA 6010	07/23/92	<1	<1	<1	<1
Chromium	mg/Kg	1	EPA 6010	07/23/92	9	37	30	32
Lead	mg/Kg	5	EPA 6010	07/23/92	5	21	12	15
Nickel	mg/Kg	2.5	EPA 6010	07/23/92	15	33	48	70
Zinc	mg/Kg	5	EPA 6010	07/23/92	19	86	86	52
Percent solids					91	69	88	79

Result reported on a dry weight basis.

Client Number: GTI70TEX0I
Consultant Project Number: 020602805
Project ID: SR522 & NE 180th
Work Order Number: C2-07-207

ANALYTICAL RESULTS

Matrix: Soil

				Sample Number	09			
				Sample Identification	MW-3C			
				Date Sampled	07/10/92			
Test Description	Units	Detection Limit	Method	Date Analyzed	Test Result			
Cadmium	mg/Kg	1	EPA 6010	07/23/92	<1			
Chromium	mg/Kg	1	EPA 6010	07/23/92	39			
Lead	mg/Kg	5	EPA 6010	07/23/92	18			
Nickel	mg/Kg	2.5	EPA 6010	07/23/92	20			
Zinc	mg/Kg	5	EPA 6010	07/23/92	57			
Percent solids					76			

Result reported on a dry weight basis.

GTEL ENVIRONMENTAL LABORATORIES, INC.

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(510) 825-0720 (FAX)

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: SR522 & NEI80th
Work Order Number: C2-07-205

July 27, 1992

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Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen

Eileen F. Bullen
Laboratory Director

Table 1

ANALYTICAL RESULTS
Semi-Volatile Organics in Soil
EPA Method 8270[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW-1A	MW-1B	MW-2A	MW-2B
Date Sampled		07/09/92	07/09/92	07/09/92	07/09/92
Date Extracted		07/17/92	07/17/92	07/17/92	07/17/92
Date Analyzed		07/23/92	07/23/92	07/23/92	07/23/92
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
Phenol	300	<300	<300	<300	<300
bis(2-Chloroethyl)ether	300	<300	<300	<300	<300
2-Chlorophenol	300	<300	<300	<300	<300
1,3-Dichlorobenzene	300	<300	<300	<300	<300
1,4-Dichlorobenzene	300	<300	<300	<300	<300
Benzyl alcohol	300	<300	<300	<300	<300
1,2-Dichlorobenzene	300	<300	<300	<300	<300
2-Methylphenol	300	<300	<300	<300	<300
bis-(2-Chloroisopropyl)ether	300	<300	<300	<300	<300
4-Methylphenol	300	<300	<300	<300	<300
N-Nitroso-di-propylamine	300	<300	<300	<300	<300
Hexachloroethane	300	<300	<300	<300	<300
Nitrobenzene	300	<300	<300	<300	<300
Isophorone	300	<300	<300	<300	<300
2-Nitrophenol	300	<300	<300	<300	<300
2,4-Dimethylphenol	300	<300	<300	<300	<300
Benzoic acid	1500	<1500	<1500	<1500	<1500
bis(2-Chloroethoxy)methane	300	<300	<300	<300	<300
2,4-Dichlorophenol	300	<300	<300	<300	<300
1,2,4-Trichlorobenzene	300	<300	<300	<300	<300
Naphthalene	300	<300	<300	<300	<300
4-Chloroaniline	300	<300	<300	<300	<300
Hexachlorobutadiene	300	<300	<300	<300	<300
4-Chloro-3-methylphenol	300	<300	<300	<300	<300
2-Methylnaphthalene	300	<300	<300	<300	<300
Hexachlorocyclopentadiene	300	<300	<300	<300	<300
2,4,6-Trichlorophenol	300	<300	<300	<300	<300
2,4,5-Trichlorophenol	1500	<1500	<1500	<1500	<1500
2-Chloronaphthalene	300	<300	<300	<300	<300
2-Nitroaniline	1500	<1500	<1500	<1500	<1500
Dimethylphthalate	300	<300	<300	<300	<300
Acenaphthylene	300	<300	<300	<300	<300
3-Nitroaniline	1500	<1500	<1500	<1500	<1500
Acenaphthene	300	<300	<300	<300	<300
2,4-Dinitrophenol	1500	<1500	<1500	<1500	<1500

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Sample extraction by EPA Method 3550. Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS
Semi-Volatile Organics in Soil
EPA Method 8270[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW-1A	MW-1B	MW-2A	MW-2B
Date Sampled		07/09/92	07/09/92	07/09/92	07/09/92
Date Extracted		07/17/92	07/17/92	07/17/92	07/17/92
Date Analyzed		07/23/92	07/23/92	07/23/92	07/23/92
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
4-Nitrophenol	1500	<1500	<1500	<1500	<1500
Dibenzofuran	300	<300	<300	<300	<300
2,4-Dinitrotoluene	300	<300	<300	<300	<300
2,6-Dinitrotoluene	300	<300	<300	<300	<300
Diethylphthalate	300	<300	<300	<300	<300
4-Chlorophenyl-phenylether	300	<300	<300	<300	<300
Fluorene	300	<300	<300	<300	<300
4-Nitroaniline	1500	<1500	<1500	<1500	<1500
4,6-Dinitro-2-methylphenol	1500	<1500	<1500	<1500	<1500
N-Nitrosodiphenylamine	300	<300	<300	<300	<300
4-Bromophenyl-phenylether	300	<300	<300	<300	<300
Hexachlorobenzene	300	<300	<300	<300	<300
Pentachlorophenol	1500	<1500	<1500	<1500	<1500
Phenanthrene	300	<300	<300	<300	<300
Anthracene	300	<300	<300	<300	<300
Di-n-butylphthalate	300	<300	<300	<300	<300
Fluoranthene	300	<300	<300	<300	<300
Pyrene	300	<300	<300	<300	<300
Butylbenzylphthalate	300	<300	<300	<300	<300
3,3'-Dichlorobenzidine	600	<600	<600	<600	<600
Benzo(a)anthracene	300	<300	<300	<300	<300
bis(2-Ethylhexyl)phthalate	300	<300	<300	<300	<300
Chrysene	300	<300	<300	<300	<300
Di-n-octylphthalate	300	<300	<300	<300	<300
Benzo(b)fluoranthene	300	<300	<300	<300	<300
Benzo(k)fluoranthene	300	<300	<300	<300	<300
Benzidine	600	<600	<600	<600	<600
Benzo(a)pyrene	300	<300	<300	<300	<300
Indeno(1,2,3-cd)pyrene	300	<300	<300	<300	<300
Dibenz(a,h)anthracene	300	<300	<300	<300	<300
Benzo(g,h,i)perylene	300	<300	<300	<300	<300
Quantitation Limit Multiplier		1	1	1	1
Percent solids		85	80	90	76

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Sample extraction by EPA Method 3550. Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS
Semi-Volatile Organics in Soil
EPA Method 8270[a]

GTEL Sample Number		05	06	07	08
Client Identification		MW-3A	MW-3B	MW-1C	MW-2C
Date Sampled		07/10/92	07/10/92	07/09/92	07/09/92
Date Extracted		07/17/92	07/17/92	07/17/92	07/17/92
Date Analyzed		07/23/92	07/23/92	07/23/92	07/23/92
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
Phenol	300	<300	<300	<300	<300
bis(2-Chloroethyl)ether	300	<300	<300	<300	<300
2-Chlorophenol	300	<300	<300	<300	<300
1,3-Dichlorobenzene	300	<300	<300	<300	<300
1,4-Dichlorobenzene	300	<300	<300	<300	<300
Benzyl alcohol	300	<300	<300	<300	<300
1,2-Dichlorobenzene	300	<300	<300	<300	<300
2-Methylphenol	300	<300	<300	<300	<300
bis-(2-Chloroisopropyl)ether	300	<300	<300	<300	<300
4-Methylphenol	300	<300	<300	<300	<300
N-Nitroso-di-propylamine	300	<300	<300	<300	<300
Hexachloroethane	300	<300	<300	<300	<300
Nitrobenzene	300	<300	<300	<300	<300
Isophorone	300	<300	<300	<300	<300
2-Nitrophenol	300	<300	<300	<300	<300
2,4-Dimethylphenol	300	<300	<300	<300	<300
Benzoic acid	1500	<1500	<1500	<1500	<1500
bis(2-Chloroethoxy)methane	300	<300	<300	<300	<300
2,4-Dichlorophenol	300	<300	<300	<300	<300
1,2,4-Trichlorobenzene	300	<300	<300	<300	<300
Naphthalene	300	<300	<300	<300	<300
4-Chloroaniline	300	<300	<300	<300	<300
Hexachlorobutadiene	300	<300	<300	<300	<300
4-Chloro-3-methylphenol	300	<300	<300	<300	<300
2-Methylnaphthalene	300	<300	<300	<300	<300
Hexachlorocyclopentadiene	300	<300	<300	<300	<300
2,4,6-Trichlorophenol	300	<300	<300	<300	<300
2,4,5-Trichlorophenol	1500	<1500	<1500	<1500	<1500
2-Chloronaphthalene	300	<300	<300	<300	<300
2-Nitroaniline	1500	<1500	<1500	<1500	<1500
Dimethylphthalate	300	<300	<300	<300	<300
Acenaphthylene	300	<300	<300	<300	<300
3-Nitroaniline	1500	<1500	<1500	<1500	<1500
Acenaphthene	300	<300	<300	<300	<300
2,4-Dinitrophenol	1500	<1500	<1500	<1500	<1500

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Sample extraction by EPA Method 3550. Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS
Semi-Volatile Organics in Soil
EPA Method 8270[a]

GTEL Sample Number		05	06	07	08
Client Identification		MW-3A	MW-3B	MW-1C	MW-2C
Date Sampled		07/10/92	07/10/92	07/09/92	07/09/92
Date Extracted		07/17/92	07/17/92	07/17/92	07/17/92
Date Analyzed		07/23/92	07/23/92	07/23/92	07/23/92
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
4-Nitrophenol	1500	<1500	<1500	<1500	<1500
Dibenzofuran	300	<300	<300	<300	<300
2,4-Dinitrotoluene	300	<300	<300	<300	<300
2,6-Dinitrotoluene	300	<300	<300	<300	<300
Diethylphthalate	300	<300	<300	<300	<300
4-Chlorophenyl-phenylether	300	<300	<300	<300	<300
Fluorene	300	<300	<300	<300	<300
4-Nitroaniline	1500	<1500	<1500	<1500	<1500
4,6-Dinitro-2-methylphenol	1500	<1500	<1500	<1500	<1500
N-Nitrosodiphenylamine	300	<300	<300	<300	<300
4-Bromophenyl-phenylether	300	<300	<300	<300	<300
Hexachlorobenzene	300	<300	<300	<300	<300
Pentachlorophenol	1500	<1500	<1500	<1500	<1500
Phenanthrene	300	<300	<300	<300	<300
Anthracene	300	<300	<300	<300	<300
Di-n-butylphthalate	300	<300	<300	<300	<300
Fluoranthene	300	<300	<300	<300	<300
Pyrene	300	<300	<300	<300	<300
Butylbenzylphthalate	300	<300	<300	<300	<300
3,3'-Dichlorobenzidine	600	<600	<600	<600	<600
Benzo(a)anthracene	300	<300	<300	<300	<300
bis(2-Ethylhexyl)phthalate	300	<300	<300	<300	<300
Chrysene	300	<300	<300	<300	<300
Di-n-octylphthalate	300	<300	<300	<300	<300
Benzo(b)fluoranthene	300	<300	<300	<300	<300
Benzo(k)fluoranthene	300	<300	<300	<300	<300
Benzidine	600	<600	<600	<600	<600
Benzo(a)pyrene	300	<300	<300	<300	<300
Indeno(1,2,3-cd)pyrene	300	<300	<300	<300	<300
Dibenz(a,h)anthracene	300	<300	<300	<300	<300
Benzo(g,h,i)perylene	300	<300	<300	<300	<300
Quantitation Limit Multiplier		1	1	1	1
Percent solids		91	69	88	79

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Sample extraction by EPA Method 3550. Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS
Semi-Volatile Organics in Soil
EPA Method 8270[a]

GTEL Sample Number		09			
Client Identification		MW-3C			
Date Sampled		07/10/92			
Date Extracted		07/17/92			
Date Analyzed		07/24/92			
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
Phenol	300	<300			
bis(2-Chloroethyl)ether	300	<300			
2-Chlorophenol	300	<300			
1,3-Dichlorobenzene	300	<300			
1,4-Dichlorobenzene	300	<300			
Benzyl alcohol	300	<300			
1,2-Dichlorobenzene	300	<300			
2-Methylphenol	300	<300			
bis-(2-Chloroisopropyl)ether	300	<300			
4-Methylphenol	300	<300			
N-Nitroso-di-propylamine	300	<300			
Hexachloroethane	300	<300			
Nitrobenzene	300	<300			
Isophorone	300	<300			
2-Nitrophenol	300	<300			
2,4-Dimethylphenol	300	<300			
Benzoic acid	1500	<1500			
bis(2-Chloroethoxy)methane	300	<300			
2,4-Dichlorophenol	300	<300			
1,2,4-Trichlorobenzene	300	<300			
Naphthalene	300	<300			
4-Chloroaniline	300	<300			
Hexachlorobutadiene	300	<300			
4-Chloro-3-methylphenol	300	<300			
2-Methylnaphthalene	300	<300			
Hexachlorocyclopentadiene	300	<300			
2,4,6-Trichlorophenol	300	<300			
2,4,5-Trichlorophenol	1500	<1500			
2-Chloronaphthalene	300	<300			
2-Nitroaniline	1500	<1500			
Dimethylphthalate	300	<300			
Acenaphthylene	300	<300			
3-Nitroaniline	1500	<1500			
Acenaphthene	300	<300			
2,4-Dinitrophenol	1500	<1500			

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Sample extraction by EPA Method 3550. Results reported on a dry weight basis.

Table 1 (Continued)

ANALYTICAL RESULTS
Semi-Volatile Organics in Soil
PA Method 8270[a]

GTEL Sample Number		09			
Client Identification		MW-3C			
Date Sampled		07/10/92			
Date Extracted		07/17/92			
Date Analyzed		07/24/92			
Analyte	Quantitation Limit, ug/Kg	Concentration, ug/Kg			
4-Nitrophenol	1500	<1500			
Dibenzofuran	300	<300			
2,4-Dinitrotoluene	300	<300			
2,6-Dinitrotoluene	300	<300			
Diethylphthalate	300	<300			
4-Chlorophenyl-phenylether	300	<300			
Fluorene	300	<300			
4-Nitroaniline	1500	<1500			
4,6-Dinitro-2-methylphenol	1500	<1500			
N-Nitrosodiphenylamine	300	<300			
4-Bromophenyl-phenylether	300	<300			
Hexachlorobenzene	300	<300			
Pentachlorophenol	1500	<1500			
Phenanthrene	300	<300			
Anthracene	300	<300			
Di-n-butylphthalate	300	<300			
Fluoranthene	300	<300			
Pyrene	300	<300			
Butylbenzylphthalate	300	<300			
3,3'-Dichlorobenzidine	600	<600			
Benzo(a)anthracene	300	<300			
bis(2-Ethylhexyl)phthalate	300	<300			
Chrysene	300	<300			
Di-n-octylphthalate	300	<300			
Benzo(b)fluoranthene	300	<300			
Benzo(k)fluoranthene	300	<300			
Benzidine	600	<600			
Benzo(a)pyrene	300	<300			
Indeno(1,2,3-cd)pyrene	300	<300			
Dibenz(a,h)anthracene	300	<300			
Benzo(g,h,i)perylene	300	<300			
Quantitation Limit Multiplier		1			
Percent solids		76			

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Sample extraction by EPA Method 3550. Results reported on a dry weight basis.

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Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: Bothell, WA
Work Order Number: C2-07-351

July 31, 1992

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Mark Nichols
Groundwater Technology, Inc.
19033 W. Valley Hwy., D-104
Kent, WA 98032

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 07/17/92, under chain of custody record 23032.

A formal Quality Control/Quality Assurance (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

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If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen / mjb

Eileen F. Bullen
Laboratory Director

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: Bothell, WA
Work Order Number: C2-07-351

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and
Total Petroleum Hydrocarbons as Gasoline in Water

EPA Methods 5030, 8020, and Modified 8015[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW1	MW2	MW3	MW3A
Date Sampled		07/15/92	07/15/92	07/15/92	07/15/92
Date Analyzed		07/23/92	07/23/92	07/23/92	07/23/92
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<0.3	<0.3	<0.3
Toluene	0.3	<0.3	0.3	<0.3	<0.3
Ethylbenzene	0.3	<0.3	<0.3	<0.3	<0.3
Xylene, total	0.5	<0.5	3	<0.5	<0.5
BTEX, total	--	--	3	--	--
Gasoline	10	<10	200	<10	<10
Detection Limit Multiplier		1	1	1	1

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

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Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen
Laboratory Director

Client Number: GTI70TEX01
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Project ID: Bothell, WA
Work Order Number: C2-07-352

Table 1

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons in Water by Infrared Spectrometry

WTPH-418.1[1](SM 5520 FC[2])

1. Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-202, Revised March 1983, U.S. Environmental Protection Agency. Modification in TPH Methods as per the state of Washington Department of Ecology, Appendix L, April, 1992.
2. Standard Methods for the Examination of Water and Wastewater, 17th ed., 1898, American Public Health Association.

GTEL Sample Number		01	02	03	04
Client Identification		MW1	MW2	MW3	MW3A
Date Sampled		07/15/92	07/15/92	07/15/92	07/15/92
Date Prepared		07/27/92	07/27/92	07/27/92	07/27/92
Date Analyzed		07/28/92	07/28/92	07/28/92	07/28/92
Analyte	Quantitation Limit, mg/L	Concentration, mg/L			
Total petroleum hydrocarbons	1	1	<1	<1	<1
Quantitation Limit Multiplier		1	1	1	1

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Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen/KPM

Eileen F. Bullen
Laboratory Director

Table 1

ANALYTICAL RESULTS

Volatile Organics in Water

EPA Method 8240[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW1	MW2	MW3	MW3A
Date Sampled		07/15/92	07/15/92	07/15/92	07/15/92
Date Analyzed		07/24/92	07/24/92	07/24/92	07/24/92
Analyte	Quantitation Limit, ug/L	Concentration, ug/L			
Chloromethane	10	<10	<10	<10	<10
Bromomethane	10	<10	<10	<10	<10
Vinyl chloride	10	<10	<10	<10	<10
Chloroethane	10	<10	<10	<10	<10
Methylene chloride	5	<5	<5	<5	<5
Acetone	100	<100	<100	<100	<100
Carbon disulfide	5	<5	<5	<5	<5
1,1-Dichloroethene	5	<5	<5	<5	<5
1,1-Dichloroethane	5	<5	<5	<5	<5
1,2-Dichloroethene, total	5	<5	<5	<5	<5
Chloroform	5	<5	<5	<5	6.5
1,2-Dichloroethane	5	<5	<5	<5	<5
2-Butanone	100	<100	<100	<100	<100
1,1,1-Trichloroethane	5	<5	<5	<5	<5
Carbon tetrachloride	5	<5	<5	<5	<5
Vinyl acetate	50	<50	<50	<50	<50
Bromodichloromethane	5	<5	<5	<5	<5
1,2-Dichloropropane	5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5	7.5	<5	<5	<5
Trichloroethene	5	<5	<5	<5	110

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Sample introduction by EPA Method 5030.

Table 1 (Continued)

ANALYTICAL RESULTS

Volatile Organics in Water

EPA Method 8240[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW1	MW2	MW3	MW3A
Date Sampled		07/15/92	07/15/92	07/15/92	07/15/92
Date Analyzed		07/24/92	07/24/92	07/24/92	07/24/92
Analyte	Quantitation Limit, ug/L	Concentration, ug/L			
Dibromochloromethane	5	<5	<5	<5	<5
1,1,2-Trichloroethane	5	<5	<5	<5	<5
Benzene	5	<5	<5	<5	<5
trans-1,3-Dichloropropene	5	<5	<5	<5	<5
2-Chloroethylvinyl ether	10	<10	<10	<10	<10
Bromoform	5	<5	<5	<5	<5
4-Methyl-2-pentanone	50	<50	<50	<50	<50
2-Hexanone	50	<50	<50	<50	<50
Tetrachloroethene	5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5	<5	<5	<5	<5
Toluene	5	<5	<5	<5	<5
Chlorobenzene	5	<5	<5	<5	<5
Ethylbenzene	5	<5	<5	<5	<5
Styrene	5	<5	<5	<5	<5
1,2-Dichlorobenzene	5	<5	<5	<5	<5
1,3-Dichlorobenzene	5	<5	<5	<5	<5
1,4-Dichlorobenzene	5	<5	<5	<5	<5
Xylene, total	5	<5	<5	<5	<5
Trichlorofluoromethane	5	<5	<5	<5	<5
Quantitation Limit Multiplier		1	1	1	1

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Sample introduction by EPA Method 5030.

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Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: Bothell, WA
Work Order Number: C2-07-354

July 29, 1992

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Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen /RM

Eileen F. Bullen
Laboratory Director

Table 1

ANALYTICAL RESULTS

Semi-Volatile Organics in Water

EPA Method 8270[a]/625[b]

GTEL Sample Number		01	02	03	04
Client Identification		MW1	MW2	MW3	MW3A
Date Sampled		07/15/92	07/15/92	07/15/92	07/15/92
Date Extracted		07/22/92	07/22/92	07/22/92	07/22/92
Date Analyzed		07/24/92	07/24/92	07/24/92	07/24/92
Analyte	Quantitation Limit, ug/L	Concentration, ug/L			
Phenol	10	<10	<10	<10	<10
bis(2-Chloroethyl)ether	10	<10	<10	<10	<10
2-Chlorophenol	10	<10	<10	<10	<10
1,3-Dichlorobenzene	10	<10	<10	<10	<10
1,4-Dichlorobenzene	10	<10	<10	<10	<10
Benzyl alcohol	10	<10	<10	<10	<10
1,2-Dichlorobenzene	10	<10	<10	<10	<10
2-Methylphenol	10	<10	<10	<10	<10
bis-(2-Chloroisopropyl)ether	10	<10	<10	<10	<10
4-Methylphenol	10	<10	<10	<10	<10
N-Nitroso-di-propylamine	10	<10	<10	<10	<10
Hexachloroethane	10	<10	<10	<10	<10
Nitrobenzene	10	<10	<10	<10	<10
Isophorone	10	<10	<10	<10	<10
2-Nitrophenol	10	<10	<10	<10	<10
2,4-Dimethylphenol	10	<10	<10	<10	<10
Benzoic acid	50	<50	<50	<50	<50
bis(2-Chloroethoxy)methane	10	<10	<10	<10	<10
2,4-Dichlorophenol	10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	10	<10	<10	<10	<10
Naphthalene	10	<10	<10	<10	<10
4-Chloroaniline	10	<10	<10	<10	<10
Hexachlorobutadiene	10	<10	<10	<10	<10
4-Chloro-3-methylphenol	10	<10	<10	<10	<10
2-Methylnaphthalene	10	<10	<10	<10	<10
Hexachlorocyclopentadiene	10	<10	<10	<10	<10
2,4,6-Trichlorophenol	10	<10	<10	<10	<10
2,4,5-Trichlorophenol	50	<50	<50	<50	<50
2-Chloronaphthalene	10	<10	<10	<10	<10
2-Nitroaniline	50	<50	<50	<50	<50
Dimethylphthalate	10	<10	<10	<10	<10
Acenaphthylene	10	<10	<10	<10	<10
3-Nitroaniline	50	<50	<50	<50	<50
Acenaphthene	10	<10	<10	<10	<10

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Sample extraction by EPA Method 3510.
b. Federal Register, Vol. 49, October 26, 1984. Sample extraction by EPA Method 3510.

Table 1 (Continued)

ANALYTICAL RESULTS

Semi-Volatile Organics in Water

EPA Method 8270[a]/625[b]

GTEL Sample Number		01	02	03	04
Client Identification		MW1	MW2	MW3	MW3A
Date Sampled		07/15/92	07/15/92	07/15/92	07/15/92
Date Extracted		07/22/92	07/22/92	07/22/92	07/22/92
Date Analyzed		07/24/92	07/24/92	07/24/92	07/24/92
Analyte	Quantitation Limit, ug/L	Concentration, ug/L			
2,4-Dinitrophenol	50	<50	<50	<50	<50
4-Nitrophenol	50	<50	<50	<50	<50
Dibenzofuran	10	<10	<10	<10	<10
2,4-Dinitrotoluene	10	<10	<10	<10	<10
2,6-Dinitrotoluene	10	<10	<10	<10	<10
Diethylphthalate	10	<10	<10	<10	<10
4-Chlorophenyl-phenylether	10	<10	<10	<10	<10
Fluorene	10	<10	<10	<10	<10
4-Nitroaniline	50	<50	<50	<50	<50
4,6-Dinitro-2-methylphenol	50	<50	<50	<50	<50
N-Nitrosodiphenylamine	10	<10	<10	<10	<10
4-Bromophenyl-phenylether	10	<10	<10	<10	<10
Hexachlorobenzene	10	<10	<10	<10	<10
Pentachlorophenol	50	<50	<50	<50	<50
Phenanthrene	10	<10	<10	<10	<10
Anthracene	10	<10	<10	<10	<10
Di-n-butylphthalate	10	<10	<10	<10	<10
Fluoranthene	10	<10	<10	<10	<10
Pyrene	10	<10	<10	<10	<10
Butylbenzylphthalate	10	<10	<10	<10	<10
3,3'-Dichlorobenzidine	20	<20	<20	<20	<20
Benzo(a)anthracene	10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate	10	<10	<10	<10	<10
Chrysene	10	<10	<10	<10	<10
Di-n-octylphthalate	10	<10	<10	<10	<10
Benzo(b)fluoranthene	10	<10	<10	<10	<10
Benzo(k)fluoranthene	10	<10	<10	<10	<10
Benzidine	20	<20	<20	<20	<20
Benzo(a)pyrene	10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	10	<10	<10	<10	<10
Dibenz(a,h)anthracene	10	<10	<10	<10	<10
Benzo(g,h,i)perylene	10	<10	<10	<10	<10
Quantitation Limit Multiplier		1	1	1	1

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Sample extraction by EPA Method 3510.
b. Federal Register, Vol. 49, October 26, 1984. Sample extraction by EPA Method 3510.

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Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: Bothell, WA
Work Order Number: C2-07-355

July 30, 1992

RECEIVED AUG 3 1992

Mark Nichols
Groundwater Technology, Inc.
19033 W. Valley Hwy., D-104
Kent, WA 98032

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 07/17/92, under chain of custody record 23032.

A formal Quality Control/Quality Assurance (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen

Eileen F. Bullen
Laboratory Director

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: Bothell, WA
Work Order Number: C2-07-355

Table 1

ANALYTICAL RESULTS

Polynuclear Aromatics in Water

EPA Method 8270[a]

GTEL Sample Number		01	02	03	
Client Identification		MW1	MW2	MW3	
Date Sampled		07/15/92	07/15/92	07/15/92	
Date Extracted		07/22/92	07/22/92	07/22/92	
Date Analyzed		07/29/92	07/29/92	07/29/92	
Analyte	Quantitation Limit, ug/L	Concentration, ug/L			
Naphthalene	10	<10	<10	<10	
Acenaphthylene	10	<10	<10	<10	
Acenaphthene	10	<10	<10	<10	
Fluorene	10	<10	<10	<10	
Phenanthrene	10	<10	<10	<10	
Anthracene	10	<10	<10	<10	
Fluoranthene	10	<10	<10	<10	
Pyrene	10	<10	<10	<10	
Benzo(a)anthracene	10	<10	<10	<10	
Chrysene	10	<10	<10	<10	
Benzo(b)fluoranthene	10	<10	<10	<10	
Benzo(k)fluoranthene	10	<10	<10	<10	
Benzo(a)pyrene	10	<10	<10	<10	
Dibenz(a,h)anthracene	10	<10	<10	<10	
Benzo(ghi)perylene	10	<10	<10	<10	
Indeno(1,2,3-cd)pyrene	10	<10	<10	<10	
Quantitation Limit Multiplier		1	1	1	

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986.

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: Bothell, WA
Work Order Number: C2-07-356

July 30, 1992

Mark Nichols
Groundwater Technology, Inc.
19033 W. Valley Hwy., D-104
Kent, WA 98032

RECEIVED AUG 3 1992

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 07/17/92, under chain of custody record 23032.

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Sincerely,
GTEL Environmental Laboratories, Inc.

Julia F Beaman IEB

Eileen F. Bullen
Laboratory Director

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: Bothell, WA
Work Order Number: C2-07-356

ANALYTICAL RESULTS

Matrix: Water

				Sample Number	01	02	03	04
				Sample Identification	MW1	MW2	MW3	MW3A
				Date Sampled	07/15/92	07/15/92	07/15/92	07/15/92
Test Description	Units	Detection Limit	Method	Date Analyzed	Test Result			
Cadmium	ug/L	5	EPA 6010	07/27/92	<5	<5	<5	<5
Chromium	ug/L	10	EPA 6010	07/27/92	<10	<10	<10	33
Lead	ug/L	5	EPA 7421	07/29/92	<5	6	40	240
Nickel	ug/L	50	EPA 6010	07/27/92	<50	<50	<50	94
Zinc	ug/L	10	EPA 6010	07/27/92	20	27	58	260

GTEL ENVIRONMENTAL LABORATORIES, INC.

GTEL ENVIRONMENTAL LABORATORIES, INC.

4080 PIKE LANE, SUITE C
CONCORD, CA 94520
(510) 685-7852
(800) 423-7143

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

23032

Company Name: Groundwater Tech
Phone #: 251-5441 206
FAX #: 251-8452
Site location: Bothell, Wa.
Client Project ID: (#) 020602805.6070
(NAME) TX-Riverside
Sampler Name (Print): J. Josey

Field Sample ID	GTEL Lab # (Lab use only)	# Containers	Matrix: WATER	SOIL	AIR	SLUDGE	PRODUCT	OTHER	Method Preserved: HCl	HNO_3	H_2SO_4	ICE	UNPRESERVED	OTHER (SPECIFY)	Sampling: DATE	TIME
MW1 01		11	X						X	X		X			7-15	4:00
MW2 02		11	X						X	X		X				4:15
MW3 03		11	X						X	X		X				4:30
MW 3A 04		6	X						X	X		X				4:50

ANALYSIS REQUEST

BTEX/602 ☐ 8020 ☐ with MTBE ☐	BTEX/Gas Hydrocarbons PID/FID ☒ with MTBE ☐	Hydrocarbons GC/FID Gas ☐ Diesel ☐ Screen ☐	Hydrocarbon Profile (SIMDIS) ☐	Oil and Grease 413.1 ☐ 413.2 ☐ SM 503 ☐	TPH/IR 418.1 ☒ SM 503 ☐	EDB by 504 ☐ DBCP by 504 ☐	EPA 503.1 ☐ EPA 502.2 ☐	EPA 601 ☐ EPA 8010 ☐	EPA 602 ☐ EPA 8020 ☐	EPA 608 ☐ 8080 ☐ PCB only ☐	EPA 624/PPL ☐ 8240/TAL ☒ NBS (+25) ☐	EPA 625/PPL ☐ 8270/TAL ☒ NBS (+25) ☐	EPA 610 ☐ 8310 ☒ PAH	EP TOX Metals ☐ Pesticides ☐ Herbicides ☐	TCLP Metals ☐ VOA ☐ Semi-VOA ☐ Pest ☐ Herb ☐	EPA Metals - Priority Pollutant ☐ TAL ☐ RCRA ☐	CAM Metals TTLC ☐ STLC ☐	Lead 239.2 ☐ 200.7 ☐ 7420 ☐ 7421 ☐ 6010 ☐	Organic Lead ☐	Corrosivity ☐ Flash Point ☐ Reactivity ☐	OTHER
					X						X	X	X							8260 T-BEX 35
	X				X						X	X	X							Cd, Cr, Pb, Zn, Ni 6010
	X				X						X	X	X							
	X				X						X	X	X							

TAT
(24 hr) ☐
ted (48 hr) ☐
ness Days ☐
s Days ☐
☐ CLP ☐

Special Handling
GTEL Contact
Quote/Contract #
Confirmation #
PO #
QA / QC LEVEL
OTHER

SPECIAL DETECTION LIMITS

SPECIAL REPORTING REQUIREMENTS
FAX ☐

REMARKS

Lab Use Only Lot #
Storage Location:
Work Order #

CUSTODY RECORD

Relinquished by Sampler:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: Bothell
Work Order Number: C2-07-617

August 13, 1992

RECEIVED AUG 1 1992

Mark Nichols
Groundwater Technology, Inc.
19033 W. Valley Hwy., D-104
Kent, WA 98032

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 07/29/92, under chain of custody record 23036.

A formal Quality Control/Quality Assurance (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen

Eileen F. Bullen
Laboratory Director

Client Number: GTI70TEX01
Consultant Project Number: 020602805
Project ID: Bothell
Work Order Number: C2-07-617

Table 1

ANALYTICAL RESULTS

Polynuclear Aromatics in Water

EPA Method 8310[a]

GTEL Sample Number		01			
Client Identification		MW 3A			
Date Sampled		07/28/92			
Date Extracted		07/31/92			
Date Analyzed		08/06/92			
Analyte	Quantitation Limit, ug/L	Concentration, ug/L			
Naphthalene	0.14	<0.14			
Acenaphthylene	0.069	<0.069			
Acenaphthene	0.026	<0.02			
Fluorene	0.018	<0.018			
Phenanthrene	0.019	<0.019			
Anthracene	0.014	<0.014			
Fluoranthene	0.025	0.1			
Pyrene	0.014	0.1			
Benzo(a)anthracene	0.012	0.07			
Chrysene	0.013	0.08			
Benzo(b)fluoranthene	0.013	0.13			
Benzo(k)fluoranthene	0.011	0.012			
Benzo(a)pyrene	0.012	0.017			
Dibenz(a,h)anthracene	0.013	<0.013			
Benzo(ghi)perylene	0.03	0.06			
Indeno(1,2,3-cd)pyrene	0.012	0.025			
Quantitation Limit Multiplier		1			

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986.

GTEL ENVIRONMENTAL LABORATORIES, INC.

4080 PIKE LANE, SUITE C
CONCORD, CA 94520
(510) 685-7852
(800) 423-7143

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

23036

Company Name: Groundwater Tech
Phone #: 2062575441
FAX #: 206 2518452
Company Address: 19033 W. Valley Hwy D104 Kent Wa. 98032
Site location: Bothell
Project Manager: Mike Nichols
Client Project ID: (#) 020602805.6050
(NAME) TX-Riverside
Sampler Name (Print): J. Josey

Initial each with proper field sampling procedure used during the collection of these samples

Field Sample I.D.	GTEL Lab # (Lab use only)	# Containers	Matrix: WATER	SOIL	AIR	SLUDGE	PRODUCT	OTHER	Method Preserved: HCl	HNO_3	H_2SO_4	ICE	UNPRESERVED	OTHER (SPECIFY)	Sampling: DATE	TIME
MW-3A	01	2	X									X	X		1/28	11:00

ANALYSIS REQUEST

BTEX/602 ☐ 8020 ☐ with MTBE ☐	BTEX/Gas Hydrocarbons PID/FID ☐ with MTBE ☐	Hydrocarbons GC/FID Gas ☐ Diesel ☐ Screen ☐	Hydrocarbon Profile (SIMDIS) ☐	Oil and Grease 413.1 ☐ 413.2 ☐ SM 503 ☐	TPH/R 418.1 ☐ SM503 ☐	EDB by 504 ☐ DBCP by 504 ☐	EPA 503.1 ☐ EPA 502.2 ☐	EPA 601 ☐ EPA 8010 ☐	EPA 602 ☐ EPA 8020 ☐	EPA 608 ☐ 8080 ☐ PCB only ☐	EPA 624/PPL ☐ 8240/TAL ☐ NBS (+15) ☐	EPA 625/PPL ☐ 8270/TAL ☐ NBS (+25) ☐	EPA 610 ☐ 8310 ☐ XPAH	EP TOX Metals ☐ Pesticides ☐ Herbicides ☐	TCLP Metals ☐ VOA ☐ SemiVOA ☐ Pest ☐ Herb ☐	EPA Metals - Priority Pollutant ☐ TAL ☐ RCRA ☐	CAM Metals TTLC ☐ STLC ☐	Lead 239.2 ☐ 200.7 ☐ 7420 ☐ 7421 ☐ 6010 ☐	Organic Lead ☐	Corrosivity ☐ Flash Point ☐ Reactivity ☐	OTHER
																X					

TAT
Priority (24 hr) ☐
Rush (48 hr) ☐
Expedited (5 Days) ☐
Other ☐
Business Days ☐

Special Handling
OTEL Contact
Cycle Contract
Confirmation
PO

QA / QC LEVEL
BLUE ☐ CLP ☐ OTHER

SPECIAL DETECTION LIMITS

SPECIAL REPORTING REQUIREMENTS
FAX ☐

REMARKS
TEXACO ENVIRONMENTAL SERVICES

Lab Use Only Lot #
Storage Location:
Work Order #

CUSTODY RECORD

	Date	Time	
Relinquished by Sampler: Allan Josey			Received by:
Relinquished by:			Received by
Relinquished by:			Received by Laboratory: Jamie Davis
	1/29/96	12:20	Waybill #