GROUNDWATER MONITORING REPORT
SR 522 and NE 180th Street
RIVERSIDE PROPERTY
BOTHELL, WASHINGTON

September 7, 1993

Prepared for:

Mr. D. Mark Wells, P.E.
Texaco Environmental Services, Inc.
3400 188th Street S.W., Suite 630
Kirkland, Washington 98083

Prepared by:

Groundwater Technology, Inc.
19033 West Valley Highway, Suite D- 104
Kent, Washington 98032

Stan Haskins, RG
Lead Geologist

Mark E. Nichols
Senior Project Manager/Hydrogeologist

GROUNDWATER TECHNOLOGY

EXECUTIVE SUMMARY

Groundwater Technology, Inc. conducted groundwater monitoring and sampling at the property located near the intersection of State Route 522 and NE 180th Street in Bothell, Washington, known as the Riverside Property. The work was performed to assess the current groundwater conditions underlying the site with respect to substances regulated under the Washington Department of Ecology (WDOE) Model Toxics Control Act (MTCA). Groundwater Technology personnel gauged the depth to water in six groundwater monitoring wells and collected water samples from five. The water samples were analyzed for benzene, toluene, ethylbenzene, xylenes, total petroleum hydrocarbons (TPH)-as-gasoline, TPH, volatile organic compounds and lead.

Observations and findings:

- The apparent groundwater flow direction is toward the south-southeast at approximately 2.73 feet per 100 feet.
- Groundwater Samples analyzed for volatile organics, including halogenated hydrocarbons, and gasoline constituents were non-detectable at the respective method detection limits. In addition, total petroleum hydrocarbons (TPH) were non-detectable in the water samples tested.
- Lead concentrations above groundwater MTCA compliance cleanup levels (CCL) were reported in samples collected from monitoring wells MW-1A and MW-3A.

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GROUNDWATER MONITORING REPORT
SR 522 and NE 180TH STREET
RIVERSIDE PROPERTY
BOTHELL, WASHINGTON

1.0 INTRODUCTION

Presented in this report are the worksteps and results associated with groundwater monitoring and sampling conducted by Groundwater Technology, Inc. at the Texaco Refining and Marketing Inc. Riverside Property located at State Route 522 and NE 180th Street, Bothell, Washington (See Figure 1, Site Location Map). The work was performed to assess the current groundwater conditions underlying the site with respect to substances regulated under the Washington Department of Ecology (WDOE) Model Toxics Control Act[1] (MTCA).

Groundwater Technology previously installed six groundwater monitoring wells and collected groundwater samples in July, 1992. At that time, an open excavation partially filled with water was present at the site. Since then, the excavation was pumped out and petroleum contaminated sediment and soil were excavated from the bottom of the excavation. The excavation was subsequently backfilled above groundwater level with imported clean material. The previous investigation identified two water bearing units at the site; a lower apparently confined water bearing zone, present below a depth of approximately 12 feet, and a shallow perched zone present above a depth of about eight feet. Three of the six groundwater monitoring wells installed in July 1992 (MW-1, MW-2, and MW-3) are completed in the lower zone. The other three wells (MW-1A, MW-2A, and MW-3A) were installed to a depth of eight feet in the perched zone. Tests from the previous groundwater sampling detected concentrations of gasoline constituents, total petroleum hydrocarbons (TPH) as analyzed by EPA method 418.1, trichloroethene, and lead above MTCA Method A compliance cleanup levels (CCL).

2.0 SCOPE OF WORK

The following outline summarizes the specific worksteps involved:

- Gauged the depth to water in each of the monitoring wells;
- Purged and sampled 5 of the 6 previously installed groundwater monitoring wells;

---

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

- Analyzed each water sample from monitoring wells MW-1, MW-2, MW-3, MW-1A and MW-3A for benzene, toluene, ethylbenzene, xylenes (BTEX), total petroleum hydrocarbons-as-gasoline (TPH-G), TPH, volatile organic compounds (VOCs) and lead;
- Analyzed, summarized and presented the information obtained in report form.

3.0 WELL MONITORING AND SAMPLING

On February 25, 1993 water levels were measured in groundwater monitoring wells MW-1, MW-1A, MW-2, MW-2A, MW-3 and MW-3A to evaluate groundwater flow direction and gradient. Table 1 shows the relative well-head elevation, measured depth-to-water (DTW), and relative potentiometric groundwater elevations in the monitoring wells. Based on the data, the gradient was approximately 2.73 feet per 100 feet in the lower zone. A groundwater potentiometric surface map was drawn from the data for the lower zone (Figure 3). Water was present in only two of three shallow wells, therefore no gradient was calculated nor map drawn.

Table 1
Groundwater Monitoring Data

Well Number	MW-1	MW-1A	MW-2	MW-2A	MW-3	MW-3A
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
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	--
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
Date: February 25, 1993						
DTW	7.87	6.99	9.45	7.74*	9.56	4.45
Relative Elev. (Ft)	93.95	94.75	92.12	93.73	90.66	95.89

DTW = Depth to Water
NM = Not Measured (inaccessible)
Note: Elevations are relative based on an arbitrary common datum of 100 feet.
* Likely not a representative groundwater elevation, water is trapped in the well casing.

D. Mark Wells
Texaco Environmental Services

Following groundwater monitoring on February 25, 1993, wells MW-1, MW-1A, MW-2, MW-3 and MW-3A were purged of approximately three well volumes and water samples were collected in accordance with the Standard Operating Procedures in Appendix A. Samples collected were designated MW-1, MW-1A, MW-2, MW-3 and MW-3A and sent to an analytical laboratory with proper Chain-of-Custody documentation. A degree of turbidity was noted in each sample; primarily in the shallow samples, MW-1A and MW-3A. Well MW-2A was not sampled, because the well was dry. Purged water was stored on site pending laboratory analysis.

4.0 LABORATORY ANALYSIS

Groundwater samples collected were analyzed at GTEL Environmental Laboratories in Concord, California. Each water sample was analyzed for BTEX and TPH-G by EPA Methods 8020 and modified 8015 (WTPH-G), TPH by EPA Method 418.1 (WTPH), VOCs by EPA Method 8240, and lead by EPA Method 7421. Water analyses results are summarized in Table 2. Complete laboratory results are contained in Appendix C.

Table 2
Summary of Laboratory Results - Groundwater
Sample Date: February 25, 1993
(Results in µg/L)

ANALYTE	EPA METHOD	MDL	MW-1	MW-1A	MW-2	MW-3	MW-3A	CCL
Benzene	8020	0.3	ND	ND	ND	ND	ND	5
Toluene	8020	0.3	ND	ND	ND	ND	ND	40
Ethylbenzene	8020	0.3	ND	ND	ND	ND	ND	30
Xylene	8020	0.5	ND	ND	ND	ND	ND	20
TPH-G	Mod. 8015	10	ND	ND	ND	ND	ND	1000
TPH	WTPH 418.1	1000	ND	ND	ND	ND	ND	1000
VOCs	8240	varies	ND	ND	ND	ND	ND	varies
Lead	7421	5	ND	56	ND	ND	53	5

MDL = Method Detection Limit
ND = Not Detected at MDL
CCL = WAC-340, Model Toxics Act, Method A Compliance Cleanup Levels - Groundwater
VOCs = Volatile Organic Compounds

The only detected compound was lead in samples MW-1A and MW-3A at concentrations of 56 and 53 μg/L, respectively. Both concentrations are above the CCL of 5 μg/L.

5.0 CONCLUSIONS AND RECOMMENDATIONS

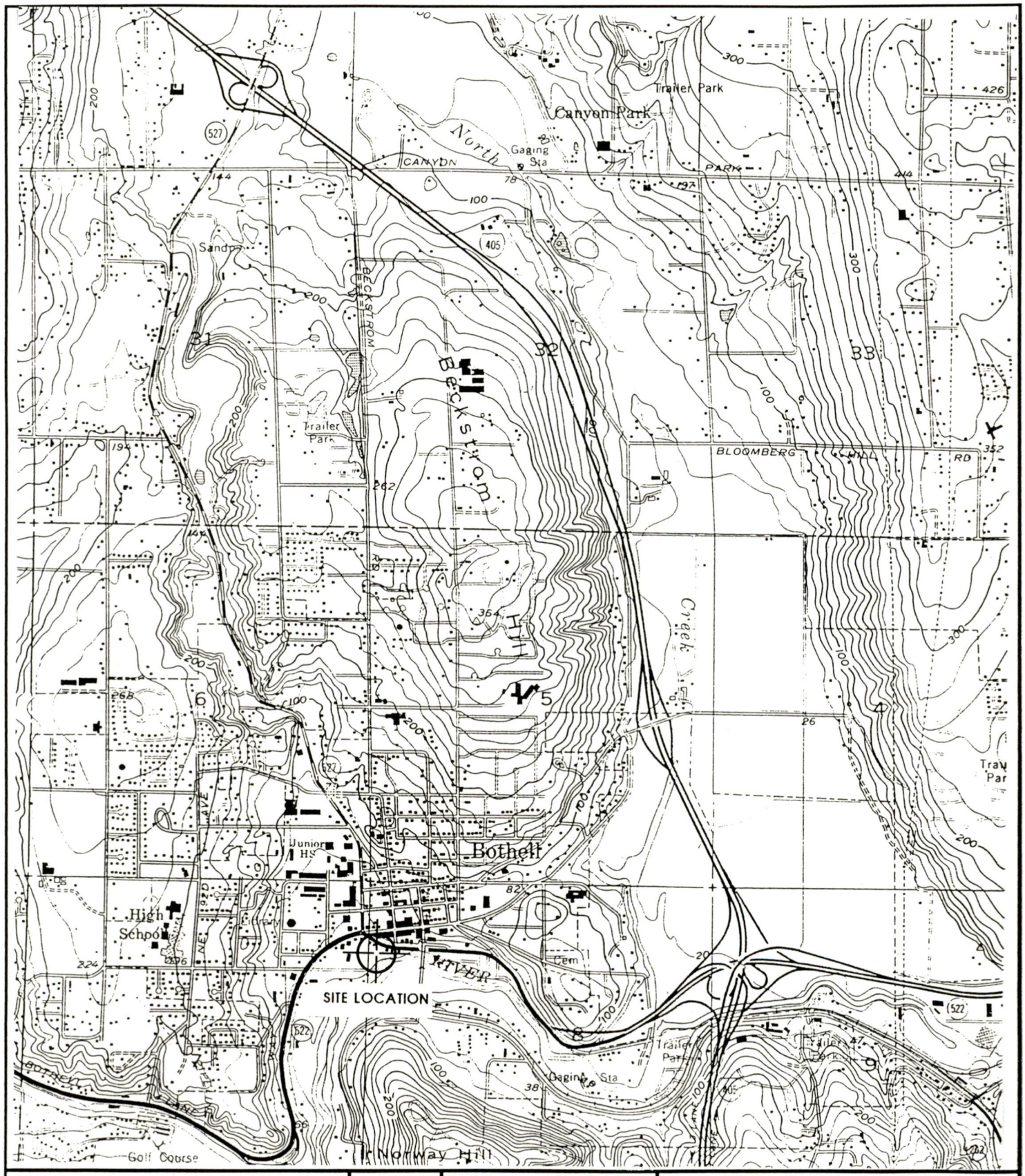
Groundwater monitoring and sampling was completed at the Riverside Property, Bothell, Washington in February, 1993. The apparent groundwater gradient was 2.73 feet per 100 feet to the south-southeast on February 25, 1993. Total lead concentrations above MTCA CCLs for groundwater were reported in samples collected from monitoring wells MW-1A and MW-3A.

One previous groundwater sampling event was conducted at the site in July, 1992. Groundwater concentrations above MTCA CCLs were reported at that time in monitoring wells MW-1 (TPH), MW-2 (lead), MW-3 (lead) and MW-3A (lead and trichloroethene). Lead was the only compound detected during this sampling event. Due to the turbidity noted in the water samples collected, the reported lead concentrations may not represent actual groundwater conditions. We recommended filtering any future groundwater samples prior to conducting inorganic analyses. This procedure is allowed in accordance with WAC 173-340-720 (8)(a)(i).

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

HORSE CREEK

BLACKBERRIES

MW-1
MW-1A

POWER POLE

MW-2A
MW-2

MW-3
MW-3A

APPROXIMATE PROPERTY LINE

NE 180TH STREET

LEGEND

⊕ GROUNDWATER MONITORING WELL LOCATION

N

0 40 80

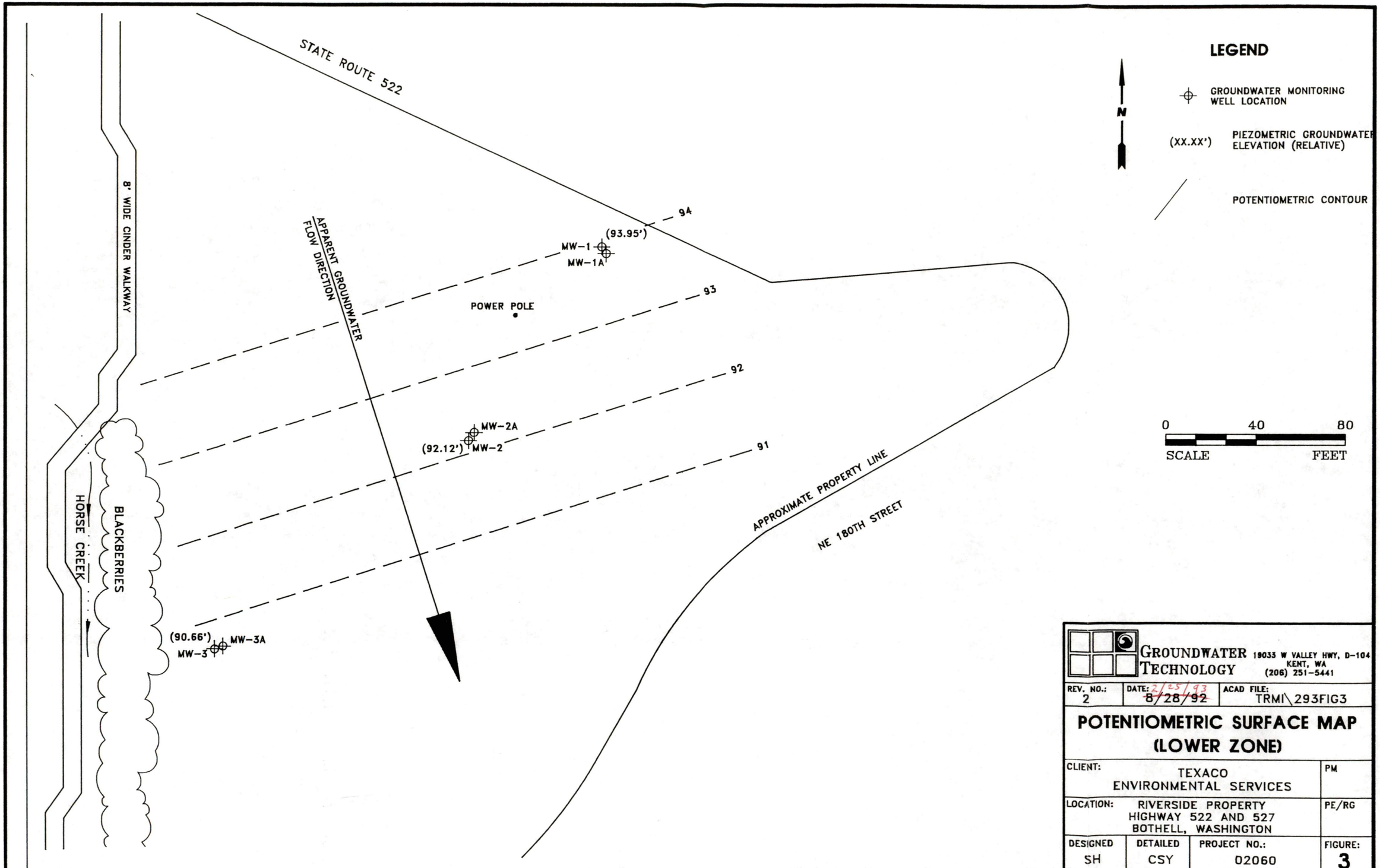
SCALE FEET

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

REV. NO.:	DATE: ~~2/25/93~~ 8/28/92	ACAD FILE:
2		TRMI\293FIG3

POTENTIOMETRIC SURFACE MAP (LOWER ZONE)

CLIENT:		PM
TEXACO ENVIRONMENTAL SERVICES		
LOCATION: RIVERSIDE PROPERTY HIGHWAY 522 AND 527 BOTHELL, WASHINGTON		PE/RG
DESIGNED: SH	DETAILED: CSY	PROJECT NO.: 02060
		FIGURE: 3

A

GROUNDWATER
TECHNOLOGY

APPENDIX A
STANDARD OPERATING PROCEDURES

3.0 WATER QUALITY SAMPLING

3.1 Water samples should not be taken from the stagnant water in the well.

3.2 Water samples should be taken in triplicate.

3.3 Remove 3 to 5 volumes of water in the well prior to sampling. The water may be removed by bailing, submersible pump, or purge system. Wells with a slow recovery period should be bailed dry and then sampled within 1 hour or when recovered to 80%. Monitor pH, temperature and specific conductivity with each well volume to insure water quality stabilization has occurred. However, this is not necessary at every well or in all circumstances.

3.4 Use only Teflon, stainless steel, or glass bailers to obtain the sample. Use Teflon only for sampling water containing chlorinated compounds and also for bacteriological samples. PVC bailers can be used for one-time sampling for other than EPA 624 analysis. Using a bailer for a one-time sampling reduces the possibility for cross-contamination.

3.5 When sampling, avoid stirring up any sediments in the well and agitating the water to reduce volitization of any dissolved compounds that may be present.

3.6 All sampling equipment must be cleaned following the appropriate procedure to avoid cross contamination from site to site and sample to sample. The sampling equipment should be cleaned before each well sampling, between each sampling, and at the end of each sampling round.

3.7 Monitoring wells should be gauged prior to sampling.

3.8 If possible, the monitoring wells should be sampled starting with the cleanest well and ending with the most contaminated well.

3.9 Wells containing free-phase contaminants should not be sampled.

3.10 When filling out the chain of custody form:
- enter the samples in the order in which they were collected;
- make a note as to the cleaning fluid used to clean the sampling equipment;
- attempt to identify which samples are the most contaminated;
- complete all other requested information.

3.11 The laboratory sample identification label should be filled out with a waterproof pen and firmly affixed to each sample container. Typically, identification labels require that the following information be supplied:
- job name
- job number
- sampler's name
- sample identification
- date sampled and time
- analysis requested

3.12 Acidification is required for samples that will be analyzed by the EPA 624 method. (see Acidification Procedure in this section)

3.13 Acidification is recommended for EPA method 601 and 602 samples to preserve them and increase their holding life. (see Acidification Procedure in this section)

3.14 Field blanks should be taken as part of each sampling round. A field blank consists of a sample of distilled water which has been collected by putting the distilled water into a sampling bailer after the bailer has been cleaned following the procedure used to clean that bailer during the sampling round. The field blank is stored with the samples. It is not analyzed unless requested by the Project Manager. The field blank should not be identified as such to the laboratory.

3.15 Handling of decontaminated equipment:
- Always use "pristine" gloves (latex, solvex, etc.).
- Place decontaminated bailers on clean surface (plastic).
- Do not wipe down bailer with paper towels or cloth. Follow decontamination procedure.

3.16 Sample accuracy can be adversely affected by the entrainment of sediment in wells which have not been properly developed. Contaminants adhering to the sediments can be released when samples are acidified for preservation. Therefore, if sediments are present, field filtering of the samples is recommended.

3.17 Chemical changes can take place because the sample was oxidized during sampling. It is critical to avoid oxidation of samples when sampling for volatile organic compounds (VOC). Therefore, take care to insure minimal agitation occurs during sampling.

3.18 All samples should be properly and promptly preserved.

3.19 All samples should be analyzed quickly; arrangements should be made with the testing laboratory to insure prompt analysis is performed within the allowable times for the specific analyses to be done.

3.20 Bailer strings that have contacted water or contaminants should be replaced between each well to avoid contamination from a bailer string which has absorbed contamination. A good practice is to replace the string between wells. Caution: some bailer strings are treated with a fungicide which may be detected in priority pollutant analysis.

3.21 Notify laboratory that samples are being shipped in advance of sampling to insure proper delivery and turnaround.

3.22 On the chain of custody, note what type of decontamination or preservation fluids, chemicals were used.

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)

B

GROUNDWATER
TECHNOLOGY

APPENDIX B
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: 020603778
Project ID: Bothell, WA
Work Order Number: C3-02-0162

March 11, 1993

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 02/26/93, under chain of custody record 25920.

A formal Quality Assurance/Quality Control (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, Laboratory certificate numbers 194 and 1075, 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: 020603778
Project ID: Bothell, WA
Work Order Number: C3-02-0162

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and
Total Petroleum Hydrocarbons as Gasoline in Water

EPA Methods 5030, 8020, and WTPH-G[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW-1	MW-1A	MW-2	MW-3
Date Sampled		02/25/93	02/25/93	02/25/93	02/25/93
Date Analyzed		03/07/93	03/07/93	03/07/93	03/07/93
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	<0.5	<0.5	<0.5
BTEX, total	--	--	--	--	--
TPH as Gasoline	10	<10	<10	<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 the State of Washington Department of Ecology, Appendix L, April, 1992.

GTEL ENVIRONMENTAL LABORATORIES, INC

Client Number: 020603778
Project ID: Bothell, WA
Work Order Number: C3-02-0162

Table 1 (Continued)

ANALYTICAL RESULTS

Aromatic Volatile Organics and
Total Petroleum Hydrocarbons as Gasoline in Water

EPA Methods 5030, 8020, and WTPH-G[a]

GTEL Sample Number		05			
Client Identification		MW-3A			
Date Sampled		02/25/93			
Date Analyzed		03/07/93			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3			
Toluene	0.3	<0.3			
Ethylbenzene	0.3	<0.3			
Xylene, total	0.5	<0.5			
BTEX, total	--	--			
TPH as Gasoline	10	<10			
Detection Limit Multiplier		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 the State of Washington Department of Ecology, Appendix L, April, 1992.

GTEL ENVIRONMENTAL LABORATORIES, INC.

GTEL ENVIRONMENTAL LABORATORIES, INC.

CONCORD, CA 94520
(510) 685-7852
(800) 423-7143
TES PM: Mark Wells

AND ANALYSIS REQUEST

Company Name: Groundwater tech.
Phone #: 251-5441 206-
FAX #: 251-8452
Company Address: 19033 w Valley Hwy Ste 210 Kent Wa 98032
Site location: Bothell, wa.
02060 3778.6020
Project Manager: MARK Nichols
Client Project ID: (#) ~~02060377~~ 8.6020
(NAME) TEXACO - Riverside
Test that the proper field sampling procedures were used during the collection of these samples.
Sampler Name (Print): JEAN 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	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 (+15) ☐	EPA 625/PPL ☐ 8270/TAL ☐ NBS (+25) ☐	EPA 610 ☐ 8310 ☐	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 ☐
W1		3	X						X			X			2-25	3:30		X																	
W1A		3	X						X			X			2-25	3:23		X																	
W2		3	X						X			X			2-25	2:59		X																	
W3		3	X						X			X			2125	2:00		X																	
W3A		3	X						X			X			2-25	1:56		X																	

TAT
- ☐ ity (24 hr)
- ☐ edited (48 hr)
- ☐ siness Days
- ☐ r Standard
- ☐ ness Days

Special Handling
GTEL Contact _____
Quote/Contract # _____
Confirmation # _____
PO # _____

QA / QC LEVEL
☐ E ☐ CLP ☐ OTHER _____

SPECIAL DETECTION LIMITS

SPECIAL REPORTING REQUIREMENTS
☐ FAX

REMARKS

Lab Use Only Lot # Storage Location:

Work Order #

CUSTODY RECORD

	Date	Time	
Relinquished by Sampler: Jean Josey			Received by:
Relinquished by:			Received by:
Relinquished by:	2-26-93	1135	Received by Laboratory: Jennifer Broughton-Cobbler

Waybill #

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: 020603778
Consultant Project Number: FDMW156
Project ID: Bothell, WA
Work Order Number: C3-04-0014

April 13, 1993

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

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 04/01/93, under chain of custody record 25819.

A formal Quality Assurance/Quality Control (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, Laboratory certificate numbers 194 and 1075, 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: 020603778
Consultant Project Number: FDMW156
Project ID: Bothell, WA
Work Order Number: C3-04-0014

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.
2. Standard Methods for the Examination of Water and Wastewater, 17th ed., 1989, American Public Health Association. "Modification in TPH Methods as per the state of Washington Department of Ecology, Appendix L, April, 1992."

GTEL Sample Number		01	02	03	04
Client Identification		MW1	MW1A	MW2	MW3
Date Sampled		03/30/93	03/30/93	03/30/93	03/30/93
Date Prepared		04/09/93	04/09/93	04/09/93	04/09/93
Date Analyzed		04/09/93	04/09/93	04/09/93	04/09/93
Analyte	Detection Limit, mg/L	Concentration, mg/L			
Total Petroleum Hydrocarbons	1	<1	<1	<1	<1
Detection Limit Multiplier		1	1	1	1

GTEL Sample Number		05			
Client Identification		MW3A			
Date Sampled		03/30/93			
Date Prepared		04/09/93			
Date Analyzed		04/09/93			
Analyte	Detection Limit, mg/L	Concentration, mg/L			
Total Petroleum Hydrocarbons	1	<1			
Detection Limit Multiplier		1			

GTEL ENVIRONMENTAL LABORATORIES, INC.

Client Number: 020603778
Consultant Project Number: FDMW156
Project ID: Bothell, WA
Work Order Number: C3-04-0014

Table 1

ANALYTICAL RESULTS

Volatile Organics in Water

EPA Method 8240[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW-1	MW-1A	MW-2	MW-3
Date Sampled		03/30/93	03/30/93	03/30/93	03/30/93
Date Analyzed		04/01/93	04/01/93	04/01/93	04/01/93
Analyte	Detection 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	20	<20	<20	<20	<20
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	20	<20	<20	<20	<20
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

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.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Table 1 (Continued)

ANALYTICAL RESULTS

Volatile Organics in Water

EPA Method 8240[a]

GTEL Sample Number		01	02	03	04
Client Identification		MW-1	MW-1A	MW-2	MW-3
Date Sampled		03/30/93	03/30/93	03/30/93	03/30/93
Date Analyzed		04/01/93	04/01/93	04/01/93	04/01/93
Analyte	Detection 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	20	<20	<20	<20	<20
2-Hexanone	20	<20	<20	<20	<20
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
Detection 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.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Table 1 (Continued)

ANALYTICAL RESULTS

Volatile Organics in Water

EPA Method 8240[a]

GTEL Sample Number		05			
Client Identification		MW-3A			
Date Sampled		03/30/93			
Date Analyzed		04/01/93			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	10	<10			
Bromomethane	10	<10			
Vinyl chloride	10	<10			
Chloroethane	10	<10			
Methylene chloride	5	<5			
Acetone	20	<20			
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	20	<20			
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			

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.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Table 1 (Continued)

ANALYTICAL RESULTS

Volatile Organics in Water

EPA Method 8240[a]

GTEL Sample Number		05			
Client Identification		MW-3A			
Date Sampled		03/30/93			
Date Analyzed		04/01/93			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Dibromochloromethane	5	<5			
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	20	<20			
2-Hexanone	20	<20			
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			
Detection Limit Multiplier		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.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Client Number: 020603778
Consultant Project Number: FDMW156
Project ID: Bothell, WA
Work Order Number: C3-04-0014

Table 1

ANALYTICAL RESULTS

Lead in Water by Graphite Furnace AA

EPA Methods 7421[1]/3005[2]

GTEL Sample Number		01	02	03	04
Client Identification		MW-1	MW-1A	MW-2	MW-3
Date Sampled		03/30/93	03/30/93	03/30/93	03/30/93
Date Prepared		04/05/93	04/05/93	04/05/93	04/05/93
Date Analyzed		04/07/93	04/07/93	04/07/93	04/07/93
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Lead, total	5	<5	56	<5	<5
Detection Limit Multiplier		1	1	1	1

1. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, November 1986.
2. Sample preparation by EPA Method 3005.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Client Number: 020603778
Consultant Project Number: FDMW156
Project ID: Bothell, WA
Work Order Number: C3-04-0014

Table 1 (Continued)

ANALYTICAL RESULTS

Lead in Water by Graphite Furnace AA

EPA Methods 7421[1]/3005[2]

GTEL Sample Number		05			
Client Identification		MW-3A			
Date Sampled		03/30/93			
Date Prepared		04/05/93			
Date Analyzed		04/07/93			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Lead, total	5	53			
Detection Limit Multiplier		1			

1. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, November 1986.
2. Sample preparation by EPA Method 3005.

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

25819

Company Name: Groundwater Tech.
Phone #: 251-5441 206
FAX #: 251-8452
Company Address: 19033 w Valley D.104 Kent Wa 98032
Site location: Bothell Wa. 020603778.6020
Project Manager: MARK Nichols
Client Project ID: (#) FDMW156
(NAME) TX-Riverside
I attest that the proper field sampling procedures were used during the collection of these samples.
Sampler Name (Print): JEAN 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
MW 1		6	X						X	X		X			3.30	6:10
MW 1A		5	X						X	X		X			3.30	6:28
MW 2		6	X						X	X		X			3.30	6:36
MW 3		6	X						X	X		X			3.30	5:49
MW 3A		6	X						X	X		X			3.30	5:30

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 (+15) ☐	EPA 625/PPL ☐ 8270/TAL ☐ NBS (+25) ☐	EPA 610 ☐ 8310 ☐	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						X							X		
					X						X							X		
					X						X							X		
					X						X							X		

TAT
Priority (24 hr) ☐
Expedited (48 hr) ☐
7 Business Days ☐
Other ____
Business Days ☐

Special Handling
GTEL Contact ____
Quote/Contract # ____
Confirmation # ____
PO # ____

QA / QC LEVEL
BLUE ☐ CLP ☐
OTHER ____

SPECIAL DETECTION LIMITS

SPECIAL REPORTING REQUIREMENTS
FAX ☐

REMARKS

Lab Use Only Lot # Storage Location:

Work Order #

CUSTODY RECORD

	Date	Time	
Relinquished by Sampler: Jean Josey			Received by:
Relinquished by:			Received by:
Relinquished by:	4/1/93	10:00	Received by Laboratory: Corinne Belskey

Waybill #