TEXACO STATION # 63232 0037
KING CO. - Seattle
LUST # 2298

EMCON Northwest, Inc.
18912 North Creek Parkway • Suite 100 • Bothell, Washington 98011-8016 • (206) 485-5000 • Fax (206) 486-9766

September 23, 1993
Project 0368-013.03

SR 12/10/93 CU

DEPARTMENT OF ECOLOGY
NWRO/TCP TANK UNIT
#2298
INTERIM CLEANUP REPORT ☑
SITE CHARACTERIZATION ☐
FINAL CLEANUP REPORT ☐
OTHER _____ ☐
AFFECTED MEDIA: SOIL ☑
OTHER _____ GW ☐
INSPECTOR (INIT.) BN DATE 11/9/93

Mr. Mike Condon
Texaco Environmental Services
3400 188th Street SW, Suite 630
Lynnwood, Washington 98037

Re: Groundwater Sampling Report
Texaco Service Station
8701 Greenwood Avenue North
Seattle, Washington

Dear Mr. Condon:

EMCON Northwest, Inc. (EMCON), is pleased to present the results of the groundwater sampling and monitoring activities conducted June 9, 1993, at the Texaco service station at 8701 Greenwood Avenue North in Seattle, Washington. Work was performed in accordance with the proposal for groundwater monitoring dated March 15, 1993.

BACKGROUND

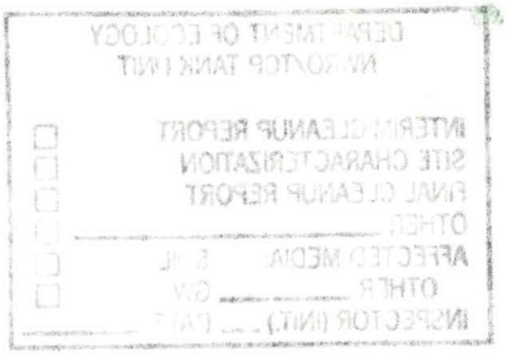
The site is an active gasoline service station at 8701 Greenwood Avenue North in Seattle, Washington (Figure 1). Groundwater monitoring wells were installed on the subject site in March 1991. A site plan is included as Figure 2.

This report presents the findings of the June 9, 1993, groundwater sampling event. A copy of the spreadsheet tabulating results of historical groundwater analyses and depth to water information is included in Appendix A.

GROUNDWATER CONDITIONS

Depth to groundwater was measured in each well on June 9, 1993. Depth-to-water measurements were converted to relative groundwater elevations using previous survey data for the top of each well casing. Depth-to-water measurements and relative groundwater elevation data are provided on Table 1. A relative groundwater elevation (potentiometric) map is included as Figure 2.

Previous boring log data indicate that groundwater under the site is confined beneath a peat and silt layer that extends a maximum depth of approximately 10 to 15 feet below ground surface. The groundwater gradient was generally toward the west on June 9,



Independent Action Report Update

Site Name: Texaco Station #63232 0037

Inc. #: 2298 Date of Report: 9/23/93

County: King Date Report Rec'd: 10/26/93

Reviewed by: R. Nye

Comments (please include: free prod., tank info., media, contaminant migration, GW conc. trends, PCS treated/fate?):

Report Documents Sampling from 4 wells for GW values TPH G-D-O., Lead, BTEX. done 6/93. TPHG, BTEX levels > MTCA in all wells Contaminant levels declining since 11/91 all wells, but not < MTCA yet. TPH G - BTEX levels increased in MW-4 - attributed to small leak from turbine. GW 1-2 ft. deep, Flow → W

1993. Although the general flow direction is toward the west, possible mounding of groundwater could occur in the tank basin. Water levels measured on June 9, 1993, were slightly higher than those measured on March 26, 1993.

GROUNDWATER SAMPLING

Groundwater samples were collected from monitoring wells AGW-1, AGW-2, AGW-4, and AGW-5 on June 9, 1993. Prior to sampling, the depth-to-groundwater was measured to the nearest 0.01 foot in each well using a Solinst™, depth-to-water probe. No floating product was observed in any of the wells.

At least three casing volumes of groundwater were purged with a suction pump before collecting groundwater samples from monitoring wells AGW-1, AGW-2, and AGW-5. Because groundwater recovery in monitoring well AGW-4 was slow, a sample was collected after two purged casing volumes.

Groundwater temperature, pH, and specific conductance were measured after each purged casing volume. These data, recorded on the Field Sampling Data Sheets, are provided in Appendix A. Groundwater samples from monitoring wells AGW-1, AGW-2, and AGW-5 were collected when these parameters were within ± 10 percent of the previous reading. These parameters did not stabilize in monitoring well AGW-4. Due to slow groundwater recovery in this well, a groundwater sample was collected after two purged casing volumes.

Groundwater samples were collected using disposable PVC bailers. Nylon line was used to lower the bailer, and new line and a new bailer were used for each well. Samples were transferred to laboratory-supplied containers, stored in a chilled cooler, and transported under standard chain-of-custody procedures to Columbia Analytical Services, Inc., in Bothell, Washington, for analyses.

LABORATORY ANALYSES

Groundwater samples from all wells were submitted for analyses of total petroleum hydrocarbons (TPH) as gasoline by Washington State Department of Ecology Method WTPH-G, for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Methods 5030/8020, and for total lead by EPA Method 7421. A duplicate sample was submitted for analyses for TPH as gasoline, BTEX, and total lead. A field blank was submitted for analyses of TPH as gasoline and BTEX. Groundwater samples from AGW-2 and AGW-4 were also analyzed for total petroleum hydrocarbons as diesel and oil by Washington State Department of Ecology Method WTPH-D (extended). A

composite sample of the purged groundwater was analyzed for total organic halides by EPA Method 9020 to characterize the purged water for disposal.

LABORATORY RESULTS

A review of laboratory results indicates that groundwater samples collected from AGW-1, AGW-2, and AGW-4 contained benzene, ethylbenzene, total xylenes, and TPH as gasoline concentrations that exceeded MTCA Method A Cleanup Levels. Groundwater samples collected from AGW-4 also exceeded the MTCA Method A Cleanup Levels for TPH as diesel and toluene. TPH as oil concentrations were not detected above method reporting limits in samples collected from AGW-2 and AGW-4. TPH as diesel concentrations in the groundwater sample collected from AGW-2 were not detected above method reporting limits. Total lead concentrations in the groundwater samples collected from the four monitoring wells were below MTCA cleanup levels. Total organic halides were not detected in the composite sample of purged groundwater.

Results of groundwater analyses are presented in Table 2. Copies of the laboratory report and chain-of-custody form for the current sampling event are included in Appendix B.

CONCLUSIONS

In June 1993, TPH as gasoline, benzene, ethylbenzene, and xylene concentrations exceeded the MTCA Method A Cleanup Levels in groundwater samples collected from AGW-1, AGW-2, and AGW-4. The MTCA Method A Cleanup Levels for TPH as diesel and toluene were also exceeded in the sample collected from AGW-4. BTEX and TPH as gasoline were not detected above the method detection limits in the groundwater sample collected from AGW-5.

BTEX and TPH as gasoline concentrations in groundwater samples collected from AGW-1, AGW-2, and AGW-5 on June 9, 1993, have continued to decline compared to the concentrations reported for the August and November 1991 sampling events. Concentrations of BTEX and TPH as gasoline have increased in AGW-4 beginning with the March 6, 1993, sampling event. Time versus concentration plots for benzene in AGW-1, AGW-2, AGW-4, and AGW-5 are presented in Figures 3, 4, 5, and 6, respectively.

AGW-1, AGW-2, and AGW-4 are hydraulically downgradient of the existing underground storage tanks. In July 1991, a leak was reported in the turbine associated with the unleaded gasoline underground storage tank. It is likely that the BTEX and

TPH as gasoline detected in groundwater samples beneath the site are associated with the turbine leak. The turbine was repaired, and no subsequent leaks have been reported.

LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our scope of work with our client. This report is solely for the use of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames , and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

We appreciate the opportunity to be of assistance to you on this project. If you have any questions or if we can be of further assistance to you, please call.

Sincerely,

EMCON Northwest, Inc.

Patrick Brooks
Project Manager

Kevin G. Rattue, R.G., C.P.G.
Director, Petroleum Hydrocarbon Services

Tom Bodle
Staff Geologist

Table 1

Survey and Groundwater Elevation
June 9, 1993
Texaco Service Station 63-232-0037
8701 Greenwood Avenue North
Seattle, Washington

Well	Elevation at Top PVC (ft)	Date Monitored	Depth to Water (ft)	Groundwater Elevation (ft)
AGW-1	47.36	06/09/93	0.42	46.94
AGW-2	47.59	06/09/93	1.06	46.53
AGW-4	47.97	06/09/93	2.66	45.31
AGW-5	49.47	06/09/93	1.95	47.52

NOTE: Elevations are referenced to an on-site benchmark location; the benchmark was assigned an arbitrary elevation of 50 feet.

Table 2

Groundwater Sample Chemical Analyses
June 9, 1993
Texaco Service Station 63-232-0037
8701 Greenwood Avenue North
Seattle, Washington

Sample Location	Sample Date	Sample ID	BTEX Compounds[a] (ppb)				Total Petroleum Hydrocarbons[b] (ppm)			Total Lead[c] (ppb)
			Benzene	Toluene	Ethyl-benzene	Total Xylenes	Gasoline	Diesel	Oil	
MTCA Method A Cleanup Levels[d]			5	40	30	20	1	1	1	5
AGW-1	06/09/93	01-06-09-93	35.2	23	415	1,530	15	—	—	ND
AGW-2	06/09/93	02-06-09-93	108	18	164	666	3.27	ND	ND	3
AGW-2 (dup)	06/09/93	03-06-09-93	108	18	164	674	3.3	—	—	ND
AGW-4	06/09/93	04-06-09-93	61.1	64	108	533	1.9	1.06	ND	ND
AGW-5	06/09/93	05-06-09-93	ND	ND	ND	ND	ND	—	—	ND
Field Blank	06/09/93	06-06-09-93	ND	ND	ND	ND	ND	—	—	—

NOTE:
- ND — No detection.
- — — Not analyzed.
- Dup — Duplicate sample.
- Shaded cells — Shaded cells indicate that values exceed MTCA Method A Cleanup Levels.
- * — The combined concentrations of total petroleum hydrocarbons as gasoline and diesel exceed the MTCA Method A Cleanup Level.
- MTCA — Model Toxics Control Act, Chapter 173-340 WAC, adopted February 1991.

[a] Results for analyses of groundwater samples for BTEX were obtained using EPA Methods 5030/8020 and reported as µg/L (ppb).

[b] Results for analyses of groundwater samples for total petroleum hydrocarbons as gasoline, diesel, and oil were obtained using Washington State Department of Ecology Methods WTPH-G and WTPH-D, respectively, reported as µg/L (ppb), and presented here in ppm.

[c] Results for analyses of groundwater samples for total lead were obtained using EPA Method 7421 and reported as µg/L (ppb).

[d] Chapter 173-340 WAC, *The Model Toxics Control Act Cleanup Regulations, Method A Cleanup Levels.* Amended February 1991.

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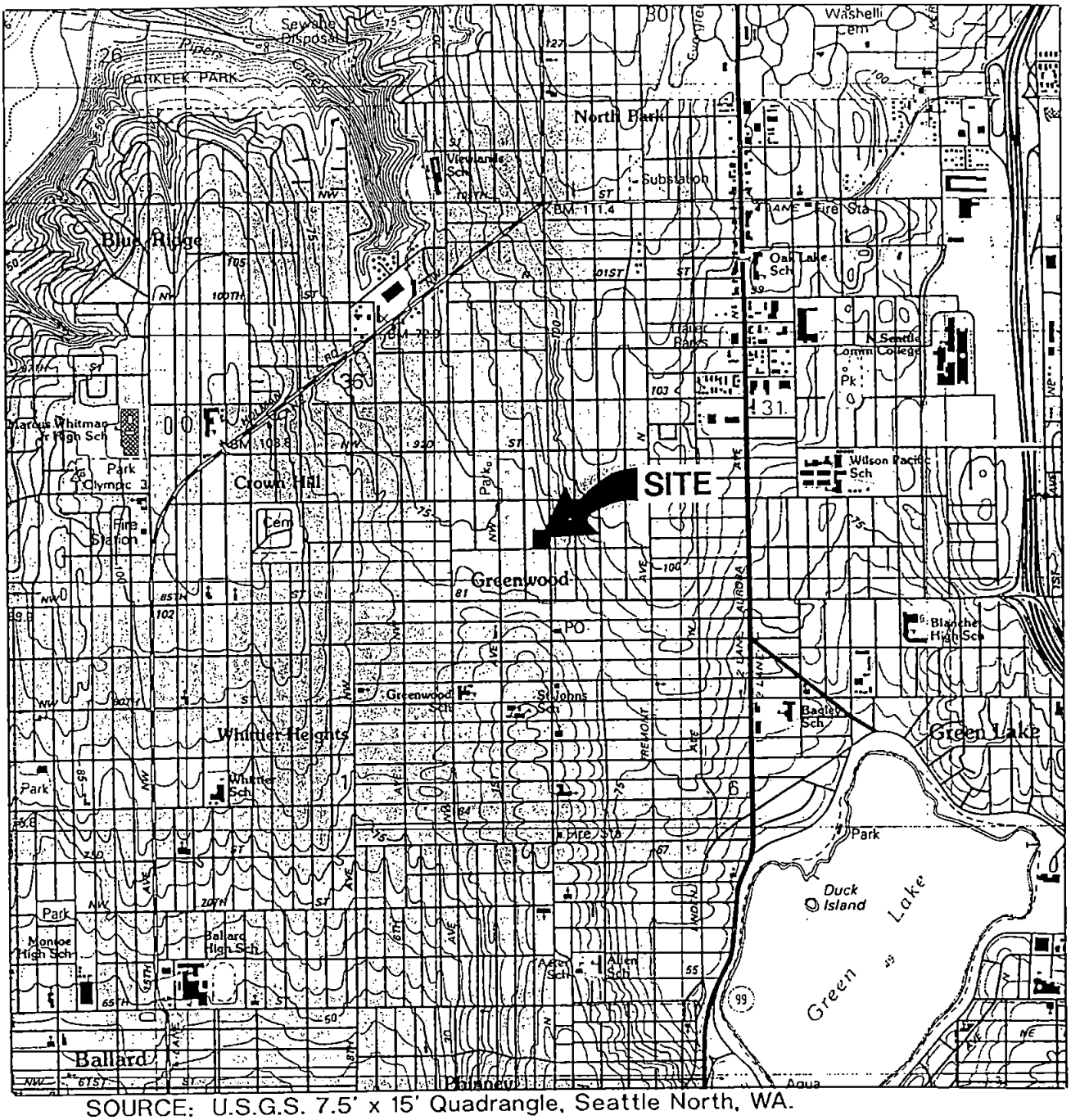


SOURCE: U.S.G.S. 7.5' x 15' Quadrangle, Seattle North, WA.

WASHINGTON

N

0 2000 4000

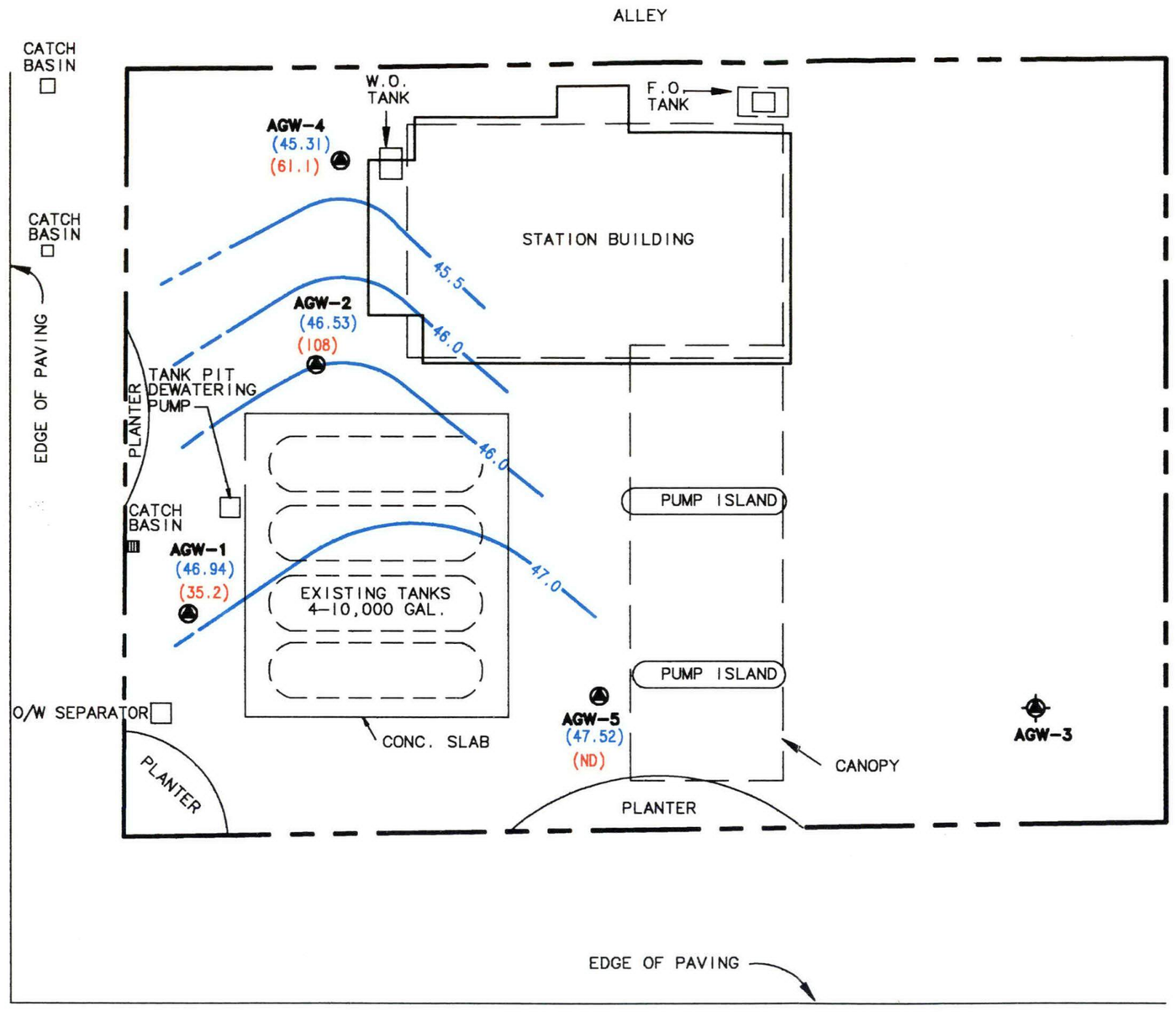
SCALE (ft)

EMCON Northwest, Inc.

DATE 4/92
DWN. JA
APPR. PB
REVIS.
PROJECT NO. 0368-013.03

Figure 1
TEXACO SERVICE STATION
8701 GREENWOOD AVENUE NORTH
SEATTLE, WASHINGTON

SITE LOCATION MAP



LEGEND:

AGW-1	Monitoring Well Location and Well Number
AGW-3	Abandoned Monitoring Well Location and Well Number
(46.53)	Potentiometric Surface Elevation (feet) Measured on June 9, 1993
46.5	Approximate Potentiometric Surface Contour (feet)
(108)	Measured Benzene Concentration in Groundwater (ppb) on June 9, 1993
ND	Not Detected

N

0 20 40

SCALE (ft)

EMCON Northwest, Inc.

DATE	6-93
DWN.	MLP
REV.	
APPR.	
PROJECT NO.	0368-013.03

Figure 2
TEXACO SERVICE STATION
8701 GREENWOOD AVENUE NORTH
SEATTLE, WASHINGTON
POTENTIOMETRIC SURFACE MAP (6-09-93)

1=20 0368\013\03C03 6-29-93

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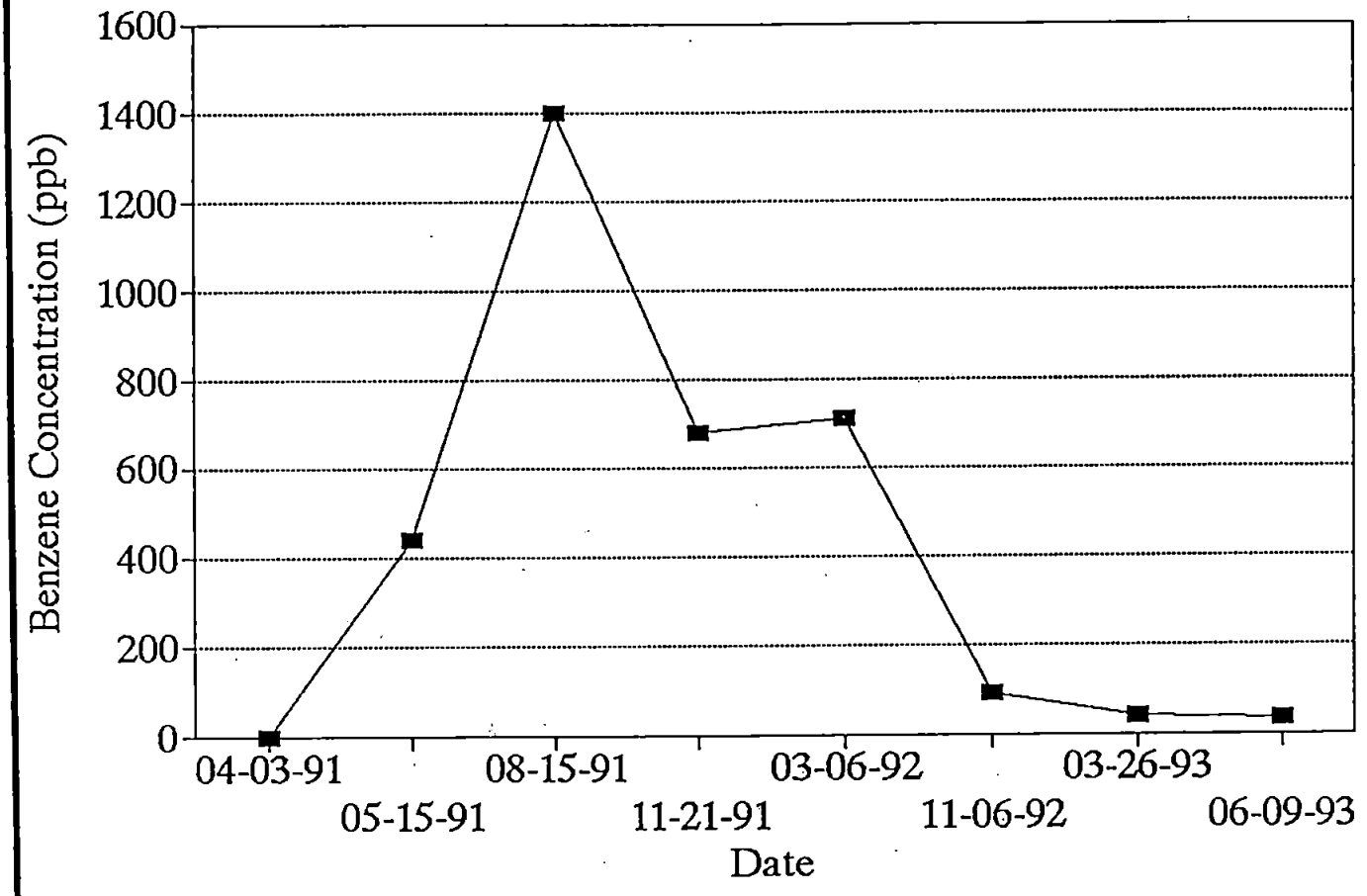
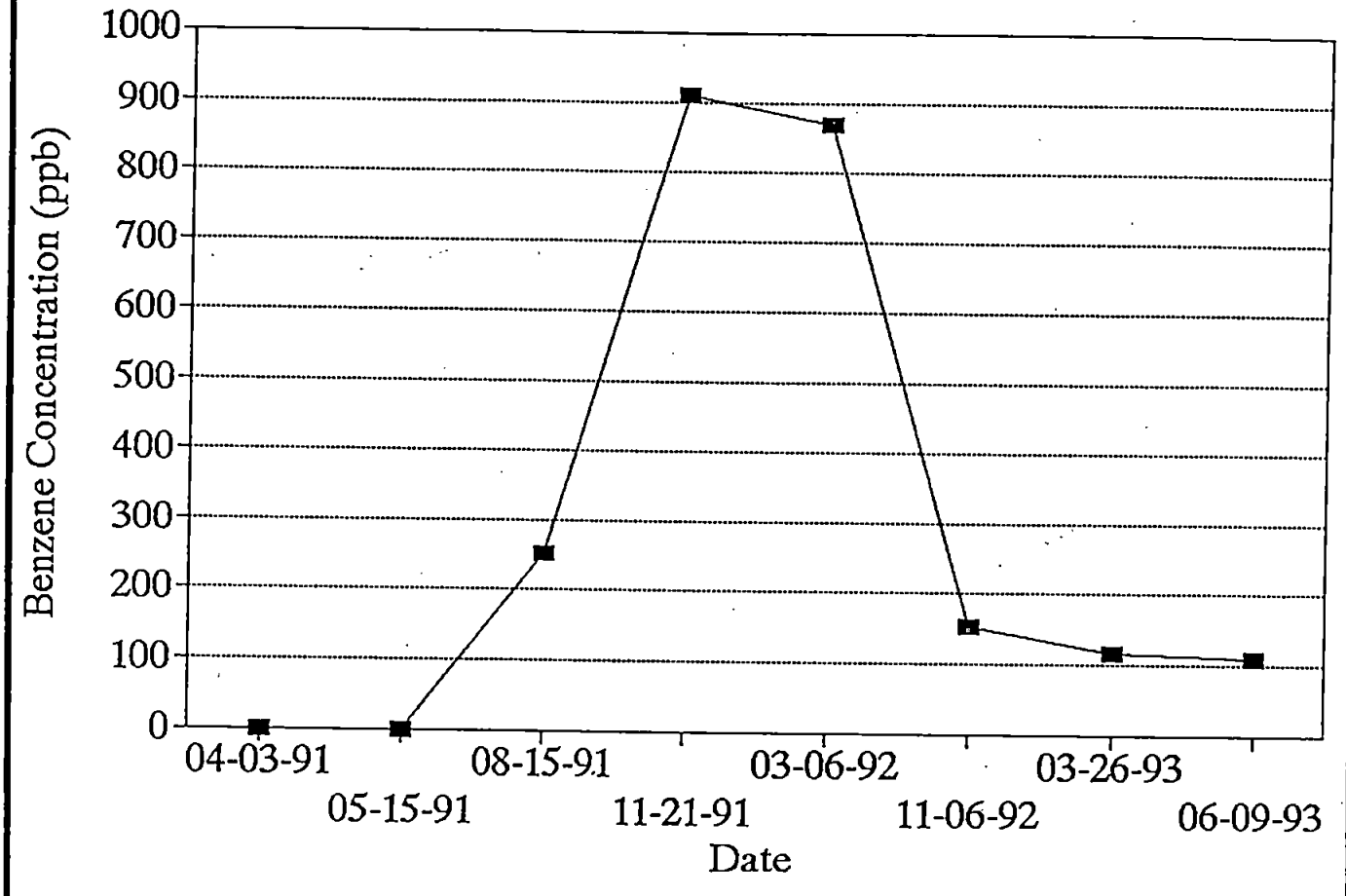


EMCON Northwest, Inc.

DATE 6-93
DWN. MLP
APPR. JB
REVIS.
PROJECT NO. 0368-013.03

Figure 3
TEXACO SERVICE STATION 8701
GREENWOOD AVENUE NORTH
SEATTLE, WASHINGTON
BENZENE CONCENTRATION IN AGW-1

142322

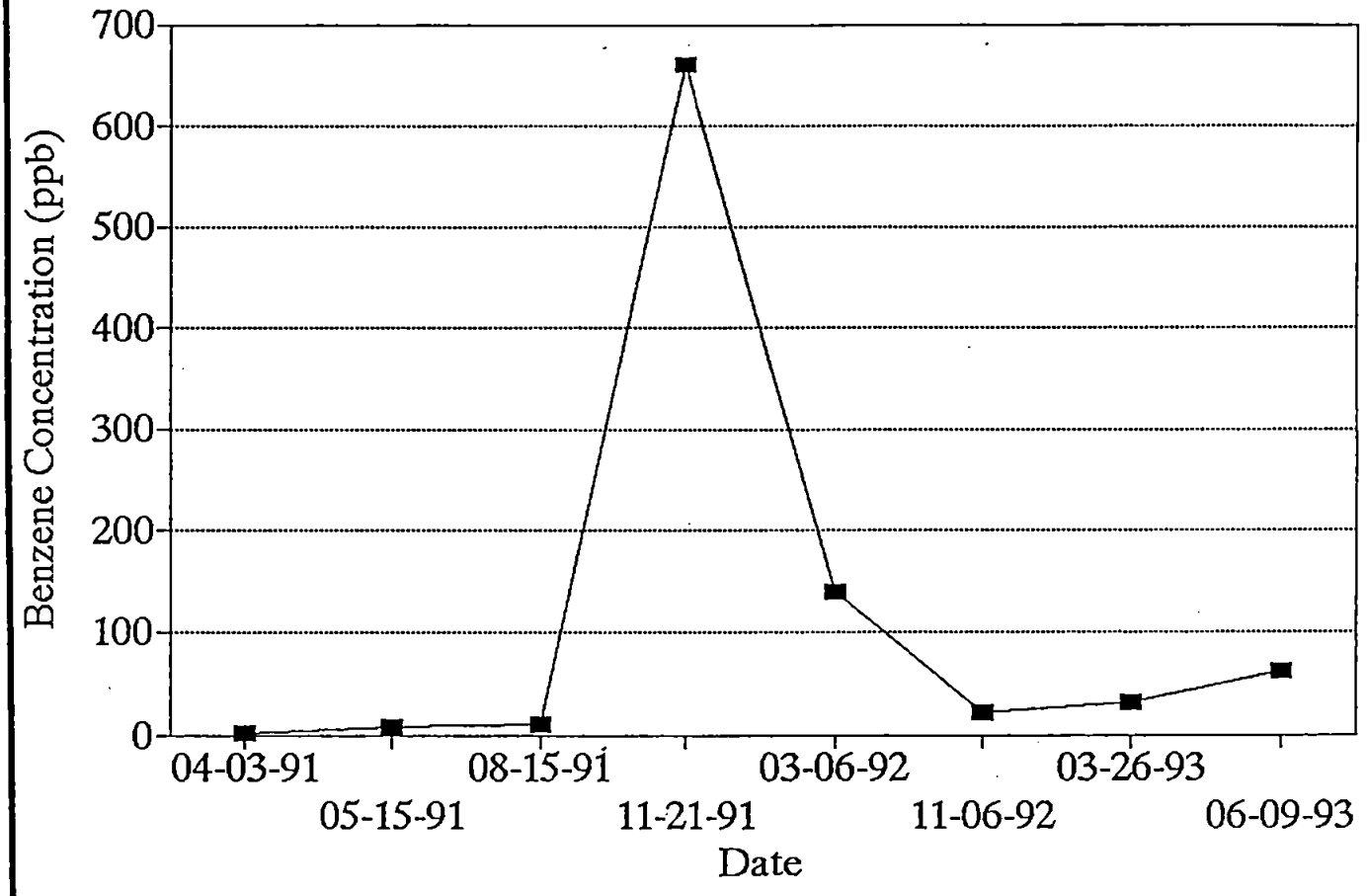


EMCON Northwest, Inc.

DATE 6-93
DWN. MLP
APPR. PB
REVIS.
PROJECT NO. 0368-013.03

Figure 4
TEXACO SERVICE STATION 8701
GREENWOOD AVENUE NORTH
SEATTLE, WASHINGTON
BENZENE CONCENTRATION IN AGW-2

142322

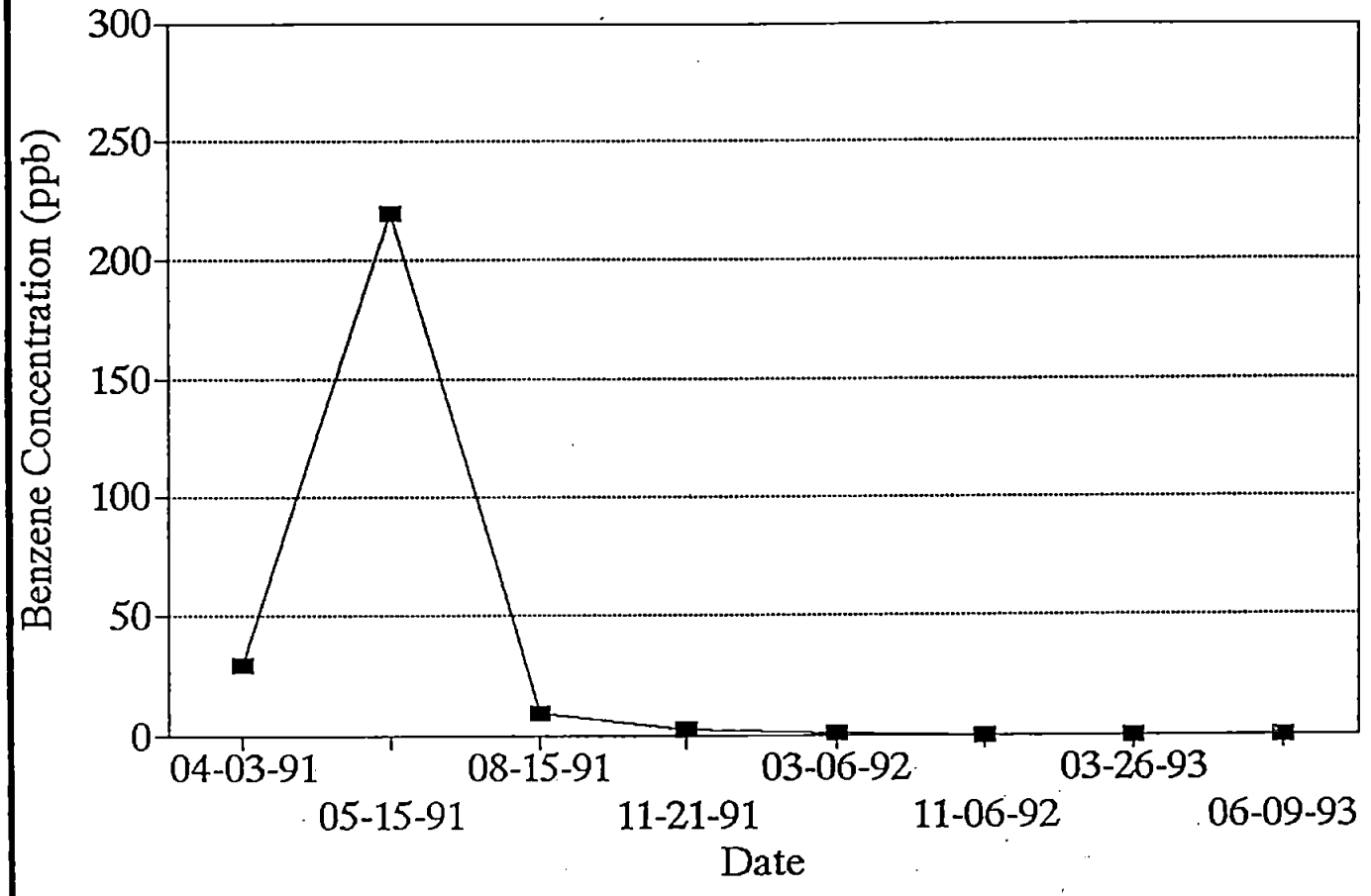


EMCON Northwest, Inc.

DATE 6-93
DWN. MLP
APPR. PB
REVIS.
PROJECT NO. 0368-013.03

Figure 5
TEXACO SERVICE STATION 8701
GREENWOOD AVENUE NORTH
SEATTLE, WASHINGTON
BENZENE CONCENTRATION IN AGW-4

142322



EMCON Northwest, Inc.

DATE 6-93
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REVIS.
PROJECT NO. 0368-013.03

Figure 6
TEXACO SERVICE STATION 8701
GREENWOOD AVENUE NORTH
SEATTLE, WASHINGTON
BENZENE CONCENTRATION IN AGW-5

APPENDIX A

HISTORICAL GROUNDWATER QUALITY DATA AND FIELD SAMPLING DATA

GROUNDWATER QUALITY SUMMARY
TEXACO SERVICE STATION 63-232-0037
8701 GREENWOOD AVENUE NORTH
SEATTLE, WASHINGTON

WELL NO./ DATE	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-G (PPM)	TPH-D (PPM)	TPH-OIL (PPM)	LEAD (PPB)	DEPTH TO WATER (FT)
AGW-1									
04-03-91	ND	ND	ND	ND	ND	–	–	–	3.18
05-15-91	440	1000	92	670	–	–	–	–	–
08-15-91	1400	7400	1000	8100	361	–	–	ND	0.62
11-21-91	680	6400	2000	13000	47	ND	ND	–	0.70
03-06-92	710	3200	1400	8700	48	ND	ND	ND	0.47
11-06-92	95.1	260	1400	8200	37	–	–	ND	0.46
03-26-93	42.8	27	397	1450	18.4	–	–	ND	0.49
06-09-93	35.2	23	415	1530	15	–	–	ND	0.42
AGW-2									
04-03-91	ND	ND	ND	ND	–	–	–	–	3.43
05-15-91	ND	ND	ND	ND	–	–	–	–	–
08-15-91	250	220	15	86	1.03	–	–	ND	1.65
11-21-91	910	1300	260	1200	7.3	ND	1.2	–	1.30
03-06-92	870	3700	760	4900	24	ND	1.1	ND	1.14
11-06-92	152	98	175	804	3.23	–	–	ND	1.18
03-26-93	113	33	149	642	3.39	0.34	ND	ND	1.18
06-09-93	108	18	164	666	3.27	ND	ND	3	1.06
AGW-3									
03-29-91	ND	ND	ND	ND	–	–	–	–	–
Well decommissioned									
AGW-4									
04-03-91	2.6	20	2.7	31	–	–	–	–	4.61
05-15-91	8.4	19	2.4	20	–	–	–	–	–
08-15-91	11	4	1	7	12	3.26	–	4	2.76
11-21-91	660	700	21	133	3.5	ND	2.04	–	2.45
03-06-92	139	182	3	18	ND	ND	0.8	ND	2.45
11-06-92	20.9	13	4	17	0.09	–	–	ND	3.21
03-26-93	31.8	35	51	246	0.99	0.48	ND	ND	3.03
06-09-93	61.1	64	108	533	1.9	1.06	ND	ND	2.66
AGW-5									
04-03-91	30	10	5	7	–	–	–	–	2.78
05-15-91	220	53	3.5	12	–	–	–	–	–
08-15-91	9.4	ND	ND	ND	0.1	–	–	ND	1.53
11-21-91	2.5	ND	ND	ND	ND	ND	ND	–	2.40
03-06-92	0.9	ND	ND	ND	ND	ND	ND	ND	1.45
11-06-92	ND	ND	ND	ND	ND	–	–	ND	2.27
03-26-93	ND	ND	ND	ND	ND	–	–	ND	2.05
06-09-93	ND	ND	ND	ND	ND	–	–	ND	1.95

+ copies

Sweet-Edwards/EMCON, Inc.
18912 North Creek Parkway, Suite 210 • Bothell, WA 98011
Office (206) 485-5000 • FAX (206) 486-9766

Field Sampling Data

LOCATION/ADDRESS 8701 Greenwood Ave N, Seattle, WA
PROJECT NAME Texaco Greenwood # 0368-013.03
CLIENT/CONTACT

Well or Surface Site Number AGW-1
Sample Designation 01-06-09-93
Date, Time 6-9-93 11:15
Weather rain, 50s

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
dtw = .42		6-9-93 09:38	oil water interface probe (#2) (Not available)
dtb = 19.40			solinst #2
Δ = 18.98			

WELL EVACUATION: 1 p.v = 12.39 gallon

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
~37.5	3	diaphragm pump compressor driven	N/A	6-9-93 11:07

Surface Water Flow Speed N/A Measurement Method N/A Date, Time N/A

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
TPH-G	6-9-93	d.b.=	2x40	vial	N/A	N	HCl	Y	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
BTEX	11:15	disposable bailer							
Total lead	"	"	1pt	poly	"	"	HNO_3	"	
		"							

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	time Eh				
1	7.55	306 µS	16° C	10:39	~12.5 gallon			
2	7.55	330	14.	10:45	~12.5			
3	7.24	334	14.5	11:07	~12.5			

NOTES:

well cap submerged, bailed
cap under pressure, opened 08:36
one bolt+ house. missing, replaced other bolt as was not tightening

purge water: clear to slightly silty, cannot discern color (perhaps gray)
strong musty odor + h.c. like?, is sewer like leave 07:33 cleanup 14:49, leave
observed suspended black sediment (<1mm) arrive 08:05
well dry at p.v = 2.5 wait to recover, (50 gal pw w/ test) calibrate 09:02

Total # of Bottles: 3 Signature: Tony Bottle

Sweet-Edwards/EMCON, Inc.
18912 North Creek Parkway, Suite 210 • Bothell, WA 98011
Office (206) 485-5000 • FAX (206) 486-9766

Field Sampling Data

LOCATION/ADDRESS 8701 Greenwood Ave N, Seattle, WA
PROJECT NAME Texaco Greenwood # 0368-013.03
CLIENT/CONTACT

Well or Surface Site Number AGW-2
Sample Designation 02-06-09-93
Date, Time 6-9-93 12:30
Weather rain, 50-60's

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
dtw = 1.06		6-9-93 09:40	oil water interface probe → not available
dtb = 19.65			solinst #2
Δ = 18.59			

WELL EVACUATION: 1 p.v = 12.19 gallon

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
~37.5	3	diaphragm pump compressor driven	N/A	6-9-93 12:17

Surface Water Flow Speed N/A Measurement Method N/A Date, Time N/A

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
TPH-G	6-9-93	d.b. =	2×40	vial	N/A	N	HCl	Y
BTEX	12:30	disposable bailer						
Total lead	"	"	1 pt	poly	"	"	HNO_3	"
TPH-D extended		"	1l	amber glass	"	"	HCl	"

Sampler Cleaning Method: Non-Phosphatic detergent wash, H2O rinse, MeOH rinse, Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	time Elapsed				
1	6.71	522 µS	16.5°C	11:47	~12.5 gallon			
2	7.20	446	14.	12:13	~12.5			
3	6.98	478	14.5	12:17	~12.5			

NOTES:

well cap submerged, opened cap 08:40
cap loose, no pressure, may have been forced loose since last sampling 3-26-93
sheen but flaky quality observed on g.w. surface; at 11:44 does appear to be sheen
no free product besides surface content observed
purge water: clear to slightly silty, olive brown in color
strong musty sewage like odor; hc-like?
observed suspended black sediment (v. fine); well dry at p.v #1.9 (11:55), wait for rec
only 1" sq total sheen observed in 55 gal drum of purge water

Total # of Bottles: 4 Signature:

Sweet-Edwards/EMCON, Inc.
18912 North Creek Parkway, Suite 210 • Bothell, WA 98011
Office (206) 485-5000 • FAX (206) 486-9766

Field Sampling Data

* duplicate

LOCATION/ADDRESS 8701 Greenwood Ave N, Seattle, WA
PROJECT NAME Texaco Greenwood # 0368-013.03
CLIENT/CONTACT

Well or Surface Site Number AGW-2
Sample Designation 03-06-09-93
Date, Time 6-9-93 "10:00
Weather

HYDROLOGY MEASUREMENTS:

	(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
dtw =			6-9-93	oil water interface probe - N/A
dtb =				
Δ =				

WELL EVACUATION: 1 p.v. =

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
		diaphragm pump compressor driven	N/A	6-9-93

Surface Water Flow Speed N/A Measurement Method N/A Date, Time N/A

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
TPH-G	6-9-93	d.b. =	2x40	vial	N/A	N	HCl	Y	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
BTEX	"10:00"	disposable bailer							
Total Lead	"	"	1 pt	poly	"	"	HNO_3	"	
		"							

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	time ~~Eh~~				
1					gallon			
2								
3								

NOTES:

See AGW-2 Field Sampling Data Sheet for details

Total # of Bottles: 3 Signature:

SEA-400-01

Sweet-Edwards/EMCON, Inc.
18912 North Creek Parkway, Suite 210 • Bothell, WA 98011
Office (206) 485-5000 • FAX (206) 486-9766

Field Sampling Data

LOCATION/ADDRESS 8701 Greenwood Ave N, Seattle, WA
PROJECT NAME Texaco Greenwood # 0368-013.03
CLIENT/CONTACT

Well or Surface Site Number AGW-4
Sample Designation 04-06-09-93
Date, Time 6-9-93 14:00
Weather rain, 50's 60's

HYDROLOGY MEASUREMENTS: 4"

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
dtw = 2.66		6-9-93 09:42	oil water interface probe - N/A
dtb = 19.70			solinst (#2)
Δ = 17.04			

WELL EVACUATION: 1 p.v = 11.13 gallon

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
33.5	2	diaphragm pump compressor driven	N/A	6-9-93

Surface Water Flow Speed N/A Measurement Method N/A Date, Time N/A

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
TPH-G	6-9-93	d.b. =	3x40	vial	N/A	N	HCl	Y	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
BTEX	14:00	disposable							
		bailer							
Total lead	"	"	1 pt	poly	"	"	HNO_3	"	
TPH-D extended		"	1l	amberglass	"	"	HCl	"	

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	time ~~Et~~				
1	6.64	406 µS	16. °C	09:50	~12 gallon			
2	6.60	372	15.	12:45	~11.5 "			
3								

NOTES:

well cap submerged, bailed
cap under pressure, opened 08:45
one monument bolt (of 2) missing

purge water: slightly silty, olive black in color, suspended black particles (<2mm)
sewage like odor, well dry at 1 p.v, allow to recover (ie wait)
well dry at p.v #2, will allow to recover
dtw = 10.26 at 13:43, will sample as recovery time ~2 hour for 1 p.v (ie 15:43)

Total # of Bottles: 4/ive (5) Signature:

SEA-400-01

Sweet-Edwards/EMCON, Inc.
18912 North Creek Parkway, Suite 210 • Bothell, WA 98011
Office (206) 485-5000 • FAX (206) 486-9766

Field Sampling Data

LOCATION/ADDRESS 8701 Greenwood Ave N, Seattle, WA
PROJECT NAME Texaco Greenwood # 0368-013.03
CLIENT/CONTACT

Well or Surface Site Number AGW-5
Sample Designation 05-06-09-93
Date, Time 6-9-93 13:30
Weather rain 50's

HYDROLOGY MEASUREMENTS: 4"

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
dtw = 1.95		6-9-93 09:37	oil water interface probe → Not available
dtb = 19.50			solinst (#2)
Δ = 17.55			

WELL EVACUATION: 1 p.v = 11.46 gallon

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
~ 35.5	3	diaphragm pump compressor driven	N/A	6-9-93 13:20

Surface Water Flow Speed N/A Measurement Method N/A Date, Time N/A

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)
TPH-G	6-9-93	d.b.a.	2x40	vial	N/A	N	HCl	Y
BTEX	13:30	disposable						
		bailer						
Total lead	"	"	1 pt	poly	"	"	HNO_3	"
		"						

Sampler Cleaning Method: Non-Phosphatic detergent wash, H_2O rinse, MeOH rinse, Distilled H_2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	time ~~Eh~~				
1	7.59	268 uS	16° C	10:04	~12 gallon			
2	7.70	290	14.	11:32	~12 "			
3	7.64	288	14.	13:20	~11.5 "			

NOTES:

20 min. to open monument, stuck/mangled
well cap submerged, drained
opened 08:30 - canister pressure

purge water: clear, musty odor (sewer like?)
well running dry at +p.v# 1, will wait for recovery; dry at pv# 1.75 (10:30)
well " " " #2.3 (11:38) " " "

Total # of Bottles: 3

Signature:

SEA-400-01

Sweet-Edwards/EMCON, Inc.
18912 North Creek Parkway, Suite 210 • Bothell, WA 98011
Office (206) 485-5000 • FAX (206) 486-9766

Field Sampling Data

Field blank

LOCATION/ADDRESS 8201 Greenwood Ave N, Seattle, WA
PROJECT NAME Texaco Greenwood # 0368-013.03
CLIENT/CONTACT

Well or Surface Site Number AGW-Not applicable
Sample Designation OG-06-09-93
Date, Time 6-9-93 13:00
Weather rainy 50-60s

HYDROLOGY MEASUREMENTS:

	(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
dtw =	N/A		6-9-93	~~oil water interface probe~~ N/A
dtb =	"			
Δ =	"			

WELL EVACUATION: 1 p.v =

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
N/A		diaphragm pump compressor driven	N/A	N/A 6-9-93

Surface Water Flow Speed N/A Measurement Method N/A Date, Time N/A

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
TPH-G	6-9-93	d.b. =	2x40	vial	N/A	N	HCl	Y	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
BTEX	13:00	disposable bailer							
~~Total Lead~~	"	"	1 pt	poly	"	"	HNO_3	"	
		"							

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	time ~~Eh~~				
1					gallon			
2								
3								

NOTES:

Field blank constructed after x3 rinse of disposable bailer with "5 Certified distilled" water from 1 gallon jug

Total # of Bottles: 2 Signature:

SEA-400-01

APPENDIX B

LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORM

Columbia Analytical Services inc.

July 6, 1993

Service Request No.: B930236

Mike Condon
Texaco Environmental Services
3400 188th Street SW
Suite 630
Lynnwood, WA 98037

Re: Texaco - 8701 Greenwood Avenue N, Seattle, WA/Project #0368-013.03/ FMWC340

Dear Mike:

Attached are the results of the samples submitted to our laboratory on June 10, 1993. For your reference, these analyses have been assigned our service request number B930236.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results only apply to samples analyzed.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B. Elliott
Laboratory Manager

cc: Pat Brooks of EMCON Northwest

CBE/bdr

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	06/09/93
Project:	Texaco FMWC340	**Date Received:**	06/10/93
Sample Matrix:	Water	**Work Order No.:**	B930236

BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
µg/L (ppb)

Sample Name:		01-06-09-93	02-06-09-93	03-06-09-93
Lab Code:		B0236-1	B0236-2	B0236-3
Date Analyzed:		06/17/93	06/16/93	06/16/93
Analyte	**MRL**			
Benzene	0.5	35.2	108	108
Toluene	1	23	18	18
Ethylbenzene	1	415	164	164
Total Xylenes	1	1,530	666	674
TPH as Gasoline	50	15,000	3,270	3,300

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Chris Ellis Date 7/6/93

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	06/09/93
Project:	Texaco FMWC340	**Date Received:**	06/10/93
Sample Matrix:	Water	**Work Order No.:**	B930236

BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
µg/L (ppb)

Sample Name:		04-06-09-93	05-06-09-93	06-06-09-93
Lab Code:		B0236-4	B0236-5	B0236-6
Date Analyzed:		06/16/93	06/16/93	06/16/93
Analyte	MRL			
Benzene	0.5	61.1	ND	ND
Toluene	1	64	ND	ND
Ethylbenzene	1	108	ND	ND
Total Xylenes	1	533	ND	ND
TPH as Gasoline	50	1,900	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Chr. Ellis Date 7/6/93

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	06/09/93
Project:	Texaco FMWC340	**Date Received:**	06/10/93
Sample Matrix:	Water	**Work Order No.:**	B930236

BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
µg/L (ppb)

Sample Name:		Method Blank
Lab Code:		B0236-MB
Date Analyzed:		06/16/93
Analyte	**MRL**	
Benzene	0.5	ND
Toluene	1	ND
Ethylbenzene	1	ND
Total Xylenes	1	ND
TPH as Gasoline	50	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Chris Ellis Date 7/6/93

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	06/09/93
Project:	Texaco FMWC340	**Date Received:**	06/10/93
Sample Matrix:	Water	**Date Extracted:**	06/14/93
		Date Analyzed:	06/15/93
		Work Order No.:	B930236

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
µg/L (ppb)

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
02-06-09-93	B0236-2	250	ND	750	ND
04-06-09-93	B0236-4	250	1,060	750	ND
Method Blank	B0236-MB	250	ND	750	ND

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Chris Ellis Date 7/6/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	06/09/93
Project:	Texaco FMWC340	**Date Received:**	06/10/93
Sample Matrix:	Water	**Date Analyzed:**	06/16,17/93
		Work Order No.:	B930236

Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G

Sample Name	Lab Code	Spike Level (µg/L)	Percent Recovery 4-Bromofluorobenzene
01-06-09-93	B0236-1	100	103
02-06-09-93	B0236-2	100	106
03-06-09-93	B0236-3	100	105
04-06-09-93	B0236-4	100	108
04-06-09-93	B0236-4Dup	100	105
05-06-09-93	B0236-5	100	102
06-06-09-93	B0236-6	100	82
06-06-09-93	B0236-6MS	100	105
Method Blank	B0236-MB	100	107
Laboratory Control Sample	B0236-LCS	100	109
Laboratory Control Sample	B0236-GLCS	100	104
	CAS Acceptance Criteria		59-139

TPH Total Petroleum Hydrocarbons

Approved by C. Elliott Date 7/6/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	06/09/93
Project:	Texaco FMWC340	**Date Received:**	06/10/93
Sample Matrix:	Water	**Date Analyzed:**	06/16/93
		Work Order No.:	B930236

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
µg/L (ppb)

Sample Name: 04-06-09-93
Lab Code: B0236-4

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.5	61.1	57.0	59.0	7
Toluene	1	64	59	61	8
Ethylbenzene	1	108	101	104	7
Total Xylenes	1	533	491	512	8
TPH as Gasoline	50	1,900	1,780	1,840	7

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Chris Ellis Date 7/6/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	06/09/93
Project:	Texaco FMWC340	**Date Received:**	06/10/93
Sample Matrix:	Water	**Date Analyzed:**	06/17/93
		Work Order No.:	B930236

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
µg/L (ppb)

Sample Name: 06-06-09-93
Lab Code: B0236-6

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	100	ND	108	108	51-159
Toluene	100	ND	110	110	50-156
Ethylbenzene	100	ND	112	112	49-157

ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 7/6/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Northwest
Project: Texaco FMWC340
LCS Matrix: Water

Date Analyzed: 06/16/93
Work Order No.: B930236

Laboratory Control Sample Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
µg/L (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	100	96	96	51-159
Toluene	100	101	101	50-156
Ethylbenzene	100	104	104	49-157
TPH as Gasoline	5,150	5,510	107	70-140

TPH Total Petroleum Hydrocarbons

Approved by Chris Elliott Date 7/6/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	06/09/93
Project:	Texaco FMWC340	**Date Received:**	06/10/93
Sample Matrix:	Water	**Date Extracted:**	06/14/93
		Date Analyzed:	06/15/93
		Work Order No.:	B930236

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
02-06-09-93	B0236-2	102
04-06-09-93	B0236-4	107
Method Blank	B0236-MB	103
Laboratory Control Sample	B0236-LCS	103
	CAS Acceptance Criteria	36-124

Approved by Cal - Elliott Date 7/6/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	----/----/----
Project:	Texaco FMWC340	**Date Received:**	----/----/----
Sample Matrix:	Water	**Date Extracted:**	06/14/93
		Date Analyzed:	06/15/93
		Work Order No.:	B930236

Duplicate Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
µg/L (ppb)

Sample Name: Batch QC
Lab Code: B0238-2

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Diesel	250	ND	ND	--	--
Oil	750	ND	ND	--	--

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by A. Ellis Date 7/6/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	----/----/----
Project:	Texaco FMWC340	**Date Received:**	----/----/----
Sample Matrix:	Water	**Date Extracted:**	06/14/93
		Date Analyzed:	06/15/93
		Work Order No.:	B930236

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
µg/L (ppb)

Sample Name: Batch QC
Lab Code: B0238-2

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	1,120	ND	1,130	101	50-130

ND None Detected at or above the method reporting limit

Approved by Cdn - Ellis Date 7/6/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Extracted:**	06/14/93
Project:	Texaco FMWC340	**Date Analyzed:**	06/15/93
LCS Matrix:	Water	**Work Order No.:**	B930236

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
µg/L (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	1,010	988	98	50-130

Approved by Cin - Elliot Date 7/6/93

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

Columbia Analytical Services inc. 18912 North Creek Pkwy, Suite 118 • Bothell, WA 98011 • (206) 486-6983 • FAX (206) 486-7695

DATE 6-10-93 PAGE 1 OF 1

PROJECT NAME Texaco Greenwood # 0368-013.03

PROJECT

COMPANY/ADDRESS EMCON

PHONE 485-5000

SAMPLERS SIGNATURE Tom Bodle

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	TPH - HCID State:	TPH - G ✓ BTEX ✓ State: WA	TPH - D OIL State: WA (extended)	TPH - 418.1 State:	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 HPCL ___ 8100 GC ___	TCLP Metals ___ Semi VOA ___ VOA ___ Pest/Herb ___	Metals Total ✓ DISS ___ List Below	Cyanide	pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC TOX (Circle)	Total organic halogens		REMARKS
01-06-09-93	6-9-93	11:15	B07316-1	water	3		✓									✓							
02-06-09-93	"	12:30	2	"	4		✓	✓								✓							
03-06-09-93	"	10:00	3	"	3		✓									✓							
04-06-09-93	"	14:00	4	"	5		✓	✓								✓							
05-06-09-93	"	13:30	5	"	3		✓									✓							
06-06-09-93	"	13:00	6	"	2		✓																
TB 07-06-09-93	"			"			X																Disregard
purgewater	"	N/A	7	"	1															✓			

RELINQUISHED BY:
Signature: Tom Bodle
Printed Name: Tom Bodle
Firm: EMCON
Date/Time: 6-10-93 08:00

RECEIVED BY:
Signature: Celia Elliott
Printed Name: Celia Elliott
Firm: CAS
Date/Time: 6-10-93 08:00

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MAS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: B93-0236

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:

Total lead

F:

Columbia Analytical Services inc.

June 23, 1993

Service Request No.: K933347B

Mike Condon
Texaco Environmental Services
3400 188th Street SW Suite 630
Lynnwood WA 98037

Re: **Texaco Greenwood/Project #0368-013.03/B930236**

Dear Mike:

Enclosed are the results of the samples submitted to our laboratory on June 10, 1993. For your reference, these analyses have been assigned our service request number K933347B. The analysis was authorized under Texaco job number FMWC340.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 215.

Respectfully submitted,

Columbia Analytical Services, Inc.

Kent Patton
Field Services Manager

KP/akn

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Received:**	06/10/93
Project:	Texaco Greenwood/#0368-013.03	**Date Analyzed:**	06/15/93
Sample Matrix:	Water	**Work Order No.:**	K933347B

Total Organic Halides (TOX)
EPA Method 9020
µg/L (ppb)

Sample Name	Lab Code	MRL	Result
Purgewater	K3347-3	10	ND
Method Blank	K3347-MB	10	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by K L Patti Date 6/23/93

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Received:**	6/10/93
Project:	Texaco Greenwood / # 0368-013.03	**Work Order No.:**	K933347B
Matrix:	Water		

Total Lead
EPA Method 7421
µg/L (ppb)

Sample Name:	Lab Code	MRL	Result
01-06-09-93	K334701	2	ND
02-06-09-93	K334702	2	3
03-06-09-93	K334703	2	ND
04-06-09-93	K334704	2	ND
05-06-09-93	K334705	2	ND
Method Blank	K3347MB	2	ND

MRL Method Reporting Limit.
ND None Detected at or above the method reporting limit.

GEN1B/03-13-92

Approved: Date: 6/23/93 Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Analyzed:**	06/15/93
Project:	Texaco Greenwood/#0368-013.03	**Work Order No.:**	K933347B
Sample Matrix:	Water		

Calibration and Method Blank Summary
Total Organic Halides (TOX)
EPA Method 9020
µg/L (ppb)

	Instrument Calibration Standard (µg)	Adsorption Standard	Halide Check Standard (µg)	Method Blank
True Value	10.0	100	3.62	ND
Run A	10.20	91	3.82	ND
Percent Recovery	102	91	106	
Run B	10.17		3.78	
Percent Recovery	102		104	

ND None Detected at or above the method reporting limit

Approved by KL Pratt Date 6/23/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Texaco Environmental Services
Project: Texaco Greenwood/#0368-013.03
Sample Matrix: Water

Date Analyzed: 06/15/93
Work Order No.: K933347B

Matrix Spike/Duplicate Matrix Spike Summary
Total Organic Halides (TOX)
EPA Method 9020
µg/L (ppb)

Sample Name: Batch QC

Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria	Relative Percent Difference
K3382-7MS	10	100	ND	106	106	85-115	
K3382-7DMS	10	100	ND	111	111	85-115	5

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by KL Pitts Date 6/23/93

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Texaco Environmental Services
Project: Texaco Greenwood / # 0368-013.03
Matrix: Water

Date Received: 6/10/
Work Order No.: K933347

Duplicate Summary
Total Metals
µg/L (ppb)

Sample Name: 05-06-09-93
Lab Code: K334705

Analyte	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Lead	7421	2	ND	ND	ND	-

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

METD.GW/03-13-92

Date: 6/23/93 Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Received:**	6/10/9
Project:	Texaco Greenwood / # 0368-013.03	**Work Order No.:**	K933347
Matrix:	Water		

Matrix Spike Summary
Total Metals
µg/L (ppb)

Sample Name: 05-06-09-93
Lab Code: K334705

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Lead	2	20	ND	21	105	75-125

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

METMS.W/03-13-92

Approved: [signature]

Date: 6/23/93 Page No.:

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

Columbia Analytical Services Inc.
18912 North Creek Pkwy, Suite 118 • Bothell, WA 98011 • (206) 486-6983 • FAX (206) 486-7695

DATE 6-10-93 PAGE 1 OF 1

PROJECT NAME Texaco Greenwood # 0368-013.03
PROJECT
COMPANY/ADDRESS EMCON
PHONE 485-5000
SAMPLERS SIGNATURE Tom Bodle

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	PETROLEUM HCS: TPH - HCID State:	TPH - G ✓ BTEX ✓ State: WA	TPH - D Oil State: WA (extended)	TPH - 418.1 State:	TPH - Other	ORGANIC: Halogenated or Aromatic Volatiles 601/8010 602/8020	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 HPCL	TCLP Metals Semi VOA VOA	ORGANIC METALS/INORGANICS: Metals Total ✓ Pest/Herb List Below DISS	Cyanide	pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC TOX (Circle)	Total organic halogens		REMARKS
01-06-09-93	6-9-93	11:15	B0236-1	water	3		✓										✓						
02-06-09-93	"	12:30	2	"	4		✓	✓									✓						
03-06-09-93	"	10:00	3	"	3		✓										✓						
04-06-09-93	"	14:00	4	"	5		✓	✓									✓						
05-06-09-93	"	13:30	5	"	3		✓										✓						
06-06-09-93	"	13:00	6	"	2		✓																
TB 07-06-09-93	"			"			X																Disregard
purgewater	"	N/A	7	"	1																✓		

RELINQUISHED BY:
Signature: Tom Bodle
Printed Name: Tom Bodle
Firm: EMCON
Date/Time: 6-10-93 08:00

RECEIVED BY:
Signature: Cdn Elliott
Printed Name: Cdn Elliott
Firm: CAS
Date/Time: 6-10-93 08:00

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 5 day
✓ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ___

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MAS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# ___
Bill To ___

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: B93-0236

RELINQUISHED BY:
Signature: [signature]
Printed Name: B. Keegan
Firm: CAS/Bothell
Date/Time: 06/10/93 1700

RECEIVED BY:
Signature: Ruth Allison
Printed Name: Ruth Allison
Firm: CAS
Date/Time: 6/11/93 0900

SPECIAL INSTRUCTIONS/COMMENTS:

Total lead