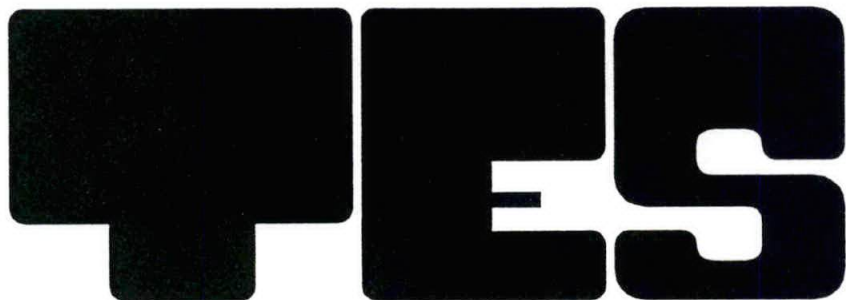


SP  
8/14/91  
AM  
Interim  
Soil  
GW

RECEIVED

JUL 26 1991

DEPT. OF ECOLOGY



 Texaco Environmental Services

REPORT ON INITIAL  
SITE ASSESSMENT

Texaco Service Station  
8701 Greenwood Avenue Nor  
Seattle, Washington

Texaco Sta. # 63232 037

Soil, GW cont.  
GW: 1-8' bgs  
Current: 4-10K single wall fiberglass  
Site includes, LG, UG, D, W, H  
No Remediation cited.  
Plan: "Monitor/Sample"

Past Leaks Reported for:

- 5/30/79 puddles of gas in holes dug in the area → island, building. Prem. gas meter repaired.
- 8/23/79 premium gas loss (inventory) of 133 gallons. Tanks sealed tight.
- 12/6/84 coupler on Regular dispenser leaking, fixed.

No Remediation Cited

July 1991

Building on a Tradition of Quality

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## 1.0 INTRODUCTION

In response to a request by the Texaco Marketing Department, Texaco Environmental Services (TES) has conducted an initial site assessment of the Texaco service station at 8701 Greenwood Avenue North in Seattle (Fig. 1). The sale of this property is being considered. This assessment was conducted to determine if any contamination is present at the site, and if so, the type and extent, so that a proper value may be assigned to the property.

### 1.1 SITE HISTORY

The subject property is located on the northwest corner of the intersection of Greenwood Avenue North and North 87th Street in Seattle. Land use in the surrounding area consists of retail businesses along Greenwood Avenue and residential neighborhoods along 87th Street.

Prior to Texaco's leasing of the property in 1946, the subject site contained a small service station and a wood-framed house. No records are available as to the type, number, or size of any tanks that were present at this time. The location of the tanks is also unknown, however, the inferred location is indicated on Figure 2. Subsequent to leasing the property Texaco razed the old service station and the house and constructed a full service gasoline station, with one pump island and two service bays. Although records are sketchy and often conflicting, it appears that the underground tanks consisted of one (1) 4,000-gallon, one (1) 3500-gallon, and one (1) 2000-gallon fuel storage tanks and one (1) 550-gallon waste oil tank. These tanks were located in the vicinity of the present pump islands (Fig. 2). The possible existence of a second 550-gallon tank and a 1000-gallon tank could not be confirmed.

In 1967 Texaco purchased the subject property and constructed a new service station on the site. At this time additional property to the north was acquired, bringing the lot to its current size. Structures on this additional property consisted of a wood framed house and garage. The new service station included a two-bay garage/sales office building and two pump islands. These structures remain today. Underground tanks installed in 1967 included two (2) 10,000-gallon gasoline tanks, one (1) 550-gallon waste-oil tank, and one (1) 1000-gallon fuel oil tank. A 4000-gallon gasoline tank was added in 1971. All tanks were constructed of single-walled carbon steel.

The entire underground system was updated in 1986 and remains in use to date. The steel tanks were removed and replaced with four (4) 10,000 gallon single-walled fiberglass tanks, including a diesel tank. The product lines, waste-oil and fuel oil tanks were replaced with fiberglass lines and tanks. The new tanks and lines were placed in approximately the same locations as the old facilities (Fig. 2).

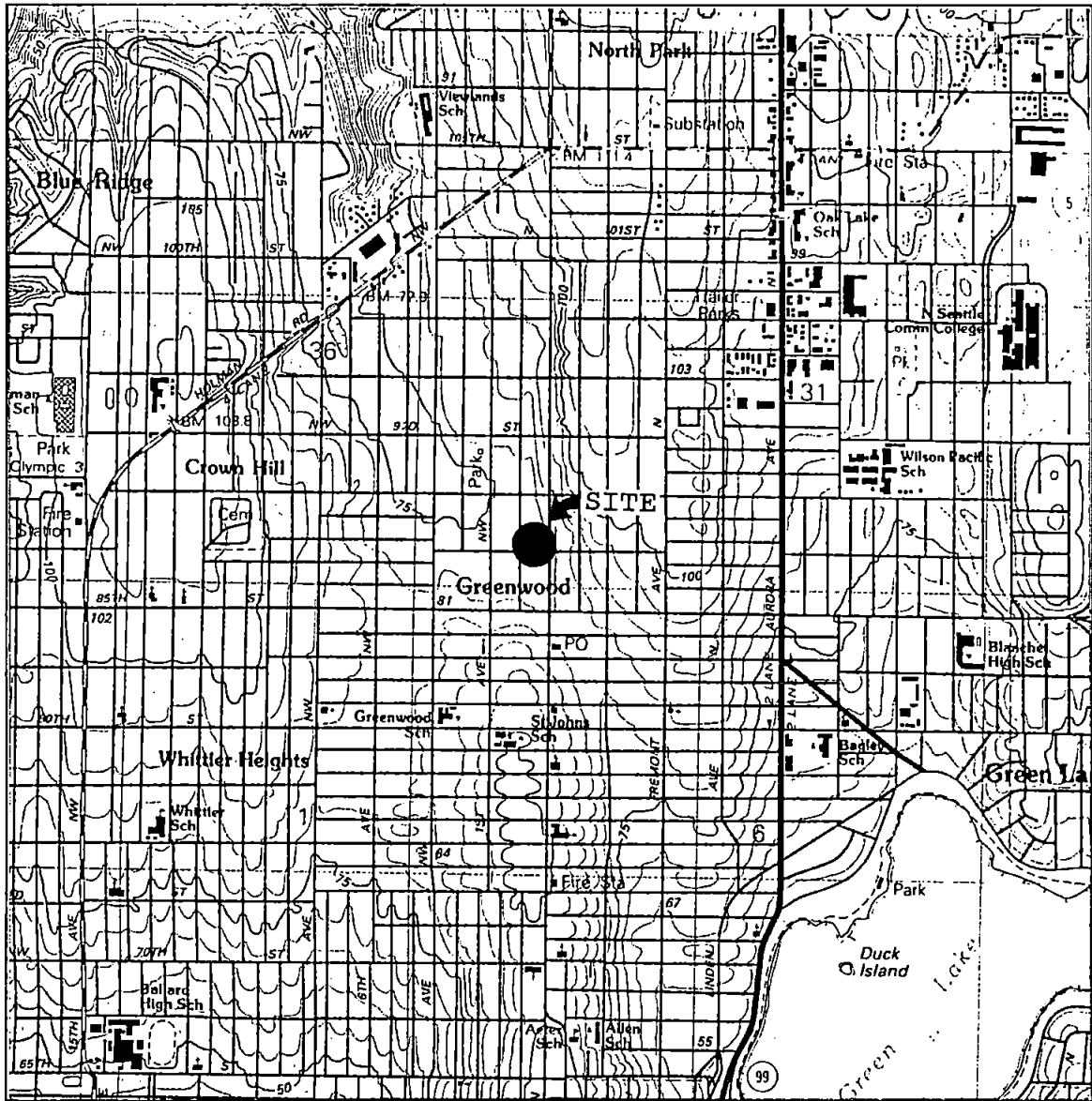
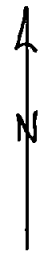


FIGURE 1

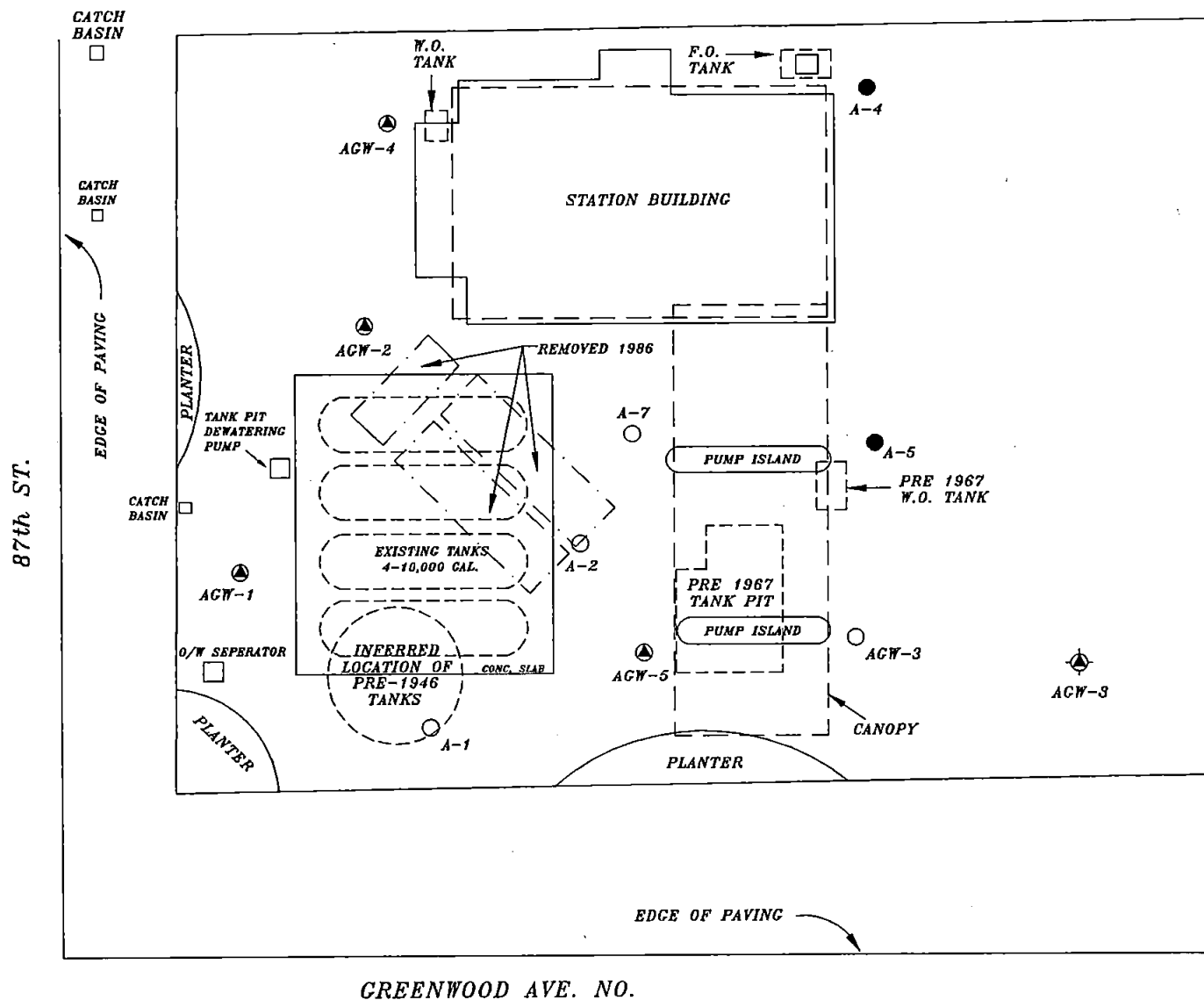
SITE LOCATION MAP  
 TEXACO SERVICE STATION  
 8701 GREENWOOD AVENUE NORTH  
 SEATTLE, WA



2000'

Base Map From: 7.5' x 15' USGS Seattle North, WA quad

ALLEY



GREENWOOD AVE. NO.

- SOIL BORING LOCATION, AND BORING NUMBER
- A-4
- ORIGINALLY PROPOSED BORING (OR WELL) LOCATION - NOT DRILLED
- A-1
- ⊕ MONITORING WELL LOCATION, AND WELL NUMBER
- ACW-1
- ⊖ ABANDONED MONITORING WELL LOCATION, AND WELL NUMBER
- ACW-3



**TEXACO**

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ENVIRONMENTAL SERVICES

**FIGURE 2**  
**STATION PLAT**

87th ST. & GREENWOOD AVE. NO.,  
SEATTLE, WASHINGTON

SCALE	1" = 25'-0"	JOB NO.	APPROVED
DRAWN BY	AMA	DATE	6/19/91
CHECKED BY	MWC	DATE	6/19/91
DRAWING NO.	(SEATTLE) 87-CW-ST	SHEET	1 of 1

## 1.2 PAST LEAKS AND INCIDENTS

On May 30, 1979 a Report of Product Leak was submitted for the subject location. This report stated that paving was deteriorating along the island and building and that puddles of gasoline accumulated in holes dug in the area. Subsequent investigations determined that the leak was occurring at the premium gasoline meter. All tanks and lines tested tight. The problem was corrected. No estimate was made as to the amount of product lost.

On August 23, 1979 a 133-gallon discrepancy was noted in the inventory of the premium gasoline. The tanks tested tight, no further action was reported.

On December 6, 1984 a coupler on the Regular dispenser was found to be leaking. The tanks were tested as tight. The problem was corrected. No estimate of product loss was made.

## 2.0 PROCEDURES

### 2.1 SOIL BORINGS

A total of seven borings were drilled on the site from March 27-29, 1991 (Fig. 2). Of these seven borings, five were converted to groundwater monitoring wells (AGW1 - AGW5). Drilling was conducted using a hollow-stem auger rig owned and operated by Tacoma Pump and Drilling of Graham, Washington. Field geologists were provided by Sweet-Edwards/EMCON (SE/E) and were present during all drilling activities performed at the site. All work was in accordance with the workplan prepared by TES.

Borings were located so as to characterize the soils around the gasoline storage tanks (A1, A2, AGW1, AGW2), the pump islands (A5, A7, AGW5, AGW3), the waste oil tank (AGW4), and the fuel oil tank (A4). Borings were advanced to a depth of 11.5 to 21.0 feet below grade surface. Three of the originally planned boring, A1, A2, and A7, were unable to be drilled due to the presence of pea-gravel and filter fabric from over-excavation of the tank hole. Additionally, AGW-3 was relocated to the north due to the presence of a broken water line on the north side of the easterly pump island (Fig. 2).

Split-spoon samplers were used to collect soil samples for lithologic descriptions and laboratory analysis. A detailed boring log was prepared for each boring (Appendix A).

All drill cuttings were placed on, and covered with, visqueen, and stored on-site pending proper disposal. Soil borings were abandoned with bentonite hole plug with a surface seal of concrete.

## 2.2 MONITORING WELLS

Five groundwater monitoring wells (AGW1 - AGW5) were installed in five of the soil borings. Well construction details are shown on the attached boring logs (Appendix A). A sketch of a typical well construction is shown as Figure 3.

Groundwater gradient was assumed to be to the south-southwest. Therefore, monitoring wells AGW1 and AGW2 were placed in apparent downgradient positions from the product tanks, while AGW3 was located in the apparent upgradient position from the tanks and pump islands. AGW4 was placed downgradient from the waste oil tank. AGW5 was installed in a position downgradient from the pump islands, but upgradient from the tanks.

All wells were constructed using 4-inch diameter, Schedule 40 PVC well screen and riser pipe. Fifteen feet of 0.010 and 0.020-inch slotted well screen was placed in each well from the bottom of the boring to a depth of 4-4.5 feet bgs. This installation allowed for a minimum of a three-foot seal between the ground surface and the sand pack. An 8/12 Colorado Silica Sand (CSS) filter pack was placed from total depth to one foot above the top of the screened interval. Each well was surged with a metal surge block for a minimum of 15 minutes. After surging, if needed, more 8/12 CSS was added to the boring. A 1-foot thick filter pack of 10/20 CSS was then placed, followed by bentonite hole plug taken from the top of the sand to 1 foot bgs. A flush mount lockable casing was then secured in concrete over the top of each well.

Monitoring wells were developed by pumping with a peristaltic pump until the well water had sufficiently cleared of sediment, or until the well went dry. Approximately 75 and 95 gallons of water was removed from AGW1 and AGW2, respectively. Wells AGW4 and AGW5 went dry after less than 20 and 35 gallons, respectively, had been removed. During a subsequent attempt in May to better develop AGW4 and AGW5, both wells again went dry after less than 15 gallons had been removed.

Discharge water was placed in 55-gallon drums, sealed, labelled, and stored on the site pending proper disposal.

Well AGW3 was a flowing well, and was abandoned one day after installation by pumping cement grout through the well screen and sand pack.

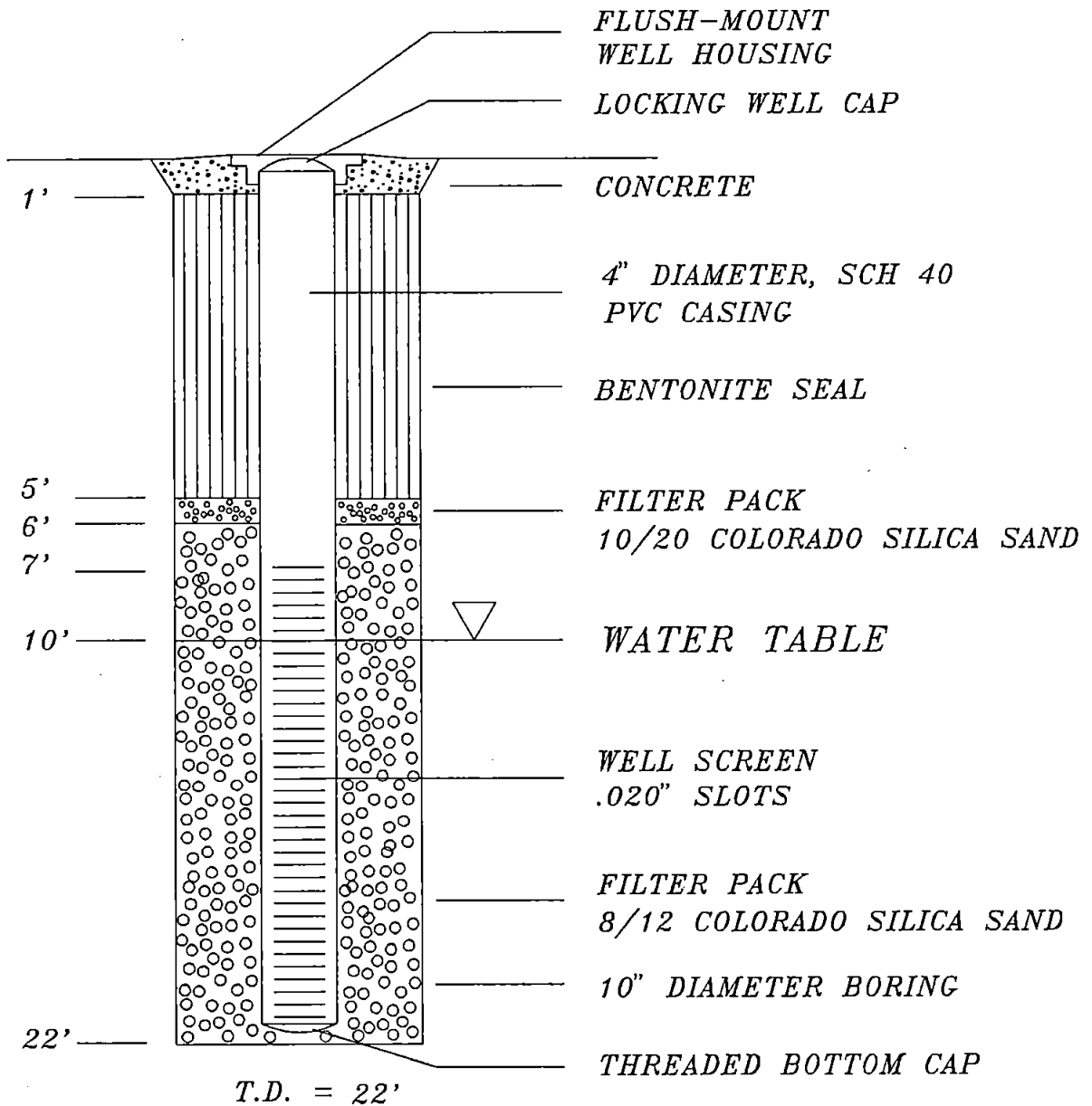
## 2.3 SOIL SAMPLING

Soil samples were collected at depths beginning at 3 and 5 feet, and then at 5-foot intervals in all borings. Additional samples were collected at depths of 8 or 13 feet in various borings. All sampled intervals are indicated on the boring logs (Appendix A). Soil samples were collected with a 2.5" i.d. split-spoon sampler containing three 6-inch long brass tubes. The number of blows



# FIGURE 3

## TYPICAL MONITORING WELL COMPLETION



required to drive the sampler each six inches was noted and recorded on the boring log. Upon retrieval, the sampler was opened and the middle tube designated for lab analysis. The ends of the tube were covered with Teflon, capped and taped. The sample was then labeled and placed in an iced cooler until delivery to Columbia Analytical Services (CAS) of Bothell, WA for analysis. The proper chain-of-custody documentation accompanied the samples at all times. Soils were logged and described using the Unified Soil Classification System.

A small amount of soil from each of the remaining tubes was placed in a clean glass sample jar, sealed, and allowed to volatilize for at least 15 minutes. A photoionization detector (PID) was used to take a headspace reading. This reading is recorded on the boring logs and was used to help select samples for lab analyses.

A total of 11 samples were submitted for analysis. Eight of the samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline, and for BTEX compounds, by EPA Methods 8015M and 8020. Three of these samples, plus the remaining three, were analyzed for TPH by a hydrocarbon scan using EPA Method 8015M. Soil samples from AGW4, adjacent to the waste oil tank, were also analyzed for the following: TPH by EPA Method 418.1, TCLP Metals (EPA Method 1311), halogenated volatile organics (EPA Method 8010), and PCB's (EPA Method 8080).

#### 2.4 GROUNDWATER SAMPLING

On April 3, 1991, each well was visually checked for the presence of free-floating petroleum product using a clear PVC bailer. No floating product or sheen was observed in any of the wells. Groundwater samples were then collected in each well and submitted to CAS for laboratory analysis of BTEX by EPA Methods 601 and 602.

Each monitoring well was purged before sampling using a peristaltic pump. Water was removed until pH, temperature, and conductivity stabilized. Approximately 40-45 gallons was removed from each well. Wells AGW4 and AGW5 purged dry after less than 15 gallon was removed. These wells were allowed to recharge for approximately 4 hours prior to sampling. Purge water was contained on-site in sealed, labelled 55-gallon drums pending proper disposal.

Groundwater samples were collected using disposable bailers. Braided nylon cord was used to lower the bailer in each well, with new cord and a new bailer used for each well. Samples were transferred to 40 ml vials with Teflon septa. Hydrochloric acid was used as a preservative. No headspace was present in the vials. Samples were labelled, placed in an iced cooler, and delivered to CAS, as noted on the Field Sampling Data Sheets (Appendix B). A field blank and duplicate were also submitted for analysis to test quality control procedures.

The sample from AGW3 was collected on March 29, just prior to abandonment of the well. This sample was submitted with those collected on April 3.

An additional round of sampling occurred on May 15, 1991. All procedures were the same as in the April sampling episode, except that the wells were developed using disposable bailers. As in the previous episode, wells AGW4 and AGW5 bailed dry. The wells were allowed to recharge for approximately 3 hours prior to sample collection. The original Field Sampling Data Sheets for this second sampling episode were lost. Those included in Appendix B are reproduced from memory and field notes.

## 2.5 FIELD EQUIPMENT DECONTAMINATION PROCEDURES

All drilling and sampling equipment were routinely decontaminated after use. The back of the rig, augers, sampling rods, split-spoons and bits were cleaned after each boring using a high pressure water/steam wash with clean water. Sampling equipment, such as split-spoons, brass tubes, and hand tools, were cleaned between sampling episodes with a detergent wash, followed by a clean water rinse, and a final rinse with distilled water. Wash water was stored on-site in 55-gallon drums pending proper disposal.

## 2.6 WELL SURVEY

On April 1 the elevation of all monitoring wells were surveyed in reference to an on-site datum which was arbitrarily set at 50.00 ft. The datum is located on the top of the northwest bolt on the west support block of the Texaco sign at the southeast corner of the property. Wells were surveyed to the nearest 0.01-foot by a survey team from SE/E. An electronic probe was then used to measure the depth to groundwater in each of the eight wells. The relative groundwater elevation at each well was calculated and are presented in Table 1. Groundwater elevations taken in May during the second sampling episode are not available due to loss of the Field Sampling Data Sheets.

TABLE 1

SURVEY AND GROUNDWATER ELEVATION SUMMARY  
Texaco Service Station  
8701 North Greenwood Avenue, Seattle

Well	Elevation at Top PVC (ft)	Date Monitored	Depth to Water (ft)	Grndwater Elevation (ft)
AGW-1	47.36	4/3/91	3.18	44.18
AGW-2	47.59	4/3/91	3.43	44.16
AGW-3	49.10	(abnd'd)	(flowing)	(49.10+)
AGW-4	47.97	4/3/91	4.61	43.36
AGW-5	49.47	4/3/91	2.78	46.69

note: Elevations are referenced to an on-site benchmark location.  
The benchmark was assigned an arbitrary elevation of 50.00 ft

### 3.0 RESULTS

#### 3.1 HYDROGEOLOGIC CONDITIONS

The entire site appears to be constructed on an old bog. Soils beneath the site consist primarily of interbedded silty sands and peat, with scattered silt and gravel stringers. Fill, consisting of gravelly sand and silty gravel, is present to a depth of approximately 3 feet bgs.

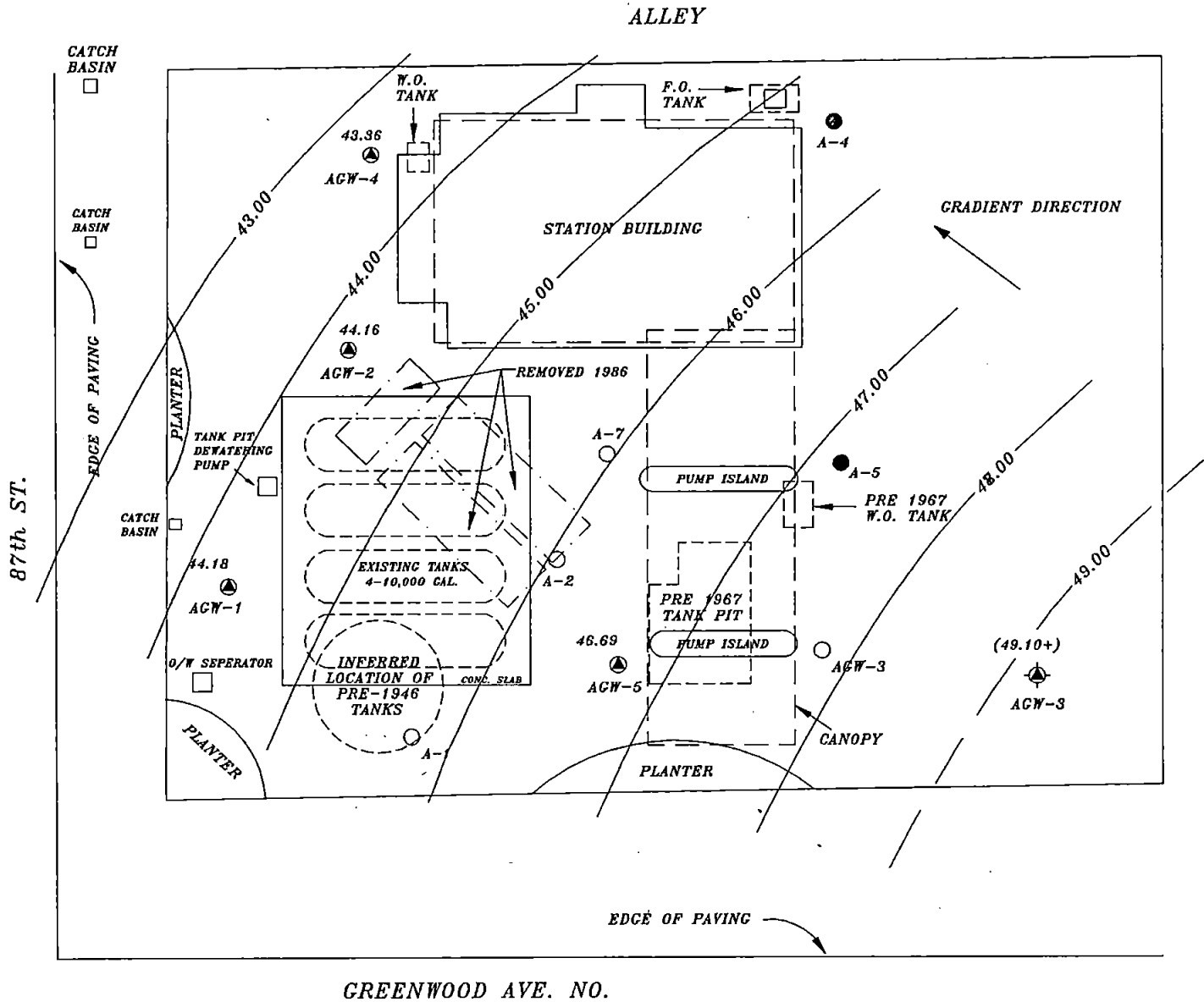
Groundwater in the area is very high, ranging from 1 to 8 feet bgs. The sandy stringers are generally the water-bearing units, with the interbedded peat horizons commonly dry to damp. At times groundwater in the area rises to above 1 foot bgs. This has necessitated the installation of a tank pit dewatering pump to keep the water level below the tank turbines. Most buildings in the area are constructed on pilings so as to prevent sinking of the structures.

At the time of drilling water generally stabilized within the borings at a depth of 6 - 8 feet bgs. The exception was well AGW3, which was a flowing well. Water levels measured in the monitoring wells on April 1, 1991 ranged from 2.78 to 4.61 feet bgs (Table 1). Groundwater gradient was to the southwest at 0.04 to 0.06 ft/ft (Fig. 4).

#### 3.2 SOIL ANALYSIS RESULTS

The results of soil analyses are presented in Table 2. Of the eleven samples analyzed, nine contained detectable levels of TPH. Samples from borings located near the product tanks and dispenser islands (A5, AGW1, AGW2, and AGW5) contained TPH as gasoline ranging from non-detect (ND) to 131 ppm, however, only two of these (AGW1-5 and AGW5-5) contained amounts greater than 9.1 ppm. Samples from AGW1 and AGW2 also contained 55 and 80 ppm, respectively, of TPH as oil. Samples from AGW4, adjacent to the waste oil tank, and A4, adjacent to the fuel oil tank, contained 720 - 830 ppm TPH as oil. EPA 418.1 analyses of the samples from AGW4 ranged from 328 to 979 ppm TPH. Figure 5 show the areal distribution of TPH in soil.

Of the eight samples analyzed for BTEX, only one (AGW1-5) contained a detectable quantity of benzene at 0.11 ppm. Analyses for halogenated volatiles, PCB's, and all metals, except barium, were non-detect. Barium levels in AGW4-3 and AGW4-5 were 0.7 and 0.6 ppm, respectively. These represent background levels, and are well below the Federal regulatory limit of 100 ppm. Copies of the laboratory reports and chain-of-custody documentation are found in Appendix C.



FEET

- A-4 SOIL BORING LOCATION, AND BORING NUMBER
- A-1 ORIGINALLY PROPOSED BORING (OR WELL) LOCATION - NOT DRILLED
- ⊕ ACW-1 MONITORING WELL LOCATION, AND WELL NUMBER
- ⊖ ACW-3 ABANDONED MONITORING WELL LOCATION, AND WELL NUMBER

<b>TEXACO</b> REFINING AND MARKETING, INC. ENVIRONMENTAL SERVICES		
<b>FIGURE 4</b> GROUNDWATER ELEVATION CONTOUR MAP, 4/3/91 87th ST. & GREENWOOD AVE. NO., SEATTLE, WASHINGTON		
SCALE 1"=25'-0"	JOB NO.	APPROVED
DRAWN BY AMA	DATE 6/19/91	APPROVED
CHECKED BY MWC	DATE 6/19/91	SHEET 1 of 1
DRAWING NO. (SEATTLE) 87-GW-ST		

TABLE 2  
 SOIL SAMPLE LABORATORY RESULTS  
 TEXACO SERVICE STATION  
 8701 NORTH GREENWOOD AVENUE, SEATTLE

SAMPLE #	HYDROCARBON SCAN EPA METHOD 8015M mg/Kg (ppm)			BTEX AND TPH AS GASOLINE EPA METHODS 8015M/8020 mg/Kg (ppm)					TPH EPA 418.1 mg/Kg	TCLP METALS EPA 1311 mg/L (ppm)	HALOGENATED VOLATILES EPA 8010	PCB's EPA 8080 mg/Kg
	GASOLINE	DIESEL	OIL	TPH G	BENZENE	TOLUENE	E-BENZ.	XYLENES				
A4-3	ND	ND	720 ✓	--	--	--	--	--	--	--	--	--
A5-3	--	--	--	ND	ND	ND	ND	ND	--	--	--	--
A5-5	--	--	--	5.1	ND	ND	ND	ND	--	--	--	--
AGW1-3	ND	ND	ND	5.2	ND	ND	0.11	0.67	--	--	--	--
AGW1-5	19	ND	55	131 ✓	0.11	0.20	1.63	11.0	--	--	--	--
AGW2-4	ND	ND	80	9.1	ND	ND	ND	0.09	--	--	--	--
AGW3-3	--	--	--	ND	ND	ND	ND	ND	--	--	--	--
AGW3-5	--	--	--	7.7	ND	ND	ND	ND	--	--	--	--
AGW4-3	ND	16	780 ✓	--	--	--	--	--	328	0.7*	ND	ND
AGW4-5	ND	ND	830 ✓	--	--	--	--	--	979	0.6*	ND	ND
AGW5-5	--	--	--	33.7	ND	ND	0.06	0.23	--	--	--	--
MRL	10	10	10	1	0.05	0.05	0.05	0.05	25	various	various	various

-- = not analyzed

MRL = Method Reporting Limit

ND = not detected at MRL

\* = quantity listed is for barium, all other metals were ND

100      .5      40      20      20

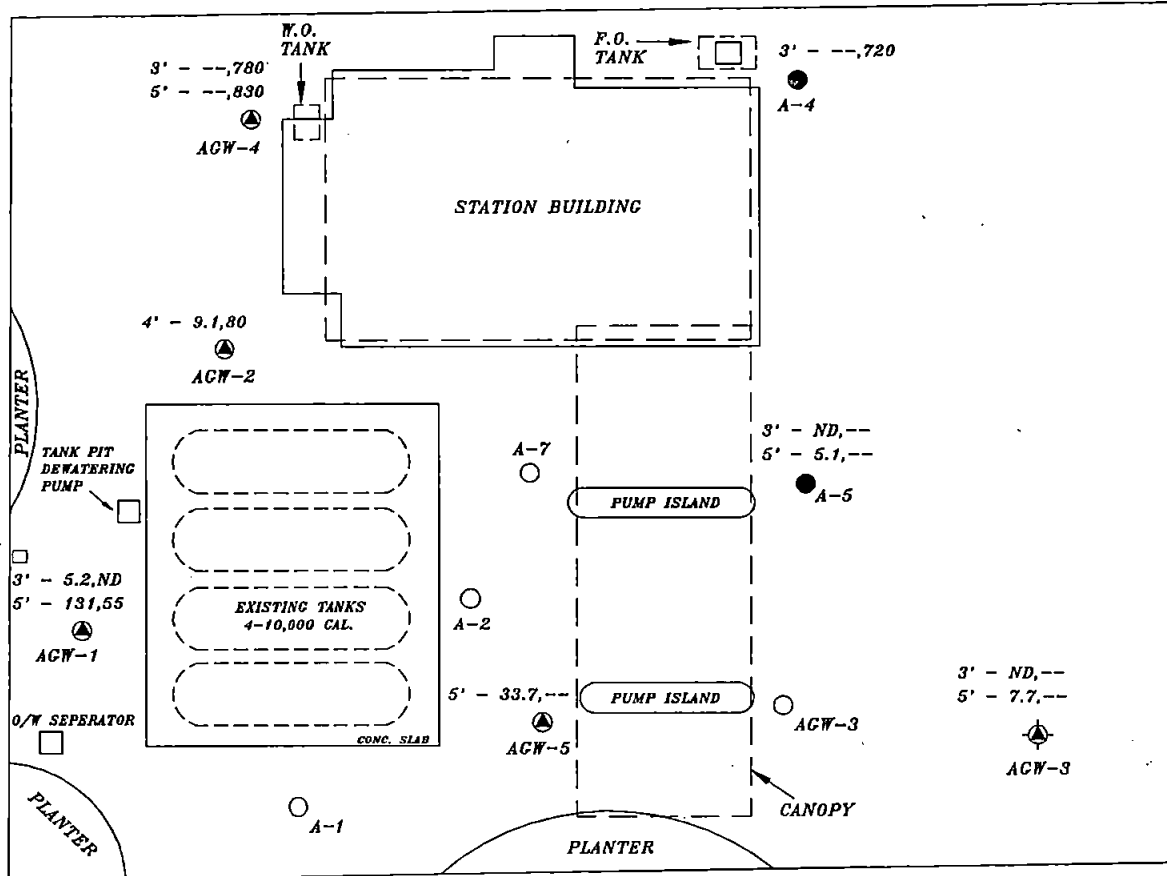
ALLEY

CATCH BASIN

CATCH BASIN

87th ST.

EDGE OF PAVING



CATCH BASIN

CATCH BASIN

PLANTER

TANK PIT DEWATERING PUMP

O/W SEPRATOR

PLANTER

EXISTING TANKS  
4-10,000 GAL.

CONC. SLAB

EDGE OF PAVING

GREENWOOD AVE. NO.

3' - 5.2,ND ( -- = not analyzed)

Depth of Sample

TPH as oil (8015M)

TPH as gasoline (8015M)



FEET

- SOIL BORING LOCATION, AND BORING NUMBER
- A-4
- ORIGINALLY PROPOSED BORING (OR WELL) LOCATION - NOT DRILLED
- A-1
- ⊕ MONITORING WELL LOCATION, AND WELL NUMBER
- ACW-1
- ⊖ ABANDONED MONITORING WELL LOCATION, AND WELL NUMBER
- ACW-3



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ENVIRONMENTAL SERVICES

**FIGURE 5**  
SOIL CONTAMINATION - PPM  
87th ST. & GREENWOOD AVE. NO.,  
SEATTLE, WASHINGTON

SCALE	1" = 25'-0"	JOB NO.	APPROVED
DRAWN BY	AMA	DATE	6/19/91
CHECKED BY	MWC	DATE	6/19/91
DRAWING NO.	(SEATTLE) 87-GW-ST	SHEET	1 OF 1



### 3.3 WATER ANALYSIS RESULTS

The results of water analyses are summarized in Table 3. During the initial round of sampling in April, BTEX compounds were detected only in wells AGW4 and AGW5. Benzene levels were 2.6 and 30 ppb, respectively. No halogenated volatiles were detected.

After further development of AGW4 and AGW5, and resampling of all wells in May, BTEX compounds were detected in wells AGW1, AGW4, and AGW5, with a marked increase of BTEX compounds seen in AGW1 and AGW5. Benzene levels ranged from 8.4 ppb in AGW4 to 440 ppb in AGW1. Halogenated volatiles remained non-detectable in all wells. A rather strong septic odor was noted in the water from AGW4 during this second round of sampling. Figure 6 is a plot of benzene levels in groundwater for both sampling episodes.

Copies of the laboratory reports and chain-of-custody documentation are found in Appendix C.

### 3.4 DISCUSSION/CONCLUSIONS

Soil contamination at the site appears to be limited in extent, and consist primarily of oil contamination around the waste oil and fuel oil tanks. The small amounts of oil detected in samples from AGW1 and AGW2 may be residual levels from past activities at the site, or may be due to interference of the analyses from the organic-rich soils. The generally higher viscosity of oil, combined with the very low permeability of the peaty soil at the site would inhibit the migration of the contaminants within the soil.

The only gasoline contamination of note was present at the five-foot depth in wells AGW1 and AGW5, adjacent to the tank pit and pump islands, respectively. Only one sample, AGW5-5, contained TPH-as-gasoline at a level greater than the 100 ppm level allowed in the Washington State Model Toxics Control Act (MTCA). However, the levels of volatiles was well below the action levels specified in (MTCA). Further, the fact that BTEX compounds comprise less than 10% of the TPH, and that benzene is less than 1% of the BTEX total, indicates that the gasoline is old and weathered, and is not the result of a recent spill.

Groundwater contamination, in the form of BTEX compounds, is present in wells AGW1, AGW4, and AGW5. The contaminant level in AGW4 stayed very constant, and low, between the two sampling episodes. Given the southwestern groundwater gradient, and the fact that water from AGW2 has twice tested non-detect by methods 601 and 602, this suggests that the low level of contamination seen in well AGW4 is not related to that seen in AGW 1 or AGW5.

The cause for the marked increase in contaminants, most notably benzene, seen in AGW1 and AGW5 between the two sampling episodes, is not known. Since groundwater elevation data from the last

TABLE 3  
 WATER SAMPLE LABORATORY RESULTS  
 Texaco Service Station  
 8701 North Greenwood Avenue, Seattle

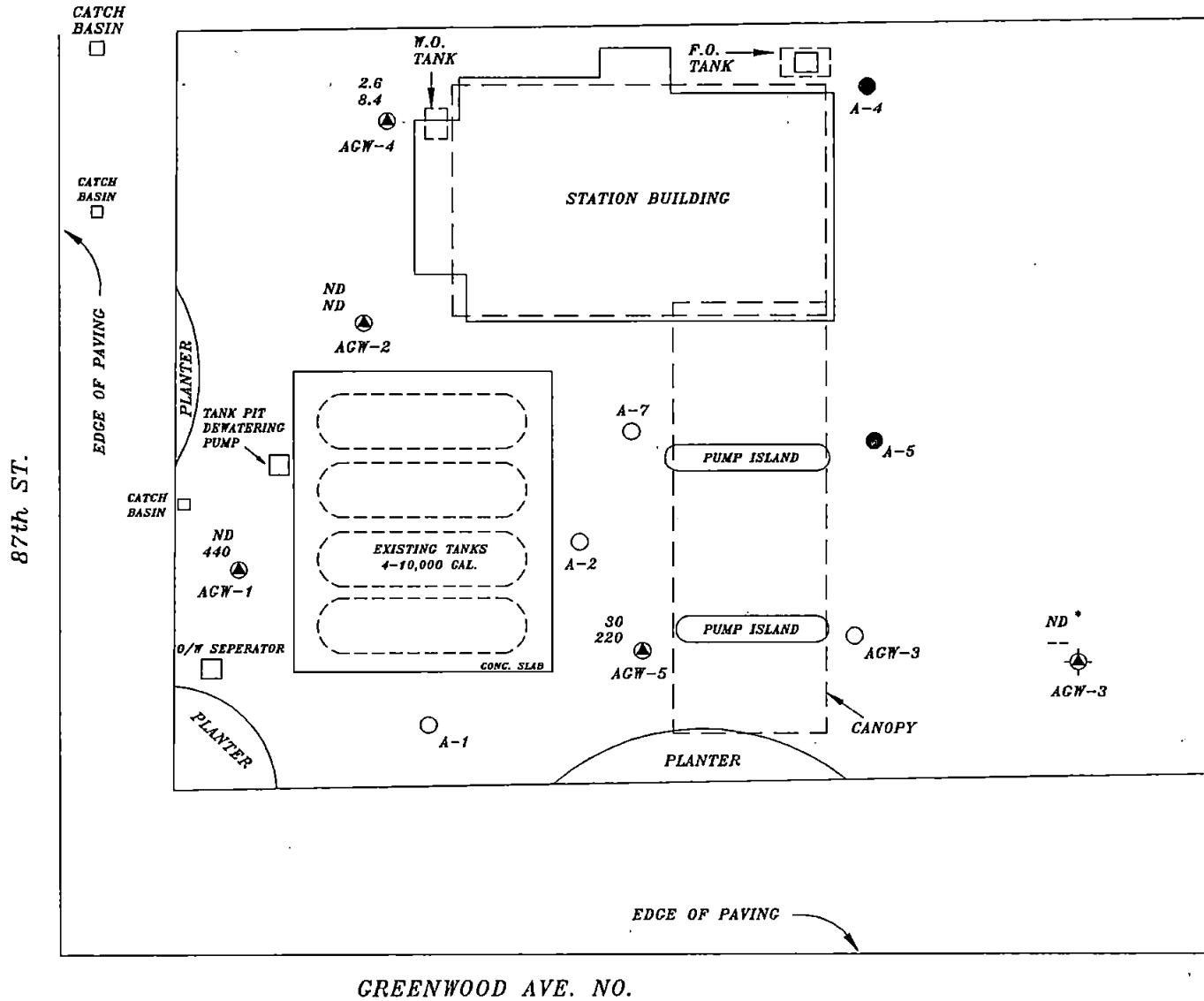
SAMPLE # COLLECTION DATE	BENZENE EPA 602 ug/L (ppb) <i>.5</i>	TOLUENE EPA 602 ug/L (ppb) <i>40</i>	E-BENZENE EPA 602 ug/L (ppb) <i>90</i>	XYLENE EPA 602 ug/L (ppb) <i>20</i>	TPH EPA 418.1 mg/L (ppm)	HALOGENATED VOLATILES EPA 8010 ug/L (ppb)
<b>AGW-1</b> 4/3/91 5/15/91	ND(0.5) <b>440</b>	ND(1.0) <b>1000</b>	ND(1.0) <b>92</b>	ND(1.0) <b>670</b>	-- --	ND(v) ND(v)
<b>AGW-2</b> 4/3/91 5/15/91	ND(0.5) ND(0.5)	ND(1.0) ND(1.0)	ND(1.0) ND(1.0)	ND(1.0) ND(1.0)	-- --	ND(v) ND(v)
<b>AGW3</b> 3/29/91 abnd'd 3/29	ND(0.5) --	ND(1.0) --	ND(1.0) --	ND(1.0) --	-- --	ND(v) --
<b>AGW4</b> 4/3/91 5/15/91	<b>2.6</b> <b>8.4</b>	<b>20</b> <b>19</b>	<b>2.7</b> <b>2.4</b>	<b>31</b> <b>20</b>	-- ND(0.5)	ND(v) ND(v)
<b>AGW5</b> 4/3/91 5/15/91	<b>30</b> <b>220</b>	<b>10</b> <b>53</b>	<b>5</b> <b>3.5</b>	<b>7</b> <b>12</b>	-- --	ND(v) ND(v)

ND = not detected (at detection level shown in parentheses, v = various)

-- = not analyzed


shaded/bold = above MTCA Method A Cleanup Levels for groundwater

ALLEY



30 - PPB BENZENE, 4/3/91  
 220 - PPB BENZENE, 5/15/91  
 \* - sampled 3/29/91, prior to abandonment

- SOIL BORING LOCATION, AND BORING NUMBER
- A-4
- ORIGINALLY PROPOSED BORING (OR WELL) LOCATION - NOT DRILLED
- A-1
- ⊕ MONITORING WELL LOCATION, AND WELL NUMBER
- ACW-1
- ⊖ ABANDONED MONITORING WELL LOCATION, AND WELL NUMBER
- ACW-3

 <b>TEXACO</b> REFINING AND MARKETING, INC. ENVIRONMENTAL SERVICES		
<b>FIGURE 6</b> BENZENE IN GROUNDWATER, PPB 87th ST. & GREENWOOD AVE. NO., SEATTLE, WASHINGTON		
SCALE 1"=25'-0"	JOB NO.	APPROVED
DRAWN BY AMA	DATE 6/19/91	APPROVED
CHECKED BY MWC	DATE 6/19/91	SHEET 1 of 1
DRAWING NO. (SEATTLE) 87-CW-ST		

sampling episode was lost, it is not known if the increase is in response to a fluctuation in groundwater level. Other explanations may involve overfills or spills. One difference in the results from the two wells is that in AGW5 benzene is the most abundant chemical, comprising up to 76% of the total BTEX compounds. This suggests that the source of this contamination is "fresh". In comparison, in the sample from AGW1 benzene comprises less than 20% of the total BTEX compounds, with both toluene and xylenes being present in greater quantities. This suggests that the source of this contamination is different from source that in AGW5, and that the source is not "fresh".

#### 4.0 FUTURE WORK

A quarterly groundwater monitoring and sampling program is planned. Further, the possibility of installing additional groundwater monitoring wells, both up-gradient on the site, and down-gradient off-site, is being pursued. Reports will be prepared detailing the results of all future activities. If necessary, a Corrective Action Plan will be prepared to address groundwater and/or soil contamination at the site.

TEXACO ENVIRONMENTAL SERVICES



MICHAEL W. CONDON  
Project Manager

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**APPENDIX A**

**Boring Logs**



SOIL CLASSIFICATION CHART  
& KEY TO BORING LOG

MAJOR DIVISIONS					TYPICAL NAMES	
COARSE-GRAINED SOILS MORE THAN HALF IS LARGER THAN NO. 200 SIEVE	GRAVELS  MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES	
			GP		POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES	
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES	
			GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES	
	SANDS  MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL-GRADED SANDS, GRAVELLY SANDS	
			SP		POORLY GRADED SANDS, GRAVELLY SANDS	
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES	
			SC		CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES	
			SILTS AND CLAYS  LIQUID LIMIT 50% OR LESS	ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY				
SILTS AND CLAYS  LIQUID LIMIT GREATER THAN 50%	MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS			
	CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
HIGHLY ORGANIC SOILS		Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS		

UNIFIED SOIL CLASSIFICATION SYSTEM

G - GRAB SAMPLE	HC odor - Hydrocarbon odor	■ - Sample interval
SS - DRIVEN SPLIT SPOON	NO - No odor	▽ - Groundwater level
ST - PRESSED SHELBY TUBE	SL - Slight odor	
RC - ROCK CORE	MD - Moderate odor	
CT - CONTINUOUS TUBE	SG - Strong odor	
PID - PHOTONIZATION DETECTOR		
HS - HEAD SPACE		

# MONITORING WELL

SITE LOCATION: SEATTLE, WA.  
 ADDRESS: 8701 N. GREENWOOD AVE.  
 DRILLING CO: TACOMA PUMP & DRILLING  
 LOGGED BY: M. CONDON / M. NOLL (SE/E)  
 SURFACE ELEV: ~79'

AGW-1



DATE: 3/27/91  
 TIME START: 13:15  
 TIME STOP: 16:30  
 DRILLING METHOD: HSA

GL	Casing Annulus	LITHOLOGY		REC (in)	BLOWS	BDR	PID (ppm) smpl/hdspc	TPH 8015M (ppm)	EPA 8020 (ppm)				OIL 8015M (ppm)	DESCRIPTION
		LOG	USCS						B	T	E	X		
														3" Asphalt
			SP				62							Gravelly Sand, olive to olive-brown, fine-med. sand, gravel to 2" dia., loose, moist (fill)
2	4" SCH 40 PVC	Bentonite	GM			SG	1580							Silty Gravel, olive to olive-grey, 20% fines, 30% fine-crs. sand, 50% fine-crs gravel, med. dense moist, roots @ 2.5'
4	4" SCH 40 PVC	20/40 CSS	ML	18	32/40/8	MD	74	5.2	ND	ND	0.11	0.67	ND	Silt, olive-grey, gravelly, 50% fines, 15% fine-crs sand, 35% gravel, stiff, moist
			PT											Peat, brown
6	4" Dia. PVC Screen, .020" Slots		SM	18	3/5/8	SG	90	131	0.11	0.20	1.63	11.0	55	Silty Sand, olive-grey to grey, 20% fines, 69% fine-med sand, 20% gravel, med. dense, moist
			PT											Peat, brown
8	4" Dia. PVC Screen, .020" Slots		SM	18	2/4/5	SL	52							Silty Sand, grey, 25% fines, 75% fine sand, med dense, moist
			PT											Peat, brown
10	4" Dia. PVC Screen, .020" Slots		SM	18	2/5/8	SL	520							Silty Sand, olive-grey, 20% fines, 80% fine-med sand, trace of gravel, med dense, moist
			PT											Peat, brown
12	4" Dia. PVC Screen, .020" Slots	8/12 Colorado Silica Sand (CSS)												
14	4" Dia. PVC Screen, .010" Slots		SM	18	7/11/23	NO	---							Silty Sand, olive-grey, 25% fines, 70% fine-crs sand, 5% fine gravel, med dense, moist
16	4" Dia. PVC Screen, .010" Slots		PT											Peat, brown
			ML											Silty Sand grading to Sandy Silt, grey, 70-80% fines, 20-30% fine sand, firm, wet
18	4" Dia. PVC Screen, .010" Slots		ML	18	19/30/60	NO	---							Sand Silt, as above
20	End cap		SM											Silty Sand (as above) grading to
			GM											Silty Gravel, grey to dark grey, 15% fines, 70% fine-med sand grading to 70% fine gravel, dense, wet

Total Depth 20'

ADVANCED BOREHOLE BY HAND TO 3'

# MONITORING WELL

SITE LOCATION: SEATTLE, WA.  
 ADDRESS: 8701 N. GREENWOOD AVE.  
 DRILLING CO: TACOMA PUMP & DRILLING  
 LOGGED BY: M. CONDON / M. NOLL (SE/E)  
 SURFACE ELEV: ~79'

## AGW-2



DATE: 3/27/91  
 TIME START: 9:15  
 TIME STOP: 12:00  
 DRILLING METHOD: HSA

GL	Casing Annulus	LITHOLOGY LOG	USCS	REC (in)	BLOWS	DDOR	PID (ppm) smpl/hdspc	TPH 8015M (ppm)	EPA 8020 (ppm)				OIL 8015M (ppm)	DESCRIPTION
									B	T	E	X		
GL														3" Asphalt
			GM											Silty Gravel (fill)
2	4" SCH 40 PVC		SW			MD								Gravelly Sand, olive-brown, 10% fines, 60% fine-crs sand, 30% fine-med gravel, loose, moist, (fill)
			GM											Silty Gravel, olive to olive-grey, 40% fines, 10% fine-crs sand, 50% gravel, med dense, wet
4	20/40 CSS Bentonite		OL	18	11/8/60	-	16	9.1	ND	ND	ND	0.09	80	Organic Silt, brown, 70% fines, 25% organics, 5% fine sand, soft to firm, wet (bog deposit)
			ML											Gravelly Silt, olive to olive-grey, 60% fines, 10% fine-crs sand, 30% gravel, firm, wet
6				6	31/8/14	-	19							
8	4" Dia. PVC Screen, .020" Slots		PT	6	1/5/7	SL	23							Peat, brown, 90% organics, 10% fines, soft to firm, dry to moist
10	4" Dia. PVC Screen, .020" Slots		OL	18	2/5/8	SL	28							Organic Silt, olive-grey, 60% fines, 10% gravel, 30% organics
12	4" Dia. PVC Screen, .020" Slots		PT											Peat, brown, 90% organics, 10% fines, moist, some H2S odor
14	8/12 Colorado Silica Sand (CSS)		PT/ML	18	10/15/30		14							Silt, lt grey, sandy, firm, moist, moist. Interbedded w/Peat layers up to 3" thick
			PT											Peat, as above
16	4" Dia. PVC Screen, .010" Slots		ML	18	10/8/10	FT	8							Silt, grey to lt grey, sandy, lower 3" gravelly, firm, wet. 2"-thick silty sand layer @ 16', loose, wet, pet. odor, some roots
18	4" Dia. PVC Screen, .010" Slots		ML											Silt, as above
20	End cap		SP GP	18	8/31/40		12							Sand, grey, med-crs, grades to: Sandy Gravel, 85% fine-crs sand grading to 80% fine gravel (looks like pea gravel), wet
22														
24														

Total Depth 20'



# (ABANDONED) MONITORING WELL

SITE LOCATION: SEATTLE, WA.  
 ADDRESS: 8701 N. GREENWOOD AVE.  
 DRILLING CO: TACOMA PUMP & DRILLING  
 LOGGED BY: M. CONDON / M. NOLL (SE/E)  
 SURFACE ELEV: ~79'

AGW-3



DATE: 3/28/91  
 TIME START: 10:00  
 TIME STOP: 12:15  
 DRILLING METHOD: HSA

GL	Casing Annulus	LITHOLOGY		REC (in)	BLOWS	DIPOR	PID (ppm) smpl/hdspc	TPH 8015M (ppm)	EPA 8020 (ppm)				OIL 8015M (ppm)	DESCRIPTION
		LOG	USCS						B	T	E	X		
GL														6" Asphalt
2	4" SCH 40 PVC Bentonite Conc.		SM											Silty Sand, olive-grey, gravelly, 20% fines, 50% fine-crs sand, 30% gravel, dense, wet. Water seeps into hole @ 1.5'-2.5'
4	4" SCH 40 PVC 20/40 GSS		SP	6	70/50 (for 4")	-	13	ND	ND	ND	ND	ND		Gravelly Sand, grey, 5% fines, 60% fine-med sand, 35% gravel, (fill), wood @ 2-3', moist-wet
6	4" Dia. PVC Screen, .020" Slots		SM	3	70/ (for 4")		37	7.7	ND	ND	ND	ND		Silty Sand, olive, gravelly, 20% fines, 50% fine-med sand, 30% gravel, dense, moist to wet
8	4" Dia. PVC Screen, .020" Slots		PT											Peat, v. dk brown, moist to wet (from drill cuttings)
10	4" Dia. PVC Screen, .020" Slots		SM PT SP	18	5/2/5		23							Silty Sand, olive-grey, 25% fines, 70% fine sand, 5% gravel Peat, as above Sand, olive-grey, 5% fines, 90% fine sand, 5% gravel, loose, wet
12	8/12 Colorado Silico Sand (CSS)													Peat, as above (from cuttings)
14	4" Dia. PVC Screen, .010" Slots		PT	0	80/ (for 2")									@14' - 1" steel pipe came up on auger flight No Recovery, bounced on wood
16	4" Dia. PVC Screen, .010" Slots													Peat, as above (from cuttings)
18	4" Dia. PVC Screen, .010" Slots													Sand, grey, 5% fines, 95% fine sand, dense, wet
20	End * Top cop		SP ML SP	17	8/34/50 (for 5")									Silt (2" thick), lt grey, sl sandy, stiff, wet, finely laminated Sand, as above
22														
24														* PVC string pulled up 0.5' during installation

Note - flowing well. Abandoned 3/29/91

Total Depth 20'

# MONITORING WELL

SITE LOCATION: SEATTLE, WA.  
 ADDRESS: 8701 N. GREENWOOD AVE.  
 DRILLING CO: TACOMA PUMP & DRILLING  
 LOGGED BY: M. CONDON / M. NOLL (SE/E)  
 SURFACE ELEV: ~79'

AGW-4



DATE: 3/29/91  
 TIME START: 7:45  
 TIME STOP: 11:00  
 DRILLING METHOD: HSA

Casing Annulus	LITHOLOGY LOG	USCS	REC (in)	BLOWS	ODOR	PID (ppm) smpl/hdspc	TPH 418.1 (ppm)	EPA 8020 (ppm)				OIL 8015M (ppm)	DESCRIPTION
								B	T	E	X		
GL												3" Asphalt	
	Bentonite	SP				640						Gravelly Sand, olive-brown, 5% fines, 60% fine-med sand, 35% gravel, loose, moist (fill).	
2													
4	4" SCH 40 PVC		18	20/25/25	SG	614	328	--	--	--	780	Silty Sand, olive-grey, gravelly, 20% fines, 50% fine-crs sand, 30% gravel, med dense, moist	
6		SM	18	8/12/14	SG	240	979	--	--	--	830	Silty Sand, as above	
8			18	2/3/2	SG	242						Silty Sand, as above	
10	4" Dia. PVC Screen, .020" Slots	PT										Peat, dk brown, moist to wet	
12	8/12 Colorado Silica Sand (CSS)	ML	18	2/4/2	SG*	188						Sandy Silt, grey, 80% fines, 20% fine sand, firm, moist. * strong septic odor	
14		PT										Peat, as above	
16	4" Dia. PVC Screen, .010" Slots	ML	18	11/14/16	-	8						Silt, grey, 90% fines, 10% fine sand, firm to stiff, wet to moist, some roots	
18		SM										Silty Sand, 15% fines, 85% fine sand, med dense, wet	
20	End cap	ML	18	12/30/32	-	10						Sandy Silt, grey, 85% fines, 15% fine sand, roots, wet. Some fine laminations	
22		SM										Silty Sand, as above	
24		GM										Silty Gravel, grey, 15% fines, 15% fine-crs sand, 70% gravel	

Total Depth 20'

# MONITORING WELL

SITE LOCATION: SEATTLE, WA.  
 ADDRESS: 8701 N. GREENWOOD AVE.  
 DRILLING CO: TACOMA PUMP & DRILLING  
 LOGGED BY: M. CONDON / M. NOLL (SE/E)  
 SURFACE ELEV: ~79'

AGW-5



DATE: 3/29/91  
 TIME START: 11:45  
 TIME STOP: 14:30  
 DRILLING METHOD: HSA

GL	Casing Annulus	LITHOLOGY		REC (in)	BLOWS	ODOR	PID (ppm) smpl/hdspec	TPH 8015M (ppm)	EPA 8020 (ppm)				OIL 8015M (ppm)	DESCRIPTION
		LOG	USCS						B	T	E	X		
GL		Conc.	GP											3" Asphalt
		Bentonite	SP											Sandy Gravel, olive-grey, 5% fines, 35% fine-crs sand, 60% gravel, loose, dry (fill)
2	4" SCH 40 PVC					SG								Gravelly Sand, olive to olive-grey, 5% fines, 55% fine-med sand, 40% gravel, 2" iron pipe (loose) @ 2.5', oriented NE-SW
4	20/40 CSS		SM	1/4	18/14/13		284							Silty Sand, olive-brown, gravelly, 20% fines, 55% fine-med sand, 25% gravel
6				18	4/4/4	SG	--	33.7	ND	ND	0.06	0.23	--	Silty Sand, as above
8			PT											Peat, v dk brown, moist
10	4" Dia. PVC Screen, .020" Slots			18	1/3/3		24							Peat, as above
12	4" Dia. PVC Screen, .020" Slots		GM											Silty Gravel, sandy, 30% fines, 30% fine-crs sand, 40% gravel, loose, moist to wet
14	4" Dia. PVC Screen, .020" Slots													
16	8/12 Colorado Silica Sand (CSS)		SP	18	22/55/35		10							Sand, dk grey, 5% fines, 85% fine-med sand, 5% gravel, wet
18			SM											Silty Sand & Sandy Silt, grey, 40% fines, 60% fine-med sand, dens, wet. Beds 1/8-1/2-inch thick, finely laminated silt
20	4" Dia. PVC Screen, .010" Slots		SP	10	38/50/ (for 4")		10							Sand, grey, 10% fines, 85% fine-med sand, 5% crs sand-gravel, dense, wet
22														
24														
Total Depth 21'														

# SOIL BORING

SITE LOCATION: SEATTLE, WA.  
 ADDRESS: 8701 N. GREENWOOD AVE.  
 DRILLING CO: TACOMA PUMP & DRILLING  
 LOGGED BY: M. CONDON / M. NOLL (SE/E)  
 SURFACE ELEV: ~79'

A-4

DATE: 3/28/91  
 TIME START: 14:30  
 TIME STOP: 15:30  
 DRILLING METHOD: HSA

GL	Casing Annulus	LITHOLOGY		REC (in)	BLOWS	ODDR	PID (ppm) smpl/hdspc	TPH 8015M (ppm)	EPA 8020 (ppm)				TPH 418.1 (ppm)	DESCRIPTION
		LOG	USCS						B	T	E	X		
GL														3" Asphalt
2	Conc.		SP											Gravelly Sand, olive to olive-brown, 10% fines, 60% fine-med sand, 30% crs sand-gravel, loose, moist, some asphalt and tile fragments (fill)
4			SM	8	38/50/ (for 2")	MD	23	---	---	---	---	---	720	Gravelly Silty Sand, olive, 15% fines, 55% fine-crs sand, 30% gravel, dense, moist
6	Bentonite			0	80/50/ (for 2")		---							No Recovery
8			PT											Peat (from drill cuttings)
10			SP	18	2/3/2		15							Gravelly Sand, olive-grey to grey, 5% fines, 80% fine-med sand, 15% gravel, loose, wet
12			PT											Peat, v dk brown, wet
14														
16														
18														
20														
22														
24														
Total Depth		11.5'												

# SOIL BORING

SITE LOCATION: SEATTLE, WA.  
 ADDRESS: 8701 N. GREENWOOD AVE.  
 DRILLING CO: TACOMA PUMP & DRILLING  
 LOGGED BY: M. CONDON / M. NOLL (SE/E)  
 SURFACE ELEV: ~79'

A-5.



DATE: 3/28/91  
 TIME START: 8:00  
 TIME STOP: 9:00  
 DRILLING METHOD: HSA

GL	Casing Annulus	LITHOLOGY LOG	USCS	REC (in)	BLOWS	DDOR	PID (ppm) smpl/hdspc	TPH 8015M (ppm)	EPA 8020 (ppm)				OIL 8015M (ppm)	DESCRIPTION
									B	T	E	X		
GL														Two 3" Asphalt layers
2	Conc.		SW											Gravelly Sand, olive-brown, 5% fines, 60% fine-crs sand, 30% gravel, dense, moist
4			SP	6	31/35/50	ND	31							Gravelly Sand, olive-grey, 10% fines, 60% fine-med sand, 30% gravel, dense, moist
6	Bentonite		PT	18	12/19/9	SL	12	5.1	ND	ND	ND	ND	--	Gravelly Sand, as above
8			SM	18	2/3/5		12							Silty Sand
10			PT	18	2/2/3									Peat, as above. H2S odor
12														Peat, as above
14														
16														
18														
20														
22														
24														

Total Depth 11.5'

# SOIL BORING

SITE LOCATION: SEATTLE, WA.  
 ADDRESS: 8701 N. GREENWOOD AVE.  
 DRILLING CO: TACOMA PUMP & DRILLING  
 LOGGED BY: M. CONDON / M. NOLL (SE/E)  
 SURFACE ELEV: ~79'

A-1



DATE: 3/28/91  
 TIME START: 13:00  
 TIME STOP: 13:30  
 DRILLING METHOD: HSA

GL	Casing	Annulus	LITHOLOGY		REC (in)	BLOWS	ODOR	PID (ppm) smpl/hdspec	TPH 8015M (ppm)	EPA 8020 (ppm)				TPH 418.1 (ppm)	DESCRIPTION
			LOG	USCS						B	T	E	X		
GL														6" Asphalt	
2		FILL	FILL											Fill to 3'. Attempted drilling @ 3 locations - encountered pea gravel and filter fabric. Abandoned location	
4															
6															
8															
10															
12															
14															
16															
18															
20															
22															
24															
Total Depth			3'												

# SOIL BORING

SITE LOCATION: SEATTLE, WA.  
 ADDRESS: 8701 N. GREENWOOD AVE.  
 DRILLING CO: TACOMA PUMP & DRILLING  
 LOGGED BY: M. CONDON / M. NOLL (SE/E)  
 SURFACE ELEV: ~79'

A-7



DATE: 3/29/91  
 TIME START: 14:45  
 TIME STOP: 15:15  
 DRILLING METHOD: HSA

GL	Casing	Annulus	LITHOLOGY		REC (in)	BLOWS	ODOR	PID (ppm) smpl/hdspc	TPH 8015M (ppm)	EPA 8020 (ppm)				TPH 418.1 (ppm)	DESCRIPTION
			LOG	USCS						B	T	E	X		
GL															3" Asphalt
2		FILL		FILL											Fill to 3'. Attempted drilling @ 2 locations - encountered pea gravel and filter fabric. Abandoned location
4															
6															
8															
10															
12															
14															
16															
18															
20															
22															
24															
Total Depth															3'

**APPENDIX B**

**Field Sampling Data Sheets**





# 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.  
PROJECT NAME TEXACO-GREENWOOD # U6813.01  
CLIENT/CONTACT MIKE CONDON 038 MWC  
TEXACO ENVIRONMENTAL

Well or Surface Site Number AGW-1  
Sample Designation AGW-1  
Date, Time 4-3-91 1315  
Weather Cold 35°F, Raining, Strong wind  
from SE.

### HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.) 3.18' Elevation PVC=47.26 Date, Time 4-3-91 1045 Method Used (M-Scope Number or Other) STEEL TAPE  
GW=44.18

### WELL EVACUATION:

0.653 gal/ft

Gallons 11 Pore Volumes 1 Method Used PERISTALTIC PUMP Rinse Method --- Date, Time 4-3-91 1230  
33 3 w/TYGON TUBING ---

Surface Water Flow Speed \_\_\_\_\_ Measurement Method \_\_\_\_\_ Date, Time \_\_\_\_\_

### SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
<u>601</u>	<u>4-3-91 1315</u>	<u>DISPOSABLE</u>	<u>40</u>	<u>VOA</u>	<u>5-20</u>	<u>NO</u>	<u>NO HCL</u>	<u>YES</u>	Non-Phosphatic detergent, wash H2O rinse MeOH rinse Distilled H2O rinse
<u>602</u>	<u>4-3-91 1315</u>	<u>PVC BUBBLER</u>	<u>40</u>	<u>VOA</u>	<u>5-20</u>	<u>NO</u>	<u>NO HCL</u>	<u>YES</u>	
_____	_____	_____	_____	_____	_____	_____	_____	_____	
_____	_____	_____	_____	_____	_____	_____	_____	_____	

### FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	umhos Conductivity	°C Temp	Eh
<u>1</u>	<u>6.0</u>	<u>360</u>	<u>12°</u>	_____
<u>2</u>	<u>6.2</u>	<u>354</u>	<u>12°</u>	_____
<u>3</u>	<u>6.3</u>	<u>373</u>	<u>12°</u>	_____
<u>4</u>	<u>6.3</u>	<u>390</u>	<u>12°</u>	_____

### NOTES:

Discharge water is grey, slightly silty.

Total # of Bottles: 2

Signature: Michael S. Roll



# 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.  
PROJECT NAME TEXACO-GREENWOOD # U6813.01  
CLIENT/CONTACT MIKE CONDON 038 MWC  
TEXACO ENVIRONMENTAL

Well or Surface Site Number AGW-2  
Sample Designation AGW-2  
Date, Time 4-3-91 1400  
Weather Cold (35°F), raining, windy

### HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.) 3.43 Elevation PVC=47.59 Date, Time 4-3-91 1030 Method Used (M-Scope Number or Other) STEEL TAPE  
GW=44.10

### WELL EVACUATION:

0.653 gal/ft  
Gallons 11 Pore Volumes 1 Method Used PERISTALTIC PUMP Rinse Method --- Date, Time 4-3-91 1330  
33 3 w/TYGON TUBING

Surface Water Flow Speed \_\_\_\_\_ Measurement Method \_\_\_\_\_ Date, Time \_\_\_\_\_

### SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
<u>601</u>	<u>4-3-91 1400</u>	<u>DISPOSABLE</u>	<u>40</u>	<u>VOA</u>	<u>5-20</u>	<u>NO</u>	<u>NO HCL</u>	<u>YES</u>	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
<u>602</u>	<u>4-3-91 1400</u>	<u>PVC BAWP</u>	<u>40</u>	<u>VOA</u>	<u>5-20</u>	<u>NO</u>	<u>NO HCL</u>	<u>YES</u>	
_____	_____	_____	_____	_____	_____	_____	_____	_____	

### FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	120 Temp	Eh
<u>1</u>	<u>6.5</u>	<u>395</u>	<u>12</u>	_____
<u>2</u>	<u>6.3</u>	<u>340</u>	<u>13</u>	_____
<u>3</u>	<u>6.5</u>	<u>300</u>	<u>13</u>	_____
_____	_____	_____	_____	_____

### NOTES:

discharge water appeared grey in color.

Total # of Bottles: 2

Signature: Michael D. Hill





# 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 Avenue North  
PROJECT NAME Texas - Greenwood # U6813.01  
CLIENT/CONTACT Mike Rendon 038 MNC  
Texas Environmental

Well or Surface Site Number AGW-3  
Sample Designation AGW-3  
Date, Time 3-29-91 1600  
Weather Cold, windy

### HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.) Elevation Date, Time Method Used (M-Scope Number or Other)  
Well is flowing with stickup = 1 ft. 3-29-91 1500  
PVC = 49.10 ft GW ≈ 50 ft

### WELL EVACUATION:

0.653 gal/ft

Gallons Pore Volumes Method Used Rinse Method Date, Time  
Well is flowing  
13 10 Peristaltic Pump w/ Tygon tubing 3-29-91 1530  
Surface Water Flow Speed \_\_\_\_\_ Measurement Method \_\_\_\_\_ Date, Time \_\_\_\_\_

### SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
601	3-29-91 1600	PVC bailer	40	VOA	—	NO	None	Yes	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
601	3-29-91-1600	PVC bailer	40	VOA	—	NO	None	Yes	

### FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	µmhos Conductivity	°C Temp	gal/ft				
3	7.0	280	12	40				

### NOTES:

Abandoned well by pumping cement grout into the screen and filter pack immediately after water sample was collected.

Total # of Bottles: 2 Signature: Michael S. Noll



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Field Sampling Data

LOCATION/ADDRESS 8701 GREENWOOD AVE N.
PROJECT NAME TEXACO-GREENWOOD # U6813.01
CLIENT/CONTACT MIKE CONDON O38 MWC
TEXACO ENVIRONMENTAL

Well or Surface Site Number AGW-4
Sample Designation AGW-4
Date, Time 4-3-91 1445
Weather Cold (38°F), Rainy, dr

HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.) Elevation Date, Time Method Used (M-Scope Number or Other)
4.61' PVC = 47.97 4-3-91 1030 STEEL TAPE
GW = 43.36

WELL EVACUATION: 0.653 gal/ft x 16 ft
Gallons Pore Volumes Method Used Rinse Method Date, Time
10 1 PERISTALTIC PUMP 4-3-91 1045
30 3 W/TYGON TUBING

Surface Water Flow Speed Measurement Method Date, Time

SAMPLING:

Table with columns: Sample, Date, Time, Method, Volume (ml), Container Type, Depth Taken (feet), Field Filtered (yes,no), Preservative, Iced (yes,no), Sampler Cleaning Method. Includes handwritten entries for samples 601 and 602.

FIELD WATER QUALITY TESTS:

Table with columns: Pore Vol. Number, pH, Conductivity, Temp, Eh. Includes handwritten data for three samples.

NOTES:

12 gal pumped - dry Brown silty discharge.
Allowed to recover for 4 hours prior to sampling.

Total # of Bottles: 2

Signature: Michael D. Noll



# Sweet-Edwards/EMCON, Inc.

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## Field Sampling Data

LOCATION/ADDRESS 8701 GREENWOOD AVE N.  
PROJECT NAME TEXACO-GREENWOOD # U6813.01  
CLIENT/CONTACT MIKE CONDON O38 MWC  
TEXACO ENVIRONMENTAL

Well or Surface Site Number AGW-5  
Sample Designation AGW-5  
Date, Time 4-3-91 1440  
Weather Cold (35F), Raining, Windy.

### HYDROLOGY MEASUREMENTS:

(Nearest 0.1 ft.) 2.78' Elevation PVC: 49.47 Date, Time 4-3-91 1150 Method Used (M-Scope Number or Other) STEEL TAPE  
GW: 46.69

### WELL EVACUATION:

0.653 gal/ft

Gallons 11.10 Pore Volumes 1 Method Used PERISTALTIC PUMP Rinse Method → Date, Time 4-3-91 11:53  
33.3 3 W/TYGON TUBING

Surface Water Flow Speed \_\_\_\_\_ Measurement Method \_\_\_\_\_ Date, Time \_\_\_\_\_

### SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
<u>601</u>	<u>4-3-91 1440</u>	<u>DISPOSABLE</u>	<u>40</u>	<u>VOA</u>	<u>5-20</u>	<u>NO</u>	<u>NO</u>	<u>YES</u>	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
<u>602</u>	<u>4-3-91 1440</u>	<u>PVC BALLOON</u>	<u>40</u>	<u>VOA</u>	<u>5-20</u>	<u>NO</u>	<u>NO</u>	<u>YES</u>	
_____	_____	_____	_____	_____	_____	_____	_____	_____	

### FIELD WATER QUALITY TESTS:

Number	pH	Conductivity	Temp	Eh
<u>1</u>	<u>5.9</u>	<u>249</u>	<u>11°C</u>	_____
<u>2</u>	<u>5.9</u>	<u>256</u>	<u>12°C</u>	_____
<u>3</u>	<u>6.3</u>	<u>245</u>	<u>12°C</u>	_____
_____	_____	_____	_____	_____

### NOTES:

Well dry at 20 gal. purged. Brown silky discharge.  
Allowed to recover for 3 hours prior to sampling.

Total # of Bottles: 2 Signature: Michael D. Roll





# Sweet-Edwards/EMCON, Inc.

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## Field Sampling Data

LOCATION/ADDRESS 8701 Greenwood Ave N.  
PROJECT NAME Toxics - Greenwood # 116813.01  
CLIENT/CONTACT Mike Casade Toxics

Well or Surface Site Number AGW-1  
Sample Designation AGW-1  
Date, Time 5/15/91 1015  
Weather \_\_\_\_\_

**HYDROLOGY MEASUREMENTS:** PV ≈ 10 gallons  
(Nearest .01 ft.) ≈ 3 ft Elevation \_\_\_\_\_ Date, Time 5/15/91 Method Used (M-Scope Number or Other) Estimate

**WELL EVACUATION:**  
Gallons ≈ 30+ Pore Volumes 3+ Method Used Disposably Rinse Method \_\_\_\_\_ Date, Time \_\_\_\_\_  
Bucket  
Surface Water Flow Speed \_\_\_\_\_ Measurement Method Bucket Date, Time \_\_\_\_\_

**SAMPLING:**

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
<u>601/602</u>	<u>5/15/91</u> <u>1015</u>	<u>Bucket</u> <u>(500 ml)</u>	<u>410</u>	<u>glass</u>	<u>/</u>	<u>N</u>	<u>HCL</u>	<u>Y</u>	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse

**FIELD WATER QUALITY TESTS:**

Pore Vol. Number	pH	Conductivity	Temp	Eh

**NOTES:**  
Hand well depth 20 ft.

→ Notes from available information written on 6/3/91. All values are  
estimated based on groundwater sampling / discharge trends

In general, sample values are right, dark gray clear liquid  
w/ little color

Total # of Bottles: 2 (CAC) Signature: [Signature] SEA-400-01





# Sweet-Edwards/EMCON, Inc.

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## Field Sampling Data

LOCATION/ADDRESS Texaco  
PROJECT NAME Texaco Greenwood # U68-13.01.  
CLIENT/CONTACT \_\_\_\_\_

Well or Surface Site Number AGW-2  
Sample Designation AGW-2  
Date, Time 5/15/91 1010 am  
Weather \_\_\_\_\_

### HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
_____	_____	_____	_____
_____	_____	_____	_____

### WELL EVACUATION:

PV = 6

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
<u>~18</u>	<u>3+</u>	<u>disposable bailer</u>	_____	_____
_____	_____	_____	_____	_____

Surface Water Flow Speed \_\_\_\_\_ Measurement Method \_\_\_\_\_ Date, Time \_\_\_\_\_

### SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
<u>21602</u>	<u>5/15/91</u>	<u><del>40</del> disp. bailer</u>	<u>40</u>	<u>glass</u>	<u>-</u>	<u>no</u>	<u>HCl</u>	<u>yes</u>	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

### FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

### NOTES:

Bailed 3 pore volumes before sampling. Sample appeared light tan in color. did not remember any. with no noticeable odor.

Total # of Bottles: 2

Signature: Kim J. [unclear]



# Sweet-Edwards/EMCON, Inc.

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## Field Sampling Data

LOCATION/ADDRESS Texaco  
PROJECT NAME Texaco Greenwood # U68-13.01  
CLIENT/CONTACT \_\_\_\_\_

Well or Surface Site Number AGW-4  
Sample Designation AGW-4  
Date, Time 5/15/91 1025 *gn*  
Weather \_\_\_\_\_

**HYDROLOGY MEASUREMENTS:** PV= 8 gallons  
(Nearest .01 ft.) Elevation \_\_\_\_\_ Date, Time \_\_\_\_\_ Method Used (M-Scope Number or Other) \_\_\_\_\_

**WELL EVACUATION:**  
Gallons ~15 Pore Volumes 1+ Method Used disposable bailer Rinse Method \_\_\_\_\_ Date, Time \_\_\_\_\_  
Surface Water Flow Speed \_\_\_\_\_ Measurement Method \_\_\_\_\_ Date, Time \_\_\_\_\_

**SAMPLING:**

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
<u>601 + 602</u>	<u>5/15/91</u> <u>1025</u> <i>gn</i>	_____	<u>40</u>	<u>glass</u>	<u>-</u>	<u>no</u>	<u>HCl</u>	<u>yes</u>	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

**FIELD WATER QUALITY TESTS:**

Pore Vol. Number	pH	Conductivity	Temp	Eh	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

**NOTES:**  
Bailed AGW-4 using a 2"-dia disposable bailer. Well went dry at approximately 15 gallons purged. Allowed well to recover before sampling. Sample appeared slightly cloudy, light olive-brown ~~transparent~~ color and had a slight sewer-like odor.

Total # of Bottles: 2 Signature: Kenneth L. Vuk



# Sweet-Edwards/EMCON, Inc.

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## Field Sampling Data

\* Duplicate \*

LOCATION/ADDRESS Toxaco - Green Wood  
PROJECT NAME # 46813.01  
CLIENT/CONTACT Mike Condon Toxaco

Well or Surface Site Number AGW-5 \*  
Sample Designation AGW-5  
Date, Time 5/15/91 1030  
Weather \_\_\_\_\_

HYDROLOGY MEASUREMENTS: PV=11  
(Nearest .01 ft.) 3 Elevation \_\_\_\_\_ Date, Time 5/15/91 Method Used (M-Scope Number or Other) Estimator

WELL EVACUATION:  
Gallons 20 Pore Volumes 22 Method Used Bailer Rinse Method \_\_\_\_\_ Date, Time \_\_\_\_\_  
Surface Water Flow Speed \_\_\_\_\_ Measurement Method Bucket Date, Time \_\_\_\_\_

SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative (yes,no)	iced (yes,no)	Sampler Cleaning Method
601/602	5/15/91 1030	Dipnet Bailer	40	glove	1	N	HCL	Y	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse

FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh				

NOTES:  
Arched well - 20 feet deep.  
Notes from available information written on 6/3/91. All values are estimations based on the most recent sampling/development test.

\* Duplicate - upon this well -> # AG-10-10 Time 1035

Total # of Bottles: 2 (C&S) Signature: [Signature]  
SEA-400-01



# Sweet-Edwards/EMCON, Inc.

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## Field Sampling Data

LOCATION/ADDRESS Texas Greenwood  
PROJECT NAME \_\_\_\_\_ # UGS13.01  
CLIENT/CONTACT Mike Condon Texas

Well or Surface Site Number Field Blank  
Sample Designation AGW-7  
Date, Time 5/15/91 1035  
Weather \_\_\_\_\_

### HYDROLOGY MEASUREMENTS:

(Nearest .01 ft.)	Elevation	Date, Time	Method Used (M-Scope Number or Other)
_____	_____	_____	_____
_____	_____	_____	_____

### WELL EVACUATION:

Gallons	Pore Volumes	Method Used	Rinse Method	Date, Time
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Surface Water Flow Speed	Measurement Method	Date, Time
_____	_____	_____

### SAMPLING:

Sample	Date, Time	Method	Volume (ml)	Container Type	Depth Taken (feet)	Field Filtered (yes,no)	Preservative	Iced (yes,no)	Sampler Cleaning Method
<u>601/602</u>	<u>5/15/91</u> <u>1035</u>	<u>Bailing</u> <u>disposable</u>	<u>40</u>	<u>96oz</u>	<u>1</u>	<u>N</u>	<u>HCL</u>	<u>Y</u>	Non-Phosphatic detergent wash H2O rinse MeOH rinse Distilled H2O rinse
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

### FIELD WATER QUALITY TESTS:

Pore Vol. Number	pH	Conductivity	Temp	Eh
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

### NOTES:

F10 16 blank taken through a new disposable bailer using CAS DI water.

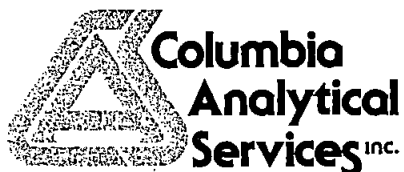
Notes from available information will be on 6/3/91. All values are estimates based on flow at recent point. Identical event.

Total # of Bottles: 2 (CAS)

Signature: [Signature]

**APPENDIX C**

Laboratory Results and  
Chain-of-Custody Documentation



April 24, 1991

Michael Condon  
Texaco Environmental Services  
10602 N.E. 38th Place  
Kirkland, WA 98083

Re: **Texaco - Greenwood Project**

Dear Michael:

Enclosed are the results of the soil samples submitted to our lab on April 2, 1991. For your reference, our service request number for this work is K911701.

All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted,

**Columbia Analytical Services, Inc.**

A handwritten signature in cursive script that reads "Colin B. Elliott".

Colin B. Elliott  
Senior Project Chemist

CBE/das

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Analytical Report**

**Client:** Texaco Environmental Services  
**Submitted By:** Michael Condon  
**Project:** Texaco - Greenwood  
**Sample Matrix:** Soil

**Date Received:** 04/02/91  
**Date TCLP Performed:** 04/11/91  
**Date Analyzed:** 04/15/91  
**Work Order #:** K911701

**Toxicity Characteristic Leaching Procedure (TCLP)  
 EPA Method 1311  
 Metals  
 mg/L (ppm) in TCLP Extract**

**Sample Name: AGW4-3                      AGW4-5**  
**Lab Code: K1701-6                      K1701-7**

<b>Analytes</b>	<b>Methods</b>	<b>MRL</b>	<b>Regulatory Limit*</b>		
Arsenic	3010/6010	0.1	5.0	ND	ND
Barium	3010/6010	0.2	100	0.7	0.6
Cadmium	3010/6010	0.01	1.0	ND	ND
Chromium	3010/6010	0.01	5.0	ND	ND
Lead	3010/6010	0.05	5.0	ND	ND
Mercury	7470	0.001	0.2	ND	ND
Selenium	3010/6010	0.1	1.0	ND	ND
Silver	3010/6010	0.01	5.0	ND	ND

**MRL** Method Reporting Limit

\* From 40 CFR Part 261, et al. and *Federal Register*, March 29, 1990 and June 29, 1990

**ND** None Detected at or above the method reporting limit

Approved by Cheri Elliott Date 4/24/91

**00001**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil

Date Received: 04/02/91  
Date TCLP Performed: 04/11/91  
Date Analyzed: 04/15/91  
Work Order #: K911701

Toxicity Characteristic Leaching Procedure (TCLP)  
EPA Method 1311  
Metals  
mg/L (ppm) in TCLP Extract

Sample Name:  
Lab Code:

Method Blank  
K1701-MB

Analytes	Methods	MRL	Regulatory Limit*	
Arsenic	3010/6010	0.1	5.0	ND
Barium	3010/6010	0.2	100	ND
Cadmium	3010/6010	0.01	1.0	ND
Chromium	3010/6010	0.01	5.0	ND
Lead	3010/6010	0.05	5.0	ND
Mercury	7470	0.001	0.2	ND
Selenium	3010/6010	0.1	1.0	ND
Silver	3010/6010	0.01	5.0	ND

MRL Method Reporting Limit

\* From 40 CFR Part 261, et al. and *Federal Register*, March 29, 1990 and June 29, 1990

ND None Detected at or above the method reporting limit

Approved by

*Colmi Elliott*

Date

*4/24/91*

00002



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
 Submitted By: Michael Condon  
 Project: Texaco - Greenwood  
 Sample Matrix: Soil

Date Received: 04/02/91  
 Work Order #: K911701

Halogenated Volatile Organic Compounds  
 EPA Methods 5030/8010 (Low Level)  
 µg/Kg (ppb)  
 Dry Weight Basis

Sample Name:	AGW4-3	AGW4-5	Method Blank
Lab Code:	K1701-6	K1701-7	K1701-MB
Date Analyzed:	04/10/91	04/10/91	04/10/91

Analytes	MRL			
Dichlorodifluoromethane (Freon 12)	10	ND	ND	ND
Chloromethane	10	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND
Bromomethane	5	ND	ND	ND
Chloroethane	5	ND	ND	ND
Trichlorofluoromethane (Freon 11)	5	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	5	ND	ND	ND
Methylene Chloride	20	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND
Chloroform	5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	5	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND
2-Chloroethyl Vinyl Ether	50	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND
Tetrachloroethene (PCE)	5	ND	ND	ND
Dibromochloromethane	5	ND	ND	ND
Chlorobenzene	5	ND	ND	ND
Bromoform	5	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
1,3-Dichlorobenzene	10	ND	ND	ND
1,4-Dichlorobenzene	10	ND	ND	ND
1,2-Dichlorobenzene	10	ND	ND	ND

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

Approved by Colin Elliott Date 4/29/91 00003

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

Client: Texaco Environmental Services  
 Submitted By: Michael Condon  
 Project: Texaco - Greenwood  
 Sample Matrix: Soil

Date Received: 04/02/91  
 Date Extracted: 04/03/91  
 Date Analyzed: 04/06/91  
 Work Order #: K911701

Hydrocarbon Scan  
 EPA Methods 3550/Modified 8015  
 mg/Kg (ppm)  
 Dry Weight Basis

Sample Name	Lab Code	MRL	Diesel	Jet Fuel	Gasoline	Kerosene	Mineral Spirits	Oil*
AGW1-3	K1701-1	10	ND	ND	ND	ND	ND	ND
AGW1-5	K1701-2	10	ND	ND	**19	ND	ND	55
AGW2-4	K1701-3	10	ND	ND	ND	ND	ND	80
AGW4-3	K1701-6	10	16	ND	ND	ND	ND	780
AGW4-5	K1701-7	10	ND	ND	ND	ND	ND	830
A4-3	K1701-9	10	ND	ND	ND	ND	ND	720
Method Blank	K1701-MB	10	ND	ND	ND	ND	ND	ND

MRL Method Reporting Limit

\* Quantitated using hydraulic oil as a standard. The MRL for oil is five times the MRL shown above.

ND None Detected at or above the method reporting limit

\*\* Weathered gasoline

Approved by Colin Elliott Date 4/24/91

00004

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil

Date Received: 04/02/91  
Date Extracted: 04/05/91  
Work Order #: K911701

BTEX and TPH as Gasoline  
EPA Methods 5030/8020/Modified 8015  
mg/Kg (ppm)  
Dry Weight Basis

Sample Name:	AGW1-3	AGW1-5	AGW2-4
Lab Code:	K1701-1	K1701-2	K1701-3
Date Analyzed:	04/07/91	04/08/91	04/08/91

Analytes	MRL			
Benzene	0.05	ND	0.11	ND
Toluene	0.05	ND	0.20	ND
Ethylbenzene	0.05	0.11	1.63	ND
Total Xylenes	0.05	0.67	11.0	0.09
TPH as Gasoline	1	5.2	131	9.1

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

Approved by

*Colin Elliott*

Date

*4/24/91*

00005

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil

Date Received: 04/02/91  
Date Extracted: 04/05/91  
Work Order #: K911701

BTEX and TPH as Gasoline  
EPA Methods 5030/8020/Modified 8015  
mg/Kg (ppm)  
Dry Weight Basis

Sample Name:	AGW3-3	AGW3-5	AGW5-5
Lab Code:	K1701-4	K1701-5	K1701-8
Date Analyzed:	04/07/91	04/08/91	04/08/91

Analytes	MRL			
Benzene	0.05	ND	ND	ND
Toluene	0.05	ND	ND	ND
Ethylbenzene	0.05	ND	ND	0.06
Total Xylenes	0.05	ND	ND	0.23
TPH as Gasoline	1	ND	7.7	33.7

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

Approved by

*Colin Elliott*

Date

*4/24/91*

00006

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil

Date Received: 04/02/91  
Date Extracted: 04/05/91  
Work Order #: K911701

BTEX and TPH as Gasoline  
EPA Methods 5030/8020/Modified 8015  
mg/Kg (ppm)  
Dry Weight Basis

Sample Name:	A5-3	A5-5
Lab Code:	K1701-10	K1701-11
Date Analyzed:	04/07/91	04/07/91

Analytes	MRL		
Benzene	0.05	ND	ND
Toluene	0.05	ND	ND
Ethylbenzene	0.05	ND	ND
Total Xylenes	0.05	ND	ND
TPH as Gasoline	1	ND	5.1

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

Approved by Colin Elliott Date 4/24/91

00007

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil

Date Received: 04/02/91  
Date Extracted: 04/05/91  
Work Order #: K911701

BTEX and TPH as Gasoline  
EPA Methods 5030/8020/Modified 8015  
mg/Kg (ppm)  
Dry Weight Basis

Sample Name:  
Lab Code:  
Date Analyzed:

Method Blank  
K1701-MB  
04/07/91

Analytes	MRL	
Benzene	0.05	ND
Toluene	0.05	ND
Ethylbenzene	0.05	ND
Total Xylenes	0.05	ND
TPH as Gasoline	1	ND

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

Approved by Cheri Elliott Date 4/24/91

00008

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil

Date Received: 04/02/91  
Date Extracted: 04/05/91  
Date Analyzed: 04/12/91  
Work Order #: K911701

Polychlorinated Biphenyls (PCBs)  
EPA Methods 3540/8080  
mg/Kg (ppm)  
Dry Weight Basis

Sample Name: AGW4-3      AGW4-5      Method Blank  
Lab Code: K1701-6      K1701-7      K1701-MB

Analytes	MRL			
Aroclor 1016	1	ND	ND	ND
Aroclor 1221	1	ND	ND	ND
Aroclor 1232	1	ND	ND	ND
Aroclor 1242	1	ND	ND	ND
Aroclor 1248	1	ND	ND	ND
Aroclor 1254	1	ND	ND	ND
Aroclor 1260	1	ND	ND	ND
Total Aroclors	1	ND	ND	ND

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

Approved by Colin Elliott Date 4/24/91

00009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil  
Date Received: 04/02/91  
Date Extracted: 04/11/91  
Date Analyzed: 04/11/91  
Work Order #: K911701

Total Recoverable Petroleum Hydrocarbons  
SM Method 5520E/EPA Method 418.1  
mg/Kg (ppm)  
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
AGW4-3	K1701-6	25	328
AGW4-5	K1701-7	25	979
Method Blank	K1701-MB	25	ND

SM Standard Methods for the Examination of Water and Wastewater, 17th Ed., 1989  
MRL Method Reporting Limit  
ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 4/24/91

00010



**APPENDIX A**  
**LABORATORY QC RESULTS**

**00011**

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Client:** Texaco Environmental Services  
**Submitted By:** Michael Condon  
**Project:** Texaco - Greenwood  
**Sample Matrix:** Soil

**Date Received:** 04/02/91  
**Date TCLP Performed:** 04/11/91  
**Date Analyzed:** 04/15/91  
**Work Order #:** K911701

QA/QC Report  
 Duplicate Summary  
 Toxicity Characteristic Leaching Procedure (TCLP)  
 EPA Method 1311  
**Metals**  
 mg/L (ppm) in TCLP Extract

**Sample Name:** AGW4-3  
**Lab Code:** K1701-6

Analytes	Methods	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Arsenic	3010/6010	0.1	ND	ND	ND	--
Barium	3010/6010	0.2	0.7	0.7	0.7	<1
Cadmium	3010/6010	0.01	ND	ND	ND	--
Chromium	3010/6010	0.01	ND	ND	ND	--
Lead	3010/6010	0.05	ND	ND	ND	--
Mercury	7470	0.001	ND	ND	ND	--
Selenium	3010/6010	0.1	ND	ND	ND	--
Silver	3010/6010	0.01	ND	ND	ND	--

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

Approved by Colin Elliott Date 4/24/91

**00012**

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil

Date Received: 04/02/91  
Date TCLP Performed: 04/11/91  
Date Analyzed: 04/15/91  
Work Order #: K911701

QA/QC Report  
Matrix Spike Summary  
Toxicity Characteristic Leaching Procedure (TCLP)  
EPA Method 1311  
Metals  
mg/L (ppm) in TCLP Extract

Sample Name: AGW4-3  
Lab Code: K1701-6

Analytes	Methods	Spike Level	MRL	Sample Result	Spiked Sample Result	Percent Recovery
Arsenic	3010/6010	5.0	0.1	ND	5.0	100
Barium	3010/6010	5.0	0.2	0.7	5.5	96
Cadmium	3010/6010	1.0	0.01	ND	1.00	100
Chromium	3010/6010	5.0	0.01	ND	4.81	96
Lead	3010/6010	5.0	0.05	ND	4.76	95
Mercury	7470	0.01	0.001	ND	0.009	90
Selenium	3010/6010	1.0	0.1	ND	1.0	100
Silver	3010/6010	1.0	0.01	ND	1.00	100

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

Approved by Colin Elliott Date 4/29/91

00013

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil

Date Received: 04/02/91  
Date Analyzed: 04/10/91  
Work Order #: K911701

QA/QC Report  
Surrogate Recovery Summary  
Halogenated Volatile Organic Compounds  
EPA Methods 5030/8010 (Low Level)

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
AGW4-3	K1701-6	116
AGW4-5	K1701-7	99.1
Method Blank	K1701-MB	103
	CAS Acceptance Criteria	50-130

Approved by Colin Elliott Date 4/24/91

00014

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil

Date Received: 04/02/91  
Date Extracted: 04/03/91  
Date Analyzed: 04/06/91  
Work Order #: K911701

QA/QC Report  
Surrogate Recovery Summary  
Hydrocarbon Scan  
EPA Methods 3550/Modified 8015

Sample Name	Lab Code	Percent Recovery <i>p</i> -Terphenyl
AGW1-3	K1701-1	80.0
AGW1-5	K1701-2	85.0
AGW2-4	K1701-3	82.1
AGW4-3	K1701-6	86.7
AGW4-5	K1701-7	78.2
A4-3	K1701-9	*55.2
Method Blank	K1701-MB	86.3
	CAS Acceptance Criteria	64-123

\* Outside acceptance limits because of matrix interferences. The gas chromatogram showed target components that interfered with the analyses. The sample was not reanalyzed.

Approved by Colmi Elliott Date 4/24/91

00015

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil

Date Received: 04/02/91  
Date Extracted: 04/05/91  
Date Analyzed: 04/05,08/91  
Work Order #: K911701

QA/QC Report  
Surrogate Recovery Summary  
BTEX and TPH as Gasoline  
EPA Methods 5030/8020/Modified 8015

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
AGW1-3	K1701-1	97.3
AGW1-5	K1701-2	98.5
AGW2-4	K1701-3	91.7
AGW3-3	K1701-4	101
AGW3-5	K1701-5	97.1
AGW5-5	K1701-8	98.6
A5-3	K1701-10	98.5
A5-5	K1701-11	97.5
Method Blank	K1701-MB	93.3

CAS Acceptance Criteria 50-130

TPH Total Petroleum Hydrocarbons

Approved by

*Cheri Elliott*

Date

*4/24/91*

00016

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco - Greenwood  
Sample Matrix: Soil

Date Received: 04/02/91  
Date Extracted: 04/05/91  
Date Analyzed: 04/12/91  
Work Order #: K911701

QA/QC Report  
Surrogate Recovery Summary  
Polychlorinated Biphenyls (PCBs)  
EPA Methods 3540/8080

Sample Name	Lab Code	Percent Recovery Decachlorobiphenyl
AGW4-3	K1701-6	124
AGW4-5	K1701-7	128
Method Blank	K1701-MB	*132
	CAS Acceptance Criteria	65-130

- \* Outside acceptance limits. Since the elevated percent recovery is for the method blank and no target analytes were detected in the samples, the quality of the data is not adversely affected.

Approved by

*Colin Elliott*

Date

*4/24/91*

00017



Sweet-Edwards / EMCON, Inc.

Kelso, WA (206) 423-3580  
Bothell, WA (206) 485-5000

# Chain of Custody / Laboratory Analysis Request

DATE 4-1-91 PAGE 1 OF 2

PROJECT <u>TEXACO-GREENWOOD</u> # <u>U6813.01</u>		ANALYSIS REQUESTED										GENERAL CHEMISTRY (Specify)				OTHER (Specify)		NUMBER OF CONTAINERS	
CLIENT INFO. CONTACT <u>MIKE CONDON</u> Fax: <u>828-2149</u>		BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS GC/MS/604/8040	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX (TCLP METALS) (Circle One) <u>Ⓟ</u>	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	PH. COND ALK	NO <sub>3</sub> /NO <sub>2</sub> , Cl SO <sub>4</sub>	Ca, Mg, Na, K	<u>5030/8020/8015M</u>	<u>3550/8015M</u>	<u>418.1 TPA</u>		<u>8080 PCBs</u>
ADDRESS <u>10602 NE 38th Place</u>																			
TELEPHONE# <u>Kirkland, WA 98033 828-8186</u>																			
SAMPLERS NAME <u>MICHAEL D. NOLL</u> PHONE# <u>485-5000</u>																			
SAMPLERS SIGNATURE <u>Michael D. Noll</u>																			

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS GC/MS/604/8040	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX (TCLP METALS) (Circle One) <u>Ⓟ</u>	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	PH. COND ALK	NO <sub>3</sub> /NO <sub>2</sub> , Cl SO <sub>4</sub>	Ca, Mg, Na, K	<u>5030/8020/8015M</u>	<u>3550/8015M</u>	<u>418.1 TPA</u>	<u>8080 PCBs</u>	NUMBER OF CONTAINERS
1. AGW1-3	3/23/91	1340		SOIL														X	X			1
2. AGW1-5	3/23/91	1345		SOIL														X	X			1
3. AGW2-4	3/23/91	0930		SOIL														X	X			1
4. <del>AGW2-5</del>	<del>3/23/91</del>	<del>0945</del>		<del>SOIL</del>														<del>X</del>	<del>X</del>			<del>1</del>
5. AGW3-3	3/28/91	1030		SOIL														X				1
6. AGW3-5	3/28/91	1035		SOIL														X				1
7. AGW4-3	3/29/91	0815		SOIL			X					X							X	X	X	* 1
8. AGW4-5	3/29/91	0820		SOIL			X					X							X	X	X	* 1

Relinquished By Sweet, Edwards & Assoc. <u>Michael D. Noll</u> Signature <u>Michael D. Noll</u> Printed Name <u>SE/E</u> Firm <u>4/1/91 1200</u> Date/Time		Relinquished By Signature Printed Name Firm Date/Time		PROJECT INFORMATION Shipping I.D. No. VIA Project				SAMPLE RECEIPT Total No. of Containers Chain of Custody Seals Received in good condition LAB NO.			
Received By <u>Michael D. Noll</u> Signature <u>M. D. NOLL</u> Printed Name <u>CAS</u> Firm <u>910401</u> Date/Time		Received By <u>Ruth Allison</u> Signature <u>Ruth Allison</u> Printed Name <u>CAS</u> Firm <u>4/2/91 0800</u> Date/Time		SPECIAL INSTRUCTIONS/COMMENTS * PID = 200-600 ppm. RESULTS TO MIKE CONDON TEXACO ENVIRONMENTAL 10602 NE 38th Place Kirkland, WA 98033 Fax: 828-2149							

U6813





Sweet-Edwards / EMCON, Inc.

Kelso, WA (206) 423-3580  
Bothell, WA (206) 485-5000

# Chain of Custody / Laboratory Analysis Request

DATE 4-1-91 PAGE 2 OF 2

PROJECT <u>TEXACO-GREENWOOD # 06813.01</u>					ANALYSIS REQUESTED												GENERAL CHEMISTRY (Specify)					OTHER (Specify)		NUMBER OF CONTAINERS
CLIENT INFO. CONTACT <u>MIKE BONDAN FAX: 828-2149</u>					BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO <sub>3</sub> /NO <sub>2</sub> -Cl SO <sub>4</sub>	Ca, Mg, Na, K	<u>5030 / 8020 / 8015M</u>	<u>350 / 8015M</u>					
ADDRESS _____																								
TELEPHONE# <u>828-8186</u>																								
SAMPLERS NAME <u>Michael D. Noll</u> PHONE# <u>485-5000</u>																								
SAMPLERS SIGNATURE <u>Michael D. Noll</u>																								
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE																				
1. <del>AGW5-3</del>	<del>3/27/91</del>	<del>1155</del>		<del>SOIL</del>													X							
2. AGW5-5	3/28/91	1200		SOIL													X							
3. A4-3	3/28/91	1450		SOIL														X						
4. A5-3	3/28/91	0830		SOIL													X							
5. A5-5	3/28/91	0840		SOIL													X							
6.																								
7.																								
8.																								

Relinquished By Sweet, Edwards & Assoc. <u>Michael D. Noll</u>	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature <u>Michael D. Noll</u>	Signature	Signature	Shipping I.D. No.	Total No. of Containers
Printed Name <u>SE/E</u>	Printed Name	Printed Name	VIA	Chain of Custody Seals
Firm <u>4/1/91 1200</u>	Firm	Firm	Project	Received in good condition
Date/Time	Date/Time	Date/Time		LAB NO.
Received By <u>Michael D. Noll</u>	Received By <u>Ruth Allison</u>	Received By	SPECIAL INSTRUCTIONS/COMMENTS	
Signature <u>M. D. NOLL</u>	Signature <u>Ruth Allison</u>	Signature	<u>Take extract from end of brass tube with label.</u>	
Printed Name <u>CAS</u>	Printed Name <u>CAS</u>	Printed Name		
Firm <u>910401</u>	Firm <u>4/2/91 0800</u>	Firm		
Date/Time	Date/Time	Date/Time		



April 22, 1991

Michael Condon  
Texaco Environmental Services  
10602 NE 38th Place  
Kirkland, WA 98033

Re: **Texaco Greenwood/Project #U6813.01**

Dear Michael:

Enclosed are the results of the water samples submitted to our lab on April 5, 1991. For your reference, our service request number for this work is K911812.

Methylene chloride was not detected in any of the samples, but it was detected in the Trip Blank. The methylene chloride in the Trip Blank was probably due to laboratory contamination since it was used in the laboratory when this bottle order was made. This does not adversely impact the data since methylene chloride was not detected in any of the samples.

All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted,

**Columbia Analytical Services, Inc.**

*Robert Scuderi*

Robert Scuderi  
Senior Project Chemist

RS/mbm

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

Client: Texaco Environmental Services  
 Submitted By: Michael Condon  
 Project: Texaco Greenwood/#U6813.01  
 Sample Matrix: Water

Date Received: 04/05/91  
 Work Order #: K911812

Halogenated and Aromatic Volatile Organic Compounds  
 EPA Methods 5030/8010/8020  
 µg/L (ppb)

Sample Name:	AGW-1	AGW-2	AGW-3
Lab Code:	K1812-1	K1812-2	K1812-3
Date Analyzed:	04/10/91	04/10/91	04/10/91

Analytes	MRL			
Dichlorodifluoromethane (Freon 12)	1	ND	ND	ND
Chloromethane	1	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (Freon 11)	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	0.5	ND	ND	ND
Methylene Chloride	2	ND	ND	ND
<i>trans</i> -1,2-Dichloroethene	0.5	ND	ND	ND
<i>cis</i> -1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	0.5	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethyl Vinyl Ether	5	ND	ND	ND
<i>trans</i> -1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	1	ND	ND	ND
<i>cis</i> -1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene (PCE)	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	1	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

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

Approved by Dave Eshelman

Date 4/22/91

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
 Submitted By: Michael Condon  
 Project: Texaco Greenwood/#U6813.01  
 Sample Matrix: Water

Date Received: 04/05/91  
 Work Order #: K911812

Halogenated and Aromatic Volatile Organic Compounds  
 EPA Methods 5030/8010/8020  
 µg/L (ppb)

Sample Name:	AGW-4	AGW-5	AGW-6
Lab Code:	K1812-4	K1812-5	K1812-6
Date Analyzed:	04/10/91	04/10/91	04/10/91

Analytes	MRL			
Dichlorodifluoromethane (Freon 12)	1	ND	ND	ND
Chloromethane	1	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (Freon 11)	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	0.5	ND	ND	ND
Methylene Chloride	2	ND	ND	ND
<i>trans</i> -1,2-Dichloroethene	0.5	ND	ND	ND
<i>cis</i> -1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	0.5	2.6	30	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethyl Vinyl Ether	5	ND	ND	ND
<i>trans</i> -1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	1	20	10	ND
<i>cis</i> -1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene (PCE)	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	1	2.7	5	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	31	7	ND

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

Approved by Dave Eshelman Date 4/22/91

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Analytical Report**

**Client:** Texaco Environmental Services  
**Submitted By:** Michael Condon  
**Project:** Texaco Greenwood/#U6813.01  
**Sample Matrix:** Water

**Date Received:** 04/05/91  
**Work Order #:** K911812

Halogenated and Aromatic Volatile Organic Compounds  
 EPA Methods 5030/8010/8020  
 µg/L (ppb)

Sample Name:	AGW-22	Trip Blank	Method Blank
Lab Code:	K1812-7	K1812-8	K1812-MB
Date Analyzed:	04/10/91	04/10/91	04/10/91

Analytes	MRL			
Dichlorodifluoromethane (Freon 12)	1	ND	ND	ND
Chloromethane	1	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (Freon 11)	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	0.5	ND	ND	ND
Methylene Chloride	2	ND	9.3	ND
<i>trans</i> -1,2-Dichloroethene	0.5	ND	ND	ND
<i>cis</i> -1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	0.5	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethyl Vinyl Ether	5	ND	ND	ND
<i>trans</i> -1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	1	ND	ND	ND
<i>cis</i> -1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene (PCE)	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	1	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

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

Approved by Dave Sheehan Date 4/22/91

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Texaco Environmental Services  
Submitted By: Michael Condon  
Project: Texaco Greenwood/#U6813.01  
Sample Matrix: Water

Date Received: 04/05/91  
Date Analyzed: 04/10/91  
Work Order #: K911812

QA/QC Report  
Surrogate Recovery Summary  
Halogenated and Aromatic Volatile Organic Compounds  
EPA Methods 5030/8010/8020

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
AGW-1	K1812-1	93.4
AGW-2	K1812-2	50.1
AGW-3	K1812-3	56.1
AGW-4	K1812-4	62.3
AGW-5	K1812-5	63.4
AGW-6	K1812-6	94.6
AGW-22	K1812-7	93.1
Trip Blank	K1812-8	95.2
Method Blank	K1812-MB	93.0

CAS Acceptance Criteria 50-130

Approved by Doon E. Jensen, J Date 4/22/91



Sweet-Edwards / EMCON, Inc.

Kelso, WA (206) 423-3580

Bothell, WA (206) 485-5000

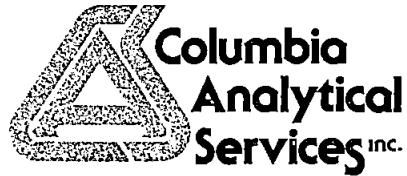
# Chain of Custody / Laboratory Analysis Request

DATE 4-3-91 PAGE 1 OF 1

PROJECT <u>TEXACO GREENWOOD # 46813.01</u>					ANALYSIS REQUESTED														GENERAL CHEMISTRY (Specify)				OTHER (Specify)		NUMBER OF CONTAINERS
CLIENT INFO. CONTACT <u>MIKE CANDON - TEXACO ENVIRONMENTAL</u>					BASE/NEU/ACID ORGAN. GC/MS/825/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS (601) 8010 (602)	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO <sub>3</sub> /NO <sub>2</sub> , Cl SO <sub>4</sub>	Ca, Mg, Na, K								
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE																					
1. AGW-1	4-3-91	1315		GW			X																	1	
2. AGW-2	4-3-91	1400		GW			X																	1	
3. AGW-3	3-29-91	1600		GW			X																	1	
4. AGW-4	4-3-91	1445		GW			X																	1	
5. AGW-5	4-3-91	1440		GW			X																	1	
6. AGW-6	4-3-91	1415		GW			X																	1	
7. AGW-22	4-3-91	1410		GW			X																	1	
8. TRIP BLANK							X																	1	
Relinquished By Sweet, Edwards & Assoc. Signature <u>Michael D. Noll</u> Printed Name <u>MICHAEL D. NOLL</u> Firm <u>SE/E</u> Date/Time <u>4-3-91 1640</u>					Relinquished By Signature <u>[Signature]</u> Printed Name <u>M. HIGGINS</u> Firm <u>CAS</u> Date/Time <u>510404 0900</u>					PROJECT INFORMATION Shipping I.D. No. VIA Project					SAMPLE RECEIPT Total No. of Containers Chain of Custody Seals Received in good condition LAB NO.										
Received By Signature <u>[Signature]</u> Printed Name <u>M. HIGGINS</u> Firm <u>CAS</u> Date/Time <u>4/5/91</u>					Received By Signature <u>[Signature]</u> Printed Name <u>FRAN ACHER</u> Firm <u>CAS</u> Date/Time <u>4/5/91</u>					SPECIAL INSTRUCTIONS/COMMENTS SEND RESULTS TO: MIKE CANDON SERVICES TEXACO ENVIRONMENTAL 10602 NE 38TH PLACE KIRKLAND, WA 98033 ANALYZE ALL SAMPLES FOR 601/602															

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

S-E/E 400-05



June 4, 1991

Michael Condon  
Texaco Environmental Services  
550 Kirkland Way - Suite 100  
Kirkland, WA 98033

Re: Greenwood Texaco/Project #U6813.01

Dear Michael:

Enclosed are the results of the rush samples submitted to our lab on May 17, 1991. Preliminary results were transmitted via facsimile on May 30, 1991. For your reference, our service request number for this work is K912738.

All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

*David L. Edelman*

David L. Edelman  
Vice-President

DLE/mbm

cc: Mike Knoll (SE/Bothell)



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
Project: Greenwood Texaco/#U6813.01  
Sample Matrix: Water

Date Received: 05/17/91  
Date Extracted: 05/22/91  
Date Analyzed: 05/22/91  
Work Order #: K912738

Total Recoverable Petroleum Hydrocarbons  
EPA Method 418.1  
mg/L (ppm)

Sample Name	Lab Code	MRL	Result
AGW-4	K2738-3	0.5	ND
Method Blank	K2738-MB	0.5	ND

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

Approved by Dave Edels Date 6/4/91

00001

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
 Project: Greenwood Texaco/#U6813.01  
 Sample Matrix: Water

Date Received: 05/17/91  
 Work Order #: K912738

Halogenated and Aromatic Volatile Organic Compounds  
 EPA Methods 5030/8010/8020  
 µg/L (ppb)

Sample Name:	AGW-1	AGW-2	AGW-4
Lab Code:	K2738-1	K2738-2	K2738-3
Date Analyzed:	05/24/91	05/24/91	05/24/91

Analyte	MRL			
Dichlorodifluoromethane (Freon 12)	1	ND	ND	ND
Chloromethane	1	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (Freon 11)	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	0.5	ND	ND	ND
Methylene Chloride	2	ND	ND	ND
<i>trans</i> -1,2-Dichloroethene	0.5	ND	ND	ND
<i>cis</i> -1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	0.5	*440	ND	8.4
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethyl Vinyl Ether	5	ND	ND	ND
<i>trans</i> -1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	1	*1,000	ND	19
<i>cis</i> -1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene (PCE)	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	1	92	ND	2.4
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	*670	ND	20

MRL Method Reporting Limit  
 ND None Detected at or above the method reporting limit  
 \* Result from analysis of a diluted sample performed on May 28, 1991.

Approved by Dave Edelmann Date 6/4/91

00002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
 Project: Greenwood Texaco/#U6813.01  
 Sample Matrix: Water

Date Received: 05/17/91  
 Work Order #: K912738

Halogenated and Aromatic Volatile Organic Compounds  
 EPA Methods 5030/8010/8020  
 µg/L (ppb)

Sample Name:	AGW-5	AGW-7	AGW-10
Lab Code:	K2738-4	K2738-5	K2738-6
Date Analyzed:	05/24/91	05/24/91	05/24/91

Analyte	MRL			
Dichlorodifluoromethane (Freon 12)	1	ND	ND	ND
Chloromethane	1	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (Freon 11)	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	0.5	ND	ND	ND
Methylene Chloride	2	ND	ND	ND
<i>trans</i> -1,2-Dichloroethene	0.5	ND	ND	ND
<i>cis</i> -1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	0.5	*220	ND	*190
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethyl Vinyl Ether	5	ND	ND	ND
<i>trans</i> -1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	1	53	ND	53
<i>cis</i> -1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene (PCE)	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	1	3.5	ND	3.5
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	12	ND	11

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

\* Result from analysis of a diluted sample performed on May 28, 1991.

Approved by Dawn E. Schell

Date 6/4/91

00003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Texaco Environmental Services  
 Project: Greenwood Texaco/#U6813.01  
 Sample Matrix: Water

Date Received: 05/17/91  
 Work Order #: K912738

Halogenated and Aromatic Volatile Organic Compounds  
 EPA Methods 5030/8010/8020  
 µg/L (ppb)

Sample Name:	Trip Blank	Method Blank	Method Blank
Lab Code:	K2738-7	K2738-MB	K2738-MB
Date Analyzed:	05/24/91	05/24/91	05/28/91

Analyte	MRL			
Dichlorodifluoromethane (Freon 12)	1	ND	ND	ND
Chloromethane	1	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (Freon 11)	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	0.5	ND	ND	ND
Methylene Chloride	2	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	0.5	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethyl Vinyl Ether	5	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	1	ND	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene (PCE)	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	1	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

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

Approved by Dave Edelman Date 6/4/91

00004

**APPENDIX A**  
**LABORATORY QC RESULTS**

00005

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Texaco Environmental Services  
Project: Greenwood Texaco/#U6813.01  
Sample Matrix: Water

Date Received: 05/17/91  
Date Analyzed: 05/24/91  
Work Order #: K912738

QA/QC Report  
Surrogate Recovery Summary  
Halogenated and Aromatic Volatile Organic Compounds  
EPA Methods 5030/8010/8020

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
AGW-1	K2738-1	64.0
AGW-2	K2738-2	52.3
AGW-4	K2738-3	51.8
AGW-5	K2738-4	65.1
AGW-7	K2738-5	57.4
AGW-10	K2738-6	53.1
Trip Blank	K2738-7	51.9
Laboratory Control Sample	K2738-LCS	67.0
Duplicate Laboratory Control Sample	K2738-DLCS	69.3
Method Blank	K2738-MB	70.1

CAS Acceptance Criteria 50-130

Approved by Dave Ebel Date 6/9/91

00006

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Texaco Environmental Services  
Project: Greenwood Texaco/#U6813.01  
Sample Matrix: Water

Date Received: 05/17/91  
Date Analyzed: 05/28/91  
Work Order #: K912738

QA/QC Report  
Surrogate Recovery Summary  
Halogenated and Aromatic Volatile Organic Compounds  
EPA Methods 5030/8010/8020

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
AGW-2	K2738-2	98.3
AGW-7	K2738-5	108
AGW-1	K2738-1	65.6
AGW-5	K2738-4	102
AGW-10	K2738-6	64.4
Method Blank	K2738-MB	81.4

CAS Acceptance Criteria 50-130

Approved by Dave Stahl Date 6/4/91

00607

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Texaco Environmental Services  
 Project: Greenwood Texaco/#U6813.01  
 Sample Matrix: Water

Date Analyzed: 05/24/91  
 Work Order #: K912738

QA/QC Report  
 Laboratory Control Sample/Duplicate Laboratory Control Sample Summary  
 Halogenated and Aromatic Volatile Organic Compounds  
 EPA Methods 5030/8010/8020  
 µg/L (ppb)

Sample Name: Laboratory Control Sample

Analyte	Spike Level		Spike Result		Percent Recovery		EPA Acceptance Criteria	Relative Percent Difference
	LCS	DLCS	LCS	DLCS	LCS	DLCS		
	1,1-Dichloroethene	50	50	74.6	82.2	149		
Trichloroethene	50	50	46.2	50.8	92.4	102	35-146	9.9
Tetrachloroethene	50	50	41.6	45.5	83.2	91.0	26-162	10.0
Benzene	50	50	50.8	53.0	102	106	39-150	3.8
Toluene	50	50	25.8	26.9	51.6	53.8	46-148	4.2
Ethylbenzene	50	50	48.7	52.3	97.4	105	32-160	7.1

Approved by Dave Ehl. Date 6/4/91

00008



**APPENDIX B**  
**CHAIN OF CUSTODY INFORMATION**

00009

**Sweet-Edwards / EMCON, Inc.**Kelso, WA (206) 423-3580  
Bothell, WA (206) 485-5000  
Portland, OR (503) 624-7200

# Chain of Custody / Laboratory Analysis Request

112738

DATE 5/17/91 PAGE 4 OF 1

PROJECT <u>Greenwood Texaco # 468/3.01</u>					ANALYSIS REQUESTED													GENERAL CHEMISTRY (Specify)		OTHER (Specify)		NUMBER OF CONTAINERS
CLIENT INFO. CONTACT <u>Mike Noll (SE/R)</u>					BASE/NEU/ACID ORGAN. GC/MS/825/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	PH, COND ALK	NO <sub>3</sub> /NO <sub>2</sub> , Cl SO <sub>4</sub>	Ca, Mg, Na, K					
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE																		
1. AGW-1	5/15	12:5		water														X			2	
2. AGW-2		10/0																X			2	
3. AGW-4		1025																X	X		3	
4. AGW-5		1030																X			2	
5. AGW-7		1040																X			2	
6. AGW-10	↓	1035		↓														X			2	
7. Trip Blank				water														X			2	
8.																					1	

Relinquished By Sweet, Edwards & Assoc. Signature <u>J. Kurtland</u> Printed Name <u>SE/R</u> Firm <u>5/17/91 10/10</u> Date/Time	Relinquished By Signature <u>M. Higgins</u> Printed Name <u>CAS/BOTHELL</u> Firm <u>9/05/7 11:00</u> Date/Time	Relinquished By Signature Printed Name Firm Date/Time	PROJECT INFORMATION Hand Delivered Shipping I.D. No. <u>625/14</u> VIA Project	SAMPLE RECEIPT Total No. of Containers Chain of Custody Seals Received in good condition LAB NO.
Received By Signature <u>M. Higgins</u> Printed Name <u>CAS/BOTHELL</u> Firm <u>9/05/7 10:10</u> Date/Time	Received By Signature <u>John Adams</u> Printed Name Firm Date/Time	Received By Signature Printed Name Firm Date/Time	SPECIAL INSTRUCTIONS/COMMENTS Report to Mike Condon Texaco Environmental 7 day turn around	

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator