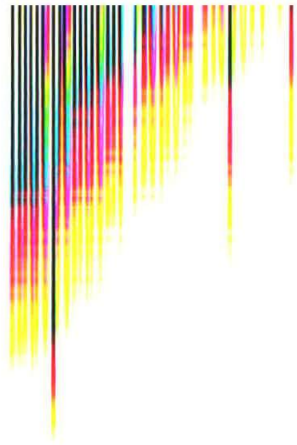
DEPARTMENT OF ECOLOGY
SR 12/9/94 NWRO/TCP TANKS UNIT

INTERIM CLEANUP REPORT	☒
SITE CHARACTERIZATON	☒
FINAL CLEANUP REPORT	☐
OTHER _____	☐
AFFECTED MEDIA: SOIL	☒
OTHER _____ GW	☒
INSPECTOR (INIT.) DP DATE 12-28-94	

EMCON



Site Name: TEXACO

Inc. #: 2298 Date of Report: 9-9-94

County: KING Date Report Rec'd: 11-10-94

Reviewed by: ~~Roger Nye~~ JOHN BAILS

Comments (please include: free prod., tank info., contaminant migration, GW depth & flow, conc. trends, PCS treated?):

CHANGE STATUS TO IN-PROGRESS
REMOVED 4-10,000 GALLON TANKS - 3 GAS, 1-6,000 HO, 500 GALLON WO. DISCOVERED 2-1250 CONCRETE SUMPS/SEPARATORS. ONE REMOVED. PCS CONTAMINATION Pollution FROM WO & HO TANKS ~~ONLY~~. GW BETWEEN 0.5-3'. APPROXIMATELY 680 600 yd3 PCS STOCKPILED ~~FOR~~ TRANSported DISPOSAL APPROXIMATELY 5-8' OF PEAT PCS IN PEAT LAYER AROUND WO TANK SITE IS VACANT. PLAN GW REMEDIATION

LUST # 2298
TEXACO
KING/SEATTLE.

Texaco Refining
and Marketing Inc

3400 188th Street SW
Suite 630
Lynnwood WA 98037

November 9, 1994

ENV - SERVICE STATIONS
Underground Storage Tank Decommissioning
Texaco Facility #63-232-0037
8701 Greenwood Avenue North, Seattle, Washington

Mr. Roger Nye
Washington Department of Ecology- Northwest Regional Office
3190 - 160th Avenue Southeast
Bellevue, Washington 98008-5452

Dear Mr. Nye:

Enclosed please find a copy of the above-referenced report prepared by Texaco's environmental consultant, EMCON Northwest, Inc. of Bothell, Washington.

Texaco and its subcontractors completed station decommissioning activities at the site including razing the building and removal of six underground storage tanks, one sump, hoists, dispenser islands and associated piping. One additional sump was pumped, rinsed and closed in place due to site conditions. Texaco and its subcontractors also installed groundwater monitoring wells, and collected soil and groundwater samples to assess site conditions.

Groundwater at the site appears to be in a confined aquifer condition, with a 5 to 8 foot-thick peat layer serving as the upper confining layer except at the former gasoline storage tank basin where the peat layer has been excavated to accommodate placements of the underground storage tanks.

Analytical results of groundwater samples collected at the site indicate that petroleum hydrocarbons in the gasoline range, benzene, and xylenes are present at concentrations that exceed the MTCA Method A Cleanup levels near the former underground storage tank basin where the peat layer has been removed. Screened piping was placed in the former tank basin as part of a groundwater sparging and vapor extraction system. Aboveground equipment and permits are being obtained to startup the system.

Analytical results of soil samples collected at the site indicate that some longer-chain petroleum hydrocarbon contaminated soil remains in-place; this soil could not be excavated due to site conditions. The majority of longer-chain petroleum hydrocarbon contaminated soil encountered in the used oil underground storage tank and sump area was excavated and disposed at the Roosevelt Regional Landfill. Longer-chain petroleum hydrocarbons were not detected in the groundwater samples which indicates that the peat layer also serves as an effective barrier to vertical migration of the these contaminants to groundwater.

The Texaco project management duties for this project have been reassigned to Ms. Theresa Geijer, who is located in my office. If you have any questions regarding this project, please contact her at (206) 774-6090, extension 224.

Sincerely,

Michael W. Condon
Area Supervisor
Texaco Environmental Services

MWC:gds
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Enclosure

cc: Mr. Robert Isackson, Village Properties (2 copies)

KEdwards-File-UCPFile (w/ enclosure)
PNWRead (w/o enclosure)

PR:gds

UNDERGROUND STORAGE TANK DECOMMISSIONING

Texaco Service Station 63-232-0037
8701 Greenwood Avenue North
Seattle, Washington

Prepared for

Texaco Environmental Services

September 9, 1994

Prepared by

EMCON Northwest, Inc.
18912 North Creek Parkway, Suite 100
Bothell, Washington 98011-8016

Project 0368-013.10

SIGNATURE PAGE

The material and data contained in this report were prepared by and under the supervision and direction of:

EMCON Northwest, Inc.

Tom Bodle
Geologist

John K. Meyer
Project Manager

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

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1 INTRODUCTION

1.1 Purpose and Scope of Work

On behalf of Texaco Environmental Services (TES), EMCON Northwest, Inc. (EMCON), conducted an environmental assessment associated with the decommissioning of underground storage tanks (USTs) and associated product lines, monitoring well installation, and groundwater sampling at former Texaco Service Station 63-232-0037, located at 8701 Greenwood Avenue North in Seattle, Washington. The work was performed to assess the extent and concentrations of petroleum hydrocarbons in soil and groundwater beneath the site.

Services completed in this scope of work included the following:

- Collecting a water sample from the gasoline and diesel tank cavity observation well and submitting it for laboratory analysis
- Obtaining an authorization from the Municipality of Metropolitan Seattle (Metro) to discharge excavation water to the sanitary sewer
- Observing and documenting subsurface conditions exposed during decommissioning, excavation, and removal of three gasoline, one diesel, one waste oil, and one heating oil underground storage tanks and associated piping
- Observing and documenting subsurface conditions exposed during excavation adjacent to two concrete sumps/separators and associated influent and effluent piping
- Directing excavation dewatering
- Observing and documenting subsurface conditions exposed during over excavation of petroleum hydrocarbon contaminated soil in the pump island and waste oil underground storage tank areas
- Submitting sludge samples collected from the concrete sump/separator influent and effluent piping for laboratory analysis

- Using a photoionization detector (PID) to screen excavated soil and to select soil samples for laboratory analysis
- Submitting selected soil samples for laboratory analyses
- Segregating excavated gasoline, diesel, and oil impacted soil from excavated clean soil
- Decommissioning one monitoring well
- Drilling, installing, and developing two monitoring wells
- Submitting water samples collected from the excavation water holding tank for laboratory analysis
- Collecting groundwater samples from monitoring wells and submitting them for laboratory analysis
- Directing sludge and excavation water disposal
- Installing three horizontal air sparging and three horizontal vapor extraction lines in the former gasoline and diesel UST excavation
- Preparing a final report summarizing findings and presenting conclusions

1.2 Site Location and Description

The site is a former gasoline service station located in the southeast quarter of the southwest quarter of Section 31, Township 26 North, Range 3 East (Figure 1). The station is located on the northwest corner of the intersection of North 87th Street and Greenwood Avenue North in Seattle, Washington. The site is bordered by commercial businesses on the north, North 87th Street on the south, Greenwood Avenue North on the east, and a residential area on the west. The property generally slopes to the south and west, with a total elevation drop of approximately 2.5 feet.

Before decommissioning, one 10,000-gallon diesel, one 1,000-gallon heating oil, one 500-gallon waste oil fiberglass, and three 10,000-gallon gasoline USTs were present on site. Two approximately 1,250-gallon concrete sumps/separators were also discovered during excavation activities. The first separator was removed. The second separator was not removed. Figure 2 is a site plan showing the station facilities before decommissioning.

1.3 Site History

The subject site contained a small service station and a wood-framed house before Texaco leased the property in 1946. No records are available as to the type, number, or size of any tanks present at this time. After 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. Based on information Texaco supplied, it appears that the USTs consisted of one 4,000-gallon, one 3,500-gallon, and one 2,000-gallon fuel storage tank and one 550-gallon waste oil tank. These tanks were located in the vicinity of the present pump islands.

Texaco purchased the subject property in 1967 and constructed a new service station on the site. The new service station included a two-bay garage/sales office building and two pump islands. The existing USTs were removed and replaced with two 10,000-gallon gasoline tanks, one 550-gallon waste-oil tank, and one 1,000-gallon fuel oil tank. A 4,000-gallon gasoline tank was added in 1971. All tanks were constructed of single-walled carbon steel.

The steel gasoline tanks were removed in 1986 and replaced with four 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.

1.4 Previous Investigations

Groundwater monitoring wells AGW-1 through AGW-5 were installed at the site March 1991 to evaluate subsurface conditions. Results of the investigation were presented to the Washington State Department of Ecology (Ecology) in Texaco's *Report on Initial Site Assessment*, dated July 1991. A review of boring log data indicated that groundwater under the site is confined beneath a peat and silt layer that extends to depths of approximately 10 to 15 feet below ground surface (bgs). A review of soil quality data indicated that soil samples collected adjacent to the heating and waste oil USTs contained concentrations of total petroleum hydrocarbons as oil (TPH-O) that exceeded MTCA Method A Cleanup Levels.[1] All other soil samples contained analyte concentrations below MTCA Method A Cleanup Levels. Monitoring well AGW-3 was decommissioned at the time of installation due to artesian conditions at the well. Depth to water measurements in the four remaining wells ranged from approximately 0.5 to 3 feet below the top of well casings. Historic groundwater data are shown on Tables 1 and 2.

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

A groundwater sampling program has been conducted at the site since April 1991. A review of the groundwater laboratory results indicates the maximum benzene concentrations were obtained in 1991 subsequent to a reported release from the unleaded gasoline tank turbine. Concentrations of total petroleum hydrocarbons as gasoline (TPH-G) and benzene generally have declined since 1991. A review of groundwater monitoring data indicates the groundwater gradient direction generally has been toward the south and west.

The gasoline tank basin had one observation well installed in each corner. The observation wells were 4 inches in diameter and appeared to be slotted over the total length. Depth to water measurements in the tank basin observation wells (0.7 to 2.3 feet bgs) historically have been similar to those in the monitoring wells. Water-level data suggest that the tank basin was excavated through the peat and silt layer.

A 12-inch-diameter well approximately 21 feet deep was present on the south side of the tank basin. The well was intended to be used as a dewatering well to prevent accumulation of groundwater in the tank basin.

2 UNDERGROUND STORAGE TANK DECOMMISSIONING

Joe Hall Construction, Inc., of Tacoma, Washington, excavated and removed one diesel, one waste oil, one heating oil storage, and three gasoline tanks and product lines during January 1994. Product from each tank was removed before tank removal, and each tank was inerted with dry ice to displace potentially explosive vapors.

Two apparent 1,250-gallon concrete sumps/separators were discovered during over excavation of petroleum hydrocarbon contaminated soil south of the service station building in February 1994 (Figure 2). Oily brownish sludge and water were removed from each sump/separator and temporarily stored on-site in DOT-approved 55-gallon drums. One sump/separator was excavated and removed. The other sump/separator was left in place to avoid disturbing the underlying peat and silt confining layer. Associated influent and effluent piping were removed up to the property boundaries.

Northwest EnviroService, Inc., coordinated the disposal of all product remaining in the tanks. Joe Hall Construction, Inc., coordinated the disposal of all removed underground storage tanks.

An EMCON geologist was present to observe and record soil conditions, to field-screen with a PID, and to collect soil samples from the excavation sidewalls and beneath the tanks and piping for laboratory analyses. Details of the field procedures and sampling techniques are found in Appendix A.

2.1 Observation Well Sampling

EMCON personnel visited the site on January 13, 1994, to collect a water sample (designated "s.w. observ. well") from gasoline and diesel tank cavity observation well TNK-4 (Figure 2). Water was present at approximately 1.5 feet bgs. The sample was collected by using a disposable bailer and transported to Columbia Analytical Services, Inc. (CAS). It was analyzed to assess the condition of water present in the tank cavity and in support of a discharge authorization from Metro before excavation.

2.2 Gasoline and Diesel Tank Excavation

One 10,000-gallon diesel tank and three 10,000-gallon gasoline tanks were excavated and removed on January 25 and 26, 1994. Upon removal, each tank was visually inspected. The tanks were constructed of single-wall fiberglass. No holes were evident. Groundwater was encountered in the excavation at approximately 3.0 to 9.0 feet bgs. The 12-inch-diameter tank basin dewatering well was used to extract water from the excavation during tank removal. The water was discharged to the sanitary sewer under authorization from Metro. A copy of the Metro authorization is included in Appendix A.

Soil samples collected from the sidewalls at the limits of the excavation immediately above the water table at depths ranging from 1.5 to 7.0 feet bgs were submitted for laboratory analysis. The limits of excavation, soil sample locations, and selected laboratory results are shown on Figure 3.

2.3 Pump Island Area Excavation

The pump island product trenches were excavated and the product lines and dispensers removed during January 1994. Trenches on the east side of the west pump island and west side of the east pump island initially were excavated to approximately 2 feet bgs to facilitate product piping removal. Groundwater was encountered in the excavation at approximately 1.5 to 3.0 bgs. Soil samples initially were collected on January 31 and February 1, 1994, immediately above the water table adjacent to former dispenser locations. Selected soil samples were submitted for 24-hour rush analyses to determine if further excavation was necessary. Based on the laboratory results of samples wpisl-2.7', episl-3', and wdisp3-3.3', excavation to remove hydrocarbon affected soil resumed February 3, 4, and 7, 1994. Soil near the north ends of the former pump islands was over excavated to depths ranging from 1.7 to 5.0 feet bgs. Confirmation soil samples were then collected from the excavation sidewalls. The limits of excavation, soil sample locations, and selected laboratory results are shown on Figure 3.

2.4 Heating Oil Tank Excavation

One 1,000-gallon heating oil tank was excavated and removed on January 27, 1994. Upon removal, the tank was visually inspected. The tank was single wall fiberglass construction. No holes were evident. Groundwater was encountered in the excavation at approximately 2.0 to 6.0 feet bgs. Soil samples were collected from the excavation sidewalls immediately above the water table at the limits of the excavation at depths ranging from 1.5 to 5.7 bgs. The limits of excavation, soil sample locations, and selected laboratory results are shown in Figure 3.

2.5 Hoists Excavation

Two hoists in the service station building were excavated and removed on January 26, 1994. Groundwater was encountered in the excavation at approximately 3.0 to 3.5 feet bgs. Soil samples were collected from the floor and sidewalls at the limits of the excavation immediately above the water table at depths ranging from 1.8 to 3.5 feet bgs. Based on laboratory results, hydrocarbon-affected soil was over excavated, and confirmation soil samples were collected. The limits of excavation, soil sample locations, and laboratory results are shown on Figure 3.

2.6 Waste Oil Tank and Sump/Separator Excavation

One 500-gallon waste oil tank was excavated and removed on January 26, 1994. Upon removal, the tank was visually inspected. The tank was single wall fiberglass construction. No holes were evident. Groundwater was encountered in the excavation at approximately 2.5 to 4 feet bgs. Soil samples were collected from the north, south, and east excavation sidewalls immediately above the water table at depths ranging from 2.0 and 3.6 feet bgs. Selected soil samples were submitted for 24-hour rush analyses to determine if further excavation was necessary.

Excavation resumed February 4, 1994, to remove hydrocarbon-affected soil, based on the laboratory results of the samples. The north, south, east, and west excavation sidewalls were over excavated approximately 5 feet. Soil samples were then collected immediately above the water table at depths ranging between 3.4 and 3.9 feet bgs and submitted for 24-hour rush analyses to determine if further excavation was necessary. Based on laboratory results additional over excavation was performed following demolition and removal of the station building.

The northern 1,250-gallon concrete sump/separator was located on February 23, 1994. Sludge was removed and placed into DOT-approved, 55-gallon drums pending analysis and disposal. Sample tile effluent was collected from the sludge and submitted for laboratory analysis. Following sludge removal, the sump/separator, influent and effluent piping were removed and stockpiled with excavated soil. A southern sump/separator was subsequently discovered. The southern sump/separator appeared to penetrate the underlying peat and silt confining layer. Consequently, the southern sump/separator was purged of sludge, backfilled with clean soil, and left in place to prevent infiltration of groundwater from the confined aquifer.

Approximately 500 cubic yards of soil adjacent to the sump/separators and associated piping was removed. Petroleum hydrocarbon-impacted soil was removed from the ground surface to the top of the peat and silt layer, present approximately 5 to 8 feet bgs. Confirmation soil samples were then collected from the excavation sidewalls and bottom at depths ranging between approximately 3.0 and 8.0 feet bgs. During this period,

surface runoff and storm water were removed from the excavation and placed into a 5,000-gallon holding tank.

During excavation activities, monitoring well AGW-4 was abandoned by a licensed well driller from Cascade Drilling, Inc., and later was over excavated. Soil sample locations at the final limits of excavations, and laboratory results are shown in Figure 3.

2.7 Stockpiled Soil

Approximately 1,000 cubic yards of soil and pea gravel were excavated and placed in separate stockpiles on site. During and after excavation activities, soil samples collected from stockpiled soil were submitted to CAS for analysis. Stockpiled excavated soil samples were collected from the gasoline and diesel tank, waste oil tank, heating oil tank, pump island stockpiles, and stockpiled clean soil. Based on results of field screening and laboratory analysis, approximately 600 cubic yards of petroleum-hydrocarbon-impacted soil excavated from the tank basin and dispenser island areas was covered with plastic sheeting and temporarily stored on site pending transport and disposal. Clean soil and pea gravel were backfilled into the former gasoline and diesel UST excavation.

2.8 Soil Conditions

Soils encountered during excavation generally consisted of 5 to 8 feet of moist to saturated gravelly and silty sand of loose to compact density, overlying approximately 5 to 8 feet of dry to damp peat and silt.

3 MONITORING WELL INSTALLATION, DEVELOPMENT, AND GROUNDWATER SAMPLING

3.1 Field Activities

EMCON conducted additional field activities in March 1994. Activities performed at the site consisted of drilling two soil borings, installing monitoring wells in the two soil borings, developing the monitoring wells, and collecting groundwater samples from the new and existing wells.

3.2 Soil Borings

On- and off-site utilities were located and marked before any subsurface activity. The local utility district's locating service was contacted to mark the known utilities on site, at the property easements, and on right-of-ways. In addition, Locating, Inc., a private utility locating service, was on site before drilling activities to provide a utility clearance at the proposed drilling locations.

Two soil borings (AGW-6 and AGW-7) were advanced on March 11, 1994, to provide information concerning the subsurface soil and water quality adjacent to the waste oil excavation, the southwest property limit, and the pump island excavation. Boring locations are shown on Figure 4.

Cascade Drilling, Inc., of Woodinville, Washington, drilled the borings by using hollow-stem auger techniques. Borings AGW-6 and AGW-7 were drilled to depths of 25.5 and 27.0 feet bgs, respectively. Groundwater was encountered beneath the peat layer at approximately 13.5 feet bgs at the time of drilling.

Soil samples were collected continuously both above and within the peat layer in each boring by using a split-spoon sampler. An EMCON geologist logged soils, collected and screened samples, and recorded observations during drilling activities. Boring logs, which include lithological information and PID readings, are included in Appendix A. A description of the soil sampling methodology is also presented in Appendix A.

3.3 Monitoring Well Installation and Development

Borings AGW-6 and AGW-7 were completed as 4-inch-diameter PVC monitoring wells following drilling. Based on the depth to the peat layer encountered during drilling, AGW-6 and AGW-7 were constructed to approximately 25.5 and 27.0 feet bgs, respectively, with the screened internal entirely beneath the confining peat layer. Well construction details are shown on the boring logs in Appendix A. Well installation procedures are also described in Appendix A.

EMCON personnel developed the wells following installation by using a stainless-steel bailer. Approximately 35 and 40 gallons of water were removed from AGW-6 and AGW-7, respectively, during development. Wellhead elevations were surveyed relative to an arbitrary datum at an assumed elevation of 50 feet above mean sea level.

3.4 Groundwater Sampling

EMCON collected groundwater samples from existing monitoring wells AGW-1, AGW-2, and AGW-5, and new monitoring wells AGW-6, and AGW-7 on March 14, 1994. Groundwater sampling data sheets are provided in Appendix B. Groundwater sampling procedures are presented in Appendix A.

Depth to water measurements collected before sampling indicated groundwater at depths ranging between approximately 0.05 foot bgs in AGW-7 and 2.2 feet bgs in AGW-2. Depth-to-water measurements were converted to relative groundwater elevations by using well survey data EMCON provided. The maximum groundwater elevation difference was 3.28 feet between monitoring wells AGW-1 and AGW-7, approximately 75 feet apart.

Depth-to-water data indicated the inferred hydraulic gradient beneath the site was generally to the south at a magnitude of approximately 0.4 feet per foot (ft/ft) on March 17, 1994. The well survey and groundwater elevation data are presented in Table 1. Groundwater elevations are shown on Figure 4.

4 QUANTITATIVE SOIL CHEMICAL ANALYSES

4.1 Soil Sample Laboratory Analyses and Results

Soil samples collected near the gasoline and diesel USTs, pump island, waste oil, heating oil, and hoist areas were analyzed for TPH-G using Ecology Method WTPH-G, for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 5030/8020, and for total petroleum hydrocarbons as diesel (TPH-D) and as oil (TPH-O) using Ecology Method WTPH-D (extended).

4.1.1 Gasoline and Diesel Tank Excavation

A review of laboratory results indicated that confirmation soil samples collected from the gasoline and diesel tank excavation following over excavation contained analyte concentrations below MTCA Method A Cleanup Levels.

4.1.2 Dispenser Island Excavation

Soil samples wpisl-2.7', wdisp3-3.3', and edispl-2.3', collected adjacent to former dispenser locations on the two pump islands before over excavation, exceeded MTCA Method A Cleanup Levels for TPH-G, TPH-D, benzene, ethylbenzene, and total xylenes. Confirmation soil samples, collected at the limits of excavation following removal of petroleum hydrocarbon contaminated soil, contained analyte concentrations below MTCA Method A Cleanup Levels.

4.1.3 Heating Oil Tank Excavation

A review of laboratory results indicated samples collected from the heating oil excavation limits contained analyte concentrations below MTCA Method A Cleanup Levels.

4.1.4 Hoist Excavation

A review of laboratory results indicated confirmation soil samples, collected at the limits of the hoist excavation following removal of petroleum hydrocarbon contaminated soil, contained analyte concentrations below MTCA Method A Cleanup Levels.

4.1.5 Waste Oil Excavation

A review of laboratory results indicated soil samples initially collected from the waste oil excavation before over excavation contained analyte concentrations exceeding MTCA Method A Cleanup Levels. Laboratory results indicated soil samples collected following the completion of excavation activities contained hydrocarbon concentrations of up to 2,390 ppm TPH-G at the eastern sidewall and 6,990 ppm TPH-D, and 25,100 ppm TPH-O in the peat at the bottom of the excavation. The peat layer was not excavated since it serves as a confining layer for the underlying saturated zone. The excavation was not extended to the east to avoid flooding the excavation with water accumulated within the former gasoline UST basin.

4.1.6 Soil Boring Samples

A review of laboratory results indicates that soil samples collected during drilling of monitoring wells AGW-6 and AGW-7 at depths ranging between approximately 5.5 and 7 feet bgs contained concentrations of TPH-D and TPH-O exceeding MTCA Method A Cleanup Levels with up to 413 ppm TPH-D and 2,730 ppm TPH-O. Samples collected at approximately 13 and 14.5 feet bgs did not contain analyte concentrations exceeding MTCA Method A Cleanup Levels. Concentrations of TPH-G and BTEX were below MTCA Method A Cleanup Levels in all soil boring samples analyzed.

5 QUANTITATIVE WATER CHEMICAL ANALYSES

5.1 Water and Sludge Sample Laboratory Analyses and Results

Water Sample S.W. Observ. Well, collected from the gasoline and diesel tank cavity observation well TNK-4, was analyzed for BTEX by EPA Method 5030/602, for non-polar fats, oils, and grease using Standard Method 5520F, and for total lead using EPA Method 7421. Standard Method 5520F is equivalent to EPA Method 418.1. Laboratory results indicated the sample contained 2,700 parts per billion (ppb) non-polar fats, oils, and grease, 8 ppb total lead, 65.2 ppb benzene, 203 ppb toluene, and 638 ppb ethylbenzene. These concentrations are below Metro's sanitary sewer discharge limitations. Laboratory reports and chain-of-custody forms are included in Appendix B.

Sample rfrtank2, collected from the waste oil excavation dewatering holding tank, was submitted to Northwest EnviroServices for disposal profiling.

Sludge sample tile effluent was collected from the northern concrete sump/separator. The sample was analyzed for TPH-Hydrocarbon Identification using Ecology Method WTPH-HCID, volatile organic compounds using EPA Method 8240, and base neutral/acid semivolatile organic compounds using EPA Method 3550/8270. Laboratory results indicated the sample contained TPH-G, TPH-D, and TPH-O, ethylbenzene, total xylenes, 2-methylnaphthalene, and bis(2-ethyl hexyl) phthalate.

5.2 Groundwater Sample Laboratory Analyses and Results

Groundwater samples collected from monitoring wells AGW-1, AGW-2, AGW-5, AGW-6, and AGW-7 were submitted to CAS for analyses. Samples were analyzed for BTEX using EPA Methods 5030/8020, TPH-G using Ecology Method WTPH-G, TPH-D and TPH-O using Ecology Method WTPH-D (extended), and total lead using EPA Method 7420. A description of the laboratory test methods is included in Appendix B. A review of laboratory results indicated the samples collected from AGW-1, AGW-2, and AGW-6 exceeded MTCA Method A Cleanup Levels for benzene and total xylenes. The sample collected from AGW-1 also exceeded MTCA Method A Cleanup Levels for TPH-G. Laboratory results are presented in Table 2. Laboratory results and chain-of-custody forms are included in Appendix B.

5.3 Water and Sludge Disposal

Product removed from the USTs, oily sludge from the sump/separators, and product accumulated at the top of the holding tank was removed and disposed of by Northwest EnviroService, Inc. Remaining water and tank cleaning rinsate were discharged to the sanitary sewer.

Approximately 175 gallons of purged groundwater generated during monitoring well sampling was placed into DOT-approved, 55-gallon drums and transported to EMCON's offices in Bothell, Washington. Following receipt of laboratory results, the purge water was discharged to the sanitary sewer under EMCON's Metro authorization.

5.4 Soil Disposal

Approximately 680 cubic yards (946.870 tons) of hydrocarbon-impacted soil was temporarily stockpiled on site pending disposal. Following receipt of laboratory results the stockpiled soil was transported to Roosevelt Regional Landfill, in Roosevelt, Washington, for disposal.

6 CONCLUSIONS

Soils at the site generally consisted of 5 to 8 feet of gravelly sand and silty sand of loose to compact density, overlying approximately 5 to 8 feet of peat. The peat was underlain by saturated dense silts, sands, and gravel at least to 27 feet bgs.

Confined groundwater existed below the site, with the peat layer acting as the upper confining layer except at the former gasoline UST basin where the peat layer appears to have been excavated to accommodate placement of the tanks. Water above the peat layer appeared to be supplied by surface runoff and, possibly, leakage from the confined aquifer.

Soil samples collected from the limits of the gasoline and diesel tank, heating oil tank, pump island, and hoist areas following over excavation contained analyte concentrations below MTCA Method A Cleanup Levels.

Soil samples collected from the excavation sidewalls and from the peat layer in the waste oil/sump area following over excavation contained analyte concentrations above MTCA Method A Cleanup Levels.

Soil samples collected approximately 5 and 7.5 feet bgs during drilling of AGW-6 (near the southwest property corner) and AGW-7 (near the former dispensers) contained TPH-D and TPH-O concentrations exceeding MTCA Method A Cleanup Levels. Remaining analyte concentrations in all other samples analyzed were below MTCA Method A Cleanup Levels.

A review of laboratory results indicated groundwater samples collected from on-site monitoring wells AGW-1, AGW-2, and AGW-6 on March 17, 1994, contained concentrations of TPH-G, benzene, and total xylenes above MTCA Method A Cleanup Levels. Concentrations of TPH-G and BTEX detected are likely related to releases within the former gasoline UST basin where prior excavation of the silt and peat confining layer may have allowed these constituents to reach groundwater. Concentrations of TPH-D and TPH-O were below MTCA Method A Cleanup Levels in all groundwater samples analyzed suggesting the silt and peat layer is an effective barrier to vertical migration of these constituents.

Removal of hydrocarbon-impacted soil from the UST area likely has had a beneficial effect on groundwater quality. Improvement in groundwater quality is reflected in analytical data collected since late 1991 which reveals a general decline in BTEX and TPH concentrations.

LIMITATIONS

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

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

Table 1

Groundwater Monitoring Data
Texaco Service Station 63-232-0037
8701 Greenwood Avenue North
Seattle, Washington

Well Number	Screened Interval (feet bgs)	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Depth to Product (feet)	Groundwater Elevation (feet)	Groundwater Elevation Change Since Last Measurement (feet)
AGW-1	4.5 - 19.5	47.36	04/03/91	3.18	NONE	44.18	—
			05/15/91	—	NONE	—	—
			08/15/91	0.62	NONE	46.74	+2.56
			11/21/91	0.70	NONE	46.88	+0.14
			03/06/92	0.47	NONE	46.89	+0.01
			11/06/92	0.46	NONE	46.90	+0.01
			03/26/93	0.49	NONE	46.87	- 0.03
			06/09/93	0.42	NONE	46.94	+0.07
		47.36*	03/17/94	1.99	NONE	45.37	- 1.57
AGW-2	4.5 - 19.0	47.59	04/03/91	3.43	NONE	44.16	—
			05/15/91	—	NONE	—	—
			08/15/91	1.65	NONE	45.94	+1.78
			11/21/91	1.30	NONE	46.29	+0.35
			03/06/92	1.14	NONE	46.45	+0.16
			11/06/92	1.18	NONE	46.41	- 0.04
			03/26/93	1.18	NONE	46.41	0.00
			06/09/93	1.06	NONE	46.53	+0.12
		47.64*	03/17/94	2.18	NONE	45.46	- 0.07

Table 1

Groundwater Monitoring Data
Texaco Service Station 63-232-0037
8701 Greenwood Avenue North
Seattle, Washington

Well Number	Screened Interval (feet bgs)	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Depth to Product (feet)	Groundwater Elevation (feet)	Groundwater Elevation Change Since Last Measurement (feet)
AGW-3	4.5 - 19.0	49.10	03/29/91	—	NONE	49.10+	—
Well decommissioned							
AGW-4	4.5 - 19.5	47.97	04/03/91	4.61	NONE	43.36	—
			05/15/91	—	NONE	—	—
			08/15/91	2.76	NONE	45.21	+1.85
			11/21/91	2.45	NONE	45.52	+0.31
			03/06/92	2.45	NONE	45.52	0.00
			11/06/92	3.21	NONE	44.76	- 0.76
			03/26/93	3.03	NONE	44.94	+0.18
			06/09/93	2.66	NONE	45.31	+0.37
Well decommissioned							
AWG-5	4.5 - 19.5	49.47	04/03/91	2.78	NONE	46.69	—
			05/15/91	—	NONE	—	—
			08/15/91	1.53	NONE	47.94	+1.25
			11/21/91	2.40	NONE	47.07	- 0.87
			03/06/92	1.45	NONE	48.02	+0.95
			11/06/92	2.27	NONE	47.20	- 0.82

Table 1

Groundwater Monitoring Data
Texaco Service Station 63-232-0037
8701 Greenwood Avenue North
Seattle, Washington

Well Number	Screened Interval (feet bgs)	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Depth to Product (feet)	Groundwater Elevation (feet)	Groundwater Elevation Change Since Last Measurement (feet)
AWG-5 (cont'd)			03/26/93	2.05	NONE	47.42	+0.22
			06/09/93	1.95	NONE	47.52	+0.10
		49.11*	03/17/94	1.65*	NONE	47.46	- 0.06
AGW-6	14.0 - 24.0	46.17*	03/17/94	.51	NONE	45.66	—
AGW-7	16.0 - 26.0	48.70	03/17/94	.05	NONE	48.65	—

NOTE: * = (Re)surveyed March 16, 1994.

Table 2

Groundwater Laboratory Results
Texaco Service Station 63-232-0037
8701 Greenwood Avenue North
Seattle, Washington

Monitoring Well	Date	Results of Analyses (µg/L)							
		Ecology Method WTPH-G	Ecology Method WTPH-D (extended)		EPA Method 5030/602				EPA Method 7421
		TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead
MTCA Method A Cleanup Levels[a]		1,000	1,000	1,000	5	40	30	20	5
AGW-1	04/03/91	ND	—	—	ND	ND	ND	ND	—
	05/15/91	—	—	—	440	1,000	92	670	—
	08/15/91	361,000	—	—	1,400	7,400	1,000	8,100	ND
	11/21/91	47,000	ND	ND	680	6,400	2,000	13,000	—
	03/06/92	48,000	ND	ND	710	3,200	1,400	8,700	ND
	11/06/92	37,000	—	—	95.1	260	1,400	8,200	ND
	03/26/93	18,400	—	—	42.8	27	397	1,450	ND
	06/09/93	15,000	—	—	35.2	23	415	1,530	ND
	03/17/94	1,960	730	ND	17.8	8	24	104	ND
AGW-2	04/03/91	—	—	—	ND	ND	ND	ND	—
	05/15/91	—	—	—	ND	ND	ND	ND	—
	08/15/91	1,030	—	—	250	220	15	86	ND
	11/21/91	7,300	ND	1,200	910	1,300	260	1,200	—
	03/06/92	24,000	ND	1,100	870	3,700	760	4,900	ND
	11/06/92	3,230	—	—	152	98	175	804	ND
	03/26/93	3,390	340	ND	113	33	149	642	ND
	06/09/93	3,270	ND	ND	108	18	164	666	3
	03/17/94	470	270	ND	18.4	ND	17	68	ND

Table 2

Groundwater Laboratory Results
Texaco Service Station 63-232-0276
8701 Greenwood Avenue North
Seattle, Washington

Monitoring Well	Date	Results of Analyses (μg/L)							
		Ecology Method WTPH-G	Ecology Method WTPH-D (extended)		EPA Method 5030/602				EPA Method 7421
		TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead
MTCA Method A Cleanup Levels[a]		1,000	1,000	1,000	5	40	30	20	5
AGW-3	03/29/91	—	—	—	ND	ND	ND	ND	—
Well decommissioned.									
AGW-4	04/03/91	—	—	—	2.6	20	2.7	31	—
	05/15/91	—	—	—	8.4	19	2.4	20	—
	08/15/91	1,200	3,260	—	11	4	1	7	4
	11/21/91	3,500	ND	2,040	660	700	21	133	—
	03/06/92	ND	ND	800	139	182	3	18	ND
	11/06/92	90	—	—	20.9	13	4	17	ND
	03/26/93	999	480	ND	31.8	35	51	246	ND
	06/09/93	1,900	1,060	ND	61.1	64	108	533	ND
Well decommissioned.	03/17/94	—	—	—	—	—	—	—	—
AGW-5	04/03/91	—	—	—	30	10	5	7	—
	05/15/91	—	—	—	220	53	3.5	12	—
	08/15/91	—	—	—	9.4	ND	ND	ND	ND
	11/21/91	100	ND	ND	2.5	ND	ND	ND	—
	03/06/92	ND	ND	ND	0.9	ND	ND	ND	ND
	11/06/92	ND	—	—	ND	ND	ND	ND	ND
	03/26/93	ND	—	—	ND	ND	ND	ND	ND
	06/09/93	ND	—	—	ND	ND	ND	ND	ND
AGW-5 (cont'd)	03/17/94	ND	ND	ND	ND	ND	ND	ND	ND

Table 2

Groundwater Laboratory Results
Texaco Service Station 63-232-0276
8701 Greenwood Avenue North
Seattle, Washington

Monitoring Well	Date	Results of Analyses (µg/L)							
		Ecology Method WTPH-G	Ecology Method WTPH-D (extended)		EPA Method 5030/602				EPA Method 7421
		TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead
MTCA Method A Cleanup Levels[a]		1,000	1,000	1,000	5	40	30	20	5
AGW-6	03/17/94	300	ND	ND	10.6	1	14	56	4
AGW-7	03/17/94	ND	ND	ND	ND	ND	ND	ND	ND

NOTE: TPH-G = Total petroleum hydrocarbons as gasoline.
TPH-D = Total petroleum hydrocarbons as diesel.
TPH-O = Total petroleum hydrocarbons as oil.
µg/L = Micrograms per liter; approximates parts per billion
ND = Not detected at or above method reporting limit.
— = Not analyzed.
Shaded values exceed MTCA Method A Cleanup Levels.

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

Table 3

Soil Sample Laboratory Results
Texaco Service Station 63-232-0037
8701 Greenwood Avenue North
Seattle, Washington

Sample Number	Depth (feet)	Date Collected	Results of Analyses (ppm)						
			Ecology Method WTPH-G	Ecology Method WTPH-D (extended)		EPA Method 5030/8020			
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MTCA Method A Cleanup Levels[a]			100.0	200.0	200.0	0.5	40.0	20.0	20.0
East Hoist Excavation Samples									
hoie-f-3.5	3.5	01/26/94	13	54	160	ND	ND	ND	ND
hoie-ew-2.5'	2.5	01/26/94	ND	ND	ND	ND	ND	ND	ND
West Hoist Excavation Samples									
hoiw-f-2.8	2.8	01/26/94	21	82	280*	ND	ND	ND	ND
hoiw-ew-1.8	1.8	01/26/94	ND	ND	ND	ND	ND	ND	ND
whoistww-3'	3.0	02/04/94	ND	ND	ND	ND	ND	ND	ND
Heating Oil Underground Storage Tank Excavation Samples									
ho-ww-2.5	2.5	01/28/94	13	60	190	ND	ND	ND	ND
ho-sw-1.5	1.5	01/28/94	ND	ND	ND	ND	ND	ND	ND
ho-ew-5.7	5.7	01/28/94	ND	ND	ND	ND	ND	ND	ND
Dispenser Island and Piping Excavation Samples									
episl-3'	3.0	01/31/94	1,550*	600*	120	ND	ND	6.1	13.0
wpisl-2.7'	2.7	01/31/94	3,220*	130	ND	<1.50	ND	42.0*	38.6*
wdisp3-3.3'	3.3	02/01/94	125*	60	160	ND	ND	ND	0.2
edisp1-2.3'	2.3	02/01/94	11	29	ND	0.10	ND	ND	0.1
npisl-2.7'	2.7	02/03/94	ND	ND	ND	ND	ND	ND	0.1
wpislb-2.4'	2.4	02/03/94	35	38	ND	0.3	0.1	0.7	2.5
wpislb-5'	5.0	02/03/94	35	67	180	ND	ND	ND	0.2
npislb-2.9'	2.9	02/04/94	5	ND	ND	ND	ND	ND	ND
npislc2.3'	2.3	02/04/94	13	ND	ND	ND	ND	ND	ND

Table 3

Soil Sample Laboratory Results
Texaco Service Station 63-232-0276
8701 Greenwood Avenue North
Seattle, Washington

Sample Number	Depth (feet)	Date Collected	Results of Analyses (ppm)						
			Ecology Method WTPH-G	Ecology Method WTPH-D (extended)		EPA Method 5030/8020			
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MTCA Method A Cleanup Levels[a]			100.0	200.0	200.0	0.5	40.0	20.0	20.0
Dispenser Island and Piping Excavation Samples (cont.)									
spisl-2.3'	2.3	02/04/94	ND	ND	ND	ND	ND	ND	ND
spislb-2.4'	2.4	02/04/94	ND	ND	ND	ND	ND	ND	ND
epislc-1.7'	1.7	02/04/94	ND	ND	ND	ND	ND	ND	ND
Gasoline Underground Storage Tank Excavation Samples									
swall-m-2	2.0	01/27/94	ND	ND	ND	ND	ND	ND	ND
swall-w-1.7	1.7	01/27/94	13	ND	ND	ND	ND	ND	0.4
swall-e-3.9	3.9	01/27/94	7	ND	ND	ND	ND	ND	ND
ewall-s-2.5	2.5	01/27/94	ND	ND	ND	ND	ND	ND	ND
ewall-m-3.4	3.4	01/27/94	ND	ND	ND	ND	ND	ND	ND
wwall-s-1.7	1.7	01/27/94	16	ND	ND	ND	ND	0.1	0.6
wwall-m-7	7.0	01/27/94	6	ND	ND	ND	ND	ND	0.4
ewall-n-3.5	3.5	01/27/94	ND	33	ND	ND	ND	ND	ND
nwall-n-4.25	4.2	01/27/94	ND	ND	ND	ND	ND	ND	ND
nwall-n-1.5	1.5	01/27/94	ND	ND	ND	ND	ND	ND	ND
nwall-mw-3.5	3.5	01/28/94	ND	ND	ND	ND	ND	ND	ND
nwall-me-3.2	3.2	01/28/93	ND	29	ND	ND	ND	ND	ND
nwall-e-4	4.0	01/28/94	ND	ND	140	ND	ND	ND	ND
Waste Oil Underground Storage Tank Excavation Samples									
wo-nw-2	2.0	01/28/94	ND	80	250*	ND	ND	ND	ND
wo-ew-3.8	3.8	01/28/94	157*	95	220*	ND	ND	0.2	0.2
wo-sw-3.6	3.6	01/28/94	30	468*	1,400*	ND	0.3	1.0	5.8
Waste Oil Underground Storage Tank Excavation Samples									

Table 3

Soil Sample Laboratory Results
Texaco Service Station 63-232-0276
8701 Greenwood Avenue North
Seattle, Washington

Sample Number	Depth (feet)	Date Collected	Results of Analyses (ppm)						
			Ecology Method WTPH-G	Ecology Method WTPH-D (extended)		EPA Method 5030/8020			
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MTCA Method A Cleanup Levels[a]			100.0	200.0	200.0	0.5	40.0	20.0	20.0
wonwb-3.9'	3.9	02/04/94	3,100*	1,990*	6,440*	1.7*	4.1	14	56*
woswb-3.4'	3.4	02/04/94	65	111	470*	ND	ND	0.2	1.2
woewb-3.4'	3.4	02/04/94	846*	1,230*	3,220*	0.30	ND	4.2	18.6
wowwb-2.7'	2.7	02/04/94	69	1,720*	6,760*	0.22	0.2	0.4	0.6
woswd-5.5'	5.5	02/17/94	ND	ND	ND	ND	ND	ND	ND
wowwd-5'	5.0	02/17/94	ND	ND	ND	ND	ND	ND	ND
wo2ew-5'	5.0	02/23/94	ND	ND	ND	ND	ND	ND	ND
wo2f-6.5'	6.5	02/23/94	ND	131	570	ND	ND	ND	ND
wo2ww-5'	5.0	02/23/94	—	3,840*	15,000*	—	—	—	—
wowwh-3'	3.0	02/28/94	540	514	1,620	ND	0.2	0.8	2.6
woswi-3.5'	3.5	03/01/94	ND	ND	ND	ND	ND	ND	ND
woswi-3'	3.0	03/01/94	ND	ND	ND	ND	ND	ND	ND
wowwi-5.5'	5.5	03/01/94	ND	ND	ND	ND	ND	ND	0.1
woewi-4'	4.0	03/01/94	ND	ND	ND	ND	ND	ND	ND
wowwk-3'	3.0	03/02/94	—	ND	ND	—	—	—	—
wonwm-5'	5.0	03/03/94	18	46	150	ND	ND	ND	ND
wonwn-5'	5.0	03/03/94	ND	ND	ND	ND	ND	ND	ND
woewm-6'	6.0	03/03/94	ND	148	340	ND	ND	ND	ND
wofm1-6'	6.0	03/03/94	ND	ND	210	0.5	ND	ND	ND

Table 3

Soil Sample Laboratory Results
Texaco Service Station 63-232-0276
8701 Greenwood Avenue North
Seattle, Washington

Sample Number	Depth (feet)	Date Collected	Results of Analyses (ppm)						
			Ecology Method WTPH-G	Ecology Method WTPH-D (extended)		EPA Method 5030/8020			
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MTCA Method A Cleanup Levels[a]			100.0	200.0	200.0	0.5	40.0	20.0	20.0
Waste Oil Underground Storage Tank Excavation Samples (cont.)									
wofm2-6'	6.0	03/03/94	33	180	420	0.73	7.5	ND	0.9
wofm3-7'	7.0	03/03/94	1,020	6,990	25,100	4.3	0.7	2.3	17.4
wofm4-7'	7.0	03/03/94	ND	258	890	ND	ND	ND	ND
drain1bs-4'	4.0	03/03/94	18	ND	900	ND	ND	ND	ND
drain1bn-4'	4.0	03/03/94	ND	207	460	ND	ND	ND	ND
drain2b-7'	7.0	03/03/94	54	ND	ND	0.5	ND	ND	6.5
drain3b-8'	8.0	03/03/94	ND	662	1,490	ND	ND	ND	ND
drain3w-7'	7.0	03/03/94	ND	ND	320	0.5	ND	ND	0.9
wowwo-3'	3.0	03/04/94	78	ND	ND	ND	ND	ND	0.2
woewo-5'	5.0	03/04/94	2,390	952	2,560	ND	0.3	2.0	11.4
Stockpile Samples									
ho-sp	NA	02/02/94	ND	98	220	ND	ND	ND	ND
wo-sp	NA	02/02/94	74	1,180	4,100	ND	ND	ND	0.3
hoist-sp	NA	02/02/94	2,290	322	780	0.07	1.6	3.4	15.7
ustsp-1	NA	02/02/94	27	ND	ND	ND	ND	ND	ND
ustsp-2	NA	02/02/94	ND	ND	ND	ND	ND	ND	ND
ustsp-3	NA	02/02/94	ND	ND	ND	ND	ND	ND	ND
coldsp-2	NA	03/04/94	6	42	230	ND	ND	ND	ND
coldsp-3	NA	03/04/94	685	220	1,100	ND	0.1	0.3	2.5
hotsp-1	NA	03/04/94	732	3,520	9,480	ND	0.4	0.8	7.3
Stockpile Samples (cont.)									

Table 3

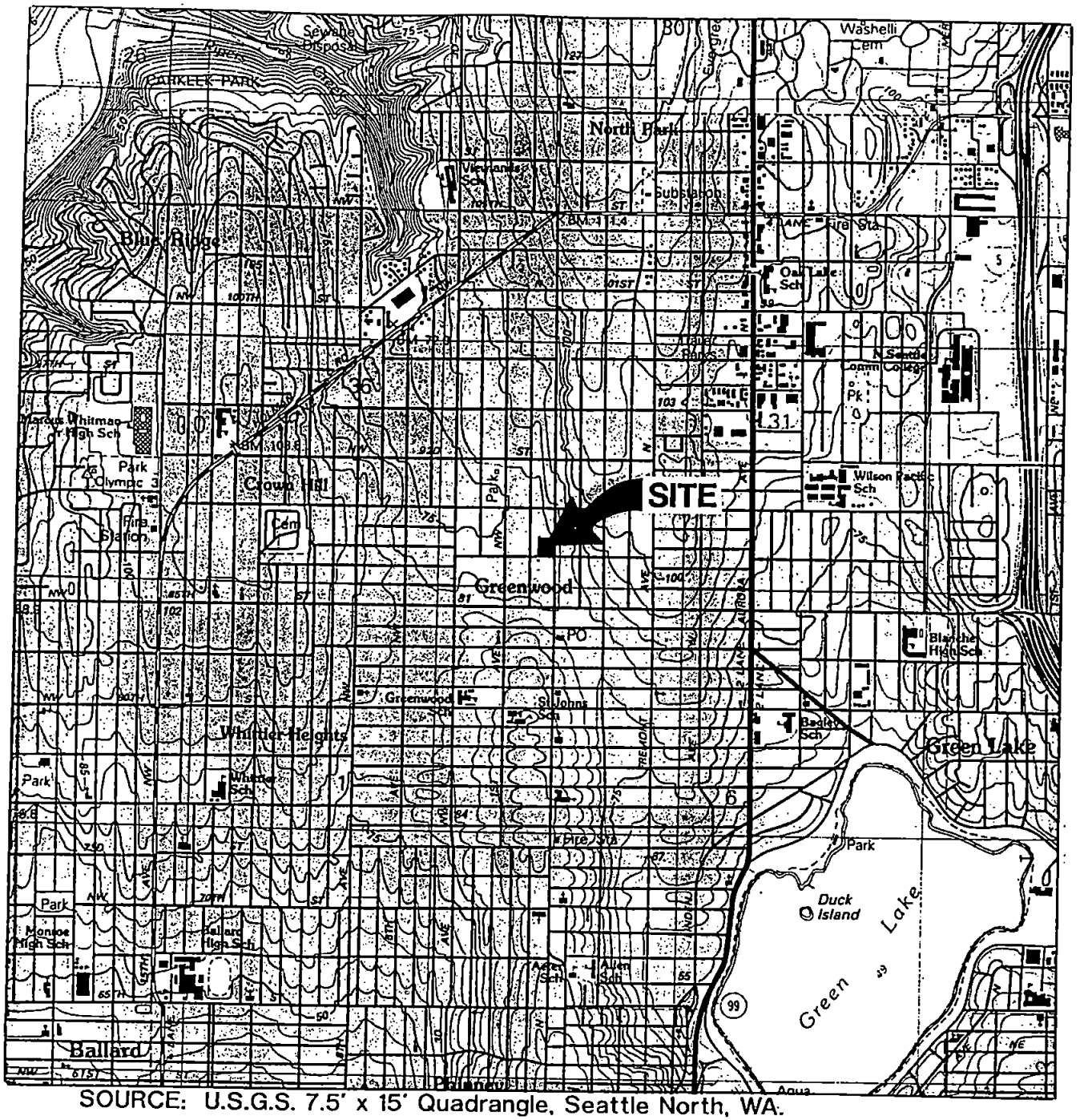
Soil Sample Laboratory Results
Texaco Service Station 63-232-0276
8701 Greenwood Avenue North
Seattle, Washington

Sample Number	Depth (feet)	Date Collected	Results of Analyses (ppm)						
			Ecology Method WTPH-G	Ecology Method WTPH-D (extended)		EPA Method 5030/8020			
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MTCA Method A Cleanup Levels[a]			100.0	200.0	200.0	0.5	40.0	20.0	20.0
hotsp-4	NA	03/04/94	507	4,030	6,770	ND	0.2	0.3	3.2
hotsp-5	NA	03/04/94	917	1,000	2,910	ND	0.7	2.2	4.7
spABC	NA	03/08/94	9	104	200	ND	ND	ND	ND
spD	NA	03/08/94	ND	35	ND	ND	ND	ND	ND
Monitoring Well AGW-6 - Soil Boring Samples									
6-5.5'	5.5	03/11/94	ND	413	2,730	0.1	0.3	ND	0.2
6-13'	13.0	03/11/94	ND	ND	140	ND	ND	ND	ND
Monitoring Well AGW-7 - Soil Boring Samples									
7-7'	7.0	03/11/94	5	412	1,870	ND	ND	ND	0.1
7-14.5'	14.5	03/11/94	ND	ND	ND	ND	ND	ND	0.1

NOTE:
TPH-G = Total petroleum hydrocarbons as gasoline.
TPH-D = Total petroleum hydrocarbons as diesel.
TPH-O = Total petroleum hydrocarbons as oil.
ppm = Parts per million.
NA = Not applicable.
ND = Not detected at or above method reporting limit.
— = Not analyzed.
* = Soil represented by sample subsequently excavated.
** = Results due to the beginning of oil, which elutes in the diesel range.
Shaded values exceed MTCA Method A Cleanup Levels.

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

142322



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

WASHINGTON

N

0 2000 4000

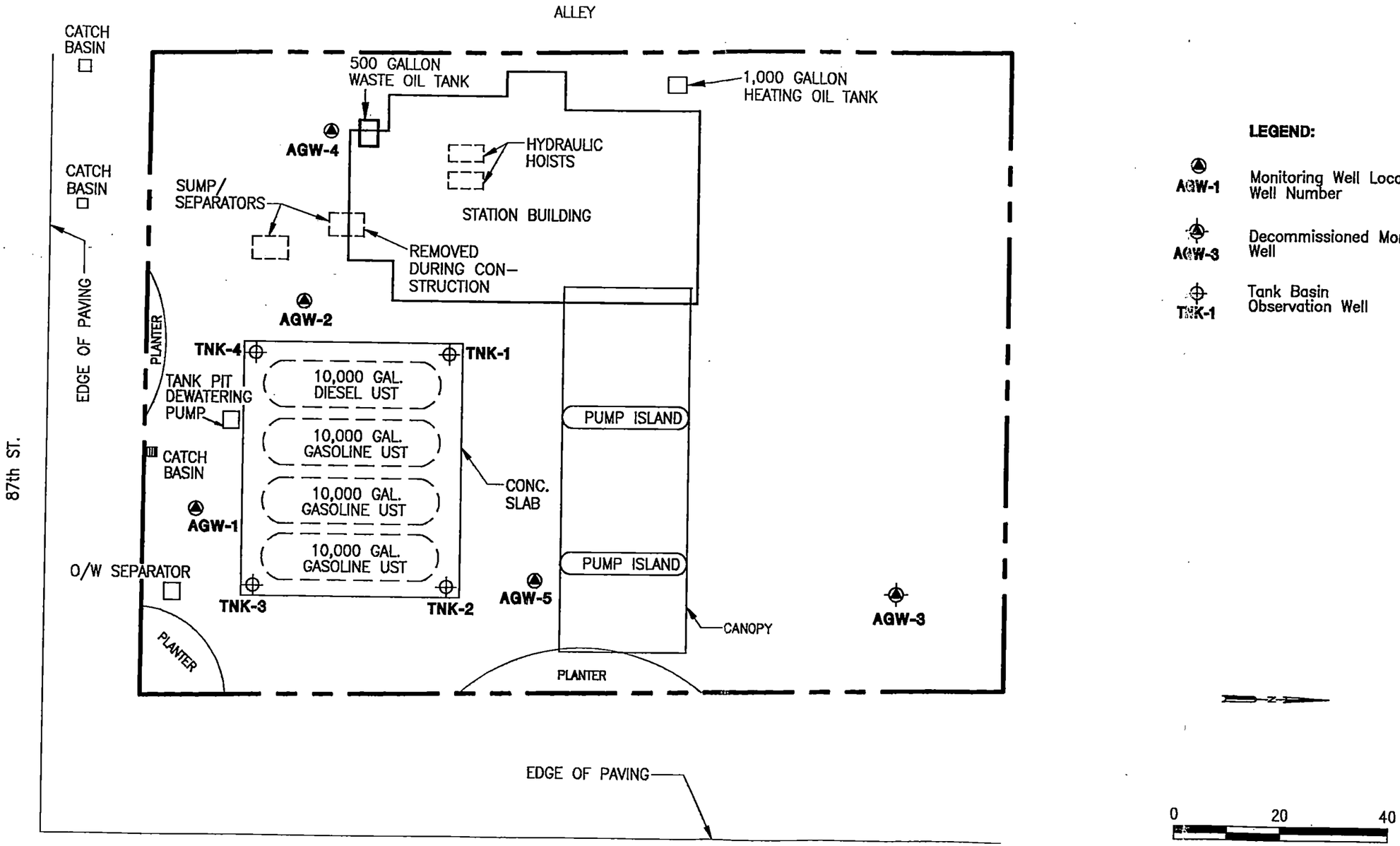
SCALE (ft)

emcon Northwest, Inc.

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

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

SITE LOCATION MAP



LEGEND:

- AGW-1 — Monitoring Well Location and Well Number
- AGW-3 — Decommissioned Monitoring Well
- TNK-1 — Tank Basin Observation Well

0 20 40

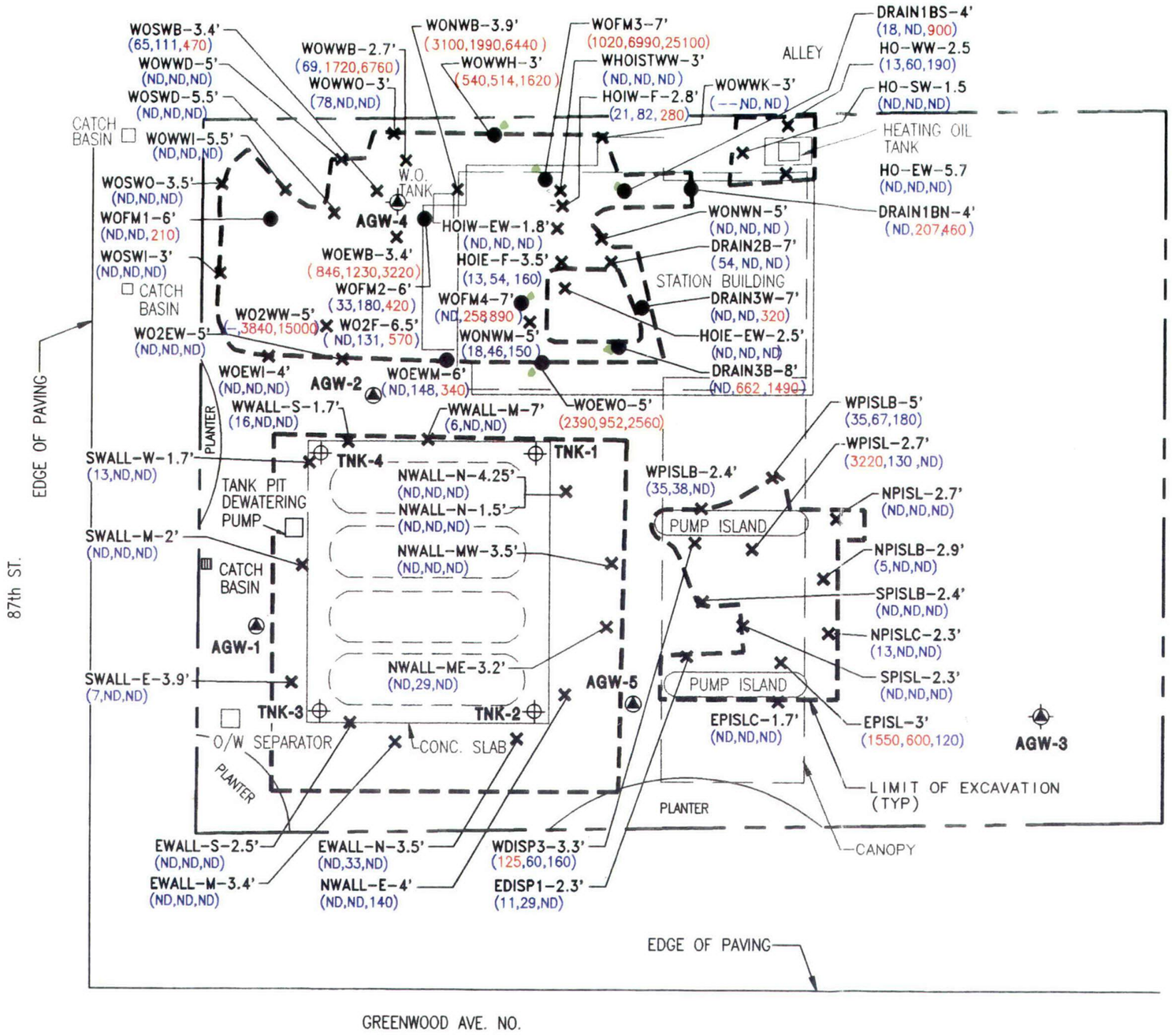
SCALE (ft)

EMCON Northwest, Inc.

DATE	7-94
DWN.	MLP
REV.	
APPR.	
PROJECT NO.	0368-013.10

Figure 2
8701 GREENWOOD AVENUE NORTH
SEATTLE, WASHINGTON
SITE MAP-PRIOR TO TANK REMOVAL

I=20 09-09-94 G:\DWG\0368\013\109LC01



LEGEND:

- **AGW-1** — Monitoring Well Location and Well Number
- **AGW-3** — Decommissioned Monitoring Well
- **TNK-1** — Tank Basin Observation Well
- Upper Limit of Excavation
- ● Soil Sample Location – Remaining Following Excavation
- × Soil Sample Location – Removed During Excavation
- **NWALL-E-4** — Soil Sample Name (Numbers Signifies Depth Below Grade in Feet)
- (ND,ND,ND) — TPH-O Concentration; TPH-D Concentration; TPH-G Concentration
- (ND,200,ND) — Numbers in Red Exceed MTCA Method A Cleanup Levels
- -- Not Analyzed

N

0 20 40

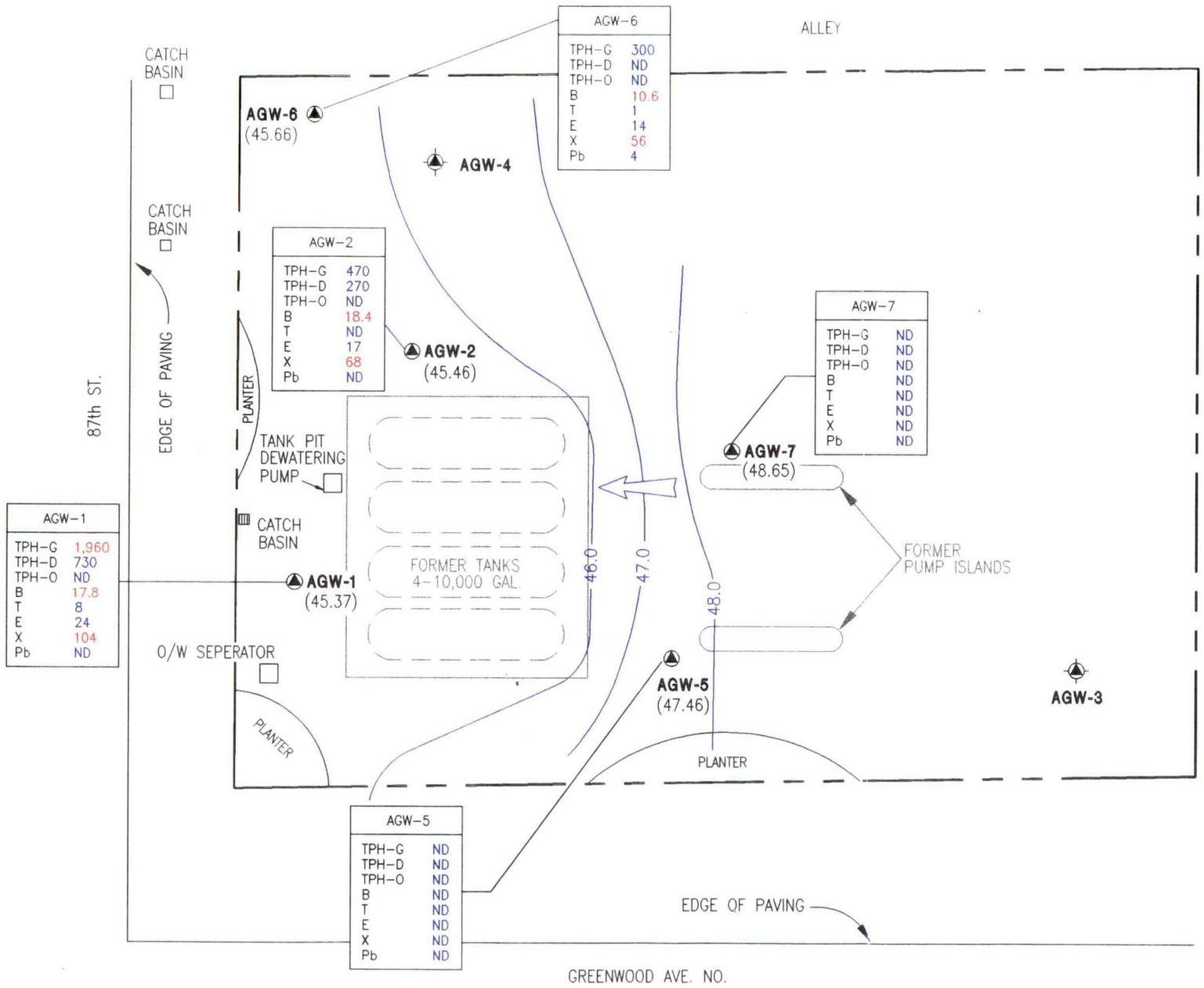
SCALE (ft)

EMCON Northwest, Inc.

DATE	9-94
DWN.	MLP
REV.	
APPR.	
PROJECT NO.	0368-013.10

Figure 3
8701 GREENWOOD AVENUE NORTH
SEATTLE, WASHINGTON
SOIL SAMPLE LOCATIONS AND LABORATORY RESULTS

1=20 09-12-94 G:\DWG\0368\013\10BLC02



AGW-6	
TPH-G	300
TPH-D	ND
TPH-O	ND
B	10.6
T	1
E	14
X	56
Pb	4

AGW-2	
TPH-G	470
TPH-D	270
TPH-O	ND
B	18.4
T	ND
E	17
X	68
Pb	ND

AGW-7	
TPH-G	ND
TPH-D	ND
TPH-O	ND
B	ND
T	ND
E	ND
X	ND
Pb	ND

AGW-1	
TPH-G	1,960
TPH-D	730
TPH-O	ND
B	17.8
T	8
E	24
X	104
Pb	ND

AGW-5	
TPH-G	ND
TPH-D	ND
TPH-O	ND
B	ND
T	ND
E	ND
X	ND
Pb	ND

LEGEND:

AGW-1 Monitoring Well Location and Well Number

AGW-3 Decommissioned Monitoring Well

AGW-1	
TPH-G	1,960
TPH-D	730
TPH-O	ND
B	17.8
T	8
E	24
X	104
Pb	ND

Laboratory Results in Parts per Billion

TPH-G = Total Petroleum Hydrocarbon – Gasoline
TPH-D = Total Petroleum Hydrocarbon – Diesel
TPH-O = Total Petroleum Hydrocarbon – Oil
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
Pb = Total Lead
ND = Not Detected at or Above Method Reporting Limits

(48.65) Relative Groundwater Elevation

48.0 Groundwater Elevation Contour

Inferred Groundwater Flow Direction

N

0 20 40

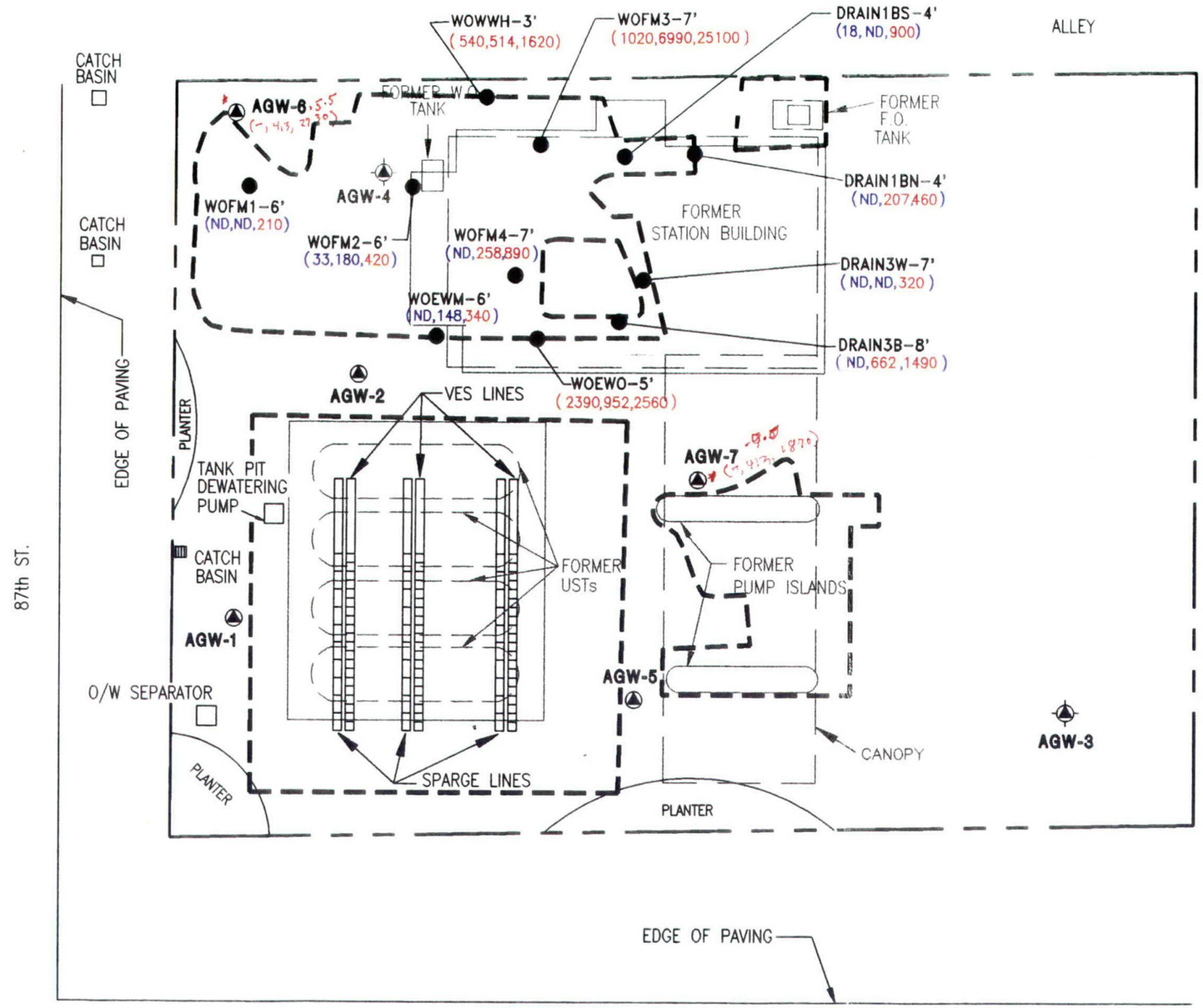
SCALE (ft)

Emcon Northwest, Inc.

DATE 7-94
DWN.
REV.
APPR.
PROJECT NO.
0368-013.10

Figure 4
8701 GREENWOOD AVENUE NORTH
SEATTLE, WASHINGTON
GROUNDWATER DATA
MARCH 17, 1994

I=20 07-29-94 G:\DWG\0368\013\10BLC03



LEGEND:

- AGW-1 — Monitoring Well Location and Well Number
- AGW-3 — Decommissioned Monitoring Well
- Backfilled Excavation
- Soil Sample Location – Remaining Following Excavation
- WOWWH-3' — Soil Sample Name (Numbers Signifies Depth Below Grade in Feet)
- (ND, 662, 1490) — TPH-O Concentration; TPH-D Concentration; TPH-G Concentration
- (ND, ND, 320) — Numbers in Red Exceed MTCA Method A Cleanup Levels
- Blank
- Screened

Sparge Lines set approximately 10' BGS

VES Lines set approximately 3' BGS

EMCON Northwest, Inc.

DATE	7-94
DWN.	MLP
REV.	
APPR.	
PROJECT NO.	0368-013.10

Figure 5
8701 GREENWOOD AVENUE NORTH
SEATTLE, WASHINGTON
AREA OF REMAINING HYDROCARBON-IMPACTED SOIL

I=20 09-12-94 G:\DWG\0368\013\10BLC04

APPENDIX A

FIELD METHODS AND SAMPLING PROCEDURES, METRO DISCHARGE AUTHORIZATION, AND BORING LOGS AND WELL CONSTRUCTION DIAGRAMS

FIELD METHODS AND SAMPLING PROCEDURES

This appendix documents the procedures EMCON Northwest, Inc., used to perform the underground storage tank decommissioning described in this report. The discussion includes information on the following subjects:

- Soil sampling procedures
- Sample jars, sample handling, and chain-of-custody
- Field screening tests
- Field equipment decontamination procedures

Soil Sampling Procedures

Excavations

Soil samples collected during the field investigation were obtained from the backhoe bucket or directly from the excavation by using a stainless steel spoon. Samples taken from the backhoe bucket were collected from the least disturbed and most representative soils. Typically, these soils accumulate directly behind the backhoe bucket teeth. Samples taken directly from an excavation or test pit were collected from undisturbed soils near the base of a sidewall or the base of the excavation. Before collecting a soil sample from an excavation, approximately 6 inches of soil were scraped away to expose undisturbed soil for collection.

Sample Jars, Sample Handling, and Chain of Custody

Each soil sample was submitted in a separate laboratory-prepared glass container. Sample jars obtained specifically for use on this project consisted of glass jars with teflon lid inserts. Samples were collected, labeled, and placed immediately into a chilled cooler for transport to CAS for analyses. Chain-of-custody records were maintained recording sample number, location, depth, and handling procedures.

Soil Sample Field Screening

Soil samples were screened at the time of collection for the presence of organic vapors with a portable PID. A Thermo Instruments Model 580B, calibrated to 100 ppm isobutylene, was used to obtain the measurements.

Field Equipment Decontamination Procedures

All sampling equipment were decontaminated after each use with a detergent wash, followed by a double distilled water rinse.

SUBSURFACE EXPLORATION METHODS AND PROCEDURES

This appendix documents the procedures EMCON Northwest, Inc., used to perform the field investigation described in this report. The discussion includes information on the following subjects:

- Drilling methods and soil sampling techniques
- Monitoring well installation, development, and sampling
- Field screening tests
- Monitoring well elevation survey

Boring logs and monitoring well as-builts drawings are included at the end of this appendix.

Boring and Soil Sampling Procedures

Soil Borings

The subsurface exploration program conducted for this site consisted of advancing and sampling two soil borings (AGW-6 and AGW-7) and converting the borings to monitoring wells. Lithologic logs, including monitoring wells as-built construction data, are contained in this appendix. The approximate locations of the monitoring wells are shown on Figure 4 of this report.

Cascade Drilling, Inc., drilled boring AGW-6 and AGW-7 by using a CME 75 truck-mounted drill rig advancing a 6-inch inside-diameter (I.D.), 9-inch outside-diameter (O.D.), hollow stem auger. The borings were observed and logged by an EMCON geologist using *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), American Society for Testing and Materials (ASTM D2488).*

Drill cuttings (approximately 8 cubic yards) were underlain and covered with polyvinyl sheeting. Water accumulated during equipment decontamination was placed in labeled and secured 55-gallon drums.

Soil Sampling

Soil samples were collected continuously until the borings advanced five feet below the bottom of the local peat layer. Samples were obtained by driving a 2-inch outside diameter (O.D.) split spoon sampler 18 inches into the undisturbed soil beneath the auger bit. The driving force was supplied by a 140-pound hammer falling about 2.5 to 3 feet per stroke. The number of blows required to drive the sampler was recorded at 6-inch intervals. The number of blows required to drive the sampler the final 12 inches was considered the standard penetration resistance (N-value) or blow count. This N-value provided a measure of relative density of granular soils or the relative consistency of cohesive soils (ASTM D1586).

Following each sample drive, the sampler was retrieved, and the soil samples were described by an EMCON geologist in general accordance with the Unified Soil Classification System (Figure A-1). All sampling equipment was decontaminated between sampling drives by using a non-phosphatic soap wash and a deionized water rinse.

Soil samples recovered from boring AGW-6 and AGW-7 were transferred into labeled, laboratory-prepared glass jars.

Collected samples were placed immediately into an iced cooler for storage and subsequent transport to the laboratory. From each boring, two samples from the peat deposits were submitted for analysis. Samples were transported to CAS using standard chain-of-custody procedures.

Soil Screening

Soil samples were field screened for the presence of volatile organic compounds with a portable photoionization detector (PID) at the time of collection. This measurement is affected by, among other influences, climate (e.g., temperature and humidity), soil type and conditions, instrument calibration, and operation. The intent of this field screening technique was to qualitatively compare samples and to assist in sample selection for chemical analyses. An OVM Model 580B PID, calibrated daily to 100 ppm isobutylene, was used to obtain the measurements. PID readings are shown on the attached boring logs.

Monitoring Well Installation

Each boring was completed as a groundwater monitoring well. The wells were constructed using nominal 4-inch-diameter, flush-join threaded, schedule 40 PVC riser pipe and 10 to 20 feet of 0.010-inch, factory-slotted, schedule 40 PVC well screen.

AGW-6 and AGW-7 were completed with a 10-foot well screen. Screens were set 1.5 feet below the bottom of the local peat layer.

Annular space in the wells was backfilled 1.5 feet above the screened interval by using a filter pack of CSSI 10-20 silica sand. Hydrated bentonite chips were placed to approximately 1.0 foot above the sand pack. Volclay grout was used to backfill the remainder of the annular space. Each well head was fitted with a 4-inch-diameter locking well cap. A flush-mounted, traffic-rated protective steel monument with a gasket seal was secured in place at the ground level with concrete. Figure A-2 presents the generalized monitoring well construction details.

Monitoring Well Development

EMCON personnel developed the monitoring wells following installation to remove accumulated sediment and to improve the flow of formation water into the well screen. A stainless steel, 1 gallon bailer was raised and lowered to "surge" and develop the well until water in the well cleared. Each well was surged for approximately 10 minutes before water was extracted. Approximately 40 gallons of water each were removed from AGW-6 and AGW-7 during development. Development water was placed into labeled and secured 55-gallon drums and temporarily stored on site.

Groundwater Sampling

Groundwater samples were collected from AGW-1, AGW-2, AGW-5, AGW-6, and AGW-7. Before sample collection, at least three well casing volumes of water were removed from each sampled well by using a disposable bailer. (In the case of monitoring well AGW-5, 2.5 casing volumes of water were removed due to poor groundwater recovery.) Conductivity, pH, and temperature parameters were measured after each well casing volume purged, and, in the case of monitoring well AGW-5, after two and one half well casing volumes were purged.

Samples were collected when parameter readings stabilized within 10 percent of the previous reading. Samples AGW-1, AGW-2, AGW-5, AGW-6, and AGW-7 were collected from monitoring wells AGW-1, AGW-2, AGW-5, AGW-6, and AGW-7, respectively, and were placed in labeled 40-milliliter glass vials, one liter amber glass bottles, and one pint poly containers. All samples were placed in an iced cooler and transported to CAS for analyses.

Approximately 175 gallons of purge water were accumulated during sampling activities. The purge water was contained in labeled and secured 55-gallon drums and temporarily stored on site. Field sampling sheets were provided in Appendix B.

Monitoring Well Survey

EMCON personnel surveyed monitoring wells AGW-1, AGW-2, AGW-5, AGW-6, and AGW-7 on March 16, 1994. The tops of casing elevations were surveyed to the nearest 0.01 foot. The elevations were based on an arbitrary site datum assigned an elevation of 50 feet. The well elevations were used to determine relative groundwater elevations and, consequently, the inferred hydraulic gradient beneath the site at the time the measurements were obtained. Survey data are included in Table 1 of this report.

Depth-to-Groundwater Measurements

Depth-to-groundwater measurements were obtained using a Solinst electronic water level indicator. Measurements were obtained by lowering the device into the well until it indicated that the water surface was encountered, then measuring the distance from the top of the inside riser pipe to the probe. All measurements were recorded to the nearest 0.01 foot.

METRO

Municipality of Metropolitan Seattle
Industrial Waste • 130 Nickerson St., Suite 200 • Seattle, WA 98109-1658 • (206) 689-3000

January 20, 1994

Mr. Tom Bodle, Project Geologist
EMCON Northwest, Inc.
18912 North Creek Parkway
Bothell, Washington 98011

One-Time Discharge (scheduled for 01-24-94) - Texaco Facility #63-232-0027

Dear Mr. Bodle:

Thank you for submitting the requested analytical results of the groundwater associated with the one-time discharge that will occur at the Texaco Station, located at 8701 Greenwood Avenue North, Seattle, Washington. The following discharge limitations and criteria shall apply to the discharge:

Discharge Limitations

Constituent	Maximum Concentration, ppm
Lead (Pb)	4.0
Benzene	0.13
Toluene	1.5
Ethylbenzene	1.4
Nonpolar Fats, Oil & Grease (nonpolar FOG)	100

Operating Criteria

a) There shall be no pronounced odor of solvent or gasoline.
b) There shall be no pronounced oil sheen or unusual color.
c) There shall be no pronounced hydrogen sulfide (rotten egg) odor.
d) There shall be no pronounced turbidity, the discharge must remain translucent.

Metro will expect operators on site to pay close attention to these operating criteria whenever discharge to the sanitary sewer is occurring. If any of the discharge limits or operating criteria are exceeded, you must stop discharging and notify the Metro Industrial Waste Section at 689-3000.

Metro Industrial Waste staff want to help you stay in compliance with our regulations. If at any time you have questions about this letter, please do not hesitate to call me at 689-3012.

Sincerely,

Arnaud J. Girard
Industrial Waste Investigator
Environmental Programs

GIRARD\LT_BTBX

BORING LOGS GENERAL REMARKS

1. SB = 2-inch, outside-diameter, split-barrel sampler driven with a 140-pound hammer falling 2.5-3 feet.

2. PID = Photoionization detector, calibrated to 100 ppm using 100 ppm isobutylene gas.

3. * = Sample submitted for analyses.

4. ATD = At time of drilling.

5. Soils were logged per ASTM D2488.

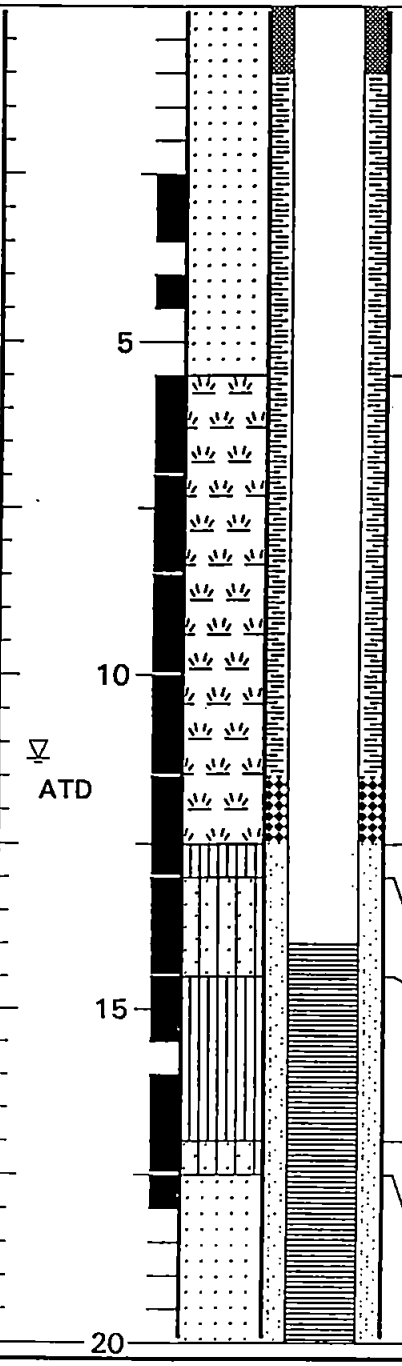
6. Potable water from driller's service truck was used to hydrate bentonite chips.

7. Water level elevations were based on results of a vertical control survey performed by EMCON on March 17, 1994.

LOG OF EXPLORATORY BORING

PROJECT NAME	Texaco Greenwood	BORING NO.	AGW- 6
LOCATION	8701 Greenwood Avenue North, Seattle, Washington	PAGE	1 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	NM
DRILL METHOD	Hollow Stem Auger (6 1/4" ID)	TOTAL DEPTH	25.50'
LOGGED BY	Tom Bodle	DATE COMPLETED	03/11/94

SAMPLE NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	LITHOLOGIC DESCRIPTION
	8	19-30-15	0 to 5.5 feet: GRAVELLY SAND (SP), grading brown to gray, fine to medium, little gravel, trace silt, dense, moist. (FILL)
	4	15-20-10	
6-5.5'	.9	2-3-3	5.5 to 12.5 feet: PEAT (PT), dark brown, loose, moist.
	.2	3-3-5	
	1.5	2-5-6	
	.4	4-4-5	
	.4	1-6-7	ATD
6-13'	.6	12-12-22	12.5 to 13.0 feet: SANDY SILT (ML), gray, few fine sand, medium dense, moist.
	.4	7-9-12	13.0 to 14.5 feet: SAND WITH SILT (SP-SM), gray, fine, few silt, medium dense, wet.
	.6	15-20-24	14.5 to 17.0 feet: SILT WITH SAND (ML), gray, few fine sand, medium dense, wet.
	0	60/6"	17.0 to 17.5 feet: SAND WITH SILT (SP-SM), gray, medium, few silt, dense, wet.
			17.5 to 25.5 feet: GRAVELLY SAND (SP), gray, medium, some gravel, trace silt, very dense, wet.



REMARKS

(1) PID = Photoionization detector readings in parts per million. (2) ATD = approximate depth to groundwater at the time of drilling. (3) Samples collected with a 2-inch-O.D. split barrel sampler with a 140-pound hammer. (4) NM = Not measured.

LOG OF EXPLORATORY BORING

PROJECT NAME	Texaco Greenwood	BORING NO.	AGW- 6
LOCATION	8701 Greenwood Avenue North, Seattle, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	NM
DRILL METHOD	Hollow Stem Auger (6 1/4" ID)	TOTAL DEPTH	25.50'
LOGGED BY	Tom Bodle	DATE COMPLETED	03/11/94

SAMPLE NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
				25				17.5 to 25.5 feet: GRAVELLY SAND (SP), continued.
				30				Total depth drilled = 25.5 feet. Total depth sampled = 17.5 feet. **WELL COMPLETION DETAILS:** 0 to 14.0 feet: 4-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe. 14.0 to 24.0 feet: 4-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.010-inch machined slots and a 4-inch-diameter endcap attached with stainless steel screws. 0 to 1.0 foot: Concrete. 1.0 to 11.5 feet: Volclay grout. 11.5 to 12.5 feet: Bentonite chips. 12.5 to 25.5 feet: 10 - 20 Colorado Silica Sand.
				35				
				40				

REMARKS

(1) PID = Photoionization detector readings in parts per million. (2) ATD = approximate depth to groundwater at the time of drilling. (3) Samples collected with a 2-inch-O.D. split barrel sampler with a 140-pound hammer. (4) NM = Not measured.

LOG OF EXPLORATORY BORING

PROJECT NAME	Texaco Greenwood	BORING NO.	AGW- 7
LOCATION	8701 Greenwood Avenue North, Seattle, Washington	PAGE	1 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	NM
DRILL METHOD	Hollow Stem Auger (6 1/4" ID)	TOTAL DEPTH	27.00'
LOGGED BY	Tom Bodle	DATE COMPLETED	03/11/94

SAMPLE NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	LITHOLOGIC DESCRIPTION
	31	2-3-3	0 to 7.0 feet: GRAVELLY SAND (SP), brown, fine to medium, some gravel, trace silt, loose to medium dense, wet.
	7	1-3-10	
	1.3	6-6-8	
7-7'	2.3	1-2-3	7.0 to 11.25 feet: PEAT (PT), dark brown, loose, moist.
	2	1-1-2	
	.7	1-2-8	
	0	3-6-7	11.25 to 11.5 feet: SANDY SILT (ML), gray, some fine sand, loose, moist.
	0	15-20-24	11.5 to 14.5 feet: PEAT (PT), dark brown, medium dense to dense, moist.
			@ 13.0 feet: wet.
7-14.5'	0	5-6-7	14.5 to 16.0 feet: SANDY SILT (ML), gray, fine to medium sand, trace gravel, medium dense, wet.
	0	9-10-13	16.0 to 20.5 feet: SAND (SP), gray, fine, medium dense, wet.

GROUND WATER LEVELS: ATD

DEPTH IN FEET: 5, 10, 15, 20

SAMPLES

LITHOLOGIC COLUMN

WELL DETAILS

REMARKS

(1) PID = Photoionization detector readings in parts per million. (2) ATD = approximate depth to groundwater at the time of drilling. (3) Samples collected with a 2-inch-O.D. split barrel sampler with a 140-pound hammer. (4) NM = Not measured.

LOG OF EXPLORATORY BORING

PROJECT NAME	Texaco Greenwood	BORING NO.	AGW- 7
LOCATION	8701 Greenwood Avenue North, Seattle, Washington	PAGE	2 OF 2
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	NM
DRILL METHOD	Hollow Stem Auger (6 1/4" ID)	TOTAL DEPTH	27.00'
LOGGED BY	Tom Bodle	DATE COMPLETED	03/11/94

SAMPLE NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
		19-50/4"		25				**16.0 to 20.5 feet: SAND (SP), continued.** **20.5 to 26.5 feet: SAND WITH SILT (SP-SM),** gray, medium to fine, little gravel, few fines, very dense, wet.
		50/6"		30				**26.5 to 27.0 feet: GRAVELLY SAND (SP),** gray, medium to fine, some gravel, trace fines, very dense, wet. Total depth drilled = 27.0 feet. Total depth sampled = 27.0 feet.
				35				**WELL COMPLETION DETAILS:** 0 to 16.0 feet: 4-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe. 16.0 to 26.0 feet: 4-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.010-inch machined slots and a 4-inch-diameter end cap attached with stainless steel screws. 0 to 1.0 foot: Concrete. 1.0 to 13.5 feet: Volclay grout. 13.5 to 14.5 feet: Bentonite chips. 14.5 to 27.0 feet: 10 - 20 Colorado Silica Sand.
				40				

REMARKS

(1) PID = Photoionization detector readings in parts per million. (2) ATD = approximate depth to groundwater at the time of drilling. (3) Samples collected with a 2-inch-O.D. split barrel sampler with a 140-pound hammer. (4) NM = Not measured.

APPENDIX B

LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS

(Chronological)

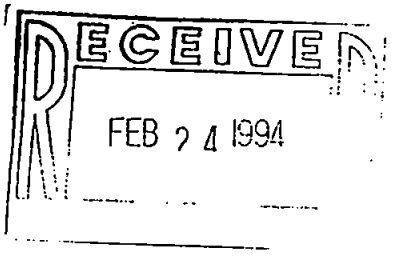
NORTH CREEK ANALYTICAL

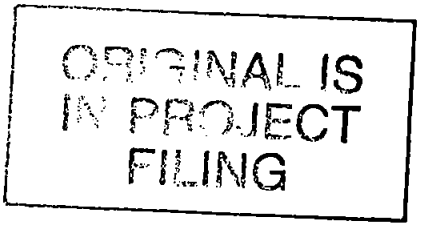
18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4779 (509) 924-9200 • FAX 924-9290
15055 S.W. Sequoia Parkway, Suite 110 • Portland, OR 97224-7155 (503) 624-9800 • FAX 684-3782

EMCON Northwest	Client Project ID:	Texaco Greenwood, #0368-013.02	Sampled:	Feb 14, 1994
18912 N. Creek Parkway, #100	Sample Descript:	GREEN 2-14	Received:	Feb 14, 1994
Bothell, WA 98011	Analysis Method:	EPA 1311/6010/7000	TCLP Ext:	Feb 14, 1994
Attention: John Meyer	Sample Number:	402-0532	Analyzed:	Feb 15, 1994
			Reported:	Feb 15, 1994

TCLP Extraction Metals

Analyte	Regulatory Level mg/L (ppm)	Reporting Limit mg/L (ppm)	Sample Results mg/L (ppm)
Arsenic	5.0	0.20	N.D.
Barium	100	1.0	N.D.
Cadmium	1.0	0.0050	N.D.
Chromium	5.0	0.020	N.D.
Lead	5.0	0.10	N.D.
Mercury	0.20	0.00050	N.D.
Selenium	1.0	0.15	N.D.
Silver	5.0	0.020	N.D.





Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110 • Portland, OR 97224-7155 (503) 624-9800 • FAX 684-3782

EMCON Northwest
18912 N. Creek Parkway, #100
Bothell, WA 98011
Attention: John Meyer

Client Project ID: Texaco Greenwood, #0368-013.02
Sample Descript: Method Blank
Analysis Method: EPA 1311/6010/7000
Sample Number: BLK021494

TCLP Ext: Feb 14, 1994
Analyzed: Feb 15, 1994
Reported: Feb 15, 1994

TCLP Extraction Metals

Analyte	Regulatory Level mg/L (ppm)	Reporting Limit mg/L (ppm)	Sample Results mg/L (ppm)
Arsenic	5.0	0.20	N.D.
Barium	100	1.0	N.D.
Cadmium	1.0	0.0050	N.D.
Chromium	5.0	0.020	N.D.
Lead	5.0	0.10	N.D.
Mercury	0.20	0.00050	N.D.
Selenium	1.0	0.15	N.D.
Silver	5.0	0.020	N.D.

Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

NORTH CREEK ANALYTICAL

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15055 S.W. Sequoia Parkway, Suite 110 • Portland, OR 97224-7155 (503) 624-9800 • FAX 684-3782

EMCON Northwest
18912 N. Creek Parkway, #100
Bothell, WA 98011
Attention: John Meyer

Client Project ID: Texaco Greenwood, #0368-013.02
Sample Matrix : TCLP Extract
Units: mg/L (ppm)

Analyst: T. Fitzgibbon, B. Oaks
TCLP Ext.: Feb 14, 1994
Reported: Feb 15, 1994

METALS QUALITY CONTROL DATA REPORT

ANALYTE	As	Ba	Cd	Cr	Pb	Hg	Se
EPA Method:	1311/6010	1311/6010	1311/6010	1311/6010	1311/6010	1311/7470	1311/6010
Date Analyzed:	Feb 15, 1994	Feb 15, 1994	Feb 15, 1994	Feb 15, 1994	Feb 15, 1994	Feb 15, 1994	Feb 15, 1994
ACCURACY ASSESSMENT							
LCS Spike Conc. Added:	1.0	5.0	1.0	1.0	1.0	0.0050	1.0
LCS Spike Result:	0.95	4.7	0.89	0.91	0.89	0.0046	0.92
LCS Spike % Recovery:	95	94	89	91	89	92	92
Upper Control Limit:	126	126	131	119	117	145	126
Lower Control Limit:	56	59	56	52	55	66	55
Matrix Spike Sample #:	402-0532	402-0532	402-0532	402-0532	402-0532	402-0163	402-0532
Matrix Spike % Recovery:	85	102	89	89	90	90	88
PRECISION ASSESSMENT							
Sample #:	402-0532	402-0532	402-0532	402-0532	402-0532	402-0163	402-0532
Original:	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Duplicate:	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Relative % Difference:	Relative Percent Difference values are not reported at sample concentration levels less than 10 times the Reporting Limit.						

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

Lab Control Sample % Recovery: $\frac{\text{Conc. of L.C.S.}}{\text{L.C.S. Spike Conc. Added}} \times 100$

Relative % Difference: $\frac{\text{Original Result - Duplicate Result}}{(\text{Original Result + Duplicate Result}) / 2} \times 100$

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B • Spokane, WA 99206-4779 (509) 924-9200 • FAX 924-9290
15055 S.W. Sequoia Parkway, Suite 110 • Portland, OR 97224-7155 (503) 624-9800 • FAX 684-3782

EMCON Northwest
18912 N. Creek Parkway, #100
Bothell, WA 98011
Attention: John Meyer

Client Project ID: Texaco Greenwood, #0368-013.02
Sample Matrix : TCLP Extract
Units: mg/L (ppm)

Analyst: T. Fitzgibbon
B. Oaks

TCLP Ext.: Feb 14, 1994
Reported: Feb 15, 1994

METALS QUALITY CONTROL DATA REPORT

ANALYTE
Ag

EPA Method: 1311/7760
Date Analyzed: Feb 15, 1994

ACCURACY ASSESSMENT

LCS Spike Conc. Added:	1.0
LCS Spike Result:	0.95
LCS Spike % Recovery:	95
Upper Control Limit:	116
Lower Control Limit:	77
Matrix Spike Sample #:	402-0532
Matrix Spike % Recovery:	94

PRECISION ASSESSMENT

Sample #:	402-0532
Original:	N.D.
Duplicate:	N.D.
Relative % Difference:	RPD values are not reported at sample concentration levels <10 X the Reporting Limit.

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

Lab Control Sample % Recovery: $\frac{\text{Conc. of L.C.S.}}{\text{L.C.S. Spike Conc. Added}} \times 100$

Relative % Difference: $\frac{\text{Original Result - Duplicate Result}}{(\text{Original Result + Duplicate Result}) / 2} \times 100$

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4779 (509) 924-9200 • FAX 924-9290
15055 S.W. Sequoia Parkway, Suite 110 • Portland, OR 97224-7155 (503) 624-9800 • FAX 684-3782

EMCON Northwest	Client Project ID:	Texaco Greenwood, #0368-013.02	Sampled:	Feb 14, 1994
18912 N. Creek Parkway, #100	Sample Matrix:	Water	Received:	Feb 14, 1994
Bothell, WA 98011	Analysis Method:	EPA 9020	Analyzed:	Feb 15, 1994
Attention: John Meyer	First Sample #:	402-0532	Reported:	Feb 15, 1994

LABORATORY ANALYSIS FOR: TOTAL ORGANIC HALIDES

Sample Number	Sample Description	Reporting Limit mg/L (ppm)	Sample Result mg/L (ppm)
402-0532	GREEN 2-14	0.010	0.027

Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

NORTH CREEK ANALYTICAL

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EMCON Northwest
18912 N. Creek Parkway, #100
Bothell, WA 98011
Attention: John Meyer

Client Project ID: Texaco Greenwood, #0368-013.02
Sample Matrix : Water
Units: mg/L (ppm)

Analyst: J. Wright

Reported: Feb 15, 1994

INORGANIC QUALITY CONTROL DATA REPORT

ANALYTE	Total Organic Halides

EPA Method: 9020
Date Analyzed: Feb 15, 1994

ACCURACY ASSESSMENT

LCS Spike Conc. Added: 0.10

LCS Spike Result: 0.092

LCS Spike % Recovery: 92

Upper Control Limit: 109

Lower Control Limit: 77

PRECISION ASSESSMENT

Sample #: 402-0532

Original: 0.027

Duplicate: 0.028

Relative % Difference: RPD values are not reported at sample concentration levels <5 X the Reporting Limit.

Maximum RPD: 15

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

Lab Control Sample % Recovery: $\frac{\text{Conc. of L.C.S.}}{\text{L.C.S. Spike Conc. Added}} \times 100$

Relative % Difference: $\frac{\text{Original Result - Duplicate Result}}{(\text{Original Result + Duplicate Result}) / 2} \times 100$

EMCON Northwest, Inc.

Chain of Custody / Laboratory Analysis Request

DATE 2-14-94 PAGE 1 OF 1

PROJECT 0368-013.02 #GREENWOOD TEXACO

CLIENT INFO. CONTACT JOHN MEYER

ADDRESS EMCON NW INC

TELEPHONE # 485-5000 EXT 337

SAMPLERS NAME PETER SAYDAH PHONE # 485-5000-215

SAMPLERS SIGNATURE PETER A. SAYDAH

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE
1. GREEN 2-14	2-14	1200	4020532	H2O
2.				
3.				
4.				
5.				
6.				
7.				
8.				

ANALYSIS REQUESTED

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	GENERAL CHEMISTRY (Specify) pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)	NUMBER OF CONTAINERS
						X	X							2

Relinquished By EMCON Northwest, Inc.
Signature: PETER A. SAYDAH
Printed Name:
Firm: EMCON NW INC
Date/Time: 2-14-94 1250

Relinquished By
Signature:
Printed Name:
Firm:
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
Signature:
Printed Name: DANA HEINZ
Firm: NCA
Date/Time: 2/14/94 1250

Received By
Signature:
Printed Name:
Firm:
Date/Time:

Received By
Signature:
Printed Name:
Firm:
Date/Time:

SPECIAL INSTRUCTIONS/COMMENTS
RESULTS BY 1200 2-15-94

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

Columbia Analytical Services inc.

February 18, 1994

Service Request No.: B940064

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

Re: **Texaco #63-232-0037 - 8701 Greenwood Avenue, Seattle, WA**

Dear Mike:

Attached are the results of the sample(s) submitted to our laboratory on January 28, 1994. Preliminary results were given on January 31 and February 2 and 3, 1994. For your reference, these analyses have been assigned our service request number B940064, and is authorized under Texaco Job No. TMWC397.

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

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B. Elliott
Laboratory Manager

cc: John Meyer - EMCON Northwest

CBE/bdr

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Received:**	01/28/94
Project:	#63-232-0037	**Work Order No.:**	B940064
Sample Matrix:	Soil		

CASE NARRATIVE SUMMARY

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc.

The analysis by Method WTPH-G for samples SWALL-W-1.7, SWALL-E-3.9 and WWALL-S-1.7 was performed on February 4, 1994. The gasoline standard used for calibration gave a response of 84% compared to the calibration curve which is just below the lower acceptance limit of 85%. Unfortunately, the samples were past the 14-day holding time when this was discovered and therefore could not be reanalyzed. The final results reported for gasoline for those samples may be slightly biased, but by no more than 20% of the expected value.

Approved by Ann. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Water	**Work Order No.:**	B940064

BTE
EPA Methods 602
µg/L (ppb)

Sample Name:		WO	Method Blank
Lab Code:		B0064-1	B0064-MB
Date Analyzed:		01/31/94	01/31/94
Analyte	**MRL**		
Benzene	0.5	19.1	ND
Toluene	1	1.5	ND
Ethylbenzene	1	12	ND

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

Approved by C. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	01/31/94
		Work Order No.:	B940064

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		HO-WW-2.5	HO-SW-1.5	HO-EW-5.7
Lab Code:		B0064-7	B0064-8	B0064-9
Date Analyzed:		01/31/94	01/31/94	01/31/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	ND	ND
TPH as Gasoline	5	13	ND	ND

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

Approved by Chris Elliott Date 2/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	01/31/94
		Work Order No.:	B940064

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		HOIE-F-3.5	HOIE-EW-2.5	Method Blank
Lab Code:		B0064-10	B0064-11	B0064-MB
Date Analyzed:		01/31/94	01/31/94	01/31/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	ND	ND
TPH as Gasoline	5	13	ND	ND

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

Approved by Chris Ellwood Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Work Order No.:	B940064

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		WO-EW-3.8	WO-SW-3.6	HOIW-F-2.8
Lab Code:		B0064-5	B0064-6	B0064-14
Date Analyzed:		02/02/94	02/02/94	02/02/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	0.3	ND
Ethylbenzene	0.1	0.2	1.0	ND
Total Xylenes	0.1	0.2	5.8	ND
TPH as Gasoline	5	157	30	21

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

Approved by C. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Work Order No.:	B940064

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		HOIW-EW-1.8	SWALL-M-2	SWALL-W-1.7
Lab Code:		B0064-16	B0064-18	B0064-20
Date Analyzed:		02/02/94	02/03/94	02/04/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	ND	0.4
TPH as Gasoline	5	ND	ND	*13

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* The gasoline standard used to analyze this sample gave slightly low response (84%) vs. the calibration curve. This reported value may be biased slighly high.

Approved by C. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/93
		Work Order No.:	B940064

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		SWALL-E-3.9	EWALL-S-2.5	EWALL-M-3.4
Lab Code:		B0064-21	B0064-23	B0064-24
Date Analyzed:		02/04/94	02/03/94	02/03/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	ND	ND
TPH as Gasoline	5	*7	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* The gasoline standard used to analyze this sample gave slightly low response (84%) vs. the calibration curve. This reported value may be biased slighly high.

Approved by Colin Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Work Order No.:	B940064

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		WWALL-S-1.7	WWALL-M-7	EWALL-N-3.5
Lab Code:		B0064-25	B0064-28	B0064-32
Date Analyzed:		02/04/94	02/02/94	02/04/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	0.1	ND	ND
Total Xylenes	0.1	0.6	*0.4	ND
TPH as Gasoline	5	**16	6	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Analyte concentration is an estimate because the detector showed an elevated response for this sample.
** The gasoline standard used to analyze this sample gave slightly low response (84%) vs. the calibration curve. This reported value may be biased slighly high.

Approved by Chris Elliott Date 2/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Work Order No.:	B940064

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		NWALL-N-4.25	NWALL-N-1.5	NWALL-E-4
Lab Code:		B0064-34	B0064-35	B0064-37
Date Analyzed:		02/04/94	02/04/94	02/04/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	ND	ND
TPH as Gasoline	5	ND	ND	ND

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

Approved by A. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Work Order No.:	B940064

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		NWALL-MW-3.5	NWALL-ME-3.2	Method Blank
Lab Code:		B0064-38	B0064-40	B0064-MB
Date Analyzed:		02/02/94	02/04/94	02/03/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	ND	ND
TPH as Gasoline	5	ND	ND	ND

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

Approved by Ellen Elliot Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/02/94
		Work Order No.:	B940064

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		WO-NW-2	Method Blank
Lab Code:		B0064-4	B0064-MB
Date Analyzed:		02/03/94	02/03/94
Analyte	MRL		
Benzene	0.05	ND	ND
Toluene	0.1	ND	ND
Ethylbenzene	0.1	ND	ND
Total Xylenes	0.1	ND	ND
TPH as Gasoline	5	ND	ND

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

Approved by Ch. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	01/31/94
		Date Analyzed:	01/31/94
		Work Order No.:	B940064

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
HO-WW-2.5	B0064-7	25	*60	100	190
HO-SW-1.5	B0064-8	25	ND	100	ND
HO-EW-5.7	B0064-9	25	ND	100	ND
HOIE-F-3.5	B0064-10	25	*54	100	160
HOIE-F-2.5	B0064-11	25	ND	100	ND
Method Blank	B0064-MB	25	ND	100	ND

(?)

V

vs hoie - ew-2.5

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Result is due to the beginning of oil, which elutes in the diesel region.

Approved by Ann Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Date Analyzed:	02/02,03/94
		Work Order No.:	B940064

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
WO-EW-3.8	B0064-5	25	*95	100	220
WO-SW-3.6	B0064-6	25	*468	100	1,400
HOIW-F-2.8	B0064-14	25	*82	100	280
HOIW-EW-1.8	B0064-16	25	ND	100	ND
WWALL-M-7	B0064-28	25	ND	100	ND
NWALL-MW-3.5	B0064-38	25	ND	100	ND
SWALL-M-2	B0064-18	25	ND	100	ND
SWALL-W-1.7	B0064-20	25	ND	100	ND
SWALL-E-3.9	B0064-21	25	ND	100	ND
EWALL-S-2.5	B0064-23	25	ND	100	ND
Method Blank	B0064-MB	25	ND	100	ND

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Quantified as diesel. The sample contained components that eluted in the diesel range, but the chromatogram did not match the typical diesel fingerprint.

Approved by C. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/02/94
		Date Analyzed:	02/03/94
		Work Order No.:	B940064

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
WO-NW-2	B0064-4	25	*80	100	250
EWALL-M-3.4	B0064-24	25	ND	100	ND
WWALL-S-1.7	B0064-25	25	ND	100	ND
EWALL-N-3.5	B0064-32	25	*33	100	ND
NWALL-N-4.25	B0064-34	25	ND	100	ND
NWALL-N-1.5	B0064-35	25	ND	100	ND
NWALL-E-4	B0064-37	25	ND	100	140
NWALL-ME-3.2	B0064-40	25	*29	100	ND
Method Blank	B0064-MB	25	ND	100	ND

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Due to overlapping oil components eluting in the diesel region.

Approved by C. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Water	**Date Extracted:**	01/31/94
		Date Analyzed:	01/31/94
		Work Order No.:	B940064

Total Fats, Oils, and Grease
EPA Method 413.2
mg/L (ppm)

Sample Name	Lab Code	MRL	Result
WO	B0064-1	0.5	2,900
Method Blank	B0064-MB	0.5	ND

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

Approved by A. Ellis Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Water	**Date Analyzed:**	01/31/94
		Work Order No.:	B940064

Surrogate Recovery Summary
BTE
EPA Method 602

Sample Name	Lab Code	Spike Level (µg/L)	Percent Recovery 4-Bromofluorobenzene
WO	B0064-1	100	106
Method Blank	B0064-MB	100	NA
	CAS Acceptance Criteria		59-139

TPH Total Petroleum Hydrocarbons
* Surrogate not added.

Approved by A. Ellis Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	01/31/94
		Date Analyzed:	01/31/94
		Work Order No.:	B940064

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
HO-WW-2.5	B0064-7	8.8	93
HO-SW-1.5	B0064-8	8.8	92
HO-SW-1.5	B0064-8MS	8.8	78
HO-EW-5.7	B0064-9	8.8	94
HOIE-F-3.5	B0064-10	8.8	92
HOIE-EW-2.5	B0064-11	8.8	92
HOIE-EW-2.5	B0064-11Dup	8.8	90
Method Blank	B0064-MB	8.8	101
Laboratory Control Sample	B0064-GLCS	8.8	100
	CAS Acceptance Criteria		37-132

TPH Total Petroleum Hydrocarbons

Approved by C. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/26/94
Project:	#63-232-0037	**Date Received:**	02/01/94
Sample Matrix:	Soil	**Date Extracted:**	02/02/94
		Date Analyzed:	02/02/94
		Work Order No.:	B940064

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
WO-EW-3.8	B0064-5	8.8	110
WO-SW-3.6	B0064-6	8.8	109
HOIW-F-2.8	B0064-14	8.8	117
HOIW-EW-1.8	B0064-16	8.8	129
HOIW-EW-1.8	B0064-16MS	8.8	96
SWALL-M-2	B0064-18	8.8	91
SWALL-W-1.7	B0064-20	8.8	94
SWALL-W-1.7	B0064-20Dup	8.8	104
SWALL-E-3.9	B0064-21	8.8	95
	CAS Acceptance Criteria		37-132

TPH Total Petroleum Hydrocarbons

Approved by Ann Ellis Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	02/01/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Date Analyzed:	02/02,04/94
		Work Order No.:	B940064

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
SWALL-E-3.9	B0064-21Dup	8.8	111
EWALL-S-2.5	B0064-23	8.8	97
EWALL-M-3.4	B0064-24	8.8	96
WWALL-S-1.7	B0064-25	8.8	102
WWALL-M-7	B0064-28	8.8	126
EWALL-N-3.5	B0064-32	8.8	92
NWALL-N-4.25	B0064-34	8.8	89
NWALL-N-1.5	B0064-35	8.8	100
NWALL-E-4	B0064-37	8.8	99
NWALL-MW-3.5	B0064-38	8.8	121
	CAS Acceptance Criteria		37-132

TPH Total Petroleum Hydrocarbons

Approved by A. Elliot Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	02/01/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Date Analyzed:	02/02,04/94
		Work Order No.:	B940064

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
NWALL-ME-3.2	B0064-40	8.8	88
NWALL-MW-3.2	B0064-40MS	8.8	99
Method Blank	B0064-MB	8.8	99
Laboratory Control Sample	B0064-GLCS	8.8	98
	CAS Acceptance Criteria		37-132

TPH Total Petroleum Hydrocarbons

Approved by A. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	02/01/94
Sample Matrix:	Soil	**Date Extracted:**	02/02/94
		Date Analyzed:	02/03/94
		Work Order No.:	B940064

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
WO-NW-2	B0064-4	8.8	111
Method Blank	B0064-MB	8.8	99
Laboratory Control Sample	B0064-GLCS	8.8	*97
	CAS Acceptance Criteria		37-132

TPH Total Petroleum Hydrocarbons
* Result is from an analysis performed on February 12, 1994.

Approved by A. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Date Analyzed:	02/04/94
		Work Order No.:	B940064

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: SWALL-W-1.7
Lab Code: B0064-20

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.05	ND	ND	--	--
Toluene	0.1	ND	ND	--	--
Ethylbenzene	0.1	ND	ND	--	--
Total Xylenes	0.1	0.4	0.4	0.4	<1
TPH as Gasoline	5	13	14	14	7

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

Approved by Chris Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Date Analyzed:	02/04/94
		Work Order No.:	B940064

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: SWALL-E-3.9
Lab Code: B0064-21

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.05	ND	ND	--	--
Toluene	0.1	ND	ND	--	--
Ethylbenzene	0.1	ND	ND	--	--
Total Xylenes	0.1	ND	ND	--	--
TPH as Gasoline	5	7	6	6	15

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

Approved by Chris Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	01/31/94
		Date Analyzed:	01/31/94
		Work Order No.:	B940064

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: HO-SW-1.5
Lab Code: B0064-8

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.00	ND	*0.83	83	23-170
Toluene	1.00	ND	0.75	75	31-166
Ethylbenzene	1.00	ND	0.77	77	30-164

ND None Detected at or above the method reporting limit
***** Result is from the FID.

Approved by Ann. Elliott Date 2/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Date Analyzed:	02/04/94
		Work Order No.:	B940064

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: HOIW-EW-1.8
Lab Code: B0064-16

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	0.97	ND	0.89	92	23-170
Toluene	0.97	ND	0.88	91	31-166
Ethylbenzene	0.97	ND	0.86	89	30-164

ND None Detected at or above the method reporting limit

Approved by Ann. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/26-28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Date Analyzed:	02/04/94
		Work Order No.:	B940064

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: NWALL-ME-3.2
Lab Code: B0064-40

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.13	ND	1.02	90	23-170
Toluene	1.13	ND	1.03	91	31-166
Ethylbenzene	1.13	ND	1.07	95	30-164

ND None Detected at or above the method reporting limit

Approved by Chris Elliott Date 2/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Extracted:**	01/31/94
Project:	#63-232-0037	**Date Analyzed:**	01/31/94
LCS Matrix:	Soil	**Work Order No.:**	B940064

Laboratory Control Sample Summary
TPH as Gasoline
Washington DOE Method WTPH-G
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
TPH as Gasoline	50	62	124	70-140

TPH Total Petroleum Hydrocarbons

Approved by Ann Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Extracted:**	02/01/94
Project:	#63-232-0037	**Date Analyzed:**	02/12/94
LCS Matrix:	Soil	**Work Order No.:**	B940064

Laboratory Control Sample Summary
TPH as Gasoline
Washington DOE Method WTPH-G
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
TPH as Gasoline	50	62	124	70-140

TPH Total Petroleum Hydrocarbons

Approved by Ben Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	01/31/94
		Date Analyzed:	01/31/94
		Work Order No.:	B940064

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
HO-WW-2.5	B0064-7	99
HO-WW-2.5	B0064-7Dup	79
HO-SW-1.5	B0064-8	101
HO-SW-1.5	B0064-8MS	111
HO-EW-5.7	B0064-9	97
HOIE-F-3.5	B0064-10	96
HOIE-EW-2.5	B0064-11	91
Method Blank	B0064-MB	107
Laboratory Control Sample	B0064-LCS	110
	CAS Acceptance Criteria	50-114

Approved by Chris Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Date Analyzed:	02/02,04/94
		Work Order No.:	B940064

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
WO-EW-3.8	B0064-5	110
WO-SW-3.6	B0064-6	104
HOIW-F-2.8	B0064-14	104
HOIW-EW-1.8	B0064-16	107
SWALL-M-2	B0064-18	105
SWALL-W-1.7	B0064-20	108
SWALL-E-3.9	B0064-21	111
EWALL-S-2.5	B0064-23	110
WWALL-M-7	B0064-28	112
NWALL-MW-3.5	B0064-38	*119
Method Blank	B0064-MB	105
Laboratory Control Sample	B0064-LCS	102
	CAS Acceptance Criteria	50-114
	WDOE Acceptance Criteria	50-150

* Outside of acceptance limits. Since no target analytes were detected in the sample, it is the opinion of CAS that the quality of the sample data has not been significantly affected by the elevated percent recovery.

Approved by John Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/02/94
		Date Analyzed:	02/03/94
		Work Order No.:	B940064

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
WO-NW-2	B0064-4	95
EWALL-M-3.4	B0064-24	114
WWALL-S-1.7	B0064-25	111
EWALL-N-3.5	B0064-32	*115
NWALL-N-4.25	B0064-34	**116
NWALL-N-1.5	B0064-35	105
NWALL-E-4	B0064-37	102
NWALL-ME-3.2	B0064-40	100
Method Blank	B0064-MB	111
Laboratory Control Sample	B0064-LCS	112
	CAS Acceptance Criteria	50-114
	WDOE Acceptance Criteria	50-150

* Outside of acceptance limits. Since this result is slightly out, but consistent with recoveries of samples from the same batch, it is the opinion of CAS that the quality of the sample data has not been significantly affected by the elevated surrogate recovery.

** Outside of acceptance limits. Since no target analytes were detected in the sample, it is the opinion of CAS that the quality of the sample data has not been significantly affected by the elevated percent recovery.

Approved by Chr. Ellis Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	01/31/94
		Date Analyzed:	01/31/94
		Work Order No.:	B940064

Duplicate Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: HO-WW-2.5
Lab Code: B0064-7

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Diesel	25	60	60	60	<1
Oil	100	190	200	195	5

MRL Method Reporting Limit

Approved by Ada Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	01/31/94
		Date Analyzed:	01/31/94
		Work Order No.:	B940064

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: HO-SW-1.5
Lab Code: B0064-8

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	266	ND	304	114	41-136

ND None Detected at or above the method reporting limit

Approved by Ann Ellis Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	02/02/94
		Date Analyzed:	02/03/94
		Work Order No.:	B940064

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0074-1

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	260	ND	275	106	41-136

ND None Detected at or above the method reporting limit

Approved by Chris Elliott Date 2/16/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	01/28/94
Project:	#63-232-0037	**Date Received:**	01/28/94
Sample Matrix:	Soil	**Date Extracted:**	02/01/94
		Date Analyzed:	02/04/94
		Work Order No.:	B940064

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0065-7

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	227	ND	231	102	41-136

ND None Detected at or above the method reporting limit

Approved by Ann. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Extracted:**	01/31/94
Project:	#63-232-0037	**Date Analyzed:**	01/31/94
LCS Matrix:	Soil	**Work Order No.:**	B940064

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	289	320	111	41-136

Approved by John Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Extracted:**	02/02/94
Project:	#63-232-0037	**Date Analyzed:**	02/03/94
LCS Matrix:	Soil	**Work Order No.:**	B940064

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	289	308	107	41-136

Approved by A. Elliott Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Extracted:**	02/01/94
Project:	#63-232-0037	**Date Analyzed:**	02/04/94
LCS Matrix:	Soil	**Work Order No.:**	B940064

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	289	277	96	41-136

Approved by Ann. Ellis Date 2/18/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Extracted:**	01/31/94
Project:	#63-232-0037	**Date Analyzed:**	01/31/94
Sample Matrix:	Water	**Work Order No.:**	B940064

Laboratory Control Sample Summary
Total Fats, Oils, and Grease
EPA Method 413.2
mg/L (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
TPH	20.3	18.7	92	83-107
TPH	20.3	18.5	91	83-107

Approved by Ori Ellis Date 2/18/94

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

Northwest, Inc.

DATE 1-28-94 PAGE 1 OF 2

PROJECT NAME Texaco Greenwood 0368-013.02

PROJECT HC EM Greenwood

COMPANY/ADDRESS EMCON - Bothell

John Meyer, proj. mgr.

PHONE 485-5200

SAMPLERS SIGNATURE Holly Corner

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUEST: PETROLEUM HCS: TPH - HCID State:	TPH - G / BTEX State:	TPH - D / OIL State:	TPH - 418.1 State:	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 / 602/8020	Volatile Organics GC/MS 624-8240	ORGANIC: Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 HPCL / 8100 GC	TCLP Metals / Semi VOA / VOA / Pest/Herb	Metals Total / DISS List Below	Cyanide	ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)	BTE	fats, oils, grease (413.1)	REMARKS
WO	1-28-94		64-1	Water	1								Assessment								X	X	24-hr.
HO			-2		1																		HOLD
HOIE			-3		1																		HOLD

RELINQUISHED BY:
Signature: Holly Corner
Printed Name: Holly Corner
Firm: EMCON
Date/Time: 1-28-94 1520

RECEIVED BY:
Signature:
Printed Name: CAS
Firm:
Date/Time: 1-28-94 15:20

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

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

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

INVOICE INFORMATION:
P.O.#
Bill To

SAMPLE RECEIPT:
Shipping VIA:
Shipping to:
Condition:
Lab No:

SPECIAL INSTRUCTIONS/COMMENTS:
24-hour rush on WO. HOLD others
(A) Assessment cost to TES

Northwest, Inc.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST

DATE 1-28-94 PAGE 1 OF 2

PROJECT NAME Texaco Greenwood # 0368-013.02
PROJECT Greenwood
COMPANY/ADDRESS EMCON - Bothell
John Meyer, Proj. Mgr.
PHONE 485-5000
SAMPLERS SIGNATURE Holly Corner

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	PETROLEUM HCS: TPH-HCID State:	TPH-G State: WA BTEX	TPH-D State: WA Oil (WTPH-Dext)	TPH-418.1 State:	TPH-Other	ORGANIC: Halogenated or Aromatic Volatiles 601/8010 or 602/8020	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 HPCL	8100 GC	TCLP Metals	Semi VOA	VOA	Pest/Herb	Metals Total	DISS	Metals List Below	Cyanide	ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br	NO_2 NO_3 (Circle)	NH_3-N, COD, Total-P TKN, TOC, TOX (Circle)	Total Metals As, Ba, Cd, Cr, Pb, Hg, Se, Ag	REMARKS
WO-NW-2	1-28-94	1020	64-4	Soil	1		X	X			X			X													X	24-hr
WO-EW-3.8		1035	-5		1		X	X																				HOLD 24hr
WO-SW-3.6		1045	-6		1		X	X																				HOLD 24hr
HO-WW-2.5		1050	-7		1		X	X																				24-hr
HO-SW-1.5		1110	-8		1		X	X																				24-hr.
HO-EW-5.7		1120	-9		1		X	X																				24-hr.

Added by John Meyer 2/1/94

RELINQUISHED BY:
Signature: Holly Corner
Printed Name: Holly Corner
Firm: EMCON
Date/Time: 1-28-94 1530

RECEIVED BY:
Signature:
Printed Name:
Firm:
Date/Time:

RELINQUISHED BY:
Signature:
Printed Name:
Firm:
Date/Time:

RECEIVED BY:
Signature:
Printed Name:
Firm:
Date/Time:

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

Requested Report Date: ___

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

INVOICE INFORMATION:
PO #
Bill To

SAMPLE RECEIPT:
Shipping VIA:
Shipping to:
Condition:
Lab No:

SPECIAL INSTRUCTIONS/COMMENTS:
24 hour rush as marked. HOLD other.
© Compliance cost to TKMI

EMCON Northwest, Inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 1-28-94 PAGE 1 OF 3

PROJECT NAME Texaco Greenwood # 0368-013.02

PROJECT Greenwood

COMPANY/ADDRESS EMCON - Bothell

John Meyer, proj. mgr.

PHONE 485-5000

SAMPLERS SIGNATURE Holly Corner

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUEST: PETROLEUM HCS — TPH - HCID State:	TPH - G State: WA	BTEX ✓ WITPH-G/BTEX	TPH - D State: WA	OIL ✓ WITPH-G/BTEX/D ext	TPH - 418.1 State: WA	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 8100 GC ___ HPCL ___	TCLP Metals ___ Semi VOA ___ VOA ___ Pest/Herb	Metals Total ___ DISS ___ List Below	Cyanide	pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3-N, COD, Total-P TKN, TOC TOX (Circle)	REMARKS
HOIE-F-3.5	1-26-94	1015	64-10	Soil	1		X		X															24-hr
HOIE-EW-2.5		1030	-11		1		X		X															24-hr
HOIE-NW-2.5		1035	-12		1																			HOLD
HOIE-SW-2		1040	-13		1																			
HOIW-F-2.8		1200	-14		1		X		X															24 hr.
HOIW-WW-1.8		1205	-15		1		X		X				CBE											24 hr.
HOIW-EW-1.8		1210	-16		1		X		X															24 hr.
HOIW-SW-1.8		1215	-17		1																			

RELINQUISHED BY:
Signature: Holly Corner
Printed Name: Holly Corner
Firm: EMCON
Date/Time: 1-28-94 0850

RECEIVED BY:
Signature: [illegible]
Printed Name: DAVID SEARS
Firm: CAS
Date/Time: 1-28-94 8:50

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

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

Requested Report Date ___

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

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

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: ___

SPECIAL INSTRUCTIONS/COMMENTS:
Please ~~HOLD ALL~~ HC. 1-28-94
Please run samples 24-hour rush as noted. HOLD others.
(A) Assessment cost to TES

Northwest, Inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 1-28-94 PAGE 2 OF 3

PROJECT NAME Texaco-Greenwood # 0368-013.02

PROJECT Greenwood

COMPANY/ADDRESS EMCON - Bothell

John Meyer, proj. mgr.

PHONE 485-5000

SAMPLERS SIGNATURE Holly Corner

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	PETROLEUM HCS: TPH-HCID State:	TPH-G State:	BTEX	TPH-D State:	OIL	TPH-418.1 State:	TPH-Other	ORGANIC: Halogenated or Aromatic Volatiles 601/8010	602/8020	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080	PCB ONLY	PAH 8310	8100 GC	HPCL	TCLP Metals	Semi VOA	VOA	Pest/Herb	Metals List Below Total	DISS	Cyanide	ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)	REMARKS
SWALL-M-2	1-27-94	0930	64-18	Soil	1		X		X																					24 hr.
SWALL-E-2		0940	-19		1																									Hold
SWALL-W-1.7		0945	-20		1		X		X																					24 hr.
SWALL-E-3.9		1320	-21		1		X		X																					↓
SWALL-ME-4		1400	-22		1																									Hold
EWALL-S-2.5		0900	-23		1		X		X																					24 hr.
EWALL-M-3.4		1330	-24		1		X		X																					↓
WWALL-S-1.7		1000	-25		1		X		X																					↓
SWALL-W-5		1415	-26		1																									Hold
WWALL-S-5		1505	-27		1																									Hold

RELINQUISHED BY:
Signature: Holly Corner
Printed Name: Holly Corner
Firm: EMCON
Date/Time: 1-28-94 0850

RECEIVED BY:
Signature: David Sears
Printed Name: DAVID SEARS
Firm: CAS
Date/Time: 1-28-94 8:50

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

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

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

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

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: ___

SPECIAL INSTRUCTIONS/COMMENTS:
Please HOLD ALL. Compliance

Northwest, Inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 1-28-94 PAGE 3 OF 3

PROJECT NAME Texaco Greenwood # 0368-013.02

PROJECT Greenwood

COMPANY/ADDRESS EMCON - Bothell

John Meyer, proj. mgr.

PHONE 485-5000

SAMPLERS SIGNATURE Holly Corner

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	PETROLEUM HCS: TPH - HCID State:	TPH - G State: / BTEX	TPH - D State: / OIL	TPH - 418.1 State:	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 / 602/8020	Volatile Organics GC/MS 624-8240	ORGANIC: Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 8100 GC / HPCL	TCLP Metals / Semi VOA / VOA	Metals Total / DISS List Below / Pest/Herb	Cyanide	ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br	NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)			REMARKS
WWALL-~~S~~ M-7 ~~HC~~	1-27-94	1500	64-28	Soil	1		X	X																24 hr.
SWALL-MW-5		1430	-29		1																			
Peat WW-M-8		1510	-30		1																			
EWALL-M-4.5		1515	-31		1																			
EWALL-N-3.5		1520	-32		1		X	X																✓
Peat EW-N-5		1530	-33		1																			
NWALL-N-4.25		1545	-34		1		X	X																
NWALL-N-1.5		1550	-35		1		X	X																24 hr.
EWALL-N-1.5		1600	-36		1																			24 hr.
																								~~24 hr.~~

RELINQUISHED BY:
Signature: Holly Corner
Printed Name: Holly Corner
Firm: EMCON
Date/Time: 1-28-94 0850

RECEIVED BY:
Signature: [signature]
Printed Name: DAVID SEARS
Firm: CAS
Date/Time: 1-28-94 8:50

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

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

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

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

SAMPLE RECEIPT:
Shipping VIA: _____
Shipping to: _____
Condition: _____
Lab No: _____

SPECIAL INSTRUCTIONS/COMMENTS:
Please HOLD ALL
Compliance

Columbia Analytical Services, Inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST/REPORT FORM

18912 North Creek Pkwy, Suite 118 • Bothell, WA 98011 • (206) 486-6983 • FAX (206) 486-7695

DATE 1/28/94 PAGE 1 OF 1

PROJECT NAME Texaco Greenwood #0364/0013.06

PROJECT Greenwood

COMPANY/ADDRESS Emcon NW

John Mayer

PHONE 485-5000

SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	PETROLEUM HCS: TPH - HCID State:	TPH - G / BTEX State: N/A	TPH - D / Oil State: N/A	TPH - 418.1 State:	TPH - Other	ORGANIC: Halogenated or Aromatic Volatiles 601/8010 / 602/8020	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 / 8100 GC / HPCL	TCLP Metals / Semi VOA / VOA / Pest/Herb	Metals Total / DISS List Below	Cyanide	ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC TOX (Circle)	REMARKS
NWALL-E-4	1/29/94		64-37	soil	1		X	X						Assessment							24 Hour
NWALL-MW-3.5			38		1		X	X						Assessment							24 Hour
NWALL-MW-8			39		1		Hold							Assessment							24 Hour
NWALL-ME-3.2			40		1		X	X													
NWALL-ME-8	↓		41	↓	1		Hold.														

RELINQUISHED BY:

Signature

Printed Name Kelly Conner

Firm Emcon

Date/Time

RECEIVED BY:

Signature Edn. Elliott

Printed Name Edn. Elliott

Firm CAS

Date/Time 1/28/94

RELINQUISHED BY:

Signature

Printed Name

Firm

Date/Time

RECEIVED BY:

Signature

Printed Name

Firm

Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr. ___ 5 day

___ Standard (10-15 working days)

___ Provide Verbal Preliminary Results

___ Provide FAX preliminary Results

Requested Report Date _____

REPORT REQUIREMENTS

___ I. Routine Report

___ II. Report (includes DUP.MAS. MSD, as required, may be charged as samples)

___ III. Data Validation Report (includes All Raw Data)

___ IV. CLP Deliverable Report

INVOICE INFORMATION:

P.O.# _____

Bill To _____

SAMPLE RECEIPT:

Shipping VIA: _____

Shipping to: _____

Condition: _____

Lab No: _____

SPECIAL INSTRUCTIONS/COMMENTS:

Columbia Analytical Services inc.

March 3, 1994

Service Request No.: B940104

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

Re: **Texaco #63-232-0037 - 8701 Greenwood Avenue, Seattle, WA**

Dear Mike:

Attached are the results of the sample(s) submitted to our laboratory on February 17, 1994. Preliminary results were given on February 18, 1994. For your reference, these analyses have been assigned our service request number B940104.

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

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B. Elliott
Laboratory Manager

cc: John Meyer - EMCON Northwest

CBE/bdr

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	02/17/94
Project:	#63-232-0037	**Date Received:**	02/17/94
Sample Matrix:	Soil	**Date Extracted:**	02/17/94
		Work Order No.:	B940104

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		WOWWD-5'	WOSWD-5.5'	Method Blank
Lab Code:		B0104-4	B0104-5	B0104-MB
Date Analyzed:		02/18/94	02/18/94	02/17/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	ND	ND
TPH as Gasoline	5	ND	ND	ND

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

Approved by Chris Elliott Date 3/3/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	02/17/94
Project:	#63-232-0037	**Date Received:**	02/17/94
Sample Matrix:	Soil	**Date Extracted:**	02/17/94
		Date Analyzed:	02/18/94
		Work Order No.:	B940104

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
WOWWD-5'	B0104-4	25	ND	100	ND
WOSWD-5.5'	B0104-5*	25	ND	100	ND
Method Blank	B0104-MB	25	ND	100	ND

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Extracted February 18, 1994; analyzed February 23, 1994.

Approved by Chris Elliott Date 3/3/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	02/17/94
Project:	#63-232-0037	**Date Received:**	02/17/94
Sample Matrix:	Soil	**Date Extracted:**	02/17/94
		Date Analyzed:	02/17,18/94
		Work Order No.:	B940104

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
WOWWD-5'	B0104-4	8.8	99
WOSWD-5.5'	B0104-5	8.8	78
Method Blank	B0104-MB	8.8	107
Laboratory Control Sample	B0104-LCS	8.8	105
Laboratory Control Sample	B0104-GLCS	8.8	104
	CAS Acceptance Criteria		37-132

TPH Total Petroleum Hydrocarbons

Approved by Chris Elliott Date 3/3/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	02/17/94
		Date Analyzed:	02/18/94
		Work Order No.:	B940104

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0096-13

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.05	ND	ND	--	--
Toluene	0.1	0.1	0.1	0.1	<1
Ethylbenzene	0.1	0.1	0.1	0.1	<1
Total Xylenes	0.1	6.4	5.9	6.2	8
TPH as Gasoline	5	342	358	350	5

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

Approved by Chris Elliott Date 3/3/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	02/17/93
		Date Analyzed:	02/18/94
		Work Order No.:	B940104

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0096-1

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.20	ND	1.05	88	23-170
Toluene	1.20	ND	1.08	90	31-166
Ethylbenzene	1.20	ND	1.06	88	30-164

ND None Detected at or above the method reporting limit

Approved by Chris Ellis Date 3/3/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	02/17/94
Project:	#63-232-0037	**Date Analyzed:**	02/17/94
LCS Matrix:	Soil	**Work Order No.:**	B940104

Laboratory Control Sample Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.00	0.85	85	23-170
Toluene	1.00	0.88	88	31-166
Ethylbenzene	1.00	0.87	87	30-164
TPH as Gasoline	50	51	102	70-140

TPH Total Petroleum Hydrocarbons

Approved by C. Elliott Date 3/3/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	02/17/94
Project:	#63-232-0037	**Date Received:**	02/17/94
Sample Matrix:	Soil	**Date Extracted:**	02/17/94
		Date Analyzed:	02/18/94
		Work Order No.:	B940104

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
WOWWD-5'	B0104-4	109
WOSWD-5.5'	B0104-5	*93
Method Blank	B0104-MB	114
Laboratory Control Sample	B0104-LCS	108
	CAS Acceptance Criteria	50-114

* Result is from an analysis performed on February 23, 1994.

Approved by John Elliott Date 3/3/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	02/17/94
		Date Analyzed:	02/18/94
		Work Order No.:	B940104

Duplicate Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0096-12

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Diesel	25	453	423	438	7
Oil	100	300	270	285	11

MRL Method Reporting Limit

Approved by Chris Elliott Date 3/3/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	02/17/94
		Date Analyzed:	02/19/94
		Work Order No.:	B940104

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0096-11

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	293	188	493	104	41-136

Approved by Chris Elliott Date 3/3/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	02/17/94
Project:	#63-232-0037	**Date Analyzed:**	02/18/94
LCS Matrix:	Soil	**Work Order No.:**	B940104

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	289	225	78	41-136

Approved by Chris Elliott Date 3/3/94

Columbia Analytical Services, Inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST RECORD

18912 North Creek Pkwy, Suite 118 • Bothell, WA 98011 • (206) 486-6983 • FAX (206) 486-7695

DATE _____ PAGE _____ OF _____

PROJECT NAME Texaco Greenwood # 0368-013.06

PROJECT John Meyer

COMPANY/ADDRESS EMCON

PHONE _____

SAMPLERS SIGNATURE T. Bodle

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUEST: PETROLEUM HCS / ORGANIC / ORGANIC METALS/INORGANICS	REMARKS
wofd-6.5'	2-17-94	11:45	104-1	soil	1		hold
wofd2-6.5'	2-17-94	11:50	-2	"	1		hold
wofd3-6.5'	2-17-94	11:55	-3	"	1		hold
wowwd-5'	2-17-94	13:00	-4	"	1	TPH-G ✓ BTEX ✓ TPH-D ✓ OIL ✓	
woswd-5.5'	2-17-94	13:15	-5	"	1	TPH-G ✓ BTEX ✓ TPH-D ✓ OIL ✓	

ANALYSIS REQUEST — PETROLEUM HCS: TPH - HCID State: ; TPH - G ✓ State: WA ; BTEX ✓ ; TPH - D ✓ State: WA ; OIL ✓ ; TPH - 418.1 State: ; TPH - Other

ANALYSIS REQUEST — ORGANIC: Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___ ; Volatile Organics GC/MS 624-8240 ; Base/Neu/Acid Organics GC/MS 625/8270 ; Pesticides/PCBS 8080 PCB ONLY ___ ; PAH 8310 HPCL ___ 8100 GC ___ ; TCLP Metals ___ Semi VOA ___ VOA ___ Pest/Herb ___ ; Metals Total ___ DISS ___ List Below ; Cyanide

ANALYSIS REQUEST — ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br ; NO_2 NO_3 (Circle) ; NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)

RELINQUISHED BY:
Signature: Tom Bodle
Printed Name: T. Bodle
Firm: EMCON
Date/Time: 2-17-94 16:30

RECEIVED BY:
Signature: DJ Mosier
Printed Name: DJ MOSIER
Firm: CAS
Date/Time: 02/17/94 4:30

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

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

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

SAMPLE RECEIPT:
Shipping VIA: _____
Shipping to: _____
Condition: _____
Lab No: 394-104

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:

Project Chemist: _____ Work Request #: B94-101104L

Sample Recipient: D.J. © Request Reviewed By: _____

Customer Name and Location: Texaco

Project Name: Texaco # 63-232-0037 8701 ~~8107~~ Greenwood Ave.

Project #: 0368-013.06

Consultant: Emcon.

Report To: Mike Condon (cc: John Meyer)

Date Sample Received: _____ Rush: X Lab Prep by: 2/18/94 Date Results Required: 2/18/94

Sample Description: Soil 5 Water _____ 1-L Amber _____ White _____

Other: _____ 16 oz Glass Soil _____ Red _____

Chain of Custody: Yes ✓ No _____ 8 oz Glass Soil _____ Yellow _____

Samples to Kelso lab (Y/(N)) Date: _____ VOA Soil _____ Green _____

Samples to/from Kelso: _____ Other _____ VOA Vial Sets _____

Special Handling Instructions - QA/QC Report Requirements: TIER II Batch QC ~~XX~~

TAT: (24-HR)
48-HR
72-HR
5-DAY
Standard

BOTHELL		KELSO	
1. BTEX/WTPH-G	6.	11.	16.
2. WTPH-D	7.	12.	17.
3. TS	8.	13.	18.
4.	9.	14.	19.
5.	10.	15.	20.

Lab Code	Sample Name	Test To Be Performed	Sample Date	Matrix
104-1	WOFD-6.5	~~1,2,3~~ Hold	2/17/94	soil
-2	WOFD2-6.5	↓	↓	↓
-3	WOFD3-6.5	↓	↓	↓
-4	WOWWD-5'	1,2,3	↓	↓
-5	WOSWD-5.5'	↓	↓	↓
-6				
-7				
-8				
-9				
-10				
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Columbia Analytical Services, Inc.

March 9, 1994

Service Request No.: B940114
K941141

John Meyer
EMCON Northwest
18912 N Creek Parkway
Suite 210
Bothell, WA 98011

Re: **Texaco #63-232-0037 - 8701 Greenwood Avenue N, Seattle, WA**

Dear John:

Attached are the results of the sample(s) submitted to our laboratory on February 23, 1994. Preliminary results were given on March 1, 1994. For your reference, these analyses have been assigned our service request number B940114.

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

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B. Elliott
Laboratory Manager

CBE/bdr

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	02/23/94
Project:	Texaco #63-232-0037	**Date Received:**	02/23/94
Sample Matrix:	Soil	**Date Extracted:**	02/28/94
		Work Order No.:	B940114

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		W02EW-5'	W02F-6.5'	Method Blank
Lab Code:		B0114-3	B0114-4	B0114-MB
Date Analyzed:		02/28/94	02/28/94	02/28/94
Analyte	**MRL**			
Benzene	0.05	ND	*<0.5	ND
Toluene	0.1	ND	*<0.5	ND
Ethylbenzene	0.1	ND	*<0.5	ND
Total Xylenes	0.1	ND	*<0.5	ND
TPH as Gasoline	5	ND	*<50	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Elevated MRL due to low Total Solids (5x).

Approved by C. Elliott Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	02/23/94
Project:	Texaco #63-232-0037	**Date Received:**	02/23/94
Sample Matrix:	Soil	**Date Extracted:**	02/24/94
		Date Analyzed:	02/25,28/94
		Work Order No.:	B940114

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
W02WW-5'	B0114-5	25	*3,840	100	**15,000
Method Blank	B0114-MB	25	ND	100	ND

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Result is due to the beginning of oil, which elutes in the diesel region.
** Result is from the analysis of a diluted sample, performed on February 25, 1994.

Approved by Ann. Elliott Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	02/23/94
Project:	Texaco #63-232-0037	**Date Received:**	02/23/94
Sample Matrix:	Soil	**Date Extracted:**	03/01/94
		Date Analyzed:	03/01/94
		Work Order No.:	B940114

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
W02EW-5'	B0114-3	25	ND	100	ND
W02F-6.5'	B0114-4*	125	**209	500	‡1,960
Method Blank	B0114-MB	25	ND	100	ND

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Elevated MRLs due to low percent solids.
** Quantified as diesel. The sample contained components that eluted in the diesel range, but the chromatogram did not match the typical diesel fingerprint.
‡ Quantified as oil. The sample contained components that eluted in the oil range, but the chromatogram did not match the typical oil fingerprint.

Approved by Chris Ellis Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Collected:**	02/23/94
Project:	Texaco #63-232-0037	**Date Received:**	02/23/94
Sample Matrix:	Soil	**Date Extracted:**	03/01/94
		Date Analyzed:	03/01/94
		Work Order No.:	B940114

Total Petroleum Hydrocarbons as Diesel and Oil
With Silica-Gel Cleanup
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
W02F-6.5'	B0114-4*	125	**131	500	‡570

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Elevated MRLs due to low percent solids.
** Quantified as diesel. The sample contained components that eluted in the diesel range, but the chromatogram did not match the typical diesel fingerprint.
‡ Quantified as oil. The sample contained components that eluted in the oil range, but the chromatogram did not match the typical oil fingerprint.

Approved by A. Elliott Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Northwest
Project: Texaco #63-232-0037
Sample Matrix: Soil

Date Collected: 02/23/94
Date Received: 02/23/94
Date Extracted: 02/28/94
Date Analyzed: 02/28/94
Work Order No.: B940114

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
W02EW-5'	B0114-3	8.8	90
W02EW-5'	B0114-3Dup	8.8	99
W02WW-5'	B0114-4	8.8	75
W02WW-5'	B0114-4MS	8.8	72
Method Blank	B0114-MB	8.8	115
Laboratory Control Sample	B0114-LCS	8.8	100
Laboratory Control Sample	B0114-GLCS	8.8	105
	CAS Acceptance Criteria		37-132

TPH Total Petroleum Hydrocarbons

Approved by Chris Elliott Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	02/23/94
Project:	Texaco #63-232-0037	**Date Received:**	02/23/94
Sample Matrix:	Soil	**Date Extracted:**	02/28/94
		Date Analyzed:	02/28/94
		Work Order No.:	B940114

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: W02EW-5'
Lab Code: B0114-3

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.05	ND	ND	--	--
Toluene	0.1	ND	ND	--	--
Ethylbenzene	0.1	ND	ND	--	--
Total Xylenes	0.1	ND	ND	--	--
TPH as Gasoline	5	ND	ND	--	--

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

Approved by John Elliott Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	02/23/94
Project:	Texaco #63-232-0037	**Date Received:**	02/23/94
Sample Matrix:	Soil	**Date Extracted:**	02/28/94
		Date Analyzed:	02/28/94
		Work Order No.:	B940114

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: W02F-6.5'
Lab Code: B0114-4

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	6.93	ND	4.59	66	23-170
Toluene	6.93	ND	4.36	63	31-166
Ethylbenzene	6.93	ND	4.29	62	30-164

ND None Detected at or above the method reporting limit

Approved by Ron Elliott Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	Date Extracted:	02/28/94
Project:	Texaco #63-232-0037	Date Analyzed:	02/28/94
LCS Matrix:	Soil	Work Order No.:	B940114

Laboratory Control Sample Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.00	0.89	89	23-170
Toluene	1.00	0.89	89	31-166
Ethylbenzene	1.00	0.87	87	30-164
TPH as Gasoline	50	51	102	70-104

TPH Total Petroleum Hydrocarbons

Approved by Cole Elliott Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	02/23/94
Project:	Texaco #63-232-0037	**Date Received:**	02/23/94
Sample Matrix:	Soil	**Date Extracted:**	02/24/94
		Date Analyzed:	02/25,28/94
		Work Order No.:	B940114

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

Sample Name	**Lab Code**	**Percent Recovery** *p*-Terphenyl
W02WW-5'	B0114-5	99
Method Blank	B0114-MB	112
Laboratory Control Sample	B0114-LCS	112
	CAS Acceptance Criteria	50-114

Approved by Chris Elliott Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	02/23/94
Project:	Texaco #63-232-0037	**Date Received:**	02/23/94
Sample Matrix:	Soil	**Date Extracted:**	03/01/94
		Date Analyzed:	03/01/94
		Work Order No.:	B940114

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
W02EW-5'	B0114-3	102
W02EW-5'	B0114-3Dup	95
W02F-6.5'	B0114-4	106
W02F-6.5'	B0114-4MS	110
Method Blank	B0114-MB	102
Laboratory Control Sample	B0114-LCS	107
	CAS Acceptance Criteria	50-114

Approved by Chris Ellis Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	02/23/94
Project:	Texaco #63-232-0037	**Date Received:**	02/23/94
Sample Matrix:	Soil	**Date Extracted:**	03/01/94
		Date Analyzed:	03/01/94
		Work Order No.:	B940114

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
W02F-6.5'	B0114-4	76
	CAS Acceptance Criteria	50-114

Approved by P. Elliott Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	Date Collected:	02/23/94
Project:	Texaco #63-232-0037	Date Received:	02/23/94
Sample Matrix:	Soil	Date Extracted:	03/01/94
		Date Analyzed:	03/01/94
		Work Order No.:	B940114

Duplicate Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: W02EW-5'
Lab Code: B0114-3

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Diesel	25	ND	ND	--	--
Oil	100	ND	ND	--	--

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

Approved by Cole Elliott Date 3/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Northwest	**Date Collected:**	02/23/94
Project:	Texaco #63-232-0037	**Date Received:**	02/23/94
Sample Matrix:	Soil	**Date Extracted:**	03/01/94
		Date Analyzed:	03/01/94
		Work Order No.:	B940114

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: W02F-6.5'
Lab Code: B0114-4

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	1,610	209	1,590	86	41-136

Approved by Ann Ellis Date 3/11/94

Columbia Analytical Services Inc. — CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

18912 North Creek Pkwy, Suite 118 • Bothell, WA 98011 • (206) 486-6983 • FAX (206) 486-7695

DATE 2-23-94 PAGE 1 OF

PROJECT NAME Texaco Greenwood # 0365-013.06

PROJECT John Meyer

COMPANY/ADDRESS EMCON

PHONE

SAMPLERS SIGNATURE Tom Bodle

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	PETROLEUM HCS: TPH-HCID State:	TPH-G State: BTEX	TPH-D State: OIL ✓	TPH-418.1 State: WA	TPH-Other	ORGANIC: Halogenated or Aromatic Volatiles 601/8010 602/8020	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 8100 GC HPCL	TCLP Metals Semi VOA VOA Pest/Herb	Metals Total DISS List Below	Cyanide	ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3-N, COD, Total-P TKN, TOC, TOX (Circle)			REMARKS
wowwq-2,5'	2-22-94	14:15	114-1	soil	1																		see *
tile-eff	2-22-94	15:45	-2	"sludge"	1																		"
wo2ew-5'	2-23-94	12:45	-3	soil	1		✓	✓															"
wo2F-6.5'	2-23-94	13:15	-4	soil	1		✓	✓															"
wo2ww-5'	2-23-94	14:20	-5	soil	1			✓															"
wo ewh-3'	2-23-94	15:00	-6	soil	1																		"

RELINQUISHED BY:
Signature: Tom Bodle
Printed Name: Tom Bodle
Firm: EMCON
Date/Time: 2-23-94 16:00

RECEIVED BY:
Signature: CAS
Printed Name: 2-23-94
Firm: 16:00
Date/Time

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

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

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

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: 94-114

RELINQUISHED BY:
Signature
DAVID SEARS
Printed Name
CAS
Firm
2-24-94 15:00
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:

* Hold all samples for further analyses.

MAR 1 1 1994

Columbia Analytical Services INC.

March 10, 1994

Service Request No.: B940121

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

Re: **Texaco #63-232-0037 - 8701 Greenwood Avenue, Seattle, WA**

Dear John:

Attached are the results of the sample(s) submitted to our laboratory on March 1, 1994. For your reference, these analyses have been assigned our service request number B940121, and are authorized under Texaco Job No. TMWC397.

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

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B. Elliott
Laboratory Manager

ORIGINAL IS IN PROJECT FILING

cc: John Meyer - EMCON Northwest

CBE/bdr

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	02/28,03/01/94
Project:	#63-232-0037	**Date Received:**	03/01/94
Sample Matrix:	Soil	**Date Extracted:**	03/02/94
		Work Order No.:	B940121

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		WOWWH-3'	WOSWI-3.5'	WOSWI-3'
Lab Code:		B0121-1	B0121-3	B0121-4
Date Analyzed:		03/03/94	03/03/94	03/03/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	0.2	ND	ND
Ethylbenzene	0.1	0.8	ND	ND
Total Xylenes	0.1	2.6	ND	ND
TPH as Gasoline	5	540	ND	ND

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

Approved by Cin. Ellatt Date 3/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	02/28,03/01/94
Project:	#63-232-0037	**Date Received:**	03/01/94
Sample Matrix:	Soil	**Date Extracted:**	03/02/94
		Work Order No.:	B940121

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		WOWWI-5.5'	WOEWI-4'	Method Blank
Lab Code:		B0121-5	B0121-7	B0121-MB
Date Analyzed:		03/03/94	03/03/94	03/02/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	0.1	ND	ND
TPH as Gasoline	5	ND	ND	ND

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

Approved by John Elliott Date 3/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	02/28,03/01/94
Project:	#63-232-0037	**Date Received:**	03/01/94
Sample Matrix:	Soil	**Date Extracted:**	03/02/94
		Date Analyzed:	03/02/94
		Work Order No.:	B940121

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
WOWWH-3'	B0121-1	25	*514	100	1,620
WOSWI-3.5'	B0121-3	25	ND	100	ND
WOSWI-3'	B0121-4	25	ND	100	ND
WOWWI-5.5'	B0121-5	25	ND	100	ND
WOEWI-4'	B0121-7	25	ND	100	ND
Method Blank	B0121-MB	25	ND	100	ND

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Response is due to the beginning of oil, which elutes in the diesel region.

Approved by C. Elliott Date 3/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	02/28,03/01/94
Project:	#63-232-0037	**Date Received:**	03/01/94
Sample Matrix:	Soil	**Date Extracted:**	03/02/94
		Date Analyzed:	03/02,03/94
		Work Order No.:	B940121

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
WOWWH-3'	B0121-1	8.8	110
WOSWI-3.5'	B0121-3	8.8	90
WOSWI-3'	B0121-4	8.8	94
WOWWI-5.5'	B0121-5	8.8	89
WOEWI-4'	B0121-7	8.8	94
Method Blank	B0121-MB	8.8	98
Laboratory Control Sample	B0121-LCS	8.8	99
Laboratory Control Sample	B0121-GLCS	8.8	92
	CAS Acceptance Criteria		37-132

TPH Total Petroleum Hydrocarbons

Approved by Chr. Ellis Date 3/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	03/02/94
		Date Analyzed:	03/02/94
		Work Order No.:	B940121

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0111-14

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.05	ND	ND	--	--
Toluene	0.1	ND	ND	--	--
Ethylbenzene	0.1	ND	ND	--	--
Total Xylenes	0.1	ND	ND	--	--
TPH as Gasoline	5	ND	ND	--	--

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

Approved by Chris Elliott Date 3/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	03/02/94
		Date Analyzed:	03/02/94
		Work Order No.:	B940121

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0111-11

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.14	ND	0.90	79	23-170
Toluene	1.14	ND	0.91	80	31-166
Ethylbenzene	1.14	ND	0.90	79	30-164

ND None Detected at or above the method reporting limit

Approved by Chris Elliott Date 3/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	03/02/94
Project:	#63-232-0037	**Date Analyzed:**	03/02/94
LCS Matrix:	Soil	**Work Order No.:**	B940121

Laboratory Control Sample Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.00	0.94	94	23-170
Toluene	1.00	0.94	94	31-166
Ethylbenzene	1.00	0.93	93	30-164
TPH as Gasoline	52	41	79	70-140

TPH Total Petroleum Hydrocarbons

Approved by Chris Elliott Date 3/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	02/28,03/01/94
Project:	#63-232-0037	**Date Received:**	03/01/94
Sample Matrix:	Soil	**Date Extracted:**	03/02/94
		Date Analyzed:	03/03/94
		Work Order No.:	B940121

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
WOWWH-3'	B0121-1	102
WOSWI-3.5'	B0121-3	101
WOSWI-3.5'	B0121-3Dup	93
WOSWI-3'	B0121-4	106
WOSWI-3'	B0121-4MS	105
WOWWI-5.5'	B0121-5	97
WOEWI-4'	B0121-7	100
Method Blank	B0121-MB	108
Laboratory Control Sample	B0121-LCS	111
	CAS Acceptance Criteria	50-114

Approved by Chris Elliott Date 3/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	02/28,03/01/94
Project:	#63-232-0037	**Date Received:**	03/01/94
Sample Matrix:	Soil	**Date Extracted:**	03/02/94
		Date Analyzed:	03/03/94
		Work Order No.:	B940121

Duplicate Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: WOSWI-3.5'
Lab Code: B0121-3

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Diesel	25	ND	ND	--	--
Oil	100	ND	ND	--	--

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

Approved by Chris Elliott Date 3/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	02/28,03/01/94
Project:	#63-232-0037	**Date Received:**	03/01/94
Sample Matrix:	Soil	**Date Extracted:**	03/02/94
		Date Analyzed:	03/03/94
		Work Order No.:	B940121

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: WOSWI-3'
Lab Code: B0121-4

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	273	ND	302	111	41-136

ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 3/10/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	03/02/94
Project:	#63-232-0037	**Date Analyzed:**	03/03/94
LCS Matrix:	Soil	**Work Order No.:**	B940121

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	289	335	116	41-136

Approved by Colin Elliott Date 3/10/94

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

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE March 1, 94 PAGE 1 OF 1

PROJECT NAME Texaco Greenwood # 0368-013.06
PROJECT John Mayer
COMPANY/ADDRESS ENCON
PHONE 485-5000
SAMPLERS SIGNATURE Tom Bodle

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUEST: PETROLEUM HCS — TPH - HCID State:	TPH - G (BTEX) State: N/A	TPH - D State: N/A OIL	TPH - 418.1 State:	TPH - Other	ORGANIC — Halogenated or Aromatic Volatiles 601/8010 602/8020	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 8100 GC HPCL	TCLP Metals Semi VOA VOA	Metals Total DISS List Below Pest/Herb	ORGANIC METALS/INORGANICS — Cyanide	pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)	REMARKS
WOWWH-3'	2-28-94	1000	121-1	soil	1		X	X													Standard
WONWH-6.5'	2-28-94	10:45	-2	soil	1																
WOSWI-3.5'	3-1-94	13:00	-3	soil	1		X	X													Standard
WOSWI-3'	3-1-94	13:10	-4	soil	1		X	X													Standard
WOWWI-5.5'	3-1-94	13:20	-5	soil	1		X	X													Rush
WOSWI-5'	3-1-94	14:15	-6	soil/sludge	1																
WOEWI-4'	3-1-94	14:45	-7	soil	1		X	X													RUSH

RELINQUISHED BY:
Signature: Tom Bodle
Printed Name: T. Bodle
Firm: ENCON
Date/Time: 3-1-94 16:15

RECEIVED BY:
Signature:
Printed Name:
Firm: CAS
Date/Time: 3-1-94 16:27

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

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

Requested Report Date ___

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

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

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: B94-121

SPECIAL INSTRUCTIONS/COMMENTS:
hold all samples for further analyses

Columbia Analytical Services inc.

March 23, 1994

Service Request No.: B940138

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

Re: **Texaco #63-232-0037 - 8701 Greenwood Avenue, Seattle, WA**

Dear Mike:

Attached are the results of the sample(s) submitted to our laboratory on March 4, 1994. Preliminary results were given on March 15, 1994. For your reference, these analyses have been assigned our service request number B940138, and are authorized under Texaco Job No. TMWC462B.

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

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B. Elliott
Laboratory Manager

cc: John Meyer - EMCON Northwest

CBE/bdr

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Received:**	03/04/94
Project:	#63-232-0037	**Work Order No.:**	B940138
Sample Matrix:	Soil		

CASE NARRATIVE SUMMARY

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc.

The method blank analyzed for Method WTPH-D showed some unidentified components which caused a positive response for diesel. These same components were isolated to the method blank and did not effect the sample results.

Approved by Cdn. Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/04/94
Project:	#63-232-0037	**Date Received:**	03/04/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Work Order No.:	B940138

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		WOWWO-3	WOEWO-5'	COLDSP-2
Lab Code:		B0138-1	B0138-2	B0138-4
Date Analyzed:		03/11/94	03/11/94	03/11/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	0.3	ND
Ethylbenzene	0.1	ND	2.0	ND
Total Xylenes	0.1	0.2	11.4	ND
TPH as Gasoline	5	*78	*2,390	6

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
***** Quantified as gasoline. The sample contained components that eluted in the gasoline range, but the chromatogram did not match the typical gasoline fingerprint. The observed product may be mineral spirits.

Approved by John Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/04/94
Project:	#63-232-0037	**Date Received:**	03/04/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Work Order No.:	B940138

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		COLDSP-3	HOTSP-1	HOTSP-4
Lab Code:		B0138-5	B0138-8	B0138-11
Date Analyzed:		03/11/94	03/12/94	03/12/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	0.1	0.4	0.2
Ethylbenzene	0.1	0.3	0.8	0.3
Total Xylenes	0.1	2.5	7.3	3.2
TPH as Gasoline	5	*685	*732	507

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Quantified as gasoline. The sample contained components that eluted in the gasoline range, but the chromatogram did not match the typical gasoline fingerprint.

Approved by Chris Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/04/94
Project:	#63-232-0037	**Date Received:**	03/04/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Work Order No.:	B940138

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		HOTSP-5	Method Blank
Lab Code:		B0138-12	B0138-MB
Date Analyzed:		03/11/94	03/11/94
Analyte	**MRL**		
Benzene	0.05	ND	ND
Toluene	0.1	0.7	ND
Ethylbenzene	0.1	2.2	ND
Total Xylenes	0.1	4.7	ND
TPH as Gasoline	5	*917	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Quantified as gasoline. The sample contained components that eluted in the gasoline range, but the chromatogram did not match the typical gasoline fingerprint.

Approved by John Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/04/94
Project:	#63-232-0037	**Date Received:**	03/04/94
Sample Matrix:	Soil	**Date Extracted:**	03/10/94
		Date Analyzed:	03/15/94
		Work Order No.:	B940138

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
WOWWO-3'	B0138-1	25	ND	100	ND
WOEWO-5'	B0138-2	25	*952	100	2,560
COLDSP-2	B0138-4	25	*42	100	230
COLDSP-3	B0138-5**	25	*220	100	1,100
HOTSP-1	B0138-8	25	*3,520	100	9,480
HOTSP-4	B0138-11	25	4,030	100	6,770
HOTSP-5	B0138-12	25	*1,000	100	2,910
Method Blank	B0138-MB	25	‡72	100	ND

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Quantified as diesel. The sample contained components that eluted in the diesel range, but the chromatogram did not match the typical diesel fingerprint. The diesel response is due primarily to the overlap of oil into the diesel region.
** Result is from the analysis of a diluted sample, performed on March 15, 1994.
‡ Quantified as diesel. The sample contained components that eluted in the diesel range, but the chromatogram did not match the typical diesel fingerprint.

Approved by Ch. Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/04/94
Project:	#63-232-0037	**Date Received:**	03/04/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Date Analyzed:	03/11,12/94
		Work Order No.:	B940138

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
WOWWO-3'	B0138-1	8.8	84
WOWWO-3'	B0138-1Dup	8.8	86
WOEWO-5'	B0138-2	8.8	*151
COLDSP-2	B0138-4	8.8	88
COLDSP-2	B0138-4MS	8.8	96
COLDSP-3	B0138-5	8.8	96
COLDSP-3	B0138-5MS	8.8	90
HOTSP-1	B0138-8	8.8	104
HOTSP-4	B0138-11	8.8	106
HOTSP-5	B0138-12	8.8	**127
HOTSP-5	B0138-12Dup	8.8	**122
Method Blank	B0138-MB	8.8	107
Laboratory Control Sample	B0138-LCS	8.8	95
Laboratory Control Sample	B0138-GLCS	8.8	96
	CAS Acceptance Criteria		37-132

TPH Total Petroleum Hydrocarbons

* Outside of acceptance limits because of matrix interferences. The chromatogram showed nontarget components that interfered with the analysis.

** Elevated percent recovery due to sample matrix. The chromatogram showed target components that interfered with determination of the surrogate.

Approved by Chris Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/04/94
Project:	#63-232-0037	**Date Received:**	03/04/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Date Analyzed:	03/11/94
		Work Order No.:	B940138

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: COLDSP-2
Lab Code: B0138-4

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.01	ND	0.88	87	23-170
Toluene	1.01	ND	0.88	87	31-166
Ethylbenzene	1.01	ND	0.88	87	30-164

ND None Detected at or above the method reporting limit

Approved by Chris Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/09/94
Project:	#63-232-0037	**Date Received:**	03/04/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Date Analyzed:	03/11/94
		Work Order No.:	B940138

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: WOWWO-3'
Lab Code: B0138-12

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.05	ND	ND	--	--
Toluene	0.1	0.7	0.8	0.8	13
Ethylbenzene	0.1	2.2	1.6	1.9	32
Total Xylenes	0.1	4.7	4.5	3.6	4
TPH as Gasoline	5	917	871	894	5

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

Approved by Ann Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/04/94
Project:	#63-232-0037	**Date Received:**	03/04/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Date Analyzed:	03/11/94
		Work Order No.:	B940138

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: COLDSP-3
Lab Code: B0138-5

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.13	ND	*0.95	84	23-170
Toluene	1.13	ND	0.87	77	31-166
Ethylbenzene	1.13	ND	0.90	80	30-164

ND None Detected at or above the method reporting limit
* Result taken from FID

Approved by Ann Ellis Date 8/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	03/09/94
Project:	#63-232-0037	**Date Analyzed:**	03/11/94
LCS Matrix:	Soil	**Work Order No.:**	B940138

Laboratory Control Sample Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.00	0.90	90	23-170
Toluene	1.00	0.88	88	31-166
Ethylbenzene	1.00	0.85	85	30-164
TPH as Gasoline	52	48	92	70-140

TPH Total Petroleum Hydrocarbons

Approved by John Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/04/94
Project:	#63-232-0037	**Date Received:**	03/04/94
Sample Matrix:	Soil	**Date Extracted:**	03/10/94
		Date Analyzed:	03/15,16/94
		Work Order No.:	B940138

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
WOWWO-3'	B0138-1	78
WOEWO-5'	B0138-2	104
WOEWO-5'	B0138-2Dup	101
COLDSP-2	B0138-4	95
COLDSP-2	B0138-4MS	103
COLDSP-3	B0138-5	*64
HOTSP-1	B0138-8	89
HOTSP-4	B0138-11	111
HOTSP-5	B0138-12	91
Method Blank	B0138-MB	92
Laboratory Control Sample	B0138-LCS	107
	CAS Acceptance Criteria	50-114

* Result is from the analysis of a diluted sample, performed on March 15, 1994.

Approved by Ann Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/04/94
Project:	#63-232-0037	**Date Received:**	03/04/94
Sample Matrix:	Soil	**Date Extracted:**	03/10/94
		Date Analyzed:	03/16/94
		Work Order No.:	B940138

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: COLDSP-2
Lab Code: B0138-4

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	286	42	387	121	41-136

Approved by Lab. Elliott Date 3/23/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	03/10/94
Project:	#63-232-0037	**Date Analyzed:**	03/16/94
LCS Matrix:	Soil	**Work Order No.:**	B940138

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	289	344	119	41-136

Approved by Chris Elliott Date 3/23/94

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

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

DATE 3-4-94 PAGE 1 OF 2

PROJECT NAME Texaco Greenwood # 0368-013.06
PROJECT J. Meyer
COMPANY/ADDRESS EMCON
PHONE 485-5000
SAMPLERS SIGNATURE T. Bodle

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	PETROLEUM HCS: TPH - HCID State:	TPH - G ✓ BTEX ✓ State: WA	TPH - D ✓ OIL ✓ State: WA	TPH - 418.1 State:	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___	Volatile Organics GC/MS 624-8240	ORGANIC: Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 HPCL ___ 8100 GC ___	TCLP Metals ___ Semi VOA ___ VOA ___ Pest/Herb	Metals List Below Total ___ DISS ___	Cyanide	ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br	NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)			REMARKS
coldsp-1	3-4-94	13:15	138-3	soil	1																			
coldsp-2		13:30	-4		1		X	X																hold
coldsp-3		13:45	-5		1		X	X																
coldsp-4		13:50	-6		1																			
coldsp-5		13:55	-7		1						added per John Meyer 3/8/94													
hotsp-1		14:00	-8		1		X	X															CBE	
hotsp-2		14:10	-9		1																			
hotsp-3		14:20	-10		1																			
hotsp-4		14:25	-11		1		X	X																
hotsp-5		14:30	-12		1		X	X																

RELINQUISHED BY:
Signature: Tom Bodle
Printed Name: Tom Bodle
Firm: EMCON
Date/Time: 3-4-94 15:50

RECEIVED BY:
Signature: Colin Elliott
Printed Name: Colin Elliott
Firm: CAS
Date/Time: 3-4-94 - 15:50

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

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

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

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: ___

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
Hotsp-5 on 5-day TAT.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

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

DATE 3-4-94 PAGE 2 OF 2

PROJECT NAME Exxon Greenwood # 0368-013.06

PROJECT J. Meyer

COMPANY/ADDRESS EMCON

PHONE

SAMPLERS SIGNATURE T. Bodle

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS
WOWWO-3'	3-4-94	11:30	138-1	soil	1
WOEWO-5'	3-4-94	11:45	-2	soil	1

ANALYSIS REQUEST

PETROLEUM HCS						ORGANIC						ORGANIC METALS/INORGANICS						
TPH - HCID State:	TPH - G ✓ State: WA	BTEX ✓	TPH - D ✓ State: WA	OIL ✓	TPH - 418.1 State:	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 8100 GC ___ HPCL ___	TCLP Metals ___ Semi VOA ___ VOA ___ Pest/Herb ___	Metals Total ___ List Below ___ DISS ___	Cyanide	pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)			REMARKS
	✓		✓															
	✓		✓															

RELINQUISHED BY:
Signature: Tom Bodle
Printed Name: Tom Bodle
Firm: EMCON
Date/Time: 3-4-94 13:50

RECEIVED BY:
Signature: Colin Elliott
Printed Name: Colin Elliott
Firm: CAS
Date/Time: 3/4/94 13:50

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

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

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

INVOICE INFORMATION:
P.O.#
Bill To

SAMPLE RECEIPT:
Shipping VIA:
Shipping to:
Condition:
Lab No:

SPECIAL INSTRUCTIONS/COMMENTS:

ORIGINAL IS IN PROJECT FILING

RECEIVE
MAR 2 8 1994

Columbia Analytical Services, Inc.

March 23, 1994

Service Request No.: B940131

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

Re: **Texaco #63-232-0037 - 8701 Greenwood Avenue, Seattle, WA**

Dear Mike:

Attached are the results of the sample(s) submitted to our laboratory on March 3, 1994. For your reference, these analyses have been assigned our service request number B940131, and are authorized under Texaco Job No. TMWC397.

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

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B. Elliott
Laboratory Manager

cc: John Meyer - EMCON Northwest

CBE/bdr

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Received:**	03/03/94
Project:	#63-232-0037	**Work Order No.:**	B940131
Sample Matrix:	Soil		

CASE NARRATIVE SUMMARY

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc.

Sample WONWK-5.5' was inadvertently analyzed for BTEX and TPH as Gasoline rather than Sample WOWWK-3'. Unfortunately, sample WOWWK-3' could not be analyzed within the 14-day holding time. The results for sample WONWK-5.5 are included in this report but no charges will be made for this analysis. We apologize for any inconvenience this has caused.

Approved by C. Elliott Date 3/25/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/02/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Work Order No.:	B940131

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		WONWK-5.5'	Method Blank
Lab Code:		B0131-1	B0131-MB
Date Analyzed:		03/11/94	03/12/94
Analyte	**MRL**		
Benzene	0.05	ND	ND
Toluene	0.1	ND	ND
Ethylbenzene	0.1	ND	ND
Total Xylenes	0.1	ND	ND
TPH as Gasoline	5	ND	65

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

Approved by C. Elliott Date 3/24/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/02/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/03/94
		Date Analyzed:	03/04/94
		Work Order No.:	B940131

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
WOWWK-3'	B0131-5	25	ND	100	ND
Method Blank	B0131-MB	25	ND	100	ND

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

Approved by Chris Elliott Date 3/24/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/02/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Date Analyzed:	03/11,13/94
		Work Order No.:	B940131

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
WONWK-5.5'	B0131-1	8.8	76
Method Blank	B0131-MB	8.8	107
Laboratory Control Sample	B0131-LCS	8.8	95
Laboratory Control Sample	B0131-GLCS	8.8	96
	CAS Acceptance Criteria		37-132

TPH Total Petroleum Hydrocarbons

Approved by C. Elliott Date 3/24/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Date Analyzed:	03/11/94
		Work Order No.:	B940131

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0138-1

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.05	ND	ND	--	--
Toluene	0.1	ND	ND	--	--
Ethylbenzene	0.1	ND	ND	--	--
Total Xylenes	0.1	0.2	0.1	0.2	67
TPH as Gasoline	5	69	61	65	12

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

Approved by Chris Elliott Date 3/24/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Date Analyzed:	03/12/94
		Work Order No.:	B940131

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0138-4

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.01	ND	0.88	87	23-170
Toluene	1.01	ND	0.88	87	31-166
Ethylbenzene	1.01	ND	0.88	87	30-164

ND None Detected at or above the method reporting limit

Approved by John Elliott Date 3/24/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	03/09/94
Project:	#63-232-0037	**Date Analyzed:**	03/11/94
LCS Matrix:	Soil	**Work Order No.:**	B940131

Laboratory Control Sample Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.00	0.90	90	23-170
Toluene	1.00	0.88	88	31-166
Ethylbenzene	1.00	0.85	85	30-164
TPH as Gasoline	52	42	81	70-140

TPH Total Petroleum Hydrocarbons

Approved by Chris Elliott Date 3/24/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/02/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/03/94
		Date Analyzed:	03/04/94
		Work Order No.:	B940131

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
WOWWK-3'	B0131-5	85
WOWWK-3'	B0131-5Dup	73
Method Blank	B0131-MB	85
Laboratory Control Sample	B0131-LCS	99
	CAS Acceptance Criteria	50-114

Approved by Alan Elliott Date 3/24/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/02/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/03/94
		Date Analyzed:	03/04/94
		Work Order No.:	B940131

Duplicate Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: WOWWK-3'
Lab Code: B0131-5

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Diesel	25	ND	ND	--	--
Oil	100	ND	ND	--	--

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

Approved by Glen Elliott Date 3/24/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	03/03/94
		Date Analyzed:	03/04/94
		Work Order No.:	B940131

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0132-11

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	244	148	248	41	41-136

Approved by Chris Elliott Date 3/24/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	03/03/94
Project:	#63-232-0037	**Date Analyzed:**	03/04/94
LCS Matrix:	Soil	**Work Order No.:**	B940131

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	289	296	102	41-136

Approved by Ch. Elliott Date 3/24/94

Analytical Services Inc. — CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

18912 North Creek Pkwy, Suite 118 • Bothell, WA 98011 • (206) 486-6983 • FAX (206) 486-7695

DATE 3-3-94 PAGE 1 OF 1

PROJECT NAME Texaco Greenwood # 0368-013.06

PROJECT John Meyer

COMPANY/ADDRESS EMCON

PHONE 485-5000

SAMPLERS SIGNATURE T Bell

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	PETROLEUM HCS: TPH - HCID State:	TPH - G ✓ BTEX ✓ State: WA	TPH - D ✓ OIL ✓ State: WA	TPH - 418.1 State:	TPH - Other	ORGANIC: Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 8100 GC ___ HPCL ___	TCLP Metals ___ Semi VOA ___ VOA ___ Pest/Herb ___	Metals Total ___ DISS ___ List Below	Cyanide	ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)			REMARKS
wonwK-5.5'	3-2-94	11:35		soil	1																		hold
drain 2-5'	↓	13:00		"	1																		hold
wonwK-5'		13:30		"	1																		hold
drain 1-5'		13:45		"	1																		hold
wowwK-3'		13:55		"	1		✓	✓															

RELINQUISHED BY:
Signature: T Bell
Printed Name: Bell
Firm: EMCON
Date/Time: 3-3-93 16:00

RECEIVED BY:
Signature: [illegible]
Printed Name: [illegible]
Firm: CAS
Date/Time: 3-3-93 16:00

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

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

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

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: ___

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
wowwK-3 standard turn.

Columbia Analytical Services, Inc.

March 25, 1994

Service Request No.: K941676

John Meyer
EMCON Northwest, Inc.
18912 North Creek Parkway, Suite 210
Bothell, WA 98011

Re: **Texaco Greenwood/Project #0368-013.09/B94-0173**

Dear John:

Enclosed are the results of the sample(s) submitted to our laboratory on March 17, 1994. For your reference, these analyses have been assigned our service request number K941676.

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

Please call if you have any questions. My extension is 260.

Respectfully submitted,

Columbia Analytical Services, Inc.

Janice M. Sedlak

Janice M. Sedlak
Project Chemist

JMS/sm

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons

EMCON Northwest, Inc.

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 3-17-94 PAGE 1 OF 1

PROJECT NAME Texaco Greenwood # 0368-013.09
PROJECT J. Meyer
COMPANY/ADDRESS EMCON
PHONE 485-5000
SAMPLERS SIGNATURE T. Fuller

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUEST: PETROLEUM HCS: TPH - HCID State:	TPH - G ✓ State: WA ✓ BTEX ✓	TPH - D State: WA OIL ✓	TPH - 418.1 State:	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___	Volatile Organics GC/MS 624-8240 ___	Base/Neu/Acid Organics GC/MS 625/8270 ___	Pesticides/PCBS 8080 PCB ONLY ___	PAH 8310 HPCL ___	TCLP Metals ___	Semi VOA ___ VOA ___ Pest/Herb ___	Metals Total ✓ DISS ___ List Below *	Cyanide	ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br	NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC	TOX (Circle)		REMARKS
AGW-1	3-17-94	12:30	173-1	water	4		✓	✓									✓								
AGW-2	"	12:00	-2	"	4		✓	✓									✓								
AGW-5		14:30	-3		4		✓	✓									✓								
AGW-6		13:30	-4		4		✓	✓									✓								
AGW-7	↓	10:00	-5	↓	5		✓	✓									✓								

RELINQUISHED BY:
T. Fuller
Signature
T. Bode
Printed Name
EMCON
Firm
3-17-94 15:30
Date/Time

RECEIVED BY:
David J. Sears
Signature
DAVID SEARS
Printed Name
CAS
Firm
3-17-94 15:30
Date/Time

RELINQUISHED BY:
David J. Sears
Signature
DAVID SEARS
Printed Name
CAS
Firm
3-18-94 15:30
Date/Time

RECEIVED BY:
Ruth Higley
Signature
Ruth Higley
Printed Name
CAS
Firm
3/19/94 0830
Date/Time

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

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

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

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: 6344-173

SPECIAL INSTRUCTIONS/COMMENTS:
* Total lead

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Northwest	**Date Received:**	3/17/9
Project:	Texaco Greenwood /#0368-013.09	**Work Order No.:**	K941676
Matrix:	Water		

Total Lead
EPA Method 7421
µg/L (ppb)

Sample Name:	Lab Code	MRL	Result
AGW-1	K167601	2	ND
AGW-2	K167602	2	ND
AGW-5	K167603	2	ND
AGW-6	K167604	2	4
AGW-7	K167605	2	ND
Method Blank	K1676MB	2	ND

Approved: Date: 3/25/94

Project

Columbia
Analytical
Services inc.

March 29, 1994

Service Request No.: B940132

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

Re: **Texaco #63-232-0037 - 8701 Greenwood Avenue N, Seattle, WA**

Dear Mike:

Attached are the results of the sample(s) submitted to our laboratory on March 3, 1994. Preliminary results were transmitted via facsimile on March 4, 1994. For your reference, these analyses have been assigned our service request number B940132, and are authorized under Texaco Job No. TMWC397.

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

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B. Elliott
Laboratory Manager

cc: John Meyer - EMCON Northwest

CBE/bdr

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/04/94
		Work Order No.:	B940132

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		WONWM-5'	WONWN-5'	Method Blank
Lab Code:		B0132-6	B0132-12	B0132-MB
Date Analyzed:		03/04/93	03/04/94	03/04/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	ND	ND
TPH as Gasoline	5	18	ND	ND

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

Approved by Chris Elliott Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Work Order No.:	B940132

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		DRAIN 1BS-4'	DRAIN 1BN-4'	DRAIN 2b-7'
Lab Code:		B0132-1	B0132-2	B0132-3
Date Analyzed:		03/11/93	03/11/94	03/11/94
Analyte	**MRL***			
Benzene	0.2	ND	ND	0.5
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	6.5
TPH as Gasoline	25	18	ND	54

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* MRL raised 5 times due to low total solids

Approved by Ann Elliot Date 3/29/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Work Order No.:	B940132

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		DRAIN 3B-8'	DRAIN 3W-7'	WOFM1-6'
Lab Code:		B0132-4	B0132-5	B0132-7
Date Analyzed:		03/11/93	03/11/94	03/11/94
Analyte	**MRL***			
Benzene	0.2	ND	0.5	0.5
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	0.9	ND
TPH as Gasoline	25	ND	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* MRL raised 5 times due to low total solids

Approved by Ann Elliott Date 3/29/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Work Order No.:	B940132

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		WOFM2-6'	WOFM3-7'	WOFM4-7'
Lab Code:		B0132-8	B0132-9	B0132-10
Date Analyzed:		03/11/93	03/11/94	03/11/94
Analyte	**MRL***			
Benzene	0.2	0.73	4.3	ND
Toluene	0.5	7.5	0.7	ND
Ethylbenzene	0.5	ND	2.3	ND
Total Xylenes	0.5	0.9	17.4	ND
TPH as Gasoline	25	33	1,020	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* MRL raised 5 times due to low total solids

Approved by Chr. Ellers Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Work Order No.:	B940132

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		WOEWM-6'	Method Blank
Lab Code:		B0132-11	B0132-MB
Date Analyzed:		03/11/93	03/11/94
Analyte	MRL		
Benzene	0.05	ND	ND
Toluene	0.1	ND	ND
Ethylbenzene	0.1	ND	ND
Total Xylenes	0.1	ND	ND
TPH as Gasoline	5	ND	ND

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

Approved by Ken Ellett Date 3/29/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/10/94
		Date Analyzed:	03/15,17/94
		Work Order No.:	B940132

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
With Silica Gel Cleanup
mg/Kg (ppm)
Dry Weight Basis

Sample Name	Lab Code	Diesel		Oil*	
		MRL	Result	MRL	Result
DRAIN 1BS-4'	B0132-1	[a]125	ND	[a]500	[b]900
DRAIN 1BN-4'	B0132-2	[a]125	207	[a]500	[b]460
DRAIN 2B-7'	B0132-3	[a]125	ND	[a]500	ND
DRAIN 3B-8'	B0132-4	[a]125	[c]662	[a]500	[d]1,490
DRAIN 3W-7'	B0132-5	[a]125	ND	[a]500	[b]320
WOFM1-6'	B0132-7	[a]125	ND	[a]500	[b]210
WOFM2-6'	B0132-8	[a]125	[c]180	[a]500	[b]420
WOFM3-7'	B0132-9	[a]125	[e]6,990	[a]500	25,100
WOFM4-7'	B0132-10	[a]125	[c]258	[a]500	890
Method Blank	B0132-MB[f]	25	72	100	ND

* Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
[a] MRL elevated because of the low percent solids in the sample as received.
[b] Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
[c] Quantified as diesel. The sample contained components that eluted in the diesel range, but the chromatogram did not match the typical diesel fingerprint.
[d] Quantified as oil. The sample contained components that eluted in the oil range, but the chromatogram did not match the typical oil fingerprint.
[e] Result is due to the beginning of oil, which elutes in the diesel region.
[f] No silica gel

Approved by Ann Ellett Date 3/29/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/04/94
		Date Analyzed:	03/04/94
		Work Order No.:	B940132

Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
WONWM-5'	B0132-6	25	[a]46	100	[b]150
WOEWM-6'	B0132-11	25	[a]148	100	[b]340
WONWN-5'	B0132-12	25	ND	100	ND
Method Blank	B0132-MB	25	ND	100	ND

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
[a] Result is due to the beginning of oil, which elutes in the diesel region.
[b] Result is from an analysis performed on March 10, 1994.

Approved by Lab Elliott Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/04/94
		Date Analyzed:	03/04,05/94
		Work Order No.:	B940132

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
WONWM-5'	B0132-6	8.8	88
WONWM-5'	B0132-6Dup	8.8	89
WONWN-5'	B0132-12	8.8	96
WONWN-5'	B0132-12MS	8.8	90
Method Blank	B0132-MB	8.8	103
Laboratory Control Sample	B0132-LCS	8.8	97
Laboratory Control Sample	B0132-GLCS	8.8	100
	CAS Acceptance Criteria		73-116

TPH Total Petroleum Hydrocarbons

Approved by A. Ellis Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/04/94
		Date Analyzed:	03/05/94
		Work Order No.:	B940132

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: WONWM-5'
Lab Code: B0132-6

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.05	ND	ND	--	--
Toluene	0.1	ND	ND	--	--
Ethylbenzene	0.1	ND	ND	--	--
Total Xylenes	0.1	ND	ND	--	--
TPH as Gasoline	5	18	22	20	20

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

Approved by C. Elliott Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/04/94
		Date Analyzed:	03/05/94
		Work Order No.:	B940132

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: WONWN-5'
Lab Code: B0132-12

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	0.93	ND	0.76	82	23-170
Toluene	0.93	ND	0.85	91	31-166
Ethylbenzene	0.93	ND	0.80	86	30-164

ND None Detected at or above the method reporting limit

Approved by Ann-Elliot Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Date Analyzed:	03/11/94
		Work Order No.:	B940132

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
DRAIN 1BS-4'	B0132-1	8.8	105
DRAIN 1BN-4'	B0132-2	8.8	98
DRAIN 2B-7'	B0132-3	8.8	111
DRAIN 3B-8'	B0132-4	8.8	79
DRAIN 3W-7'	B0132-5	8.8	73
WOFM1-6'	B0132-7	8.8	[a]70
WOFM2-6'	B0132-8	8.8	78
WOFM3-7'	B0132-9	8.8	[b]65
WOFM4-7'	B0132-10	8.8	[a]61
WOEWM-6'	B0132-11	8.8	79
Method Blank	B0132-MB	8.8	107
Laboratory Control Sample	B0132-LCS	8.8	95
Laboratory Control Sample	B0132-GLCS	8.8	96
	CAS Acceptance Criteria		73-116

TPH Total Petroleum Hydrocarbons

[a] Outside of acceptance limits because of matrix interferences. The chromatogram showed target components that interfered with the analysis.

[b] Outside of acceptance limits because of low % solids. The chromatogram showed nontarget components that interfered with the analysis.

Approved by John Elliott Date 3/29/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Date Analyzed:	03/11/94
		Work Order No.:	B940132

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0138-12

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.05	ND	ND	--	--
Toluene	0.1	0.7	0.8	0.8	13
Ethylbenzene	0.1	2.2	1.6	1.9	32
Total Xylenes	0.1	4.7	4.5	4.6	4
TPH as Gasoline	5	917	871	894	5

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

Approved by A. Elliott Date 3/29/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	03/09/94
		Date Analyzed:	03/11/94
		Work Order No.:	B940132

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0138-4

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.01	ND	0.88	87	23-170
Toluene	1.01	ND	0.88	87	31-166
Ethylbenzene	1.01	ND	0.88	87	30-164

ND None Detected at or above the method reporting limit

Approved by Chris Elliott Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	03/09/94
Project:	#63-232-0037	**Date Analyzed:**	03/11/94
LCS Matrix:	Soil	**Work Order No.:**	B940132

Laboratory Control Sample Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.00	0.90	90	23-170
Toluene	1.00	0.88	88	31-166
Ethylbenzene	1.00	0.85	85	30-164
TPH as Gasoline	50	42	84	70-140

TPH Total Petroleum Hydrocarbons

Approved by C. Elliott Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/03/94
		Date Analyzed:	03/04/94
		Work Order No.:	B940132

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
WONWM-5'	B0132-6	90
WOEWM-6'	B0132-11	82
WOEWM-6'	B0132-11MS	77
WONWN-5'	B0132-12	74
Method Blank	B0132-MB	85
Laboratory Control Sample	B0132-LCS	99
	CAS Acceptance Criteria	50-114

Approved by John Elliott Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/03/94
		Date Analyzed:	03/04/94
		Work Order No.:	B940132

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: WOEWM-6'
Lab Code: B0132-11

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	244	148	248	41	41-136

ND None Detected at or above the method reporting limit

Approved by Jim Elliott Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	03/03/94
Project:	#63-232-0037	**Date Analyzed:**	03/04/94
LCS Matrix:	Soil	**Work Order No.:**	B940132

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	289	296	102	41-136

Approved by Chris Ellis Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/03/94
Project:	#63-232-0037	**Date Received:**	03/03/94
Sample Matrix:	Soil	**Date Extracted:**	03/10/94
		Date Analyzed:	03/15,17/94
		Work Order No.:	B940132

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
DRAIN 1BS-4'	B0132-1	*43
DRAIN 1BN-4'	B0132-2	51
DRAIN 2B-7'	B0132-3	*34
DRAIN 3B-8'	B0132-4	*37
DRAIN 3W-7'	B0132-5	*16
WOFM1-6'	B0132-7	*22
WOFM2-6'	B0132-8	*25
WOFM3-7'	B0132-9	73
WOFM4-7'	B0132-10	56
Method Blank	B0132-MB	92
Laboratory Control Sample	B0132-LCS	107
	CAS Acceptance Criteria	50-114

* Outside of acceptance limits because of matrix effects. The low percent solids in the sample as received hindered the surrogate recovery.

Approved by Chris Elliott Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	03/10/94
		Date Analyzed:	03/15/94
		Work Order No.:	B940

Duplicate Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0138-2

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Diesel	25	952	978	965	3
Oil	100	2,560	2,540	2,550	<1

MRL Method Reporting Limit

Approved by Ellis Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	03/10/94
		Date Analyzed:	03/16/94
		Work Order No.:	B940

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0138-4

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	286	42	387	121	41-136

ND None Detected at or above the method reporting limit

Approved by Chris Elliott Date 3/28/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:		**Date Extracted:**	03/10/94
Project:		**Date Analyzed:**	03/16/94
LCS Matrix:	Soil	**Work Order No.:**	B940

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	289	344	119	41-136

Approved by John Elliott Date 3/28/94

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

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

DATE 3-3-94 PAGE 1 OF 2

PROJECT NAME Texaco Greenwood # 0368-013.06
PROJECT John Mayer
COMPANY/ADDRESS EMCON
PHONE 485-5000
SAMPLERS SIGNATURE T. Bodle

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	PETROLEUM HCS: TPH - HCID State:	TPH - G ✓ State:	BTEX ✓	TPH - D State: WA	OIL ✓	TPH - 418.1 State: WA	TPH - Other	ORGANIC: Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 8100 GC ___ HPCL ___	TCLP Metals ___ Semi VOA ___ VOA ___ Pest/Herb ___	Metals List Below Total ___ DISS ___	Cyanide	ORGANIC METALS/INORGANICS: pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC TOX (Circle)	3 SILICA cleanup		REMARKS
drain 1b s-4'	3-3-94	0900	B32-1	soil	1		✓	✓															✓			
drain 1b n-4'		0910	-2		1		✓	✓															✓			
drain 2b-7'		0920	-3		1		✓	✓															✓			
drain 3b-8'		0930	-4		1		✓	✓															✓			
drain 3w-7'		1015	-5		1		✓	✓															✓			
wonwm-5'		1045	-6		1		X	X																		*24 HR TAT
wofm 1-6'		1315	-7		1		✓	✓															✓			
wofm 2-6'		1330	-8		1		✓	✓															✓			
wofm 3-7'		13:45	-9		1		✓	✓															✓			
wofm 4-7'	↓	14:00	-10	↓	1		✓	✓															✓			

RELINQUISHED BY:
Signature: Bodle
Printed Name: Bodle
Firm: EMCON
Date/Time: 3-3-94 16:00

RECEIVED BY:
Signature:
Printed Name: QAS
Firm: 3-3-94 16:00
Date/Time

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

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

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

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

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: B94-132

SPECIAL INSTRUCTIONS/COMMENTS:
hold unless further instructions
Kasper T. Bodle 3-3-94

Columbia Analytical Services inc.

April 5, 1994

Service Request No.: B940159

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

Re: **Texaco #63-232-0037 - 8701 Greenwood Avenue, Seattle, WA**

Dear Mike:

Attached are the results of the sample(s) submitted to our laboratory on March 11, 1994. For your reference, these analyses have been assigned our service request number B940159.

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

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B. Elliott
Laboratory Manager

John Meyer

CBE/bdr

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Received:**	03/11/94
Project:	#63-232-0037	**Work Order No.:**	B940159
Sample Matrix:	Soil		

CASE NARRATIVE SUMMARY

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc.

Initital analysis of sample 7-14.5' for BTEX and WTPH-G showed unacceptably low surrogate recovery. The sample was reanalyzed on March 30, 1994, which showed high surrogate recovery but equivalent results for the target parameters. The results of the initial analysis will therefore be reported.

Approved by Chris Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	Date Collected:	03/11/94
Project:	#63-232-0037	Date Received:	03/11/94
Sample Matrix:	Soil	Date Extracted:	03/24/94
		Work Order No.:	B940159

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		7-7'	7-14.5'	6-5.5'
Lab Code:		B0159-3	B0159-7	B0159-11
Date Analyzed:		03/25/94	03/25/94	03/25/94
Analyte	**MRL**			
Benzene	0.05	ND	ND	0.1
Toluene	0.1	ND	ND	0.3
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	0.1	*0.1	0.2
TPH as Gasoline	5	5	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Result is from an analysis performed on March 30, 1994.

Approved by Ken Ellis Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/11/94
Project:	#63-232-0037	**Date Received:**	03/11/94
Sample Matrix:	Soil	**Date Extracted:**	03/24/94
		Work Order No.:	B940159

BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		6-13'	Method Blank
Lab Code:		B0159-14	B0159-MB
Date Analyzed:		03/25/94	03/24/94
Analyte	**MRL**		
Benzene	0.05	ND	ND
Toluene	0.1	ND	ND
Ethylbenzene	0.1	ND	ND
Total Xylenes	0.1	ND	ND
TPH as Gasoline	5	ND	ND

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

Approved by C. Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	Date Collected:	03/11/94
Project:	#63-232-0037	Date Received:	03/11/94
Sample Matrix:	Soil	Date Extracted:	03/21/94
		Date Analyzed:	03/23-26/94
		Work Order No.:	B940159

Total Petroleum Hydrocarbons as Diesel and Oil
With Silica-Gel Cleanup
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

		Diesel		Oil♦	
Sample Name	Lab Code	MRL	Result	MRL	Result
7-7'	B0159-3	25	[a]412	100	[b]1,870
7-14.5'	B0159-7	25	ND	100	ND
6-5.5'	B0159-11	25	[a]413	100	[b]2,730
6-13'	B0159-14	25	ND	100	[b]140
Method Blank	B0159-MB	25	ND	100	ND

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
[a] Quantified as diesel. The sample contained components that eluted in the diesel range, but the chromatogram did not match the typical diesel fingerprint.
[b] Quantified as oil. The sample contained components that eluted in the oil range, but the chromatogram did not match the typical oil fingerprint.

Approved by Ron Ellers Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/11/94
Project:	#63-232-0037	**Date Received:**	03/17/94
Sample Matrix:	Soil	**Date Extracted:**	03/24/94
		Date Analyzed:	03/25,26/94
		Work Order No.:	B940159

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

Sample Name	Lab Code	Spike Level (mg/Kg)	Percent Recovery 4-Bromofluorobenzene
7-7'	B0173-3	8.8	104
7-14.5'	B0173-7	8.8	*127
6-5.5'	B0173-11	8.8	112
6-13'	B0173-14	8.8	122
Method Blank	B0173-MB	8.8	86
Laboratory Control Sample	B0173-LCS	8.8	118
Laboratory Control Sample	B0173-GLCS	8.8	107
	CAS Acceptance Criteria		73-116

TPH Total Petroleum Hydrocarbons
* Result is from an analysis performed on March 30, 1994.

Approved by C. Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	----/----/----
Project:	#63-232-0037	**Date Received:**	----/----/----
Sample Matrix:	Soil	**Date Extracted:**	03/24/94
		Date Analyzed:	03/25/94
		Work Order No.:	B940159

Duplicate Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0188-2

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.05	0.06	0.13	0.10	*70
Toluene	0.1	2.2	4.5	3.35	*69
Ethylbenzene	0.1	1.8	3.9	2.8	*75
Total Xylenes	0.1	20.1	42.2	31.2	*71
TPH as Gasoline	5	1,090	2,300	1,700	*71

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Sample is heterogeneous. Homogeneity could not be readily achieved using routine laboratory procedures.

Approved by Cole Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	Date Collected:	----/----/----
Project:	#63-232-0037	Date Received:	----/----/----
Sample Matrix:	Soil	Date Extracted:	03/24/94
		Date Analyzed:	03/26/94
		Work Order No.:	B940159

Matrix Spike Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020
Washington DOE Method WTPH-G
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0188-7

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	0.70	ND	0.95	136	23-170
Toluene	0.70	ND	1.04	149	31-166
Ethylbenzene	0.70	ND	0.99	141	30-164

ND None Detected at or above the method reporting limit

Approved by C. Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	Date Extracted:	03/24/94
Project:	#63-232-0037	Date Analyzed:	03/25/94
LCS Matrix:	Soil	Work Order No.:	B940159

Laboratory Control Sample Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/Washington DOE Method WTPH-G
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	0.70	0.47	67	23-170
Toluene	0.70	0.50	71	31-166
Ethylbenzene	0.70	0.47	67	30-164
TPH as Gasoline	35	41	116	70-140

TPH Total Petroleum Hydrocarbons

Approved by John Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/11/94
Project:	#63-232-0037	**Date Received:**	03/11/94
Sample Matrix:	Soil	**Date Extracted:**	03/21/94
		Date Analyzed:	03/23-26/94
		Work Order No.:	B940159

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
7-7'	B0159-3	88
7-14.5'	B0159-7	98
7-14.5'	B0159-7MS	97
6-5.5'	B0159-11	100
6-13'	B0159-14	*151
Method Blank	B0159-MB	100
Laboratory Control Sample	B0159-LCS	101
	CAS Acceptance Criteria	50-114

* This extract is suspected to have concentrated prior to analysis. The elevated surrogate recovery is consistent with this conclusion; therefore, the true concentrations for this sample may be lower than reported.

Approved by John Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	Date Collected:	----/----/----
Project:	#63-232-0037	Date Received:	----/----/----
Sample Matrix:	Soil	Date Extracted:	03/21/94
		Date Analyzed:	03/24/94
		Work Order No.:	B940159

Duplicate Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: B0168-2

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Diesel	25	2,480	2,330	2,400	6
Oil	100	270	190	230	35

MRL Method Reporting Limit

Approved by Colin Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/11/94
Project:	#63-232-0037	**Date Received:**	03/11/94
Sample Matrix:	Soil	**Date Extracted:**	03/21/94
		Date Analyzed:	03/24/94
		Work Order No.:	B940159

Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)
Dry Weight Basis

Sample Name: 7-14.5'
Lab Code: B0159-7

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	258	ND	249	97	41-136

ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	Date Extracted:	03/21/94
Project:	#63-232-0037	Date Analyzed:	03/24/94
LCS Matrix:	Soil	Work Order No.:	B940159

Laboratory Control Sample Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	289	297	103	41-136

Approved by Glen Elliott Date 4/5/94

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

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

DATE 3-11-94 PAGE 1 OF 2

PROJECT NAME Texaco Greenwood # 0368-013.07

PROJECT John Meyer

COMPANY/ADDRESS EMCON

PHONE 485-5000

SAMPLERS SIGNATURE Tom Bode

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	TPH - HCID State:	TPH - G State: WA / BTEX ✓	TPH - D State: WA / OIL ✓	TPH - 418.1 State:	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310 8100 GC ___ HPCL ___	TCLP Metals ___ Semi VOA ___ VOA ___ Pest/Herb	Metals Total ___ DISS ___ List Below	Cyanide	pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)		REMARKS
7-2.5'	3-11-94		B94-159-1	Soil	1																	hold
7-4'			-2		1																	
7-7'			-3		1		✓	✓														
7-8.5'			-4		1																	
7-10'			-5		1																	
7-11.5'			-6		1																	
~~7-13' TB~~			~~-7~~	~~Water~~	1																	
7-14.5'			159-7		1		✓	✓														
7-16'			-8		1																	
7-20.5'	↓		-9	↓	1																	↓

RELINQUISHED BY:
Signature: Tom Bode
Printed Name: T. Bode
Firm: EMCON
Date/Time: 3-11-94 16:05

RECEIVED BY:
Signature: Celia Elliott
Printed Name: Celia Elliott
Firm: CAS
Date/Time: 3-11-94 16:05

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

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

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

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: B94-159

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:

Run Silica Gel clean-up on all WTPH-D samples.

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

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

DATE 3-11-94 PAGE 2 OF 2

PROJECT NAME Texaco Greenwood # 0365-013.07
PROJECT John Meyer
COMPANY/ADDRESS EMCON
PHONE 485-5000
SAMPLERS SIGNATURE Tom Bodle

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	PETROLEUM HCS: TPH - HCID State:	TPH - G ✓ BTEX ✓ State: Calif	TPH - D ✓ OIL ✓ State: Wa	TPH - 418.1 State:	TPH - Other	Halogenated or Aromatic Volatiles 601/8010 ___ 602/8020 ___	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY ___	PAH 8100 GC ___ 8310 HPCL ___	TCLP Metals ___ Semi VOA ___ VOA ___	Metals Total ___ Pest/Herb ___ List Below ___ DISS ___	Cyanide	pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC, TOX (Circle)	REMARKS
6-4'	3-11-94		159-10	soil	1																
6-5.5'			-11		1		✓	✓													hold
6-8.5'			-12		1																
6-11.5'			-13		1																
6-13'			-14		1		✓	✓													
6-16'			-15		1																
7-26.5'	↓			↓	1																↓

RELINQUISHED BY:
Signature: Tom Bodle
Printed Name: Tom Bodle
Firm: EMCON
Date/Time: 3-11-94 16:25

RECEIVED BY:
Signature: Celia Elliott
Printed Name: Celia Elliott
Firm: CAS
Date/Time: 3-11-94 16:05

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

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

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

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: B94-159

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:

Run Silica Gel Cleanup on all WTPH-D samples.

ORIGINAL IS IN PROJECT FILING

Columbia Analytical Services inc.

April 5, 1994

Service Request No.: B940173

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

Re: **Texaco #63-232-0037 - 8701 Greenwood Avenue, Seattle, WA**

Dear Mike:

Attached are the results of the sample(s) submitted to our laboratory on March 17, 1994. For your reference, these analyses have been assigned our service request number B940173.

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

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Colin B. Elliott
Laboratory Manager

CBE/bdr

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	Date Collected:	03/17/94
Project:	#63-232-0037	Date Received:	03/17/94
Sample Matrix:	Water	Work Order No.:	B940173

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

Sample Name:		AGW-1	AGW-2	AGW-5
Lab Code:		B0173-1	B0173-2	B0173-3
Date Analyzed:		03/28/94	03/28/94	03/28/94
Analyte	**MRL**			
Benzene	0.5	17.8	18.4	ND
Toluene	1	8	ND	ND
Ethylbenzene	1	24	17	ND
Total Xylenes	1	104	68	ND
TPH as Gasoline	50	1,960	470	ND

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

Approved by C. Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/17/94
Project:	#63-232-0037	**Date Received:**	03/17/94
Sample Matrix:	Water	**Work Order No.:**	B940173

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

Sample Name:		AGW-6	AGW-7	Method Blank
Lab Code:		B0173-4	B0173-5	B0173-MB
Date Analyzed:		03/28/94	03/28/94	03/27/94
Analyte	**MRL**			
Benzene	0.5	10.6	ND	ND
Toluene	1	1	ND	ND
Ethylbenzene	1	14	ND	ND
Total Xylenes	1	56	ND	ND
TPH as Gasoline	50	300	ND	ND

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

Approved by Chris Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Texaco Environmental Services	**Date Collected:**	03/17/94
Project:	#63-232-0037	**Date Received:**	03/17/94
Sample Matrix:	Water	**Date Extracted:**	03/23/94
		Date Analyzed:	03/29,31/94
		Work Order No.:	B940173

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

		Diesel		Oil♦	
Sample Name	**Lab Code**	**MRL**	**Result**	**MRL**	**Result**
AGW-1	B0173-1	250	*730	750	ND
AGW-2	B0173-2	250	*270	750	ND
AGW-5	B0173-3	250	ND	750	ND
AGW-6	B0173-4	250	ND	750	ND
AGW-7	B0173-5	250	ND	750	ND
Method Blank	B0173-MB	250	ND	750	ND

♦ Quantified using 30-weight motor oil as a standard.
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* A portion of this diesel result is due to the end of gasoline, which elutes in the diesel region.

Approved by C. Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/17/94
Project:	#63-232-0037	**Date Received:**	03/17/94
Sample Matrix:	Water	**Date Analyzed:**	03/27,28/94
		Work Order No.:	B940173

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

Sample Name	Lab Code	Spike Level (µg/L)	Percent Recovery 4-Bromofluorobenzene
AGW-1	B0173-1	100	87
AGW-2	B0173-2	100	103
AGW-5	B0173-3	100	90
AGW-6	B0173-4	100	89
AGW-7	B0173-5	100	94
AGW-7	B0173-5MS	100	92
Method Blank	B0173-MB	100	103
Laboratory Control Sample	B0173-LCS	100	95
Laboratory Control Sample	B0173-GLCS	100	100
	CAS Acceptance Criteria		59-139

TPH Total Petroleum Hydrocarbons

Approved by Chris Elliott Date 9/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	Date Collected:	----/----/----
Project:	#63-232-0037	Date Received:	----/----/----
Sample Matrix:	Water	Date Analyzed:	03/27/94
		Work Order No.:	B940173

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

Sample Name: Batch QC
Lab Code: B0184-2

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Benzene	0.5	2.8	2.8	2.8	<1
Toluene	1	18	19	18	5
Ethylbenzene	1	32	32	32	<1
Total Xylenes	1	157	156	156	<1
TPH as Gasoline	50	3,040	2,730	2,890	11

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

Approved by Chris Ellwood Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/17/94
Project:	#63-232-0037	**Date Received:**	03/17/94
Sample Matrix:	Water	**Date Analyzed:**	03/28/94
		Work Order No.:	B940173

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

Sample Name: AGW-7
Lab Code: B0173-5

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	100	ND	90	90	51-159
Toluene	100	ND	95	95	50-156
Ethylbenzene	100	ND	96	96	49-157

TPH Total Petroleum Hydrocarbons
ND None Detected at or above the method reporting limit

Approved by John Elliott Date 9/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	03/27/94
Project:	#63-232-0037	**Date Analyzed:**	03/27/94
LCS Matrix:	Water	**Work Order No.:**	B940173

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

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	100	99	99	51-159
Toluene	100	97	97	50-156
Ethylbenzene	100	96	96	49-157
TPH as Gasoline	5,400	5,550	103	70-140

TPH Total Petroleum Hydrocarbons

Approved by Chris Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Collected:**	03/17/94
Project:	#63-232-0037	**Date Received:**	03/17/94
Sample Matrix:	Water	**Date Extracted:**	03/23/94
		Date Analyzed:	03/29-04/01/94
		Work Order No.:	B940173

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

Sample Name	Lab Code	Percent Recovery *p*-Terphenyl
AGW-1	B0173-1	97
AGW-2	B0173-2	93
AGW-5	B0173-3	91
AGW-6	B0173-4	86
AGW-7	B0173-5	95
Method Blank	B0173-MB	92
Laboratory Control Sample	B0173-LCS	92
	CAS Acceptance Criteria	36-124

Approved by Chris Elliott Date 4/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	Date Collected:	----/----/----
Project:	#63-232-0037	Date Received:	----/----/----
Sample Matrix:	Water	Date Extracted:	03/23/94
		Date Analyzed:	03/31/94
		Work Order No.:	B940173

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

Sample Name: Batch QC
Lab Code: B0179-1

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Diesel	250	360	410	385	13
Oil	750	ND	ND	--	--

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

Approved by Ann. Elliott Date 9/5/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Texaco Environmental Services	**Date Extracted:**	03/23/94
Project:	#63-232-0037	**Date Analyzed:**	04/01/94
LCS Matrix:	Water	**Work Order No.:**	B940173

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

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	578	643	111	50-130

Approved by Chris Elliott Date 4/5/94

Northwest, Inc.

CHAIN OF CUSTODY LABORATORY ANALYSIS REPORT FORM

DATE 3-17-94 PAGE 1 OF 1

PROJECT NAME Texaco Greenwood # 0368-013.09
PROJECT J. Meyer
COMPANY/ADDRESS EMCON
PHONE 485-5000
SAMPLERS SIGNATURE T. Fuller

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUEST: PETROLEUM HCS — TPH - HCID State:	TPH - G ✓ State:	BTEX ✓ State: WA	TPH - D ✓ State: WA	OIL ✓ TPH - 418.1 State:	TPH - Other	ORGANIC — Halogenated or Aromatic Volatiles 601/8010	Volatile Organics GC/MS 624-8240	Base/Neu/Acid Organics GC/MS 625/8270	Pesticides/PCBS 8080 PCB ONLY	PAH 8310	8100 GC	HPCL	TCLP Metals	Semi VOA VOA	Pest/Herb	Metals Total ✓ List Below	DISS	Cyanide *	ORGANIC METALS/INORGANICS — pH, Cond Cl, SO_4, PO_4 F, Br NO_2 NO_3 (Circle)	NH_3 - N, COD, Total-P TKN, TOC TOX (Circle)	REMARKS
AGW-1	3-17-94	12:30	173-1	water	4		✓		✓											✓							
AGW-2	"	12:00	-2	"	4		✓		✓											✓							
AGW-5		14:30	-3		4		✓		✓											✓							
AGW-6		13:30	-4		4		✓		✓											✓							
AGW-7	↓	10:00	-5	↓	5		✓		✓											✓							

RELINQUISHED BY:
Signature T. Fuller
Printed Name T. Fuller
Firm EMCON
Date/Time 3-17-94 15:30

RECEIVED BY:
Signature David Sears
Printed Name DAVID SEARS
Firm CAS
Date/Time 3-17-94 15:30

RELINQUISHED BY:
Signature David Sears
Printed Name DAVID SEARS
Firm CAS
Date/Time 3-18-94 15:30

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

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

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

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

SAMPLE RECEIPT:
Shipping VIA: ___
Shipping to: ___
Condition: ___
Lab No: 13947-173

SPECIAL INSTRUCTIONS/COMMENTS:
* Total lead