SUBSURFACE SOIL AND GROUNDWATER INVESTIGATION REPORT TEXACO PROPERTY 1501 CUSHMAN STREET FAIRBANKS, ALASKA

Prepared for Texaco Refining and Marketing, Inc. 10 Universal City Plaza, Suite 734 Universal City, California 91608-7812

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Prepared by America North/EMCON, Inc. 201 East 56th Avenue, Suite 300 Anchorage, Alaska 99518

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CONTENTS

	ppendic	es, Tables, and Figures	· ii
Li	mitation	S	iii
1	Introduc	ction	1
	1.1 1.2	Background Objectives	1 4
2	Field In	vestigation Program	5
	2.1	Drilling Activities	5
	2.2	Soil Sampling Methodology	6
	2.3	Groundwater Monitoring Well Installations	6
	2.4	Groundwater Monitoring Well Development	7
	2.5	Groundwater Sampling	7
3	Site Ge	eology/Hydrogeology	9
	3.1	Geology	9
	3.2	Hydrogeology	9
4	Analyti	cal Testing Results	13
	4.1	Regulatory Framework - Soil	13
	4.2	Analytical Testing Results	13
		4.2.1 Soil	13
		4.2.2 Groundwater	15
5	Conclu	sions	21
6	Referer	nces	22

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APPENDICES, TABLES, AND FIGURES

Appendices

- A Boring Logs
- B Well Details
- C Water Sample Field Data Sheets
- D Matrix Score Sheet
- E Laboratory Analytical Results
- F R & M Engineering Consultants Laboratory Test Results

Tables

1	Groundwater Elevations	11
2	Summary of Soil Sample Analytical Results	14
3	Summary of Soil Sample Analytical Results -	
	pH, Bacteria, and Nutrients	16
4	Summary of Groundwater Sample Analytical Results	17

Figures

1	Site Location Map	2
2	Site Diagram	3
3	Piezometric Surface Map	
	(water levels as of 9/14-15/92)	12
4	Groundwater Isoconcentration Map - VPH-gas	
	(as of 9/14-15/92)	18
5	Groundwater Isoconcentration Map - Benzene	
	(as of 9/14-15/92)	20

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LIMITATIONS

The purpose of a geologic/hydrogeologic study is to reasonably characterize existing site conditions based on the geology/hydrogeology of the area. In performing such a study, it is understood that a balance must be struck between a reasonable inquiry into the site conditions and an exhaustive analysis of each conceivable environmental characteristic. The following paragraphs discuss the assumptions and parameters under which such an opinion is rendered.

No investigation is thorough enough to describe all geologic/ hydrogeologic conditions of interest at a given site. If conditions have not been identified during the study, such a finding should not therefore be construed as a guarantee of the absence of such conditions at the site, but rather as the result of the services performed within the scope, limitations, and cost of the work performed.

We are unable to report on or accurately predict events that may change the site conditions after the described services are performed, whether occurring naturally or caused by external forces. We assume no responsibility for conditions we were not authorized to evaluate, or conditions not generally recognized as predictable when services were performed.

Geologic/hydrogeologic conditions may exist at the site that cannot be identified solely by visual observation. Where subsurface exploratory work was performed, our professional opinions are based in part on interpretation of data from discrete sampling locations that may not represent actual conditions at unsampled locations.

1 INTRODUCTION

The Texaco Refining and Marketing, Inc. (Texaco) subject property is located at 1501 Cushman Street, Fairbanks, Alaska (Figure 1). Texaco formerly operated the site as a retail service station. Underground storage tanks (USTs) associated with the former service station have reportedly been removed. The site currently accommodates a used car lot.

The site is located south of downtown Fairbanks and within the Gateway Subdivision which consists primarily of commercial businesses and residences. Surrounding properties include a vacant lot to the north, the Westmark Hotel to the south, residential property to the east, and a barber shop to the west. The Sportsman Mall is located approximately 150 feet northwest of the Texaco site.

The site is listed on the Alaska Department of Environmental Conservation's (ADEC's) Contaminated Sites list (ADEC facility #90310010201). According to the list, the station was closed in 1986 and soil and groundwater contamination was discovered in 1988 during removal of three USTs.

1.1 Background

On behalf of Texaco, Earth Contours conducted an environmental site evaluation of the Texaco property in March 1990 during which four soil borings (designated Hole-1 through Hole-4) were advanced to depths of approximately 14 feet below ground surface (bgs) (see Figure 2). One soil sample was collected from the bottom of each boring and submitted for laboratory analysis; however, quantitative analytical results for soil samples were not presented in the report. Groundwater samples were collected from boring designated Hole-1 and Hole-2 using disposable bailers and submitted for laboratory analysis. In each of two groundwater samples, benzene was reported at a concentration of 13 milligrams per liter (mg/L). Total benzene, ethylbenzene, toluene and xylenes (BETX) were reported in the groundwater samples at a





concentration of 108 mg/L in Hole-1 and 69 mg/L in Hole-2. Laboratory testing methods were not identified in the report.

In May 1992, Shannon & Wilson conducted an environmental site assessment of the Sportsman's Mall site located northwest of the Texaco property, across Cushman Street. As a part of the investigation, two soil borings were drilled and two groundwater monitoring wells were installed. Laboratory results of groundwater samples collected from one monitoring well indicated the presence of benzene at 330 micrograms per liter (μ g/L). Based upon the location of the monitoring well and relative location of the Texaco site, the Shannon & Wilson report describes the potential source of the benzene as the USTs formerly contained on the Texaco property.

1.2 Objectives

The overall objectives of this subsurface investigation were to assess the hydrogeology of the site and evaluate the nature and extent of petroleum hydrocarbons and volatile organic compounds in subsurface soils and in the shallow, unconfined aquifer at the site. Additionally, this investigation included the evaluation of potential off-site migration of a petroleum hydrocarbon "plume" in the shallow, unconfined aquifer in the vicinity of the Sportsman's Mall site (located northwest of the Texaco site). To accomplish these goals, America North/EMCON, Inc. (AN/E) supervised the advancement of fourteen soil borings (seven of which were converted to groundwater monitoring wells) at or adjacent to the Texaco property. Groundwater sample analytical data were used to evaluate groundwater quality on and off site.

This investigation was conducted in accordance with Texaco's "Subsurface Investigation Work Plan for Texaco Property, 1501 Cushman Street, Fairbanks, Alaska" dated May 7, 1992.

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2 FIELD INVESTIGATION PROGRAM

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2.1 Drilling Activities

Work activities were performed between September 1 and September 15, 1992. Drilling was accomplished by using a CME 55 or 75 drill rig equipped with hollow-stem augers, operated by Discovery Drilling of Anchorage, Alaska. Soil samples were collected using a 2.0inch inside diameter split spoon sampler. Soil lithologies and other pertinent information were recorded on soil boring logs (see Appendix A).

Seven soil borings (designated SB-1 through SB-7) were advanced on the Texaco property to approximately 15 feet bgs, at which depth, groundwater was encountered in the borings. Refer to Figure 2 for soil boring locations. Soil samples were collected at approximate 5-foot intervals. The borings were backfilled with hydrated bentonite chips and capped with concrete.

Seven additional soil borings were advanced to approximately 25 feet bgs and converted into groundwater monitoring wells (designated MW-1 through MW-7). Wells MW-6 and MW-7 are located off-site approximately 50 feet west (MW-6) and 100 feet north (MW-7) of the Texaco site. Refer to Figure 2 for monitoring well locations. Soil samples were collected at approximate 5-foot intervals.

Drill cuttings were containerized in labelled 55-gallon drums and subsequently transported off-site by OIT, Inc. during the week of September 28, 1992. The cuttings were disposed of in accordance with applicable regulations.

2.2 Soil Sampling Methodology

Soil samples were collected by drilling to the desired sampling depth and "driving" the split-spoon sampler approximately 1.5 feet into the soil using a 140/lb hammer. The split spoon was recovered and upon

opening, the soil was immediately (within a minute) field screened with a Thermo Environmental Instruments, Inc., photoionization detector (PID) model 580 B. Soil samples were then packed into laboratory-prepared sample jars, labeled, and placed into a cooler for shipment to the laboratory. Samples remained in AN/E custody until they were shipped via Federal Express[®] to Columbia Analytical Services, Incorporated (CAS) in Anchorage, Alaska.

Soil samples were labeled according to the boring location number and the top depth at which the split spoon sampler was driven. [For example, MW6-5 was sampled at the MW-6 location (Figure 1), from 5 to 6.5 feet bgs.]

Each split-spoon sampler was decontaminated by first scrubbing with a stiff brush in a non-phosphate soap and potable water solution; a potable water rinse; a methanol rinse and a final distilled water rinse.

Soil samples were analyzed for extractable petroleum hydrocarbons as diesel (EPH-diesel) using U.S. Environmental Protection Agency (EPA) Method 8100 Modified; volatile petroleum hydrocarbons as gasoline (VPH-gas) using EPA Method 8015 Modified; BETX using EPA Method 8020; total lead using EPA Method 7421 and total organic carbon (TOC) using American Society for Testing and Materials (ASTM) Method D 4119-82 Modified.

As per Texaco's work plan, select soil samples were collected and analyzed for pH using EPA Method 9040, bacteria (total plate count), and nutrients (total phosphorus using EPA Method 6010 ICP, nitrate using EPA Method 353.2/300.0 and kjeldahl-nitrogen using EPA Method 351.1). These samples were submitted to Chemical & Geological Laboratory.

As per the work plan, select soil samples were collected and tested for grain size distribution, percent moisture, porosity, and permeability. These samples were submitted to R & M Engineering Consultants.

2.3 Groundwater Monitoring Well Installations

The monitoring wells are constructed of 4-inch diameter, schedule 40 polyvinyl chloride (PVC) casing. Four-inch diameter, 0.020 slot, PVC screen was placed from the bottom of the well to approximately 3 feet above the top of the water table encountered at the time of drilling in the

boring. Colorado silica sand 8/12 was placed around the screened portion of the casing. A bentonite grout mixture was placed in the annulus above the washed sand to the ground surface. Each well was completed below grade with a flush mount locking protective casing cemented in place around the PVC casing. Well details are presented in Appendix B.

2.4 Groundwater Monitoring Well Development

On September 9 and September 10, 1992, the screen intervals in the monitoring wells were developed using a decontaminated submersible pump. A minimum of five well casing and annular space volumes were removed from each well. Water-sample measurements (specific conductance and pH), water-level readings, and field observations were recorded on AN/E's water sample field data sheets for the monitoring-well development event (see Appendix C).

Development water was containerized in labeled 55-gallon drums and subsequently transported off-site by Soil Services, Inc. during the week of September 14, 1992. Development water was disposed of in accordance with applicable regulations.

2.5 Groundwater Sampling

Groundwater samples were collected from the monitoring wells on September 14 and September 15, 1992. Prior to the collection of the samples an oil/water interface probe was used to check for free product on the water surface within each monitoring well; no free product was detected in any of the monitoring wells on September 14 or 15, 1992. Water-sample measurements, water-level readings, and field observations were recorded on AN/E's water sample field data sheets for the groundwater-sampling event and are contained in Appendix C.

Prior to the collection of groundwater samples, a minimum of three well casing and annular space volumes were removed from each monitoring well using a decontaminated submersible pump. After purging, water samples were collected using disposable teflon bailer. A duplicate water sample was collected from monitoring well MW-2 (designated 0208091592).

While performing the groundwater sampling event, AN/E personnel noted a petroleum hydrocarbon-like odor associated with the groundwater _ _

while removing well casing volumes from monitoring wells MW-1, MW-2, MW-4, MW-5, and MW-7.

Groundwater samples were submitted to CAS in an iced-cooler and under AN/E standard chain-of-custody procedures. Groundwater samples were analyzed for VPH-gas using EPA Method 8015 Modified, BETX using EPA Method 8020, and total lead using EPA Method 7421.

3 SITE GEOLOGY/HYDROGEOLOGY

3.1 Geology

The site is located on the broad, slightly westerly dipping flood plain deposited by the Tanana River. The alluvial flood plain is bounded by the Yukon-Tanana upland to the north and sediments derived from the Alaska Range to the south. The flood plain alluvium consists of reworked glacial outwash which is as much as 700 feet thick near the Tanana River. Layers of finer alluvial sands and silt overlie the glacial outwash gravel and sand (Nelson, 1978).

Surficial soil in the area of the Texaco property is dominated by the Tanana Series. These are horizontally to subhorizontally bedded, silty, and imperfectly drained soils containing lenses of very fine sand (Nelson, 1978). These soils are locally dissected by former channel deposits comprised of fine sandy soils.

Findings of the subsurface investigation revealed that the site is underlain by an unknown thickness of gravely sand and sand with intermittent 1.5- to 7-foot thick silt lenses occurring from 2 to 11 feet bgs.

3.2 Hydrogeology

An unconfined aquifer is present in the gravels which underlie the Fairbanks area. The occurrence and movement of groundwater in the unconfined aquifer is influenced locally by silt lenses, surface-water bodies, and permafrost. Groundwater in the Fairbanks area is recharged principally by seepage from the Tanana River and infiltration of precipitation and snowmelt. The general groundwater flow direction in the unconfined aquifer in the Fairbanks area is to the northwest. Variations in groundwater flow direction may occur seasonally based on surface water and groundwater interaction (Nelson, 1978). Based on groundwater elevation data collected in September 1992, the hydraulic gradient in this uppermost saturated zone is towards the northwest (0.0017 ft/ft) (Figure 3).

Table 1
Groundwater Elevations
Texaco Property
1501 Cushman Street, Fairbanks, Alaska

Monitoring Well	Top of Casing Elevation (feet)*	Date	Depth to Water (top of casing) (feet)	Piezometric Elevation (feet)*
MW-1	440.92	9/10/92	14.55	426.37
		9/15/92	14.62	426.30
MW-2	439.45	9/9/92	13.21	426.24
		9/15/92	13.32	426.13
MW-3	439.84	9/10/92	13.41	426.43
		9/14/92	13.45	426.39
MW-4	439.23	9/9/92	12.95	426.28
		9/15/92	13.01	426.22
MW-5	439.90	9/10/92	13.63	426.27
		9/15/92	13.73	426.17
MW-6	439.39	9/10/92	13.16	426.23
		9/14/92	13.20	426.19
MW-7	439.72	9/10/92	13.60	426.12
		9/14/92	13.67	426.05

* Elevations are relative to mean sea level.

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4 ANALYTICAL TESTING RESULTS

4.1 Regulatory Framework - Soil

Soil cleanup levels for the site were calculated based on ADEC's matrix score sheet presented in the June 18, 1991, "*Guidance Manual for Underground Storage Tank Regulations*". The matrix score sheet has five scoring criteria related to soil conditions and groundwater conditions for individual sites.

A matrix score of 40 (Level B) was calculated for the subject Texaco property (Appendix D). The corresponding cleanup levels are 200 milligrams per kilograms (mg/kg) diesel-range petroleum hydrocarbons, 100 mg/kg gasoline-range petroleum hydrocarbons, 0.5 mg/kg benzene, 15 mg/kg total BETX, and 2,000 mg/kg residual-range petroleum hydrocarbons.

4.2 Analytical Testing Results

4.2.1 Soil

A summary of the soil sample analytical results is presented in Table 2 and laboratory reports are contained in Appendix E.

A review of the analytical data reveals that benzene, total BETX and VPH-gas were detected at concentrations above soil cleanup levels in samples collected from boring SB-1 (from the 10- and 12-foot intervals), SB-3 (from the 5- and 13-foot intervals), SB-4 (from 13-foot interval), SB-7 (from the 5-foot interval), MW-2 (from 12.5-foot interval), and from MW-5 (from the 10- and 13-foot intervals). Soil samples collected from boring SB-3 (from the 5- and 13-foot intervals) and from boring SB-3 (from the 5- and 13-foot intervals) and from boring MW-5 (from the 5- foot interval) contained total BETX and VPH-gas at concentrations above the soil cleanup levels; benzene was not detected in these samples at concentrations above the method reporting limits (MRLs).

Summary of Soil Sample Anaytical Results													
Texaco Property													
	1501 Cushman Street, Fairbanks, Alaska												
Sample	Date Sample	8	Aromatic V Volatile Pet As Ga EPA Method Ethyl-	olatile Orga roleum Hyd soline (VPH 8020/801 (mg/kg)	anics and Irocarbons -gas) 5 Modified Total		Extractable Petroleum Hydrocarbons as Diesel (EPH-diesel) EPA Method 8100 Modified	Total Lead EPA Method 7421					
CD1 5	0/2/02	ND	ND	ND	Ayleries 6.9	VFN-yas 12	(iiig/kg) 20	Fercent (70)	(mg/kg)				
SB1-10	9/2/92	<u></u>	71.0	140	430	2 700	25	0.12					
SB1-12	9/2/92	35	72.0	95	100	1,000	48						
	9/2/92	ND	0.2	ND	2.8	29	29	0.31					
SB2-10	9/2/92	ND	ND	ND	ND	ND	ND						
SB2-12	9/2/92	ND	0.2	ND	2.8	34	ND	**	4				
SB3-5	9/4/92	ND	9.0	3,4	56.7	318	24*						
SB3-10	9/4/92	ND	ND	ND	ND	ND	19*	0.31					
SB3-13	9/4/92	ND	6.7	5.8	40.2	347	24						
SB4-5	9/4/92	ND	ND	ND	ND	: ND	ND						
SB4-10	9/4/92	ND	ND	ND	0.4	ND	ND	, 					
SB4-13	9/4/92	0.76	9.9	15.9	63	402	ND						
SB5-5	9/5/92	ND	ND	ND	ND	ND	ND						
SB5-10	9/5/92	ND	ND	ND	ND	ND	ND						
SB5-13	9/5/92	ND	ND	ND	ND	ND	ND						
SB6-5	9/5/92	ND	ND	ND	ND	ND	ND						
SB6-10	9/5/92	ND	ND	ND	ND	ND	ND						
SB6-13	9/5/92	ND	ND	ND	ND	ND	ND						
SB7-5	9/5/92	1.88	7.8	1	59.2	230	113*						
SB7-10	9/5/92	ND	ND	ND	ND	ND	ND						
SB7-13	9/5/92	ND	ND	ND	0.2	ND	ND						
Method Repor	ting Limit	0.05	0.1	0.1	0.1	5	10	0.05	1				
ADEC Soil Target Cleanup Level		0.5	тс	DTAL BETX:	15	100	200						

Table 2

ADEC - Alaska Department of Environmental Conservation

ASTM - American Society for Testing and Materials

EPA - U.S. Environmental Protection Agency

mg/kg - milligrams per kilograms (parts per million)

ND - Not Detected

-- not applicable or not analyzed

Shaded areas indicate ADEC Soil Target Cleanup Level exceedances.

* Response due to overlapping components from nondiesel petroleum mixtures.

Table 2 (continued)Summary of Soil Sample Anaytical ResultsTexaco Property1501 Cushman Street, Fairbanks, Alaska

			Aromatic V	olatile Orga	anics and				
			Volatile Pet	roleum Hyd	irocarbons				
			As Ga	soline (VPH	-gas)		Extractable Petroleum	Total Organic Carbon	
	_		EPA Method	8020/801	5 Modified		Hydrocarbons	(TOC)	
	Date			(mg/kg)		·····	as Diesel (EPA-diesel)	ASIM Method -	Total Lead
Sample	Sample		Ethyl-		lotal		EPA Method 8100 Modified	D 4119-82 Modified	EPA Method 7421
Identification	Collected	Benzene	benzene	Toluene	Xylenes	VPH-gas	(mg/kg)	Percent (%)	(mg/kg)
MW1-5	9/3/92	0.6	ND	0.1	0.1	ND	14	0.77	12
MW1-10	9/3/92	ND	ND	ND	0.1	ND	ND		
MW1-15	9/3/92	ND	ND	ND	0.1	ND	ND		
MW2-5	9/3/92	ND	ND	ND	ND	ND	ND		
MW2-10	9/3/92	0.06	ND	2	0.7	ND	12		
MW2-12.5	9/3/92	13.6	8.9	40.5	5.2	356	45	0.35	6
MW3-5	9/1/92	ND	ND	ND	ND	ND	616*		
MW3-10	9/1/92	ND	ND	ND	ND	ND	ND		
MW4-5	9/1/92	ND	ND	ND	0.1	ND	ND		
MW4-10	9/1/92	ND	ND	ND	0.2	ND	19		3
MW4-12	9/1/92	ND	ND	ND	0.2	ND	12	0.39	
MW5-5	9/4/92	ND	12.6	6.6	76.6	480	22*	0.39	
MW5-10	9/4/92	340	320.0	1,400	1,800	9,700	183*		
MW5-13	9/4/92	49	250.0	640	1,600	6,800	36		
MW6-5	9/4/92	ND	ND	ND	ND	ND	28 * *		
MW6-10	9/4/92	0.33	ND	0.9	2	9	ND		
MW6-13	9/4/92	ND	ND	ND	ND	ND	ND		
MW7-5	9/2/92	ND	ND	ND	ND	ND	ND		
MW7-10	9/2/92	ND	ND	ND	ND	ND	ND		
Tool Rinse	9/4/92	0.0021	ND	0.01	0.002	ND	ND		
Method E	Blanks	ND	ND	ND	ND	ND	ND	ND	ND
Method Repor	ting Limit	0.05	0.1	0.1	0.1	5	10	0.05	1
ADEC Soil Target	Cleanup Level	0.5	т	DTAL BETX:	15	100	200		

ADEC - Alaska Department of Environmental Conservation

ASTM - American Society for Testing and Materials

EPA - U.S. Environmental Protection Agency

mg/kg - milligrams per kilograms (parts per million)

ND - Not Detected

-- not applicable or not analyzed

Shaded areas indicate ADEC Soil Target Cleanup Level exceedance.

* Response due to overlapping components from nondiesel petroleum mixtures.

** Respose due to the overlap of a high boiling product, possibly lube oil within the diesel range.

A soil sample collected from boring MW-3 (from the 5-foot interval) contain 616 mg/kg EPH-diesel which is above the ADEC cleanup level for that compound. However, the laboratory indicated that this response was due to overlapping components from non-diesel petroleum mixtures.

Four soil samples which were collected from borings SB-2, MW-1, MW-2, and MW-4 and containing the highest concentrations of VPH-gas, were also analyzed for total lead. A review of the analytical testing results for those samples reveals that lead concentrations ranged from 3 mg/kg to 12 mg/kg in those samples analyzed. Based on AN/E's experience, these lead levels are lower than the ADEC cleanup levels that have previously been applied (approximately 500 mg/kg). for total lead in soils at "industrial-type" sites.

Seven soil samples (selected based upon field observations) were analyzed for TOC. Analytical results reveals that TOC concentrations ranged from 0.12 to 0.77 percent. Select soil samples (collected from the drill cutting from borings SB-1, SB-4 and MW-5) were analyzed for pH, bacteria and nutrient parameters. Refer to Table 3 for a summary of the analytical results. Select soil samples (collected from borings SB-2 through SB-6, MW-2, MW-5 and MW-6) were also tested for grain size distribution, percent moisture, porosity, and permeability. The results of this testing is contained in Appendix F.

4.2.2 Groundwater

A summary of the groundwater sample analytical results is presented in Table 4 and laboratory reports are contained in Appendix E.

A review of the analytical data reveals that VPH-gas were detected at concentrations ranging from 14 to 360 milligrams per liter (mg/L) in samples collected from monitoring wells MW-1, MW-2, and MW-4 through MW-7 (Figure 4).

Benzene was detected in all groundwater samples (from AN/E's monitoring wells MW-1 through MW-7, and Shannon & Wilson monitoring wells SWMW-1 and SWMW-2) at concentrations which exceed the EPA Maximum Contaminant Level (MCL) of 5 μ g/L [40 CFR Part 141.61a(2), July 1, 1991] (Figure 5). Additionally, ethylbenzene, toluene and total xylenes were also detected in samples collected from monitoring wells MW-1, MW-2, MW-4, and MW-5 at concentrations above the proposed MCLs. The groundwater sample collected from

Table 3Summary of Soil Anaytical Results - pH, Bacteria, and NutrientsTexaco Property

1501 Cushman Street, Fairbanks, Alaska

		· · · · · · · · · · · · · · · · · · ·		Total	[
	Date	Total		Phosphorus	Nitrate-N	Kjeldahl-N
Sample	Sample	Plate Count	pH, Corrosivity	EPA Method 6010 ICP	EPA Method 353.2/300.0	EPA Method 351.1
Identification	Collected	(col/gm)	EPA Method 9040	(mg/kg)	(mg/kg)	(mg/kg)
SB1-MB-12	9/28/92	79000	8.2	410	ND(0.20)	261
SB1-MB-12 (1	week later)	155000				
SB4-MB-13	9/28/92	87000	8.4	· 550	ND(0.20)	267
SB4-MB-13 (1 week later)		175000				
MW5-MB-13	9/28/92	10000	8.8	530	0.19	203
MW5-MB-13 (1	week later)	289000				

EPA - U.S. Environmental Protection Agency

col/gm - colonies per grams

mg/kg - milligrams per kilograms (parts per million)

ND - Not Detected

-- not applicable or not analyzed

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Table 4Summary of Groundwater Analytical ResultsTexaco Property1501 Cushman Street, Fairbanks, Alaska

······································				Aromatic Vol				
				Petroleu				
				Gas	soline (VPH-g	ias)		
				EPA Metho	d 8020/801	5 Modified		
		Date		Ethyl-		Total		Total Lead
Sample	Sample	Sample	Benzene	benzene	Toluene	Xylenes	VPH-gas	EPA Method 7421
Identification	Location	Collected	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(mg/L)	(ug/L)
0105091592	MW-1	9/15/92	4,000	2,000	14,000	10,000	71	8
0207091592	MW-2	9/15/92	50,000*	3,000	50,000*	15,000	300 *	18
0208091592	MW-2	9/15/92	52,000*	3,200	53,000*	16,000	330*	18
0301091492	MW-3	9/14/92	29.5	4	26	15	0.198	6
0404091592	MW-4	9/15/92	20,000	3,600	47,000*	19,000	190	36
0506091592	MW-5	9/15/92	54,000*	4,000	60,000*	20,000	360*	71
0602091492	MW-6	9/14/92	5,500	354	372	551	14	4
0703091492	MW-7	9/14/92	12,000	670	5,300	2,200	40	5
SWMW-1	Sportman's Mall	9/15/92	188	7	58	26	0.721	5
SWMW-2	Sportman's Mall	9/15/92	105	23	151	90	0.964	25
EQB091492	Equipment Rinse	9/15/92	0.8	ND	1	ND	ND	ND
Trip Blank	field	9/14/92	ND	ND	ND	ND	ND	
	Method Blank	ND	ND	ND	ND	ND	ND	
Me	thod Reporting Limit		0.5	1	1	1	0.0005	2
EPA/ADEC Drinki	ing Water Standards	; (p) - proposed	5	700 (p)	2,000 (p)	10,000 (p)		50 * *

ADEC - Alaska Department of Environmental Conservation

EPA - U.S. Environmental Protection Agency

mg/L - milligrams per liter (parts per million)

ug/L - micrograms per liter (parts per billion)

-- Not applicable or not analyzed

ND - Not Detected

1

Shaded area indicate Drinking Water Standard exceedances.

* Analyte concentration is an estimate because the result was above the instrument calibration range, and because insufficient sample quantity remained for additional analysis.

** ADEC drinking water MCL for lead 50 ug/L. EPA drinking water MCL for lead in tap water is 15 ug/L.



monitoring well MW-7 contained toluene at a concentration above the MCL.

A review of the analytical data indicates that the sample collected from monitoring well MW-5 contained total lead at a concentration of 71 μ g/L which is above the ADEC drinking water standard of 50 μ g/L (ADEC, 1990).



5 CONCLUSIONS

Based on the results of this subsurface investigation, the following conclusions have been made regarding the subsurface conditions at the site:

- The site is underlain by at least 25 feet or more of gravelly sands and sands with intermittent silt lenses.
- Depth to groundwater was approximately 13 to 15 feet bgs in September 1992 and is under water table (unconfined) conditions. The general groundwater flow direction is to the northwest. The hydraulic gradient across the site was approximately 0.0017 ft/ft in September 1992.
- A review of the soil analytical testing data indicate that soil samples collected from seven borings [SB-1, SB-3, SB-4, SB-7, MW-2, MW-3, and MW-5 (depths ranging from 5 to 14.5 feet bgs)] contained concentrations of VPH-gas exceeding the ADEC cleanup level. The ADEC cleanup level for benzene was exceeded in four soil samples collected from borings SB-1, SB-4, and SB-7.
- A review of the groundwater analytical testing data indicate that benzene was detected above the EPA MCL of 5 μg/L in groundwater samples collected from all nine monitoring wells (MW-1 through MW-7, SWMW-1, and SWMW-2) in September 1992. The highest benzene concentration was 54,000 μg/L detected in the sample collected from well MW-4.
- Total lead was detected above the ADEC MCL of 50 μ g/L in the groundwater sample collected from one monitoring well (MW-5).

6 REFERENCES

- Alaska Department of Environmental Conservation. September 26, 1990 "Interim Guidance for Surface and Groundwater Cleanup Levels".
- Alaska Department of Environmental Conservation. June 18, 1991, "Guidance Manual for Underground Storage Tank Regulations".
- Nelson, G. L., 1978. "Hydrogeologic Information for Land-Use Planning, Fairbanks Vicinity, Alaska": U.S. Geological Survey Open-File Report 78-959.
- Texaco Environmental Services. May 7, 1992, "Subsurface Investigation Work Plan for Texaco Property, 1501 Cushman Street, Fairbanks, AK".

Appendix A

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Boring Logs

MATERIAL SYMBOL GRAPHICS (Room 1203) 10-02-1992 13:13 page 1 of 2

GP

AS Asphalt

BREC Breccia

BSLT Basalt

CH Clay, high plasticity

CH/OH Clay and organic clay, interbedded CL Lean clay, low to medium plasticity CL-CH field classification, may be either CL or CH CL-ML Clayey silt to silty clay, dual classification CL-SC field classification, may be either CL or SC CL/ML Clayey silt and silty clay, interbedded CL/SP Clay and sand, interbedded CLST Claystone

CNGLM Conglomerate

C**OAL** Coal

CON Concrete

FILL Fill, nonspecific

GC Clayey gravel, gravel-sand-clay mixtures GC-GM field classification, may be either GC or GM GM Silty gravel, gravel-sand-silt mixtures GM-GW

Poorly graded gravels. or gravel-sand mixtures GW Well graded gravels or gravel-sand mixtures GW-ML Silt(~50%), with gravel(~25%), & sand(~25%) LMST Limestone LS/SH Limestone and shale, interbedded MDST Mudstone MH Elastic silt ML Silt, low to non-plastic silt. ML/CL SILT AND CLAY-INTERBEDDED

> OH Organic clay, medium to high plasticity OL Organic silts and silty clays, low plasticity OL/OH

> > PT Peat or other highly organic soils RECON Reinforced Concrete

> > > REF Refuse

> > > > Shale

SC Clayey sand, sand-clay mixtures SC/CL Clayey sand and lean clay, interbedded SC/GC Clayey sand and gravelly sand, interbedded SERP Serpentinite

MATERIAL SYMBOL GRAPHICS (Room 1203) 10-02-1992 13:13 page 2 of 2

SLST Siltstone SM Silty sands, sand-silt mixtures SM-ML Field classification, may be either SM or ML SM-SP field classification, silty sand to sand SM/ML Silty sand and sandy silt, interbedded SM/SC Silty sand and clayey sand, interbedded SM/SP Silty sand and p-graded sand, interbedded SP Sand, poorly graded or gravelly sand SP-SM SP/GP Poorly graded gravels, gravelly sand SP/SM

SS

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Sandstone

SS/CS Sandstone and claystone, interbedded SS/SL Sandstone and siltstone, interbedded SW Sand, well graded, or gravelly sand SW/SM



TS Topsoil

WELL SYMB GRAPHICS (Room 1205) SYMBOL ID 10-02- 12 13:16 page 1 of 4 Description CONC1" AS Concrete surface seal; solid; 1 pipe BENTCMNT CONC2 BNTCHP CONC2" Concrete surface seal; Bentonite Chip Bottom solid; 1 pipe Seal BNTCHP1" CONC22 Concrete surface seal; Bentonite Chip Seal; solid; 1" pipe solid; 2pipe group; 2 pipes CONC33 BNTCHP2" Concrete surface seal; Bentoniite chip seal: soild; 3 pipe grop; 3 pipes solid; 2" pipe BNTCHP21 CONC44 Concrete surface seal; Bentonite chip seal; solid; 4pipe group; 4 pipes solid; 2 pipe group; 1 pipe CONCPIEZ BNTCHP22 Bentonite chip seal; Concrete surface seal; solid; 2 pipe group; 2 pipes well and piezometer. CONCRETE -4 BNTCHP31 *** • 4 Concrete seal. Bentonite chip seal; ***** solid; 3 pipe group; 1 pipe ** BNTCHP32 CVSEAL21 Native cave & bentinote Bentonite chip seal;solid; 3 pipe group; 2 pipes seal; 2 pipe group; 1 pipe ********* **NANA** CVSEAL22 BNTCHP33 Native cave & bentinote Bentonite chip seal; soild; 3 pipe grop; 3 pipes seal; 2 pipe group; 2 pipe BNTCHP41 END-CAP 1" pipe, End Cap packed Bentonite Chip Seal; solid; 4 pipe gp; 1 pipe in sand. BNTCHP42 END-CAP1 Bentonite Chip Seal; 1" pipe, End Cap packed solid; 4 pipe gp; 2 pipes in sand. BNTCHP43 END-CAP2 Bentonite Chip Seal; End Cap packed in sand. solid; 4 pipe gp; 3 pipes BNTCHP44 FILL Using well graphics for Bentonite Chip Seal; a 2nd lithologic section. solid; 4 pipe gp; 4 pipes BNTCHPPZ GBFILL Granular backfill solid Bentonite chip seal; well and piezometer. լուրերել TRADE TO THE 11 11 11 11 GBFPIEZ BNTCMN22 Granular backfill; well Bent/Cement; slotted; 2 and piezometer. pipe group; 2 pipes GBFSLD1" BNTCMNT1 Granular backfill layer; 1" pipe; Bentonite-Cement Grout. solid; 1 pipe 11111111111 BNTCMNT2 GBFSLD2" Granular backfill layer; Bentonite-Cement Grout. solid; 1 pipe BOTT2 GBFSLD21 Underreamed well bottom Granular backfill; solid; 2 pipe group; 1 pipe packed w/ imperm. mat'l. BOTT3 GBFSLD22 Granular backfill; Well bottom packing. solid; 2 pipe group; 2 pipes

GBFSLD31 Granular backfill; solid; 3 pipe group; 1 pipe GBFSLD32 Granular backfill; solid; 3 pipe group; 2 pipes GBFSLD33 Granular backfill; solid; 3 pipe group; 3 pipes GBFSLD41 Granular backfill; solid; 4 pipe group; 1 pipe GBFSLD42 Granular backfill; solid; 4 pipe group; 2 pipes GBFSLD43 Granular backfill; solid; 4 pipe group; 3 pipes GBFSLD44 Granular backfill; solid; 4 pipe group; 4 pipes GBFSLT1" Granular backfill layer; slotted; 1 pipe GBFSLT2" Granular backfill layer; slotted; 1 pipe GBFSLT21 Granular backfill; slotted; 2 pipe group; 1 pipe GBFSLT22 Granular backfill; slotted; 2 pipe group; 2 pipes GBFSLT31 Granular backfill; slotted; 3 pipe group; 1 pipe GBFSLT32 Granular backfill; slotted; 3 pipe group; 2 pipes GBFSLT33 Granular backfill; slotted; 3 pipe group; 3 pipes GBFSLT41 Granular backfill; solid; 4 pipe group; 1 pipe GBFSLT42 Granular backfill; solid; 4 pipe group; 2 pipes GBFSLT43 Granular backfill; solid; 4 pipe group; 3 pipes GBFSLT44 Granular backfill; solid; 4 pipe group; 4 pipes GRAVEL Gravel Backfill.

GVLSLD1" Gravel backfill; solid; 1 pipe.

WELL SYMBUL GRAPHICS (Room 1205) 10-02-1992 13:16 page 2 of 4

GVLSLD2" Gravel backfill; solid: 1 pipe. GVLSLD33 Gravel Backfill; solid; 3 pipe group; 3 pipes. GVLSLT1" Gravel backfill: slotted; 1 pipe GVLSLT2" Gravel backfill; slotted; 1 pipe. GU Native Sandy/Gravelly Sand GWSLD1" Gravelly sand; solid; 1 pipe GWSLD2" Gravelly sand, solid; 1 pipe GWSLD21 Native Sandy/Gravelly Sand; 2 pipe group; 1 pipe GWSLD22 Native Sandy/Gravelly Sand; 2 pipe group; 2 pipes GWSLT1" Gravelly sand; slotted; 1 pipe GWSLT2" Gravelly sand, slotted; 1 pipe JUSTPIEZ Slotted pipe showing no backfill. OPEN1" 1" Well Casing with no backfill. OPEN2" 2" Well Casing with no backfill. PACKPIPE

PIPE

PIPE1" Solid pipe above screen. Packed in random mat'l. PIPE2" Solid pipe above screen. Packed in random mat'l. PIPENONE Random material; no pipe showing. SANDPACK

WELL SYMBUL GRAPHICS (Room 1205) 10-02-1992 13:16 page 3 of 4

SLOTPIPE SEAL SEAL1" SLOUGH Bentonite Seal (slurry); 1 pipe SEAL2" SND sand pack without casing Bentonite Seal (slurry); 1 pipe SNDCAP21 SEAL21 End cap; 2 pipe group; 1 Bentonite Seal (slurry); 2 pipe group; 1 pipe pipe SEAL22 SNDMAT Bentonite Seal (slurry); Silty sands, sand-silt 2 pipe group; 2 pipes mixtures (no pipe) SNDPIEZ SEAL31 Bentonite Seal (slurry); Sand pack; well and 3 pipe group; 1 pipes piezometer. SNDPZSLT SEAL32 Sand pack; well and Bentonite Seal (slurry); 3 pipe group; 2 pipes screened piezometer. XXX SEAL33 SNDSLD1" Solid pipe packed in Bentonite Seal (slurry); 3 pipe group; 3 pipes sand. SEAL41 SNDSLD2" Bentonite Seal (slurry); Solid pipe packed in 4 pipe group; 1 pipe sand. SNDSLD21 SEAL42 sand pack; 2 pipe group; Bentonite Seal (slurry); 4 pipe group; 2 pipes 1 pipe SNDSLD22 SEAL43 sand pack; 2 pipe group; Bentonite Seal (slurry); 4 pipe group; 3 pipes 2 pipes SNDSLD31 SEAL44 Sand pack; 3 pipe group; Bentonite Seal (slurry); 4 pipe group; 4 pipes 1 pipe. SNDSLD32 SEALBOTT Bentonite Bottom Seal Sand pack; 3 pipe group; 2 pipes. SEALCASE SNDSLD33 Sand pack; 3 pipe group; 3 pipes. SEALPIEZ SNDSLD41 Sand pack; 4 pipe group; Bentonite Seal; well and 1 pipe. piezometer. SEALSLT2 SNDSLD42 Bentonite Seal (slurry); Sand pack; 4 pipe group; Slotted: 1 pipe 2 pipes. SLF SNDSLD43 Sand pack; 4 pipe group; Slough 3 pipes. SLFSLD1" SNDSLD44 Slough; Solid; 1" pipe Sand pack; 4 pipe group; 4 pipes. SLFSLD2" SNDSLT1" Slough; Solid; 1 pipe Slotted pipe packed in sand. SLFSLT2" SNDSLT2" 5 Slough; Slotted; 1 pipe Slotted pipe packed in sand.

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SNDSLT21 sand pack; slotted; 2 pipe group; 1 pipe SNDSLT22 sand pack; slotted; 2 pipe group; 2 pipes SNDSLT31 Sand pack; slotted; 3 pipe group; 1 pipe. SNDSLT32 Sand pack; slotted; 3 pipe group; 2 pipes. SNDSLT33 Sand pack; slotted; 3 pipe group; 3 pipes. SNDSLT41 Sand pack; slotted; 4 pipe group; 1 pipe. SNDSLT42 Sand pack; slotted; 4 pipe group; 2 pipes. SNDSLT43 Sand pack; slotted; 4 pipe group; 3 pipes. SNDSLT44 Sand pack; slotted; 4 pipe group; 4 pipes. SP

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TC Using well graphics for 2nd lithologic section. WELL SYMBOL GRAPHICS (Room 1205) 10-02-1992 13:16 page 4 of 4

PRC LOC DRI DRI LOC	DJECT NA CATION LLED BY LL METH GGED BY	AME (HOD	TEXACO 1501 CUS DISCOVI HSA Russell T	SITE SHMAN ERY homps	- TES FAI N ST, FAI	CILITY #63-057-0003 RBANKS, ALASKA	BORING NO. PAGE REFERENCE ELEV. TOTAL DEPTH DATE COMPLETED	MW-5 1 OF 2 25.00' 9/4/92
LOWS PER 6 INCHES	RECOVERY (FT)	DATA- Logger PID (PPM)	GROUND MATER LEVELS	DEPETH.			LITHOLOGIC DESCRIPTION	
11 5 6	1.1	1524				CONCRETE GRAVELLY SAND (S trace non-plastic fine sand; 25% fine to co angular to subround SAND (SP); dark gravis non-plastic fines; 100 strong hydrocarbon-	(P); grayish brown (2.5Y 5/2); es; 60% fine sand; 15% medius barse gravel (1" diameter); ed; damp. sh brown (2.5y 4/3); trace 0% fine sand; loose; damp; like odor.	Π.
2 3 4	1.3	996	-	10		At 10'; olive brown (2.5 staining; strong hydr	Y 4/4); moist iron oxide ocarbon-like odor.	
1 2 2		1363	- - ⊻ - -	15	· ·	At 13'; dark gray (5Y 4/ staining; very strong At 14.5'; first encounter	(1); moist to wet; no iron oxide hydrocarbon-like odor. ed groundwater.	
3 3 4	.8	1249		20				
	Bi Ut	EMARK rilled using pon comple	S continuous etion, the bo	flight, h oring was	ollow stem a s converted i	auger equipment. Samples were nto a 25-foot-deep, 4-inch-diame	collected using a split-spoon sampler eter ground water monitoring well.	
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BLOWS PER 6 INCHES	RECOVERY (FT)	DATA- Logger PID (PPM)	GROUND MATER LEVELS	PRFTH.	SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION				
		171 EMARKS rilled using complet		25 30 35 a flight, pring w		ow stem a	At 23.5; 90% fine sand; 10 Bottom of Boring.)% medium sand; moderate of the second secon	odor.			
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	BLOWS PER 6 INCHES	RECOVERY (FT)	DATA- LOGGER PID (PPM)	GROUND MATER LEVELS	FFTH. SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION				
	6 4 5	.71	2.0				GRAVEL SURFACE SAND (SP) dark grayish non-plastic fines; 95-1	brown (2.5Y 4/2); trace to 59 00% fine sand; loose; damp.	%			
	4 4 4	1.2	1.1		5		SILTY SAND (SM); dar non-plastic fines; 80% oxide staining; micace SAND (SP); Dark grayish non-plastic fines; 1009 SILTY SAND (SM); dar non-plastic fines; 80% oxide staining: micace	k grayish brown (2.5Y 4/2); 2 o fine sand; loose; damp; iron ous. h brown (2.5Y 4/2); trace % fine sand; damp. k grayish brown (2.5Y 4/2); 2 o fine sand; loose; damp; iron ous.	20%			
	2 3 3	1.3	0.0			$\begin{array}{cccccccccccccccccccccccccccccccccccc$	SAND (SP); dark grayish non-plastic fines; 1009	a brown (2.5Y 4/2); trace % fine sand; loose; damp.				
	3 5 8	.8	6.8	- - - ⊻ - - - -		· · · · · <	At 14.5'; first encountered	d groundwater.				
		1.2	0.0		20	• • • • • • • • • • • • • • • • • • • •	At 18'; dark olive gray (5 coarse sand; 5% fine g subangular.	Y 2/2); 85% fine sand; 10% gravel; trace medium gravel;				
		E	EMARI Drilled using Upon compl	XS g continuous letion, the bo	flight, hol	low stem converted	auger equipment. Samples were c into a 25-foot-deep, 4-inch-diamet	ollected using a split-spoon sampler. er ground water monitoring well.	•			
- 41	AMERICA	NORTH INC						14803.00.Texaco1./	sd:2.10/20/92			

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	BLOWS PER 6 INCHES	RECOVERY (FT)	DATA- LOGGER PID (PPM)	GROUND WATER LEVELS	IN FTH. SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION	
		B	0.0 EMARK	- - - - - - - - - - - - - - - - - - -	25 30 30 31 30 30 40	ow stem a	Bottom of Boring.	re collected using a split-spoon sample	Γ.
And a state of the	AMERICA	U) NORTH INC	pon comple	etion, the bo	oring was co	onverted i	nto a 25-foot-deep, 4-inch-dia	meter ground water monitoring well. 14803.00.Texaco1.,	/sd:2.10/20/92
autorus.				A Advantage					

OWS FER ACCOVERT INCHES OATA- LOGGE (FT) OATA- LOGGE (FT) <th>PRO LOC DRI DRI LOG</th> <th>JECT NA ATION LLED BY GED BY</th> <th>IME T 1 F D HOD H R</th> <th>EXACO 501 CUS DISCOVE ISA Sussell Tl</th> <th>SITE - HMAN CRY nompso</th> <th>TES FAC ST, FAH n</th> <th>CILITY #63-057-0003 RBANKS, ALASKA</th> <th>BORING NO. PAGE REFERENCE ELEV. TOTAL DEPTH DATE COMPLETED</th> <th>MW-7 1 OF 2 25.00' 9/2/92</th>	PRO LOC DRI DRI LOG	JECT NA ATION LLED BY GED BY	IME T 1 F D HOD H R	EXACO 501 CUS DISCOVE ISA Sussell Tl	SITE - HMAN CRY nompso	TES FAC ST, FAH n	CILITY #63-057-0003 RBANKS, ALASKA	BORING NO. PAGE REFERENCE ELEV. TOTAL DEPTH DATE COMPLETED	MW-7 1 OF 2 25.00' 9/2/92
10 1.5 3 ASPHALT GRAVELLY SAND (SP); brown; 65% fine to coarse sand; fine to medium gravel (1 1/2" diameter); damp. 31 1.5 3 5 SILT (ML); brown; 90% non-plastic silt; 10% fine to coarse sand; medium dense; damp. 3 1.5 0 10 SILTY SAND (SM); brown; 25% non-plastic silt; 60% fine to medium sand; 15% fine to medium gravel; medium dense; damp. 3 1.5 0 10 SAND (SP); tan; 100% fine sand homogeneous; loose; damp. 3 1.5 741 IS IS At approximately 15; first encountered ground water. 3 20 20 At 19.5; tan to gray; 70% fine to medium sand; 30%	DWS PER INCHES	RECOVERY (FT)	DATA- Logger PID (PPM)	GROUND MATER LEVELS	IN FTH. SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	10	15	3	-	5-		ASPHALT GRAVELLY SAND (S sand; fine to medium SILT (ML); brown; 909 coarse sand; medium	P); brown; 65% fine to coarse a gravel (1 1/2" diameter); dan 6 non-plastic silt; 10% fine to a dense; damp.	e mp.
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	7 6						SILTY SAND (SM); br fine to medium sand medium dense; dam	own; 25% non-plastic silt; 60% ; 15% fine to medium gravel; p.	%
3 1.5 741 15 15 At approximately 15'; first encountered ground water. 9 1.5 741 15 15 15 9 1.5 741 15 15 15 9 1.5 741 15 15 15 9 1.5 741 15 15 15 9 1.5 1.5 15 15 15 1.5 1.5 1.5 15 15 15 9 1.5 1.5 1.5 15 15 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 20 20 1.5	3 4 4	1.5	U	- - - - - - -			SAND (SP); tan; 100% damp.	fine sand homogeneous; loose	2;
At 19.5; tan to gray; 70% fine to medium sand; 30%	3 7 9	1.5	741	- ≚ - - - - -			At approximately 15'; fi	rst encountered ground water.	
							At 19.5; tan to gray; 70	% fine to medium sand; 30%	

PRC LOC DRI DRI LOC	DJECT NA CATION LLED BY LL METH GED BY	AME 1 1 (I HOD H (H	TEXACO 501 CUS DISCOVI ISA Russell T	SITE - 7 SHMAN S ERY hompson	TES FA(ST, FAI) 1	CILITY #63-057-0003 RBANKS, ALASKA	BORING NO. PAGE REFERENCE ELEV. TOTAL DEPTH DATE COMPLETED	MW-7 2 OF 2 25.00' 9/2/92
BLOWS PER 6 INCHES	RECOVERY (FT)	DATA- LOGGER PID (PPM)	GROUND MATER LEVELS	FRFTH. SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION	
						medium gravel (1 1, hydrocarbon-like oc Bottom of Boring.	/2" diameter); wet; lor.	
	Bi Ul	EMARKS rilled using op pon complet	S continuous tion, the bc	flight, holl oring was co	ow stem a onverted in	uger equipment. Samples were nto a 25-foot-deep, 4-inch-diam	collected using a split-spoon sample eter ground water monitoring well.	

LOG OF EXPLORATORY BORING PROJECT NAME TEXACO SITE - TES FACILITY #63-657-003 DORING NO. SA DRILLED BY DSICUSMAN ST, FAIRBANNS, ALSKA PAGE REFERENCE LLEV. DRILLED BY DSICUSMAN DSICUSMAN PAGE REFERENCE LLEV. DRILLED BY Russell Thompson DATE COMPLETED PAGE PAGE PAGE LLOGGED BY Russell Thompson DATE COMPLETED PAGE PAGE PAGE PAGE I.GGES (F1) Coder PAGE PAGE PAGE PAGE PAGEE PAGE PAGE Sources OFA Coder PAGE PAGE<					See.			(
B. DOWS PER RECOVERY DATA- LOGGER DEC 1 P. D DEC 1 E LITHO- LOGIC LITHO- DESCRIPTION S INCHES P. D DEC 1 P. D DEC 1 E DEC 1 E DEC 1 E DEC 1 E DEC 1 D DEC 1 D DEC 1 D DESCRIPTION S INCHES 1.5 1.316 DEC 1 D DEC 1 D<	- 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PROJECT N LOCATION DRILLED E DRILL MET LOGGED B	JAME SY THOD Y	L TEXACO 1501 CUS DISCOVI HSA Russell T	OG O SITE - 7 SHMAN S ERY hompsor	DF EX FES FAC ST, FAL	PLORATORY BC CILITY #63-057-0003 RBANKS, ALASKA	DRING BORING NO. PAGE REFERENCE ELEV. TOTAL DEPTH DATE COMPLETED	SB-1 1 OF 1 14.50' 9/2/92
5 1.5 1316 5 GRAVELLY SAND (SP); trace non-plastic fines; 60% 1 1.5 1316 5 GraveLLY SAND (SP); trace non-plastic fines; 60% 3 5 1.5 1316 5 GraveLLY SAND (SP); trace non-plastic fines; 60% 3 5 1033 10 GraveLLY SAND (SP); 100% fine homogeneous sand; hydrocarbon-like odor. 2 1.0 520 ✓ ✓ At 14'; first encountered groundwater. 8 15 15 15 Bottom of Boring. Bottom of Boring. REMARKS Diricd using continuous flight, hollow stem auger equipment. Samples were collected using a split-spoon sampler. Upon completion, the boring was backfilled with bentonic chips and capped with approximately 6' of concrete.	BLOWS 6 INC	PER RECOVERY HES (FT)	DATA- LOGGER PID (PPM)	GROUND MATER LEVELS	IN FIH. SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION	
AMERICA NORTH INC 14803.00.Texaco1./sd:2	5 4 3 5 6 2 3 4	1.5 .5 1.0	1316 1033 520 REMARI Driled using Upon compl	$r = \frac{1}{2}$	10 10 10 10 11 15 15 15 15 10 10 10 10 10 10 10 10 10 10	low stem a ackfilled v	GRAVELLY SAND (fine to coarse sand gravel 3/4 inch; hyd SAND (SP); 100% find hydrocarbon-like o At 14'; first encountere Bottom of Boring.	(SP); trace non-plastic fines; 60° ; 35% subrounded fine to media drocarbon-like odor. e homogeneous sand; dor. ed groundwater. ed groundwater. et collected using a split-spoon sampler d with approximately 6" of concrete. 14803.00.Texaco1./	% Im
AMERICA NORTH INC 14803.00.Texaco1./sd:2	AMER	ICA NORTH ING	C				antiferran anti <mark>reann de la constante de la Califaciana de la constante de</mark>	14803.00.Texaco1./	sd:2.10/20/92

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LOC DRI DRI LOC	CATION LLED BY LL METH GGED BY	ME HOD	TEXACO 1501 CUS DISCOVI HSA Russell T	SITE - J HMAN S ERY hompsor	IES FAG ST, FAII	CILITY #63-057-0003 RBANKS, ALASKA	BORING NO. PAGE REFERENCE ELEV. TOTAL DEPTH DATE COMPLETED	SB-2 1 OF 1 15.00' 9/2/92
WS PER	RECOVERY (FT)	DATA- LOGGER PID (PPM)	GROUND MATER LEVELS	ENERTH. SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION	
6	.8	1229		5-1		CONCRETE GRAVELLY SAND (S 60% fine to coarse sa (3/4" diameter); dan	P); brown; 5% non-plastic find and; 35% fine to medium grav 1p; hydrocarbon-like odor.	es; el
3 3 4 4	1.5	212		10		 SAND (SP); tan; 100% damp; hydrocarbon- SAND (SP); tan; 75% fi medium gravel (3/4" hydrocarbon-like odd 	fine to medium sand; loose; like odor. ne to coarse sand, 25% fine to diameter); loose; damp; or.)
3 3 4	1.5	681			ለት በባለ ባለት በላይ የሰብ የስራ ባለት ባለት የሰብ ነው። የትምር የሰብ	At 13.5; moist. At approximately 15; fir Bottom of boring.	st encountered groundwater.	
	- Br	EMARH illed using bon compl	S continuous etion, the bo	20 flight, holl pring was b	ow stem a ackfilled v	uger equipment. Samples were rith bentonite chips and capped v	collected using a split-spoon sampler with approximately 6" of concrete.	

PRC LOC DRI DRI LOC	JECT NA ATION LLED BY LL METH GED BY	ME HOD	TEXACO 1501 CUS DISCOVI HSA Russell T	SITE - T SHMAN S ERY hompson	TES FAC	CILITY #63-057-0003 RBANKS, ALASKA	BORING NO. PAGE REFERENCE ELEV. TOTAL DEPTH DATE COMPLETED	SB-3 1 OF 1 14.50' 9/4/92
BLOWS PER 6 INCHES	RECOVERY (FT)	DATA- LOGGER PID (PPM)	GROUND MATER LEVELS	IN FIH. SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION	
5 3 4 3 5 4 4 7 8	.8 .9 1.2	1686 1213 1234				 CONCRETE GRA VELLY SAND (SE trace non-plastic fines sand; 5% coarse sand angular to subrounde hydrocarbon-like odo SAND (SP); dark grayish non-plastic fines; 95% oxide staining; micace odor. At 10'; olive gray (5Y 4/2 100% fine sand; loose hydrocarbon-like odo At 13'; trace fine gravel; a medium dense. At 14.5'; first encountere Bottom of boring. 	 P); dark olive gray (5Y 3/2); s; 50% fine sand; 15% medium; 30% fine to coarse gravel; d; damp; moderate r. a brown (2.5Y 4/2); 5% b fine sand; loose; damp; iron eous; strong hydrocarbon-like 2); trace non-plastic fines; c; damp; strong r. 	n
AMERICA		EMARK rilled using pon comple	S ζS continuous etion, the b	- 20 s flight, holl oring was b	low stem a ackfilled v	uger equipment. Samples were c vith bentonite chips and capped w	ollected using a split-spoon sampler. rith approximately 6" of concrete. 14803.00.Texaco1./s	d•2 10/20/02

PROJECT NAME LOCATION DRILLED BY DRILL METHOD LOGGED BY

TEXACO SITE - TES FACILITY #63-057-0003 1501 CUSHMAN ST, FAIRBANKS, ALASKA DISCOVERY HSA **Russell Thompson**

BORING NO. SB-4 PAGE **REFERENCE ELEV.** TOTAL DEPTH DATE COMPLETED 9/4/92

1 **OF** 1 14.50'

BLOWS PER 6 INCHES	RECOVERY (FT)	DATA- LOGGER PID (PPM)	GROUND MATER LEVELS	BEFEH.	SAMPLES	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
			-				CONCRETE
			-	- 			GRAVELLY SAND (SP); dark olive gray (5Y 3/2); trace non-plastic fines; 60% fine sand; 15% medium sand; 25% fine to coarse gravel; angular to subrounded; damp; moderate hydrocarbon-like odor.
3 3 5	1.4	505	-	5-			SAND (SP); olive gray (5Y 4/2); trace to 5% non-plastic fines; 95 to 100% fine sand; trace coarse sand; loose; damp; sewage-/organic-like odor.
3 3 3	1.2	671	-			· · · · · · · · · · · · · · · ·	At 7.5; 5% non-plastic fines; 95% fine sand; damp; sewage-/organic-like odor.
3 3 5	1.4	253		10			At 10'; trace trace non-plastic fines; 95% fine sand; 5% coarse sand; loose; damp; sewage-/organic-like odor.
6 5 5	1.1	1895	-				At 13'; 100% fine sand; trace coarse sand; loose; trace fine gravel; angular to subrounded; moist.
				15			At 14.5'; first encountered groundwater. Bottom of Boring.
	R	EMARKS	Continue de la contin	- 20			
	UI	pon complet	ion, the b	oring wa	as bac	w stem a kfilled v	with bentonite chips and capped with approximately 6" of concrete.

PROJECT NAME LOCATION DRILLED BY DRILL METHOD LOGGED BY TEXACO SITE - TES FACILITY #63-057-0003 1501 CUSHMAN ST, FAIRBANKS, ALASKA DISCOVERY HSA Russell Thompson

BORING NO.	SB-5
PAGE	1 OF 1
REFERENCE ELEV.	
TOTAL DEPTH	14.50'
DATE COMPLETED	9/5/92

SAMPLES BLOWS PER RECOVERY LITHO-LITHOLOGIC DATA-RFPH. LOGGER LOGIC DESCRIPTION 6 INCHES (FT) PID COLUMN (PPM) CONCRETE GRAVELLY SAND (SP); dark olive gray (5Y 3/2); trace non-plastic fines; 60% fine sand; 10% medium sand; 5% coarse sand; 25% fine to coarse gravel; angular to subrounded; damp. 5 SAND (SP); dark grayish brown (5Y 4/1); trace 1.3 20 3 non-plastic fines; 100% fine sand; loose; damp. 4 5 10 -GRAVELLY SAND (SP); trace non-plastic fines; 30% 1.1 28 4 fine sand; 10% medium sand; 25% coarse sand; 35% 9 fine to coarse gravel; subrounded to rounded; 11 medium dense; damp. At 13'; moist to wet; moderate hydrocarbon-like odor. 1.3 405 4 8 10 ⊻ At 14.5'; first encountered groundwater. 15 -Bottom of Boring. 20 REMARKS Drilled using continuous flight, hollow stem auger equipment. Samples were collected using a split-spoon sampler. Upon completion, the boring was backfilled with bentonite chips and capped with approximately 6" of concrete.

PROJECT NAME LOCATION DRILLED BY DRILL METHOD LOGGED BY

TEXACO SITE - TES FACILITY #63-057-0003 1501 CUSHMAN ST, FAIRBANKS, ALASKA DISCOVERY HSA **Russell Thompson**

PAGE TOTAL DEPTH

BORING NO. SB-6 **REFERENCE ELEV.** DATE COMPLETED

1 **OF** 1

14.50' 9/5/92

BLOWS PER 6 INCHES	RECOVERY (FT)	DATA- LOGGER PID (PPM)	GROUND WATER LEVELS	DEPTH. SAMPLES	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
						CONCRETE GRAVELLY SAND (SP); dark olive gray (5Y 3/2); trace non-plastic fines; 40% fine sand; 10% medium sand; 15% coarse sand; 35% fine to coarse gravel; subrounded; damp.
3 3 3	1.4	21	-	5	· · · · · · · · · · · · · · · · · · ·	SAND (SP); olive brown; (2.5Y 4/4); 5% non-plastic fines; 95% fine sand; loose; damp; organics.
6 6 12		87				 GRAVELLY SAND (SP); dark grayish brown (2.5Y 3/2); 5% non-plastic fines; 70% fine sand; 5% medium sand; 20% fine to coarse gravel; angular to subrounded; damp to moist; slight hydrocarbon-like odor. At 10'; dark gray (5Y 5/2) trace non-plastic fines; 30% fine sand; 20% medium sand; 20% coarse sand; 30% fine to coarse gravel; subrounded to rounded; medium dense; damp; moderate hydrocarbon-like odor.
4 4 7		688				 SANDY SILT (ML); olive gray (5Y 5/2); 60% slightly plastic fines; 30% fine sand; 5% medium sand; 5% coarse sand; medium dense; damp to moist; slight hydrocarbon-like odor. SAND (SP); olive gray (5Y 4/2); trace non-plastic fines; 100% fine sand; trace coarse sand; loose; wet; moderate hydrocarbon-like odor. GRAVELLY SAND (SP); trace non-plastic fines; 30% fine sand; 15% medium sand; 30% coarse sand; 25% fine to coarse gravel; subangular to angular; loose; wet; moderate hydrocarbon-like odor. At 14.5'; first encountered groundwater. Bottom of Boring.
			-	- 20		

ples were collec light, hollow stem auge er equipment. Sa spiit ang Upon completion, the boring was backfilled with bentonite chips and capped with approximately 6" of concrete.

PROJECT NAME LOCATION DRILLED BY DRILL METHOD LOGGED BY TEXACO SITE - TES FACILITY #63-057-0003 1501 CUSHMAN ST, FAIRBANKS, ALASKA DISCOVERY HSA Russell Thompson

PROJECT NAME LOCATION DRILLED BY DRILL METHOD LOGGED BY TEXACO SITE - TES FACILITY #63-057-0003 1501 CUSHMAN ST, FAIRBANKS, ALASKA DISCOVERY HSA Russell Thompson

BORING NO.	MW-1
PAGE	1 OF 2
REFERENCE ELEV.	
TOTAL DEPTH	2 4.00'
DATE COMPLETED	9/2/92

	BLOWS PER 6 INCHES	RECOVERY (FT)	DATA- Logger PID (PPM)	GROUND MATER LEVELS	ERETH.	SAMPLES	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
income of the second				L			-28	CONCRETE
Attornance Reventance Activity				-	_			GRAVELLY SAND (SP), brown; 60% fine to coarse sand, 40% fine to medium gravel (1 1/2" diameter); damp.
	3 4	1.5	6	-	5-			SILT (ML); olive green-gray, 85% non-plastic silt; 10% fine sand; twigs and organic debris; stiff; damp.
	5 2 3 5	1.5	0		_			Increasing sand.
	5 8 12	1.5	25	-	10 -			 SAND (SP); gray-white; 100% fine to medium sand; loose; damp. GRAVELLY SAND (SP); tan-white; 65% fine to coarse
4	7 7		83	-				sand; 35% fine to medium gravel (1 1/2" diameter; medium-dense; moist; hydrocarbon odor.
	8			- ¥ -				sand; 60-70% fine to medium gravel (1 1/2"
1.1 M 1011	6 5 3				15 –			odor. At 14'; first encountered groundwater. GRAVELLY SAND (SW); gray; 60% fine to coarse sand; 40% fine to medium gravel (1 1/2" diameter);
	2 2 5			- - -				loose; wet; hydrocarbon-like odor. SANDY GRAVEL (GP); gray; 30-40% fine to coarse sand: 60-70% fine to medium gravel (1 1/2"
					20	ا		
			EMARKS rilled using c pon completi	ontinuous ion, the bo	flight, oring w	holl as co	ow stem a onverted i	uger equipment. Samples were collected using a split-spoon sampler. nto a 25-foot-deep, 4-inch-diameter ground water monitoring well.

			in and the second s		EEV		DINC	
PRC LOC DRI DRI LOC	DJECT NA CATION LLED BY LL METH GED BY	AME T 11 (D HOD H (R	EXACO 501 CUS 501 CUS 1SCOVI 5A 1SA 1ussell T	BORING NO. PAGE REFERENCE ELEV. TOTAL DEPTH DATE COMPLETED	MW-1 2 OF 2 24.00' 9/2/92			
BLOWS PER 6 INCHES	RECOVERY (FT)	DATA- LOGGER PID (PPM)	GROUND MATER LEVELS	IN FIH. SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION	
				25 30 35 		diameter); mediun odor. No sample, sluffing in Bottom of boring.	hole	
	B U	EMARK Filled using pon complet	S continuou tion, the b	s flight, hol oring was c	low stem a onverted	auger equipment. Samples we into a 25-foot-deep, 4-inch-dia	re collected using a split-spoon sampler meter ground water monitoring well.	

PRC LOC DRI DRI LOC	DIECT NA CATION LLED BY LL METH GED BY	AME	FEXACO 1501 CUS DISCOVI HSA Russell T	SITE - T SHMAN S ERY hompson	TES FAC	CILITY #63-057-0003 RBANKS, ALASKA	BORING NO. PAGE REFERENCE ELEV. TOTAL DEPTH DATE COMPLETED	MW-2 1 OF 2 25.50' 9/3/92
LOWS PER 5 INCHES	RECOVERY (FT)	DATA- LOGGER PID (PPM)	GROUND LATER LEVELS	IN FIH. SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION	
						CONCRETE GRAVELLY SAND (SF 70-80% sand; (fine to 3/4 inch diameter; mo	?); grayish brown, (2.5Y 5/2) medium); 20-30% gravel to oist.	
10 5 3	1.	4.2		5	· · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · ·	At 5'; olive gray (5Y 5/2) SAND (SP); olive gray (5 medium); 10% gravel). 5Y 5/2); 90% sand (fine to (1/2" diameter); moist.	
3 4 4	1.5	350		10	 	SAND (SP); olive gray/g to 5Y 5/1 to 10YR 5/ moist.	ray/yellowish brown (5Y 5/2 (4); 100% fine to medium san) d;
3 3 3	1.2	585			• • • • • •	At 13'; olive gray (5Y 5/2 medium); very moist; At 13.5'; first encountere	2); 100% sand (fine to strong hydrocarbon-like odo d groundwater.	r.
62	.5			20	· · · · · · <	High blow count because At 17.5; dark olive gray (medium sand; wet; str	of heaving sands. (5Y 3/2); 100% fine to cong hydrocarbon-like odor.	
	B	EMARK rilled using pon comple	S continuous etion, the be	flight, holl oring was co	ow stem a onverted in	uger equipment. Samples were c nto a 25-foot-deep, 4-inch-diamet	ollected using a split-spoon sampler er ground water monitoring well.	
AMERICA	NORTH INC	x					14803.00.Texaco1./	sd:2.10/20/9

					Neger		an a		
_	P			L	.0G 0	FEX	PLORATORY BO	RING	
**************************************	PRC LOC DRI DRI LOC	DJECT NA CATION LLED BY LL METI GED BY	AME T 1 Y D HOD H (R	EXACO 501 CUS DISCOVE ISA Russell T	SITE - 7 HMAN S ERY hompson	TES FAC	CILITY #63-057-0003 RBANKS, ALASKA	BORING NO. PAGE REFERENCE ELEV. TOTAL DEPTH DATE COMPLETED	MW-2 2 OF 2 25.50' 9/3/92
	BLOWS PER 6 INCHES	RECOVERY (FT)	DATA- LOGGER PID (PPM)	GROUND MATER LEVELS	DEPTH. SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION	:
	42	.1					Driller indicated gravel At 25'; 90% sand (fine t diameter); wet; stror Bottom of boring.	at approximately 23 feet. o medium); 10% gravel (to 1/ ng hydrocarbon-like odor.	/2"
- T - X		E U	EMARK Filled using Jpon comple	S continuous tion, the be	s flight, hol oring was c	low stem a onverted	auger equipment. Samples were into a 25-foot-deep, 4-inch-diame	collected using a split-spoon sampler eter ground water monitoring well.	r.
×	AMERICA	NORTH INC					an mana mangana ngangan nganga Ngangan ngangan n	14803.00.Texaco1./	/sd:2.10/20/92

PRO LOC DRII DRII LOG	JECT NA ATION LLED BY GED BY	ME T 1: (D HOD H (R	EXACO 501 CUS DISCOVI ISA Aussell T	SITE - 7 SHMAN S ERY hompsor	TES FAC	CILITY #63-057-0003 RBANKS, ALASKA	BORING NO. PAGE REFERENCE ELEV. TOTAL DEPTH DATE COMPLETED	MW-3 1 OF 2 25.00' 9/2/92
LOWS PER 6 INCHES	RECOVERY (FT)	DATA- LOGGER PID (PPM)	GROUND WATER LEVELS	DR FTH. SAMPLES	LITHO- LOGIC COLUMN		LITHOLOGIC DESCRIPTION	
7 6 9	1.5	0				 SILTY SAND (SM); ta 40% fine to coarse s (3/4" diameter); dar SILT (ML) brown; 85% trace fine gravel (3/ noticable odor. SANDY GRAVEL (GV 35% fine to coarse s (1 1/2" diameter); n At 10'; tan; 5% non-plat sand; 60% fine to m At 14'; first encountered Increasing gravel from 1 	n to gray; 35% non-plastic silt; and; 25% fine to medium grav np. 6 non-plastic silt; 10% fine sand 4" diameter); stiff; damp; no W); brown; 10% non-plastic sil and; 55% fine to medium grav redium dense. stic silt; 35% fine to coarse edium gravel; dense. d groundwater. 15.0 to 16.5 feet.	el d; t; el
			- - -	20		Increasing sand.		
	Br Ur	EMARKS filled using c pon complet	S continuous ion, the bo	flight, holl bring was co	low stem a onverted in	uger equipment. Samples were nto a 25-foot-deep, 4-inch-diame	collected using a split-spoon sampler. eter ground water monitoring well.	

DRILLED DRILL ME LOGGED I	N BY THOD 3Y	1501 CUSHMAN DISCOVERY HSA Russell Thompson	TES FACILITY #63- ST, FAIRBANKS, AI	057-0003 BORING NO. MW-3 ASKA PAGE 2 OF 2 REFERENCE ELEV. TOTAL DEPTH 25.00' DATE COMPLETED 9/2/92
DWS PER RECOVER INCHES (FT)	CY DATA- LOGGER PID (PPM)	GROUND MATER LEVELS IRFTH SAMPLES	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
			Sluffing, no Sluffing, no Bottom of	o sample collected. Boring

OWS PER RECOVERY INCHES (FT)	DATA- LOGGER PID (PPM)	CROUND LEVELS LEVELS PRPTH		LITHOLOGIC DESCRIPTION CONCRETE SAND (SP); brown; 5% non-plastic silt; 70% fine to coarse sand; 25% fine to medium gravel; (1" diameter); damp. SILT (ML) brown; 90% non-plastic silt; 10% fine sand; wood debris and roots; firm; damp. At 5.5; color changes to gray, no wood debris visible.
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	7			 CONCRETE SAND (SP); brown; 5% non-plastic silt; 70% fine to coarse sand; 25% fine to medium gravel; (1" diameter); damp. SILT (ML) brown; 90% non-plastic silt; 10% fine sand; wood debris and roots; firm; damp. At 5.5'; color changes to gray, no wood debris visible.
3 1.5 7				
10	34			SAND (SP); gray-white; 100% fine to medium sand; medium dense; damp; hydrocarbon-like odor.
3 1.5 8 17	916			At 15'; first encountered groundwater. SANDY GRAVEL (GP); gray; 35% fine to coarse sand; 65% fine to medium gravel, (1 1/2" diameter); medium dense; wet; sheen on soils; hydrocarbon-like odor.
E L	SEMARK Drilled using Jpon comple	20 20 20 20 20 20 20 20 20 20 20 20 20 2	ow stem a onverted in	auger equipment. Samples were collected using a split-spoon sampler. into a 25-foot-deep, 4-inch-diameter ground water monitoring well.

LOG OF EXPLORATORY BORING										
PROJECT NAMETEXACO SITE - TES FACILITY #63-057-0003BORING NO.MW-4LOCATION1501 CUSHMAN ST, FAIRBANKS, ALASKAPAGE2 OF 2DRILLED BYDISCOVERYREFERENCE ELEV.70TAL DEPTH25.00'DRILL METHODHSADATE COMPLETED9/2/92	nyanuna 19 10-runun									
BLOWS PER RECOVERY 6 INCHES (FT) DATA- DOGGER PID (PPM) DATA- DOGGER PID (PPM) DATA- DOGGER PID (PPM) DATA- DOGGER PID (PPM) DATA- DOGGER COLUMN										
7 1.5 -										
REMARKS Drilled using continuous flight, hollow stem auger equipment. Samples were collected using a split-spoon sampler. Upon completion, the boring was converted into a 25-foot-deep, 4-inch-diameter ground water monitoring well.										
AMERICA NORTH INC 14803.00.Texaco1./sd:2.10/2	0/92									

Appendix B

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Well Details











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Appendix C

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Version

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Water Sample Field Data Sheets

Appendix C

Water Sample Field Data Sheets

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PROJEC CLIENT LOCATI SAMPLE	PROJECT NUMBER:14803.00SAMPLE ID:MW-1CLIENT:TEXACODATE:SEPTEMBER 10, 1992LOCATION:1501 CUSHMAN ST, FBKS, AKSAMPLE POINT DESIGNATION:MW-1SAMPLER:JFB										
XG	ROUND WAT	TER	SURF	ACE WATER	OTHER						
CASING CASING DEPTH DEPTH CALCUL ACTUAL	CASING DIAMETER: 2 INCH 3 INCH X 4 INCH 6 INCH OTHER CASING ELEVATION (Feet/Datum): DEPTH TO WATER (Feet/TOC): 14.55 DEPTH OF WELL (Feet/TOC): 23.00 CALCULATED PURGE VOLUME (Gallons): 20.36 ACTUAL PURGE VOLUME (Gallons):										
FIELD MEASUREMENTS											
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER					
0820		7.05	51	2.3	SILTY/GRAY						
0837	0837 20 7.20		30	1.2	CLEAR	SLIGHT ODOR					
0851	0851 40 7.28		31	0.7	LOW SILT/GRAY	MODERATE ODOR					
0906	06 60 7.29 31		31	0.1	CLEAR						
0822	2 80 7.27 32		0.3	CLEAR	:						
ODOR:	Hydrocan	bon odor		·							
2" X SUB PER	2" BLADDER PUMP BAILER (Teflon) WELL WIZARD DEDCICATED x SUBMERSIBLE PUMP BAILER (PVC) CENTRIFUGAL PUMP OTHER peristaltic pump DIPPER PNEUMATIC DISPLACEMENT PUMP										
1			SAMPL	E METHOD							
2" SUR PER	BLADDER PUN FACE SAMPLI ISTALTIC PU	ſР SR JMP	BAILER (Teflo BAILER (PVC) SUBMERSIBLE PUMP	n) WELL WIZZ DIPPER	ARD DEDCI OTHER	D DEDCICATED OTHER					
WELL I REMARK	NTEGRITY: S: Shut	Good, nee down at 09	eds locking c 930.	ap.							
SIGNAT	URE:			······	PAGE	1 OF 1					

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PROJEC CLIENT LOCATI SAMPLE	PROJECT NUMBER:14803.00SAMPLE ID:MW-2CLIENT:TEXACODATE:SEPTEMBER 9, 1992LOCATION:1501 CUSHMAN ST, FBKS, AKSAMPLE POINT DESIGNATION:MW-2SAMPLER:JFBJFBJFB										
XG	ROUND WAT	TER	SURF	ACE WATER	OTHER						
CASING	DIAMETER	R: 2 IN	CH 3 INC	H X 4 INCH	6 INCH C	THER					
CASING DEPTH DEPTH CALCUL ACTUAL	CASING ELEVATION (Feet/Datum): DEPTH TO WATER (Feet/TOC): 13.21 DEPTH OF WELL (Feet/TOC): 24.0 CALCULATED PURGE VOLUME (Gallons): 26.0 ACTUAL PURGE VOLUME (Gallons): FIELD MEASUREMENTS										
FIELD MEASUREMENTS											
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER					
1528		7.09	49	6.4	SILT/GRAY						
1536	26	7.15	39	6.4	LOW SILT/LT GRAY						
1544	52	7.05	39	6.8	LOW SILT/LT GRAY						
1553	78	7.11	39	7.5	CLEAR						
1604	104	7.11	40	6.7	LOW SILT/LT GRAY						
1617	130	7.16	39	6.2	CLEAR						
ODOR:	Slight h	ydrocarbo	n odor.								
• ••••			PURGE	E METHOD							
2" BLADDER PUMP BAILER (Teflon) WELL WIZARD DEDICATED X SUBMERSIBLE PUMP BAILER (PVC) CENTRIFUGAL PUMP OTHER PERISTALTIC PUMP DIPPER PNEUMATIC DISPLACEMENT PUMP											
			SAMPL	E METHOD							
2" I SURI PER	BLADDER PUM FACE SAMPLE ISTALTIC PU	IP CR IMP	BAILER (Teflo BAILER (PVC) SUBMERSIBLE PUMP	n) WELL WIZZ DIPPER	ARD DEDICAT OTHER	ED					
WELL I REMARK sample	NTEGRITY: S: Sheen	Good. noted on	drummed purg	e water but not	visible in bai	ler					
SIGNAT	URE:				PAGE 1	of 1					

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PROJEC CLIENT LOCATI SAMPLE	PROJECT NUMBER:14803.00SAMPLE ID:MW-3CLIENT:TEXACODATE:SEPTEMBER 10, 1992LOCATION:1501CUSHMAN ST, FBKS, AKSAMPLE POINT DESIGNATION:MW-3SAMPLER:JFBJFBJFBJFB														
XG	ROUND WAY	rer	SURF	ACE WATER	OTHER										
CASING	DIAMETER	R: 2 IN	CH 3 INC	H X 4 INCH	6 INCH C	THER									
CASING ELEVATION (Feet/Datum): DEPTH TO WATER (Feet/TOC): 13.41 DEPTH OF WELL (Feet/TOC): 24.0 CALCULATED PURGE VOLUME (Gallons): 25.5 ACTUAL PURGE VOLUME (Gallons):															
FIELD MEASUREMENTS															
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER									
1416	` 	7.63	29	6.8	LOW SILT/LT GRAY										
1430	.430 25.5 7.53 30		30	5.0	LOW SILT/LT GRAY										
1445	1445 51.0 7.52		30	4.2	CLEAR										
1500	76.5 7.49 30		3.7	CLEAR											
1518	102	7.51	29	3.4	LOW SILT/LT GRAY	·									
ODOR:	NONE														
			PURGE	E METHOD											
2" X SUB PER	2" BLADDER PUMP BAILER (Teflon) WELL WIZARD DEDICATED X SUBMERSIBLE PUMP BAILER (PVC) CENTRIFUGAL PUMP OTHER PERISTALTIC PUMP DIPPER PNEUMATIC DISPLACEMENT PUMP														
			SAMPL	E METHOD											
2" SUR PER	2" BLADDER PUMP BAILER (Teflon) WELL WIZARD DEDICATED SURFACE SAMPLER BAILER (PVC) DIPPER OTHER PERISTALTIC PUMP SUBMERSIBLE PUMP														
WELL I REMARK	NTEGRITY: S:	Good													
SIGNAT	URE:				PAGE 1	SIGNATURE: PAGE 1 OF 1									

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PROJECT NUMBER:14803.00SAMPLE ID:MW-4CLIENT:TEXACODATE:SEPTEMBER 9, 1992LOCATION:1501 CUSHMAN ST, FBKS, AKSAMPLE POINT DESIGNATION:MW-4SAMPLER:JFBSAMPLER:JFB							
X GROUND WATER SURFACE WATER OTHER							
CASING	; DIAMETER	R: 2 IN	СН З ІМС	H X 4 INCH	6 INCH	OTHER	
CASING DEPTH	; ELEVATI(To Water	ON (Feet/D (Feet/TOC	atum):):	12.95			
DEPTH	OF WELL	(Feet/TOC)		24.0			
CALCUL ACTUAL	ATED PURC	GE VOLUME DLUME (Gal.	(Gallons): lons):	26.6			
	,		FIELD ME	ASUREMENTS			
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER	
1400		6046	50	14.	MED GRAY		
1410	27	6.99	40	10.6	LT GRAY		
1420	54	7.00	35	9.3	CLEAR		
1435	81	7.04	30	7.6	CLEAR		
1447	108	7.10	30	7.5	CLEAR		
1458	135	7.08	31	7.0	CLEAR		
ODOR:	Slight h	nydrocarbo	n odor.				
			PURGE	E METHOD			
2" BLADDER PUMP BAILER (Teflon) WELL WIZARD DEDICATED X SUBMERSIBLE PUMP BAILER (PVC) CENTRIFUGAL PUMP OTHER PERISTALTIC PUMP DIPPER PNEUMATIC DISPLACEMENT PUMP							
SAMPLE METHOD							
2" BLADDER PUMPBAILER (Teflon)WELL WIZARDDEDICATEDSURFACE SAMPLERBAILER (PVC)DIPPEROTHERPERISTALTIC PUMPSUBMERSIBLE PUMPPUMPOTHER						CATED R	
WELL INTEGRITY: Good REMARKS: Shut down at 1506, 155 gallons.							
						1 OF 1	

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PROJEC CLIENT LOCATI SAMPLE	T NUMBER: TEXACO CON: 1501 CR: JFB	: 14803.0 D L CUSHMAN,	0 FBKS, AK	SAMPLE ID: DATE: SEP SAMPLE POI	MW-5 TEMBER 10, 1992 NT DESIGNATION:	MW-5		
X GROUND WATER SURFACE WATER OTHER								
ASING DIAMETER: 2 INCH 3 INCH X 4 INCH 6 INCH OTHER								
CASING ELEVATION (Feet/Datum):DEPTH TO WATER (Feet/TOC):13.63DEPTH OF WELL (Feet/TOC):23.5CALCULATED PURGE VOLUME (Gallons):23.78ACTUAL PURGE VOLUME (Gallons):								
an de			FIELD ME	ASUREMENTS				
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER		
1005		7.33	31	2.5	LOW SILT/LT GRAY			
1021	24	7.27	31	1.7	LOW SILT/LT GRAY			
1035	48	7.26	30	1.7	CLEAR			
1055	72	7.33	31		CLEAR			
11.13	96	7.33	31	2.5	CLEAR			
			,					
ODOR:	Moderate	hydrocar	bon odor.					
			PURGH	E METHOD				
2" BLADDER PUMP BAILER (Teflon) WELL WIZARD DEDICATED X SUBMERSIBLE PUMP BAILER (PVC) CENTRIFUGAL PUMP OTHER PERISTALTIC PUMP DIPPER PNEUMATIC DISPLACEMENT PUMP								
SAMPLE METHOD								
2" BLADDER PUMPBAILER (Teflon)WELL WIZARDDEDICATEDSURFACE SAMPLERBAILER (PVC)DIPPEROTHERPERISTALTIC PUMPSUBMERSIBLEPUMP					ED			
WELL INTEGRITY: Good (EMARKS: Shut down generator between 1045 and 1050 to refill gas. Shut down -at 1115.								
···· ••								
SIGNATURE: PAGE 1 OF 1								

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PROJECT NUMBER:14803.00SAMPLE ID:MW-6LIENT:TEXACODATE:SEPTEMBER 10, 1992LOCATION:1501 CUSHMAN, FBKS, AKSAMPLE POINT DESIGNATION:MW-6BAMPLER:JFBJFBJFB							
X GROUND WATER SURFACE WATER OTHER							
CASING DIAMETER: 2 INCH 3 INCH X 4 INCH 6 INCH OTHER							
CASING ELEVATION (Feet/Datum):)EPTH TO WATER (Feet/TOC):13.16)EPTH OF WELL (Feet/TOC):24.0CALCULATED PURGE VOLUME (Gallons):26.1ACTUAL PURGE VOLUME (Gallons):10.11							
			FIELD ME	ASUREMENTS			
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER	
1705		7.36	49	4.7	LOW SILT/LT GRAY		
1720	26	7.32	40	4.0	CLEAR		
1735	52	7.40	39	3.6	CLEAR		
1750	78	7.43	39	. 3.1	CLEAR		
1805	104	7.37	39	• 3.2	LOW SILT/LT GRAY		
~~•							
ODOR:	NONE					1	
2" BLADDER PUMP BAILER (Teflon) WELL WIZARD DEDICATED							
X SUBMERSIBLE PUMP BAILER (PVC) CENTRIFUGAL PUMP OTHER PERISTALTIC PUMP DIPPER PNEUMATIC DISPLACEMENT PUMP					R		
SAMPLE METHOD							
2" BLADDER PUMP BAILER (Te: SURFACE SAMPLER BAILER (PV PERISTALTIC PUMP SUBMERSIBLI PUMP			BAILER (Teflo BAILER (PVC) SUBMERSIBLE PUMP	n) WELL WIZARD DEDICATED DIPPER OTHER		ED	
WELL INTEGRITY: Good. EMARKS: Shut down at 1810.							
SIGNATURE: PAGE 1 OF 1							

Environmental Consulting & Engineering • Health & Safety

PROJECT NUMBER:14803.00SAMPLE ID:MW-7CLIENT:TEXACODATE:SEPTEMBER 10, 1992LOCATION:1501 CUSHMAN ST, FBKS, AKSAMPLE POINT DESIGNATION:MW-7SAMPLER:JFBJFBMW-7								
X GROUND WATER SURFACE WATER OTHER								
CASING DIAMETER: 2 INCH 3 INCH X 4 INCH 6 INCH OTHER								
CASING ELEVATION (Feet/Datum):DEPTH TO WATER (Feet/TOC):13.6DEPTH OF WELL (Feet/TOC):24.0CALCULATED PURGE VOLUME (Gallons):25.1ACTUAL PURGE VOLUME (Gallons):25.1								
- 			FIELD ME	ASUREMENTS				
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER		
1200		7.63	50	3.5	LOW SILT/LT GRAY			
1215	25	7.50	40	4.1	CLEAR			
1230	50	7.46	39	4.0	CLEAR			
1245	75	7.42	40	3.7	CLEAR			
1300	100	7.39	40	4.4	CLEAR			
ODOR:	Moderate	e hydrocar	bon odor.			·····		
at any			PURGE	E METHOD				
2" BLADDER PUMP BAILER (Teflo X SUBMERSIBLE PUMP BAILER (PVC) PERISTALTIC PUMP DIPPER				WELL WIZARD DEDICATED CENTRIFUGAL PUMP OTHER PNEUMATIC DISPLACEMENT PUMP				
SAMPLE METHOD								
2" BLADDER PUMP BAILER (Teflor SURFACE SAMPLER BAILER (PVC) PERISTALTIC PUMP SUBMERSIBLE PUMP) WELL WIZARD DEDICATED DIPPER OTHER		ED			
WELL INTEGRITY: Good REMARKS: Shut down at 1305.								
SIGNATURE: PAGE 1 OF 1					OF 1			
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PROJEC CLIENT LOCATI SAMPLE	T NUMBER: T: TEXACO CON: 1501 CR: JFB	: 14803.0 D L CUSHMAN	0 ST, FBKS, AK	SAMPLE ID: DATE: SEP SAMPLE POID	0105091592 FEMBER 15, 199 NT DESIGNATION	92 N: MW-1
XG	ROUND WAT	TER	SURF	ACE WATER	OTHER	
CASING	; DIAMETER	R: 2 IN	CH 3 INC	H X 4 INCH	6 INCH	OTHER
CASING DEPTH DEPTH CALCUI ACTUAL	ELEVATIO TO WATER OF WELL ATED PURO PURGE VO	DN (Feet/D (Feet/TOC) (Feet/TOC) GE VOLUME DLUME (Gal	atum):): : (Gallons): lons):	14.62 23.0 20.2		
			FIELD ME	ASUREMENTS		
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER
1020		7.23	49	0.6	LT GRAY	
1025	20	7.31	40	0.5	CLEAR	•
1030	40	7.33	39	0.4	CLEAR	
1036	60	7.36	39		CLEAR	· · · · · · · · · · · · · · · · · · ·
1038	65	7.34	40	0.1	CLEAR	
ODOR:	Moderate	e hydrocarl	oon odor.			
			PURGE	E METHOD		
2" X SUB PER	BLADDER PUN MERSIBLE PU ISTALTIC PU	4P F JMP F JMP I	BAILER (Teflon) BAILER (PVC) DIPPER	WELL WIZARD CENTRIFUGAL PNEUMATIC DISPLACEME	DE PUMP OT NT PUMP	DICATED HER
·· 4			SAMPL	E METHOD		
2" BLADDER PUMP X BAILER (Teflon) WELL WIZARD DEDICATED SURFACE SAMPLER BAILER (PVC) DIPPER OTHER PERISTALTIC PUMP SUBMERSIBLE PUMP						
WELL INTEGRITY: Good REMARKS: Needs locking cap and magnet. Shut pump down at 1040. Sample at 1045. Water level at 14.63						
SIGNAT	URE:				PAGE	1 OF 1

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PROJEC SLIENT LOCATI	T NUMBER: TEXACO ON: 1501 R: JFB	14803.0 D CUSHMAN	0 ST, FBKS, AK	SAMPLE ID: DATE: SEP SAMPLE POI	0207091592 FEMBER 15, 199 NT DESIGNATIO	91 N: MW-2
X G	ROUND WAT	TER	SURF	ACE WATER	OTHER	
ASING	; DIAMETER	R: 2 IN	CH 3 INC	H X 4 INCH	6 INCH	OTHER
CASING)EPTH)EPTH CALCUI \CTUAI	GELEVATION TO WATER OF WELL ATED PURG PURGE VO	DN (Feet/D) (Feet/TOC) (Feet/TOC) GE VOLUME DLUME (Gal)	atum):): : (Gallons): lons):	13.32 24.0 25.7		
			FIELD ME	ASUREMENTS		
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER
1235		7.49	39	1.3	LT GRAY	
1248	26	7.48	39	1.4	LT GRAY	
1258	57	7.42	39	1.6	CLEAR	
1315	78	7.47	39	1.7	CLEAR	
ODOR:	Strong o	dor.	PURGE	E METHOD		
2" X SUB PER	BLADDER PUN MERSIBLE PU ISTALTIC PU	1P F IMP F IMP I	BAILER (Teflon) BAILER (PVC) DIPPER	WELL WIZARD CENTRIFUGAL PNEUMATIC DISPLACEME	DE PUMP OI NT PUMP	EDICATED THER
·····\$			SAMPL	E METHOD		
2" BLADDER PUMP X BAILER (Teflon) WELL WIZARD DEDICATED SURFACE SAMPLER BAILER (PVC) DIPPER OTHER PERISTALTIC PUMP SUBMERSIBLE PUMP						
WELL INTEGRITY: Good EMARKS: Generator shut down from 1300 to 1306. Sample at 1320. Water leavel at 13.24. Duplicated taken at 1325; sample ID 0208091592.						
SIGNAT	URE:				PAGE	1 OF 1

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PROJEC CLIENI LOCATI SAMPLE	T NUMBER: TEXACO ON: 1501 R: JFB	: 14803.0 D L CUSHMAN	0 ST, FBKS, AK	SAMPLE ID: DATE: SEP SAMPLE POI	0301091492 TEMBER 14, 199 NT DESIGNATION	92 N: MW-3	
X G	ROUND WAT	TER	SURF	ACE WATER	OTHER		
CASING	DIAMETER	R: 2 IN	ICH 3 INC	H X 4 INCH	6 INCH	OTHER	
CASING DEPTH DEPTH CALCUI ACTUAL	ELEVATIO TO WATER OF WELL ATED PURG PURGE VO	DN (Feet/D (Feet/TOC) (Feet/TOC) SE VOLUME DLUME (Gal	atum):): : (Gallons): lons):	13.45 24.0 25.4			
A			FIELD ME	ASUREMENTS			
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER	
1418		6.56	30	9.9	MED GRAY		
1427	26	6.82	30	7.6	MED GRAY		
1432	52	6.83	29	6.4	LT GRAY		
1439	77	6.90	30	5.8	LT GRAY		
1447	102	6.92	30	5.9	CLEAR		
• 							
ODOR:	No odor						
2" X SUB PER	BLADDER PUM MERSIBLE PU ISTALTIC PU	1P I IMP I IMP I	PURGE BAILER (Teflon) BAILER (PVC) DIPPER	E METHOD WELL WIZARD CENTRIFUGAL PNEUMATIC DISPLACEME	DE PUMP OT ENT PUMP	DICATED HER	
SAMPLE METHOD 2" BLADDER PUMP X BAILER (Teflon) WELL WIZARD DEDICATED SURFACE SAMPLER BAILER (PVC) DIPPER OTHER PERISTALTIC PUMP SUBMERSIBLE PUMP							
WELL I ≷EMARK	NTEGRITY: S: Shut	Good down at 14	450. Sampled	at 1500. Wate	er level at 13	.45.	
JIGNAT	URE:				PAGE	1 OF 1~	

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PROJECT NUMBER:14803.00SAMPLE ID:0404091592CLIENT:TEXACODATE:SEPTEMBER 15, 1992LOCATION:1501 CUSHMAN ST, FBKS, AKSAMPLE POINT DESIGNATION:MW-4SAMPLER:JFBMW-4								
x	GROUND WAT	rer	SURF	ACE WATER	OTHER			
CASING	G DIAMETER	R: 2 IN	CH 3 INC	H X 4 INCH	6 INCH	OTHER		
CASING ELEVATION (Feet/Datum):DEPTH TO WATER (Feet/TOC):13.01DEPTH OF WELL (Feet/TOC):24.0CALCULATED PURGE VOLUME (Gallons):26.5ACTUAL PURGE VOLUME (Gallons):10.00								
			FIELD ME	ASUREMENTS				
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER		
0845		7.17	30	0.5	LT GRAY			
0853	27	7.25	30	0.9	CLEAR			
0902	54	7.29	30	1.0	CLEAR			
0908	81	7.29	30	1.1	CLEAR			
. 8				<u>, </u>	***			
						l		
ODOR:	Slight o	odor						
2" X SUB PER	BLADDER PU MERSIBLE PU ISTALTIC PU	MP H JMP H JMP I	PURGE BAILER (Teflon) BAILER (PVC) DIPPER	E METHOD WELL WIZARD CENTRIFUGAL PNEUMATIC DISPLACEME	DE PUMP OT NT PUMP	DICATED HER		
-			SAMPL	E METHOD				
2" BLADDER PUMP X BAILER (Teflon) WELL WIZARD DEDICATED SURFACE SAMPLER BAILER (PVC) DIPPER OTHER PERISTALTIC PUMP SUBMERSIBLE PUMP								
WELL INTEGRITY: Good REMARKS: Needs locking cap and magnet. Shut down at 0908. Sample at 0915. Water level at 13.04.								
SIGNAT	URE:				PAGE	1 OF 1		
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PROJEC CLIENT LOCATI SAMPLE	CT NUMBER T: TEXACO ION: 1503 ER: JFB	: 14803.0 D 1 CUSHMAN	0 ST, FBKS, AK	SAMPLE ID: DATE: SEP SAMPLE POI	0506091592 TEMBER 15, 199 NT DESIGNATION	2 1: MW-5	
X	ROUND WA	FER	SURF	ACE WATER	OTHER		
CASING	DIAMETE	R: 2 IN	CH 3 INC	H X 4 INCH	6 INCH	OTHER	
CASING DEPTH	G ELEVATIO TO WATER	ON (Feet/D (Feet/TOC	atum):):	13.73			
DEPTH	OF WELL	(Feet/TOC)	: (Collers):	23.5			
ACTUAI	LATED PURC D PURGE V(GE VOLUME CLUME (Gal	(Gallons): lons):	23.5			
			FIELD ME	ASUREMENTS			
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER	
1135		7.63	31	0.9	LT GRAY		
1142	24	7.46	31	1.1	LT GRAY	-	
1148	48	7:41	31	1.2	LT GRAY		
1154	72	7.38	31	1.2	CLEAR		
1157	85	7.40	31	1.2	CLEAR		
ODOR:	Strong o	odor.					
			PURGE	E METHOD			
2" X SUB PER	BLADDER PU MERSIBLE PU ISTALTIC PU	MP I JMP I JMP I	BAILER (Teflon) BAILER (PVC) DIPPER	WELL WIZARD CENTRIFUGAL PNEUMATIC DISPLACEME	DEI PUMP OTI ENT PUMP	DICATED HER	
SAMPLE METHOD							
2" BLADDER PUMP X BAILER (Teflon) WELL WIZARD DEDICATED SURFACE SAMPLER BAILER (PVC) DIPPER OTHER PERISTALTIC PUMP SUBMERSIBLE PUMP							
WELL INTEGRITY: Good REMARKS: Shut down at 1159. Sample at 1200. Water level at 13.73							
SIGNAT	URE:				PAGE	1 OF 1 [~]	

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PROJEC CLIENT LOCATI SAMPLE	T NUMBER TEXACO TON: 1501 TR: JFB	: 14803.0 D 1 CUSHMAN	0 ST, FBKS, AK	SAMPLE ID: DATE: SEP SAMPLE POI	0602091492 TEMBER 14, 199 NT DESIGNATION	92 1: MW-6
XG	ROUND WAY	FER	SURF	ACE WATER	OTHER	
CASING	DIAMETEI	R: 2 IN	ICH 3 INC	H X 4 INCH	6 INCH	OTHER
DEPTH DEPTH CALCUI ACTUAL	TO WATER OF WELL ATED PURGE VO	(Feet/TOC) (Feet/TOC) GE VOLUME DLUME (Gal): : (Gallons): lons):	13.2 24.0 26.0		3
			FIELD ME	ASUREMENTS		
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER
1555		7.39	50	5.2	MED GRAY	
1607	26	7.33	40	4.4	CLEAR	
1614	52	7.30	39	3.8	CLEAR	
1620	78	7.24	39	3.4	CLEAR	
1623	90	7.23	40	3.2	CLEAR	
ODOR:	No odor					
10-0 <u>0</u>			PURGE	E METHOD		
2" X SUB PER	BLADDER PUN MERSIBLE PU ISTALTIC PU	MP H JMP H JMP I	BAILER (Teflon) BAILER (PVC) DIPPER	WELL WIZARD CENTRIFUGAL PNEUMATIC DISPLACEME	DE PUMP OT ENT PUMP	DICATED HER
· *		·····	SAMPL	E METHOD		
2" BLADDER PUMP X BAILER (Teflon) WELL WIZARD DEDICATED SURFACE SAMPLER BAILER (PVC) DIPPER OTHER PERISTALTIC PUMP SUBMERSIBLE PUMP						
WELL I REMARK 13.24.	NTEGRITY: S: Shut	Good down at 10	625. Sample	collected at 16	30. Water lev	vel at
SIGNAT	URE:				PAGE	1 OF 1

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'ROJEC LIENI LOCATI	CT NUMBER C: TEXACO CON: 150 CR: JFB	: 14803.0 D 1 CUSHMAN	O ST, FBKS, AK	SAMPLE ID: DATE: SEP SAMPLE POI	0703091492 TEMBER 14, 199 NT DESIGNATIO	92 N: MW-7
X G	ROUND WAY	FER	SURF	ACE WATER	OTHER	
ASING CASING PEPTH PEPTH CALCUI	G DIAMETER G ELEVATIO TO WATER OF WELL ATED PURO	R: 2 IN ON (Feet/D (Feet/TOC) GE VOLUME	NCH 3 INC atum):): : (Gallons):	H X 4 INCH	6 INCH	OTHER
CTUAL	PURGE V	JLUME (GAI	FIELD ME	ASUREMENTS		
FIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER
1722		7.35	40	3.4	LT GRAY	
1735	25	7.00	39	3.1	CLEAR	
1743	50	6.93	40	2.6	CLEAR	
1753	75	6.92	40		CLEAR	
è						
2"	BLADDER PUN MERSIBLE PU	4P 1 IMP 1	PURGE BAILER (Teflon) BAILER (PVC)	C METHOD WELL WIZARD CENTRIFUGAL	DE PUMP OT	DICATED
PER	ISTALTIC PU	ляр і	DIPPER	PNEUMATIC DISPLACEME	ENT PUMP	
φ.			SAMPL	E METHOD		
2" SUR PER	BLADDER PUN FACE SAMPLE ISTALTIC PU	ир X ER ЛМР	BAILER (Teflo: BAILER (PVC) SUBMERSIBLE PUMP	n) WELL WIZA DIPPER	ARD DEDIC OTHER	CATED R
ELL I EMARK	NTEGRITY: S: Shut Equipme	Good down at 1 ent blank s	755. Samples samples colled	collected at 1 cted at 1757.	758. Water l	evel at
SIGNAT	URE:				PAGE	1 OF 1

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PROJEC CLIENI LOCATI SAMPLE	CT NUMBER F: TEXACO ION: 1514 ER: JFB	: 14803.0 D 4 CUSHMAN	O ST, FBKS, AK	SAMPLE ID: DATE: SEP SAMPLE POI	SWMW1 TEMBER 15, 199 NT DESIGNATION	92 N: MW1
xo	ROUND WAY	FER	SURF	ACE WATER	OTHER	
CASING	G DIAMETEI	R: 2 IN	ICH 3 INC	H X 4 INCH	6 INCH	other
CASING DEPTH DEPTH CALCUI	ELEVATIO TO WATER OF WELL ATED PURC PURGE VO	DN (Feet/D (Feet/TOC) (Feet/TOC) 3E VOLUME DLUME (Gal	atum):): : (Gallons): lons):	14.36 19.5 3.4	-	
			FIELD ME	ASUREMENTS		
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER
1500		7.57	49	2.6	LT BROWN	
1503	5	7.38	50	2.6	LT BROWN	
1506	10	7.38	50	2.6	CLEAR	·
1508	15	7.38	50		CLEAR	
			19.21.11.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1		<u> </u>	
ODOR:	No odor.	•				
2" X SUB PER	BLADDER PUN MERSIBLE PU ISTALTIC PU	ИР Е ЈМР Е ЈМР I	PURGE BAILER (Teflon) BAILER (PVC) DIPPER	C METHOD WELL WIZARD CENTRIFUGAL PNEUMATIC DISPLACEME	DE PUMP OT ENT PUMP	DICATED HER
•			SAMPL	E METHOD		
2" BLADDER PUMP X BAILER (Teflon) WELL WIZARD DEDICATED SURFACE SAMPLER BAILER (PVC) DIPPER OTHER PERISTALTIC PUMP SUBMERSIBLE PUMP						
WELL INTEGRITY: Good REMARKS: Shut down at 1510. Sample collected at 1517. Water level at 14.40. (Shannon and Wilson located at the Arcade Building)						
13						
SIGNAT	URE:				PAGE	1 OF 1
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WATER SAMPLE FIELD DATA SHEET

PROJEC CLIENT LOCATI SAMPLE	CT NUMBER C: TEXACO CON: 1514 ER: JFB	: 14803.0 D 4 CUSHMAN	O ST, FBKS, AK	SAMPLE ID: DATE: SEP SAMPLE POI	SWMW2 TEMBER 15, 199 NT DESIGNATION	92 N: MW2		
	X GROUND WATER SURFACE WATER OTHER							
CASING CASING DEPTH DEPTH CALCUI	G DIAMETER G ELEVATIO TO WATER OF WELL ATED PURGE VO	R: 2 IN ON (Feet/D (Feet/TOC) GE VOLUME OLUME (Gal	NCH 3 INC atum):): : (Gallons): lons):	H X 4 INCH 12.08 18.5 4.19	6 INCH	OTHER		
			FIELD ME	ASUREMENTS				
TIME	VOLUME (Gal.)	pH (Units)	E.C. (X10) (umhos/cm)	TEMPERATURE (C)	COLOR (Visual)	OTHER		
1611		7.92	30	4.2	MED BROWN			
1615	5	7.64	30	3.9	CLEAR			
1619	10	7.47	30	3.6	CLEAR			
1623	15	7.46	30 .	3.5	CLEAR			
1625	18	7.44	30	3.3	CLEAR			
ODOR:	No odor.			 	<u> </u>			
2" X SUB PER	BLADDER PUN MERSIBLE PU ISTALTIC PU	4P H JMP H JMP I	PURGE BAILER (Teflon) BAILER (PVC) DIPPER	E METHOD WELL WIZARD CENTRIFUGAL PNEUMATIC DISPLACEME	DE PUMP OT ENT PUMP	DICATED HER		
I			SAMPL	E METHOD				
2" BLADDER PUMP X BAILER (Teflon) WELL WIZARD DEDICATED SURFACE SAMPLER BAILER (PVC) DIPPER OTHER PERISTALTIC PUMP SUBMERSIBLE PUMP								
WELL INTEGRITY: Good REMARKS: Shut down at 1625. Samples collected at 1630. Water level at 12.09. (Shannon and Wilson located at the Arcade Building)								
SIGNAT	URE:				PAGE	1 OF 1		

Appendix D

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Matrix Score Sheet

Matrix Score Sheet for ADEC UST Soil Cleanup Target Levels Texaco Property 1501 Cushman Street, Fairbanks, Alaska

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1. Depth to Subsurface Water	Parameter Matrix Score
less than 5 feet	
5-15 feet X 8	8
15-25 feet	5
25-50 feet 4	
Greater than 50 feet 1	
	Parameter Matrix Score
2. Mean Annual Precipitation *	
Greater than 40 inches 10	
25-40 inches 5	
15-25 inches 3	
Less than 15 inches X 1	1
	Parameter Matrix Score
3. Soil Type (Unified Soil Classification)	
Clean, coarse-grained soils 10	
Coarse-grained soils with fines X 8	8
Fine-grained soils (low OC) 3	
Fine-grained soils (High OC)	
Potential Receptors Public Well within 1,000 feet, or	Parameter Matrix Score
Private well (s) within 500 feet X 15	15
Municipal/Private well within 0.5 mile 12	
Municipal/Private well within 1 mile 8	
No known well within 0.5 mile 6	
No known well within 1 mile 4	
Non-potable groundwater 1	
5. Volume of Contaminated Soil	Parameter Matrix Score
Greater than 500 cubic yards 10	
100-500 cubic yards X 8	8
25-100 cubic yards 5	
Greater than De Minimus-25 cubic yards 2	
De Minimus 0	
	Total Matrix Score
	40
	,
Diesel range hydrocarbons 200	
Gasoline range hydrocarbons 100	
Residual range hydrocarbons 2,000	

Appendix E

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CAS Laboratory Analytical Results



October 2, 1992

Teresa O'Carroll America North/EMCON, Inc. 520 Fourth SE, Graehl Fairbanks, AK 99701

Re: Cushman Texaco/Project #14803.00

Dear Teresa:

Enclosed are the results of the samples submitted to our laboratory on September 5, 1992. Preliminary results were transmitted via facsimile on September 24, 1992. For your reference, these analyses have been assigned our work order number K925531A.

All analyses were performed in accordance with our laboratory's quality assurance program. Reproduction of reports is allowed only in whole, not in part. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

alm. Elling

Colin B. Elliott Senior Project Chemist

CBE/akn

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Analyzed:	09/09/92
Sample Matrix:	Soil	Work Order No.:	K925531A

Solids, Total EPA Method Modified 160.3 Percent (%)

Sample Name	Lab Code	Result
SB1-5	K5531-1	93.4
SB1-10	K5531-2	94.1
SB1-12	K5531-3	78.4
SB2-5	К5531-4	87.2
SB2-10	K5531-5	97.5
SB2-12	K5531-6	92.3
MW1-5	K55 31- 7	74.0
MW1-10	K5531-8	83.1
MW1-15	K5531-9	92.8
MW3-5	K5531-10	86.2

Approved by

Colm. Ellist

Date 10/2/92

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Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Analyzed:	09/09/92
Sample Matrix:	Soil	Work Order No .:	K925531A

Solids, Total EPA Method Modified 160.3 Percent (%)

Sample Name	Lab Code	
MW3-10	K5531-11	96.9
MW4-5	K5531-12	88.0
MW4-10	K5531-13	89.7
MW4-12	K5531-14	86.8
MW7-5	K5531-15	89.6
MW7-10	K5531-16	96.2
MW2-5	K5531-17	86.4
MW2-10	K5531-18	84.0
MW2-12.5	K5531-19	77.4

Approved by___

Colini Ellett

Date 10/2/92

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Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Analyzed:	09/11/92
Sample Matrix:	Soil	Work Order No.:	K925531A

Total Organic Carbon (TOC) ASTM Method D 4119-82 Modified Percent (%) Dry Weight Basis

Sample Name	Lab Code	MRL	Result
SB1-10	K5531-2	0.05	0.12
SB2-5	K5531-4	0.05	0.31
MW1-5	К5531-7	0.05	0.77
MW4-12	K5531-14	0.05	0.39
MW2-12.5	K5531-19	0.05	0.35
Method Blank	K5531-MB	0.05	ND

MRLMethod Reporting LimitNDNone Detected at or above the method reporting limit

Approved by

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alm Ellut

Date 10/2/92

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Analyzed:	10/01/92
Sample Matrix:	Soil	Work Order No.:	K925531A

Total Lead EPA Method 7421 mg/Kg (ppm) Dry Weight Basis

Sample Name	Lab Code	MRL	Result
SB2-12	K5531-6	1	4
MW1-5	K5531-7	1	12
MW4-10	K5531-13	1	3
MW2-12.5	К5531-19	1	6
Method Blank	K5531-MB	1	ND

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

Approved by

Colm: Elluty

Date 10/2/92

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Work Order No.:	K925531A

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

Sample Name: Lab Code: Date Analyzed:		SB1-5 K5531-1 09/16/92	SB1-10 K5531-2 09/16/92	SB1-12 K5531-3 09/12/92
Analyte	MRL			
Benzene	0.05	ND	0.9	35
Toluene	0.1	ND	140	95
Ethylbenzene	0.1	ND	71	22
Total Xylenes	0.1	6.8	430	100
VPH as Gasoline	5	43	2,700	1,000

VPH Volatile Petroleum HydrocarbonsMRL Method Reporting LimitND None Detected at or above the method reporting limit

Colon: Elliott Approved by

Date 10/2/92

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Work Order No.:	K925531A

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

Sarr Date	nple Name: Lab Code: Analyzed:	SB2-5 K5531-4 09/15/92	SB2-10 K5531-5 09/12/92	SB2-12 K5531-6 09/12/92
Analyte	MRL			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	0.2	ND	0.2
Total Xylenes	0.1	2.8	ND	2.8
VPH as Gasoline	5	29	ND	34

VPH Volatile Petroleum HydrocarbonsMRL Method Reporting LimitND None Detected at or above the method reporting limit

Approved by

Colm: Ellert

Date 10/2/92

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Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Work Order No.:	K925531A

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

Sample Name: Lab Code: Date Analyzed:		MW1-5 K5531-7 09/16/92	MW1-10 K5531-8 09/16/92	MW1-15 K5531-9 09/16/92
Analyte	MRL			
Benzene	0.05	0.6	ND	ND
Toluene	0.1	0.1	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	0.1	0.1	0.1
VPH as Gasoline	5	ND	ND	ND

VPH Volatile Petroleum HydrocarbonsMRL Method Reporting LimitND None Detected at or above the method reporting limit

Approved by___

Colm: Ellerty

Date 10/2/92

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Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/9 2
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Work Order No.:	K925531A

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

C	Sample Name: Lab Code: Date Analyzed:		MW3-5 K5531-10 09/17/92*	MW3-10 K5531-11 09/12/92	MW4-5 K5531-12 09/15/92
Analyte	м	RL			
Benzene	0.	05	ND	ND	ND
Toluene	0.	1	ND	ND	ND
Ethylbenzene	0.	1	ND	ND	ND
Total Xylenes	0.	1	ND	ND	0.1
VPH as Gasoline	5		ND	ND	ND

VPH Volatile Petroleum Hydrocarbons

Sample was analyzed two days past the end of the recommended maximum holding time. Initial analysis, performed *within* the recommended maximum holding time, failed CAS QC criteria. The reanalysis met our QC criteria. It is the opinion of CAS that the quality of the sample data has not been significantly affected.

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

Approved by Colini Ellivit

Date 10/2/92

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Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Work Order No.:	K925531A

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

Sample Lab Date Ana	Name: Code: alyzed:	MW4-10 K5531-13 09/15/92	MW4-12 K5531-14 09/15/92	MW7-5 K5531-15 09/12/92
Analyte	MRL			
Benzene	0.05	ND	ND	ND
Toluene	0.1	ND	ND	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	0.2	0.2	ND
VPH as Gasoline	5	ND	ND	ND

VPH Volatile Petroleum HydrocarbonsMRL Method Reporting LimitND None Detected at or above the method reporting limit

Colm: Ellett Approved by

Date 10/2/92

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Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Work Order No.:	K925531A

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

: C	Sample Name: Lab Code: Date Analyzed:		MW7-10 K5531-16 09/16/92	MW2-5 K5531-17 09/12/92	MW2-10 K5531-18 09/12/92
Analyte	N	IRL			
Benzene	0	.05	ND	ND	0.06
Toluene	0	.1	ND	ND	2
Ethylbenzene	0	.1	ND	ND	ND
Total Xylenes	0	.1	ND	ND	0.7
VPH as Gasoline	5		ND	ND	ND

VPH Volatile Petroleum HydrocarbonsMRL Method Reporting LimitND None Detected at or above the method reporting limit

Approved by Colm Ellint

Date 10/2/92

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Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Work Order No.:	K925531A

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

Sample Name: Lab Code: Date Analyzed:		MW2-12.5 K5531-19 09/12/92	Method Blank K5531-MB 09/12/92
Analyte	MRL		
Benzene	0.05	13.6	ND
Toluene	0.1	40.5	ND
Ethylbenzene	0.1	8.9	ND
Total Xylenes	0.1	5.2	ND
VPH as Gasoline	5	356	ND

VPH Volatile Petroleum Hydrocarbons

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

Approved by

When Ellit

Date 10/2/92

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/09/92
Sample Matrix:	Soil	Date Analyzed:	09/12,13/92
		Work Order No.:	K925531A

Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name	Lab Code	MRL	Diesel
SB1-5	K5531-1	10	28
SB1-10	К5531-2	10	25
SB1-12	К5531-3	10	48
SB2-5	К5531-4	10	29
SB2-10	K5531-5	10	ND
SB2-12	K5531-6	10	ND
MW1-5	К5531-7	10	14
MW1-10	K5531-8	10	ND
MW1-15	K5531-9	10	ND
MW3-5	К5531-10	10	*616

MRL Method Reporting Limit

None Detected at or above the method reporting limit

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Measured response due to the overlap of a high boiling product, possibly lube oil within the diesel region.

Approved by

Date 10/2/92

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/09/92
Sample Matrix:	Soil	Date Analyzed:	09/12,13/92
		Work Order No.:	K925531A

Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name	Lab Code	MRL	Diesel
MW3-10	K5531-11	10	ND
MW4-5	K5531-12	10	ND
MW4-10	K5531-13	10	19
MW4-12	K5531-14	10	12
MW7-5	K5531-15	10	ND
MW7-10	K5531-16	10	ND
MW2-5	K5531-17	10	ND
MW2-10	K5531-18	10	12
MW2-12.5	K5531-19	10	45
Method Blank	K5531-MB	10	ND

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

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Date 10/2/92

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APPENDIX A

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LABORATORY QC RESULTS

QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Analyzed:	09/11/92
Sample Matrix:	Soil	Work Order No.:	K925531A

Duplicate Summary Total Organic Carbon (TOC) ASTM Method D 4129-82 Modified Percent (%) Dry Weight Basis

				Relative		
Sample Name	Lab Code	MRL	Sample Result	Sample Result	Average	Percent Difference
SB1-10	K5531-2	0.05	0.12	0.13	0.12	8

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MRL Method Reporting Limit

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Date 10/2/92

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QA/QC Report

Clien t:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Analyzed:	10/01/92
Sample Matrix:	Soil	Work Order No.:	K925531A

Duplicate Summary Total Lead EPA Method 7421 mg/Kg (ppm) Dry Weight Basis

			Sample	Duplicate Sample		Relative Percent
Sample Name	Lab Code	MRL	Result	Result	Average	Difference
SB2-12	K5531-6	1	4	3	4	25

MRL Method Reporting Limit

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Date 10/2/92

QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Analyzed:	10/01/92
Sample Matrix:	Soil	Work Order No.:	K925531A

Matrix Spike Summary Total Lead EPA Method 7421 mg/Kg (ppm) Dry Weight Basis

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
SB2-12	K5531-6	1	1.1	4	5	100	75-125

MRL Method Reporting Limit

Coloni Elliti Approved by

Date 10/2/92

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QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Date Analyzed:	09/12-16/92
		Work Order No.:	K925531A

Surrogate Recovery Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH

Sample Name	Lab Code	Percent Recovery a,a,a-Trifluorotoluene
SB1-5	K5531-1	102
SB1-10	K5531-2	136
SB1-12	K5531-3	109
SB2-5	K5531-4	80
SB2-10	K5531-5	65
SB2-12	K5531-6	66
MW1-5	K5531-7	78
MW1-10	K5531-8	79
MW1-15	K5531-9	93
MW3-5	К5531-10	106

CAS Acceptance Criteria

60-150

VPH Volatile Petroleum Hydrocarbons

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Approved	by	Colini	Cant

_____Date_____/92_____

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QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Date Analyzed:	09/12-16/92
		Work Order No.:	K925531A

Surrogate Recovery Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH

Sample Name	Lab Code	Percent Recovery <i>a</i> , <i>a</i> , <i>a</i> -Trifluorotoluene
MW3-10	K5531-11	73
MW4-5	К5531-12	93
MW4-10	K5531-13	79
MW4-12	K5531-14	75
MW7-5	K5531-15	79
MW7-10	K5531-16	96
MW2-5	К5531-17	91
MW2-10	K5531-18	114
MW2-12.5	K5531-19	86
SB1-5	K5531-1Dup	97

CAS Acceptance Criteria

60-150

VPH Volatile Petroleum Hydrocarbons

Approved by Colm' Ellert

Date 10/2/92

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QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Date Analyzed:	09/12-16/92
		Work Order No.:	K925531A

Surrogate Recovery Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH

Sample Name Lab Code Percent Recovery a,a,a-Trifluorotoluene 124 SB1-10 K5531-2Dup MW4-12 K5531-14MS 87 K5531-15MS **MW7-5** 88 Method Blank 124 K5531-MB Laboratory Control Sample K5531-LCS 64

CAS Acceptance Criteria

60-150

VPH Volatile Petroleum Hydrocarbons

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Date_10/2/92

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QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Date Analyzed:	09/16/92
		Work Order No.:	K925531A

Duplicate Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH mg/Kg (ppm) Dry Weight Basis

Sample Name: SB1-5 Lab Code: K5531-1

		Duplicate Sample Sample			Relative Percent
Analyte	MRL	Résult	Result	Average	Difference
Benzene	0.05	ND	ND	ND	
Toluene	0.1	ND	ND	ND	
Ethylbenzene	0.1	ND	ND	ND	
Total Xylenes	0.1	6.8	6.3	6.6	8
VPH as Gasoline	5	43	44	44	2

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

alm Elluit Approved by

Date 10/2/92

QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Date Analyzed:	09/16/92
		Work Order No.:	K925531A

Duplicate Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH mg/Kg (ppm) Dry Weight Basis

Sample Name: SB1-10 Lab Code: K5531-2

		Sample	Duplicate Sample		Relative Percent Difference
Analyte	MRL	Result	Result	Average	
Benzene	*0.5	0.9	0.8	0.8	12
Toluene	*1	140	140	140	<1
Ethylbenzene	*1	71	75	73	5
Total Xylenes	*1	430	460	440	7
VPH as Gasoline	*50	2,700	2,900	2,800	7

VPH Volatile Petroleum Hydroc	carbons
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MRL Method Reporting Limit

MRL is elevated because the sample(s) required diluting.

Colmi Ellutit Approved by

Date 10/2/92

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QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Date Analyzed:	09/15/92
		Work Order No.:	K925531A

Matrix Spike Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH mg/Kg (ppm) Dry Weight Basis

Sample Name: MW4-12 Lab Code: K5531-14

Analyte	Spike Level	Sámple Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	1.1	ND	0.80	73	23-170
Toluene	1.1	ND	1.1	100	31-166
Ethylbenzene	1.1	0.2	1.2	91	30-164

VPH Volatile Petroleum HydrocarbonsND None Detected at or above the method reporting limit

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QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/11/92
Sample Matrix:	Soil	Date Analyzed:	09/12,15/92
		Work Order No.:	K925531A

Matrix Spike Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH mg/Kg (ppm) Dry Weight Basis

Sample Name: MW7-5 Lab Code: K5531-15

	Spike Level					CAS Percent
			Spiked		Recovery	
Analyte		Sample Result	Sample Result	Percent	Acceptance Criteria	
				Recovery		
VPH as Gasoline	52	ND	40	77	70-140	

VPH Volatile Petroleum HydrocarbonsND None Detected at or above the method reporting limit

Colm Elluit

Date 10/2/92

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QA/QC Report

Client:	America North/EMCON, Inc.	Date Extracted:	09/11/92
Project:	Cushman Texaco/#14803.00	Date Analyzed:	09/13/92
LCS Matrix:	Soil	Work Order No.:	K925531A

Laboratory Control Sample Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH mg/Kg (ppm)

	Taua		Develop	CAS Percent Recovery
Analyte	Value	Result	Recovery	Criteria
D	0.07	0.00	60	00.170
Benzene	0.97	0.60	62	23-170
Toluene	1.0	0.6	60	31-166
Ethylbenzene	1.0	0.6	60	30-164

VPH Volatile Petroleum Hydrocarbons

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Date 10/2/92

QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/09/92
Sample Matrix:	Soil	Date Analyzed:	09/12,13/92
		Work Order No.:	K925531A

Surrogate Recovery Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified

Sample Name Lab Code **Percent Recovery** p-Terphenyl SB1-5 K5531-1 84 85 SB1-10 K5531-2 SB1-12 K5531-3 86 SB2-5 K5531-4 87 90 SB2-10 K5531-5 92 SB2-12 K5531-6 MW1-5 K5531-7 80 MW1-10 K5531-8 83 MW1-15 K5531-9 95 MW3-5 K5531-10 85

CAS Acceptance Criteria 50-114

Colm Ellerty Approved by

Date 10/2/92

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QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/ 09/92
Sample Matrix:	Soil	Date Analyzed:	09/12,13/92
		Work Order No.:	K925531A

Surrogate Recovery Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified

Sample Name	Lab Code	Percent Recovery p-Terphenyl
MW3-10	K5531-11	75
MW4-5	K5531-12	85
MW4-10	K5531-13	87
MW4-12	K5531-14	89
MW7-5	K5531-15	77
MW7-10	K5531-16	92
MW2-5	K5531-17	79
MW2-10	K5531-18	92
MW2-12.5	K5531-19	91
Method Blank	K5531-MB	88

CAS Acceptance Criteria 50-114

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Date 10/2/92

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QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/ 92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/09/92
Sample Matrix:	Soil	Date Analyzed:	09/12,13/92
		Work Order No.:	K925531A

Surrogate Recovery Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified

Lab Code

Sample Name

Laboratory Control Sample SB1-12 SB2-10 MW2-12.5 MW7-10 K5531-LCS K5531-3Dup K5531-5MS K5531-19Dup K5531-16MS

CAS Acceptance Criteria 50-114

Percent Recovery p-Terphenyl

90

90

85

90

91

Colini Ellutt Approved by

Date 10/2/92

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QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/09/92
Sample Matrix:	Soil	Date Analyzed:	09/12/92
		Work Order No.:	K925531A

Duplicate Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name: SB1-12 Lab Code: K5531-3

		Samole	Duplicate Sample		Relative	
Analyte	MRL	Result	Result	Average	Difference	Criteria
Diesel	10	48	47	48	2	25

MRL Method Reporting Limit

Colm Ellet Approved by

Date 10/2/92

QA/QC Report

Client:-	America North/EMCON, Inc.	Date Received:	09 /05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/09/92
Sample Matrix:	Soil	Date Analyzed:	09/13/92
		Work Order No.:	K925531A

Duplicate Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name: MW2-12.5 Lab Code: K5531-19

Analyte	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	CAS RPD Acceptance Criteria
Diesel	10	45	45	45	<1	25

MRL Method Reporting Limit

almi Ellaty Approved by_

Date 10/2/92

.00.00

QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/09/92
Sample Matrix:	Soil	Date Analyzed:	09/13/92
		Work Order No.:	K925531A

Matrix Spike Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name: Lab Code:	SB2-10 K5531-5			-	
Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	220	ND	212	96	41-136

ND None Detected at or above the method reporting limit

Colini Ellutt Approved by

Date 10/2/92

.0031

QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/05/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/09/92
Sample Matrix:	Soil	Date Analyzed:	09/13/92
		Work Order No.:	K925531A

Matrix Spike Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name: MW7-10 Lab Code: K5531-16

			Spiked		CAS Percent Becovery
Analyte	Spike Level	Sample Result	Sample Result	Percent Recovery	Acceptance Criteria
Diesel	240	ND	246	102	41-136

ND None Detected at or above the method reporting limit

Col Ellint Approved by_

Date 10/2/92

10032

1317 South 13th Avenue • PO Box 479 • Kelso Washington 98626 • Telephone 206/577-7222 • Fax 206/636-106

QA/QC Report

Client:	America North/EMCON, Inc.	Date Extracted:	09/09/92
Project:	Cushman Texaco/#14803.00	Date Analyzed:	09/13/92
LCS Matrix:	Soil	Work Order No.:	K925531A

Laboratory Control Sample Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

				CAS Percent Recoverv
Analyte	True Value	Result	Percent Recovery	Acceptance Criteria
Diesel	240	247	103	41-136

John Ellnit Date 10/2/92 Approved by

.0023



America North Inc.

Chain of Custody/

ener (biosecorus)

Laboratory Analysis Request

Date/Time Date/Time			Date/Time							- SBZ, MWI, MW4, 11105 11102																
Firm 9/E/O- 11	Firm 9/-/2 / 20 Firm			Firm]	- UPH for lead in multip million															
Signature Ruth Allisom Signature			Signa	ture d Name						- Analyze sample interval with highest																
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5. SB2-5	9/2/92	1805		5					 									X	X	× ./		<u>×</u>	4			
4.5B1-12	9/2/92	1650		5														X	$\frac{1}{2}$			$\overline{}$	15			
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2.5B1-5	7/2/92	16.50		12							 							$\frac{\lambda}{\sqrt{2}}$	$\frac{2}{\sqrt{2}}$	$\frac{1}{\sqrt{2}}$		×				
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SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BA BA		A HAI	PHI 902	P01 AR(ēĒ	25	<u>с</u> Б	ME (Se	2	ALI	8 S	C	8	8	So.		<u> </u>				
IELEPHONE# 456-2011 SAMPLERS NAME TETESA O'Carrol PHONE# 456-2011 SAMPLERS SIGNATURE CALL END'COULL				2011	SE/NEU/ACID OR MS/625/8270	ATILE ORGANICS MS/624/8240	LOGENATED VOL/ SANICS 601/8010	ENOLICS 1/8040	YNUCLEAR MATIC 610/831(TAL ORGANIC CAF C) 415/9060	FAL ORGANIC HAI IX) 9020	TOX/TCLP METAI cle One)	TALS (TOTAL) e Special Inst.)	LP ORGANICS	COND	3/N02, CI	Mg, Na, K	3-Waol	<u> 15 M - V</u>	020 - B	CL.P-LO	Jo	NUMBER OF CON			
CONTACT I Pres	<u>n U(</u> -F	Fairl	nnk(GAN.		VTILE			BON	IDE	S						Hd	Hd,	X	ad		TAINERS			
PROJECT $++$ Cushman $ e \times acd # 4803.00 $						ANALYSIS REQUESTED								(Specify)							(Specify)					
ill Cabo					-																					

RISTRIRITION. WHITE , related to administer. YELLOW , tab. PHIN , pataland by administer



Chain of Custody/ Laboratory Analysis Request

____PAGE_____OF____3

1317 South 13th Avenue • Kelso, WA 98626 • 206/577-7222, Fax 206/636-1068

PROJECT Cushme	in Te	+460	<u> </u>	203.00				ORG	ANIC	ANAL	YSIS				INC	RGAN		NALYS	SIS		OTH	IER			
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SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	Base/Ne GC/MS	Volatile GC/MS	Halogen 601/801	Aromati 602/802	Gas/BTE MOD 80	Pesticid 608/808	Total Pe Hydroca	Total Pe Hydroca	Total Or (TOX)	Total O	EPTOX As, Ba,	Metals (List Bek	Cyanide	Ph, Con NO2, NO	NH1-N, ((Circle)	Coliforn Total, F	316	10		NUMB	1
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America North Inc.

Chain of Custody/

Laboratory Analysis Request

DATE 9-3-92 PAGE 3 OF 3

PROJECT Cushman	JECT Cushman Texaco # 14803.00							ANALYSIS REQUESTED									GENERAL CHEMISTRY OTHER (Specify) (Specify)						Ι	
CLIENT INFO. Teresa	D,	Currel)							_									+	X				EBS
ADDRESS ANIE	- ;-	nir b4	nks		RGAN.	S	ATILE 0			RBON	ILIDE	rs						d	d	F		0 A C		ITAIN
TELEPHONE# 456	-201)			10 0F	ANIC 240	0 V0L		0/831	S CA	IC HA	META	AL) Ist.)	S				1-1	>	l m		1		L CON
SAMPLERS NAME O'	1 Longre	<u>.U</u>	PHONE# 456	-241	U/AC 825/8	0RG	ATEI S 601	S	LEAR C 61(3GAN	RGAN 20	e) CLP	(T01/ ial In	BANIC		IJ	Na, K	2	Ł	0	U	2		EB 01
SAMPLERS SIGNATURE	1	÷-O	<u></u>		E/NE MS/6	ATILE MS/6	OGEN	NOLIC	YNUC MATI	AL 0F	AL 01 X) 90	DX/1 DA/1	ALS	P OR	CON	/N02.	Mg.	101	215	22	$ _{0}$	5		UMB
SAMPLE I.D.	DATE	TIME	LAB I.D.	ТУРЕ	BAS GC/	SC CL	HAL	PHE 604	ABOL	10 D D D D D D D	10E	C EP 1	MET (See	TCL	ALK.	so4 So4	Ca.	8	\otimes	30		F		
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2. MWZ-S	9 /3 /92	1445		S														14	4	X				Z
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4. MWZ-12.5	9/3/92	1515		5			<u> </u>											\mathbf{X}	\checkmark	X	\times			3
5. Trip Blank 090392	9/3/12	1830		W															×	*				Z
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DISTRIBUTION: WHITE - return to originator: YELLOW - lab; PINK - retained by originator



October 5, 1992

Teresa O'Carrol America North/EMCON, Inc. 520 Fourth SE, Graehl Fairbanks, AK 99701

Re: Cushman Texaco/Project #14803.00

Dear Teresa:

Enclosed are the results of the samples submitted to our laboratory on September 10, 1992. Preliminary results were transmitted via facsimile on September 24, 1992. For your reference, these analyses have been assigned our work order number K925611A.

All analyses were performed in accordance with our laboratory's quality assurance program. Reproduction of reports is allowed only in whole, not in part. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

ohn Ellist

Colin B. Elliott Senior Project Chemist

CBE/sm

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Analyzed:	09/12/92
Sample Matrix:	Soil	Work Order No.:	K925611A

Solids, Total EPA Method Modified 160.3 Percent (%)

Sample Name	Lab Code	Result			
SB5-5	K5611-1	91.4			
SB5-10	K5611-2	87.2			
SB5-13	K5611-3	96.3			
SB6-5	К5611-4	72.4			
SB6-10	K5611-5	95.7			
SB6-13	K5611-6	85.7			
SB7-5	K5611-7	65.3			
SB7-10	К5611-8	94.2			
SB7-13	K5611-9	91.3			

Approved by June Elluty

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/18/92
Sample Matrix:	Soil	Work Order No.:	K925611A

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

Sam Date	ple Name: Lab Code: Analyzed:	SB5-5 K5611-1 09/18/92	SB5-10 K5611-2 09/18/92	SB5-13 K5611-3 09/19/92
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
VPH as Gasoline	5	ND	ND	ND

VPH Volatile Petroleum Hydrocarbons

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

ahn: Ellit Date 11/5/92 Approved by

0.000

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/18/92
Sample Matrix:	Soil	Work Order No.:	K925611A

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

Sample Na Lab Co Date Analy:	ime: ode: zed:	SB6-5 K5611-4 09/18/92	SB6-10 K5611-5 09/19/92	SB6-13 K5611-6 09/19/92
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
VPH as Gasoline	5	ND	ND	ND

VPH Volatile Petroleum HydrocarbonsMRL Method Reporting LimitND None Detected at or above the method reporting limit

Colm: Ellit Approved by

Date 10/5/92

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/18/92
Sample Matrix:	Soil	Work Order No.:	K925611A

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

Sample Nar Lab Co Date Analyz	ne: de: ed:	SB7-5 K5611-7 09/18/92	SB7-10 K5611-8 09/18/92	SB7-13 K5611-9 09/18/92
Analyte	MRL			
Benzene	0.05	1.88	ND	ND
Toluene	0.1	1.0	ND	ND
Ethylbenzene	0.1	7.8	ND	ND
Total Xylenes	0.1	59.2	ND	0.2
VPH as Gasoline	5	230	ND	ND

VPH Volatile Petroleum HydrocarbonsMRL Method Reporting LimitND None Detected at or above the method reporting limit

Approved by Col Ellist

Analytical Report

Client:	America North/EMCON, Inc.	Date Extracted:	09/18/92
Project:	Cushman Texaco/#14803.00	Work Order No.:	K925611A
Sample Matrix:	Soil		

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

Sample Name: Lab Code: Date Analyzed: Method Blank K5611-MB 09/18/92

Analyte	MRL	
Benzene	0.05	ND
Toluene	0.1	· ND
Ethylbenzene	0.1	ND
Total Xylenes	0.1	ND
VPH as Gasoline	5	ND

VPH Volatile Petroleum HydrocarbonsMRL Method Reporting LimitND None Detected at or above the method reporting limit

Approved by Colm. Ellit

Date_ 10/5/92_

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/12/92
Sample Matrix:	Soil	Date Analyzed:	09/18/92
		Work Order No.:	K925611A

Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name	Lab Code	MRL	Diesel
SB5-5	K5611-1	10	ND
SB5-10	K5611-2	10	ND
SB5-13	K5611-3	10	ND
SB6-5	K5611-4	10	ND
SB6-10	K5611-5	10	ND
SB6-13	K5611-6	10	ND
SB7-5	K5611-7	10	*113
SB7-10	K5611-8	10	ND
SB7-13	K5611-9	10	ND
Method Blank	K5611-MB1	10	ND
Method Blank	K5611-MB2	10	ND

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

* Response due to overlapping components from nondiesel petroleum mixtures.

Approved by Gol. Elluit

Date 10/5/92

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APPENDIX A

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LABORATORY QC RESULTS

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QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/18/92
Sample Matrix:	Soil	Date Analyzed:	09/18,19/92
		Work Order No.:	K925611A

Surrogate Recovery Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH

Sample Name	Lab Code	Percent Recovery a,a,a -Trifluorotoluene
SB5-5	K5611-1	93
SB5-10	K5611-2	84
SB5-13	K5611-3	81
SB6-5	K5611-4	92
SB6-10	K5611-5	82
SB6-13	K5611-6	94
SB7-5	K5611-7	. 117
SB7-10	K5611-8	78
SB7-13	K5611-9	81
Method Blank	K5611-MB	101

CAS Acceptance Criteria 60-150

VPH Volatile Petroleum Hydrocarbons

Approved by

Atm: Ellit

_____Date____015[92_

QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/12/92
Sample Matrix:	Soil	Date Analyzed:	09/18/92
		Work Order No.:	K925611A

Surrogate Recovery Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified

Sample Name	Lab Code	Percent Recovery p-Terphenyl
SB5-5	К5611-1	77
SB5-10	К5611-2	78
SB5-13	K5611-3	92
SB6-5	К5611-4	6 9
SB6-10	K5611-5	74
SB6-13	K5611-6	90
SB7-5	K5611-7	70
SB7-10	K5611-8	81
SB7-13	К5611-9	79
Method Blank	K5611-MB1	93
Method Blank	K5611-MB2	84

CAS Acceptance Criteria

50-114

Approved by Colm Ellit

Date 10/5/92

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1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-1068

QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/12/92
Sample Matrix:	Soil	Date Analyzed:	09/18/92
		Work Order No.:	K925611A

Surrogate Recovery Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified

Sample Name

Lab Code

Percent Recovery p-Terphenyl

81

82

SB5-5 SB6-10 K5611-1MS K5611-5Dup

CAS Acceptance Criteria

50-114

Approved by (

Colm: Elluit

Date 10/5/92

QA/QC Report

Client:-	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/12/92
Sample Matrix:	Soil	Date Analyzed:	09/18/92
		Work Order No.:	K925611A

Duplicate Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name: SB6-10 Lab Code: K5611-5

		Sample	Duplicate Sample		Relative Percent	CAS RPD Acceptance
Analyte	MRL 10	Result	Hesult	Average	Difference	Criteria
Diesei	10	ND	ND	ND		25

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

John: Ellit

Approved by

10/5/82 Date

QA/QC Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/12/92
Sample Matrix:	Soil	Date Analyzed:	09/18/92
·		Work Order No.:	K925611A

Matrix Spike Summary Extractable Petroleum Hydrocarbons as Diesel EPA Method 3541/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name: SB5-5 Lab Code: K5611-1

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Diesel	240	ND	210	88	41-136

ND None Detected at or above the method reporting limit

Approved by

an Ellats

Date 10/5/92

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America North/EMCON, Inc. 201 East 56th, Suite 300 • Anchorage, AK 99518 (907) 562-3452 • FAX (907) 563-2814

Chain of Custody/ Laboratory Analysis Request

PROJECT Cushman TS	Aco # 14803.	00	ANAL	YSIS RE	QUESTED							GENER (Specifi	AL CHI	EMISTI	RY				OTHER (Spec	R Ify)	1
CLIENT INFO. CONTACT TELESA O'C ADDRESS AN/E - FORESA TELEPHONE# 456-2011 SAMPLER'S NAME JEARY BO SAMPLER'S SIGNATURE	Mccocc Antes m phonen 456-2	2011	E/NEU/ACID ORGAN. WS/625/8270	ATILE ORGANICS MS/624/8240 DGENATED VOLATILE	ANICS 601/8010 VOLICS '8040	NUCLEAR MATIC 610/8310	AL ORGANIC CARBON) 415/9060	AL ORGANIC HALIDE () 9020	OX/TCLP METALS le One)	ALS (T0TAL) Special Inst.)	P ORGANICS	COND	/N02, CI	Mg, Na, K	100 M-804	Hon - NOH		220 - BTIX			L Umber of containers
SAMPLE I.D DATE	TIME LAB I.D.	TYPE	BASI GC/I		ORG PHEI 604	POL	101 101		EP T (Circ	MET (See	TCL	ALK.	N03 S04	Ca.	00	Ŕ	، الا +	à			
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2.5B5-10						ļ											1_	<u>i</u>			2
3. 5B5 - 13						ļ							ļ]]		<u> </u>				2
4. 5B6 - 5					;								ļ		 			Ш.			Z
5. 5B6-10																		\parallel	\square		2
6. SB6-13									 		ļ										2
7. 587-5		·																			2
8. SB7-10 V		V													\mathbb{N}			<u> </u>			2
Rellaquished By America North/EMCON Inc.	Relinquished By		Relin	quished i	ly				PROJE	CT INF	ORMA	TION				SAMP	LE R	ECEIF	PT	•	
Signature TELC R	Signature		Signat	ure					Shippi	na I.D. I	No.				<u></u> .	Total I	No, ol	l Conta	ainers		
Printed Name	Printed Name		Printer	1 Name											Ì	Chain	of Cu	istody	Seals		
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Date/Time	Date/Time		Date/	lime					Project	1						LAB N	10.				
Received by	Received By		Recel	ved By					SPECIA	AL INST	RUCT	IONS/	COMME	NTS							
- Signature Lori K. Hawn	Signature		Signat	ure																	
Printed Name	Printed Name		Printer	d Name	<u></u>			_													
Firm 9/10/92	Firm	•	Firm																		
Date/Time	Date/Time		Date/	Time																	

Laboratory Analysis Request

DATE 7/8/42 PAGE 2 OF Z____

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PROJECT Custon AN TELACO # 14803.00							REQUE	QUESTED GENERAL CHEMISTRY OTHER (Specify) (Specify)											e.					
CLIENT INFO. TCSASA CONTACT TCSASA ADDRESS AN /E TELEPHONE# 45 CAMPLER'S NAME TCSA SAMPLER'S SIGNATURE	- 60 - 60 - 201 - 201	- CALL 2010-	044 HC (PHONE# 4/56= 2 18 19 2 18 19 2 18 19	2011	E/NEU/ACID ORGAN. MS/625/8270	ATILE ORGANICS MS/624/8240	OGENATED VOLATILE ANICS 601/8010	NOLICS /8040	YNUCLEAR MATIC 610/8310	AL ORGANIC CARBON () 415/9060	AL ORGANIC HALIDE () 9020	OX/TCLP METALS the One)	ALS (TOTAL) Special Inst.)	P ORGANICS	COND	/NO ₂ , CI	Mg, Na, K	10 M - 1-1-	HJN - MSY	את2 - נצע				UMBER OF CONTAINERS
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BAS GC/		HAL	PHE 604	POL	ĒĔ	ĒÊ	Circ EP	MET (See	TCL	ALK.	NO3 SO4	ġ	à	6	α				
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Relinquished By America North/E	MCON Inc.	Relinquist	ied By		Relin	quished	i By		L		T	PROJE	CT INF	ORMA	TION	I	+	1	SAMPL	E RECE	IPT		.	J
Bignature		Signature			Signat	ture						Shipoir	na I.D. I	No.					Total N	o. of Co	tainers			
Printed Name	~	Printed Nan	10		Printe	d Name			······································										Chain o	f Custod	y Seals			
Firm		Firm			Firm					<u></u>		VIA							Receive	d in goo	d condi	tion		
9/8/92 (* / S.) Date/Time	00	Date/Time	·		Date/	Time					-	Project	1				•		LAB NO.					
Received By		Received	By		Rece	ived By					T	SPECIA	L INST	RUCTI	ONS/C	OMME	NTS							
Signature Signature				Signat		r! []		1.1	 		-													
Printed Name				Printe	d Name		. <u>†</u> .				. : .		i .			· ·								
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				<u> </u>	I																			



October 7, 1992

Teresa O'Carroll America North/EMCON, Inc. 520 Fourth SE, Graehl Fairbanks, AK 99701

Re: Cushman Texaco/Project #14803.00

Dear Teresa:

Enclosed are the results of the samples submitted to our laboratory on September 10, 1992. Preliminary results were transmitted via facsimile on September 24, 1992. For your reference, these analyses have been assigned our work order number K925609A.

Samples MWS-10 and MWS-13 were analyzed for gasoline range organics and BTEX within the 14-day holding time, but due to levels well above the calibration range, the sample extracts had to be reanalyzed. Unfortunately, the reanalysis could not be completed until five days past the recommended holding time. Since the samples had been extracted and properly stored, it is not expected that this extended holding time had affected the final results.

All analyses were performed in accordance with our laboratory's quality assurance program. Reproduction of reports is allowed only in whole, not in part. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Ch. Ellit

Colin B. Elliott Senior Project Chemist

CBE/akn

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Analyzed:	09/17/92
Sample Matrix:	Soil	Work Order No.:	K925609A

Total Organic Carbon (TOC) ASTM Method D 4129-82 Modified Percent (%) Dry Weight Basis

Sample Name	Lab Code	MRL	Result
MW5-5	К5609-1	0.05	0.39
SB3-10	K5609-8	0.05	0.31
Method Blank	K5609-MB	0.05	ND
		{	

ASTM American Society for Testing and Materials MRL Method Reporting Limit

John Ellerti

- ND None Detected at or above the method reporting limit

Approved by

Date 11/7/92

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Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/17/92
Sample Matrix:	Soil	Work Order No.:	K925609A

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

Sample I Lab Date Ana	Name: Code: lyzed:	MW5-5 K5609-1 09/18/92	MW5-10 K5609-2 09/18/92*	MW5-13 K5609-3 09/18/92*
Analyte	MRL			
Benzene	0.05	ND	340	49
Toluene	0.1	6.6	1,400	640
Ethylbenzene	0.1	12.6	320	250
Total Xylenes	0.1	76.6	1,800	1,600
VPH as Gasoline	5	480	9,700	6,800

VPH Volatile Petroleum Hydrocarbons

Result is from the analysis of a diluted sample, performed on September 23, 1992. Sample was analyzed five days past the end of the recommended maximum holding time. Initial analysis, performed *within* the recommended maximum holding time, failed CAS QC criteria. The reanalysis met our QC criteria. It is the opinion of CAS that the quality of the sample data has not been significantly affected.

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

Color Ellior Approved by

Date 10/7/92

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Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/17/92
Sample Matrix:	Soil	Work Order No.:	K925609A

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

Sample Name: Lab Code: Date Analyzed:		MW6-5 K5609-4 09/18/92	MW6-10 K5609-5 09/18/92	MW6-13 K5609-6 09/18/92
Analyte	MRL			
Benzene	0.05	ND	0.33	ND
Toluene	0.1	ND	0.9	ND
Ethylbenzene	0.1	ND	ND	ND
Total Xylenes	0.1	ND	2.0	ND
VPH as Gasoline	5	ND	9	ND

VPH Volatile Petroleum Hydrocarbons

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

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Approved by_

Date 10/7/92

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Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/17/92
Sample Matrix:	Soil	Work Order No.:	K925609A

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

San Date	nple Name: Lab Code: Analyzed:	SB3-5 K5609-7 09/18/92	SB3-10 K5609-8 09/18/92	SB3-13 K5609-9 09/18/92
Analyte	MRL			
Benzene	0.05	ND	ND	ND
Toluene	0.1	3.4	ND	5.8
Ethylbenzene	0.1	9.0	ND	6.7
Total Xylenes	0.1	56.7	ND	40.2
VPH as Gasoline	5	318	ND	347

VPH Volatile Petroleum Hydrocarbons

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

Colm. Elleit Approved by_

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Date 10/7/92

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Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Date Extracted:	09/17/92
Sample Matrix:	Soil	Work Order No.:	K925609A

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

Sample Name: Lab Code: Date Analyzed:		SB4-5 K5609-10 09/18/92	SB4-10 K5609-11 09/18/92	SB4-13 K5609-12 09/18/92
Analyte	MRL			
Benzene	0.05	ND	ND	0.76
Toluene	0.1	ND	ND	15.9
Ethylbenzene	0.1	ND	ND	9.9
Total Xylenes	0.1	ND	0.4	63.0
VPH as Gasoline	5	ND	ND	402

- VPH Volatile Petroleum Hydrocarbons
- MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

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Gen. Ellutt Approved by

Date 10/7/92

Analytical Report

Client:	America North/EMCON, Inc.	Date Received:	09/10/92
Project:	Cushman Texaco/#14803.00	Work Order No.:	K925609A
Sample Matrix:	Water		

BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH μ g/L (ppb)

Sample Name: Lab Code: Date Analyzed:		Tool Rinse K5609-13 09/29/92	Method Blank K5609-MB 09/29/92
Analyte	MRL		
Benzene	0.5	∆ (2.1	ND
Toluene	1	10	ND
Ethylbenzene	1	ND	ND
Total Xylenes	1	2	ND
VPH as Gasoline	50	ND	ND

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

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When Ellutt Approved by_

Date 10/7/92

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#### Analytical Report

Client: **Project:** Sample Matrix:

America North/EMCON, Inc. Cushman Texaco/#14803.00 Soil

Date Extracted: 09/17/92 Work Order No.: K925609A

> Method Blank K5609-MB

09/17/92

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#### BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH mg/Kg (ppm) **Dry Weight Basis**

Sample Name: Lab Code: Date Analyzed:

| Analyte         | MRL  |    |
|-----------------|------|----|
| Benzene         | 0.05 | ND |
| Toluene         | 0.1  | ND |
| Ethylbenzene    | 0.1  | ND |
| Total Xylenes   | 0.1  | ND |
| VPH as Gasoline | 5    | ND |

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

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Date\_ 10/7/92

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#### **Analytical Report**

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92    |
|----------------|---------------------------|-----------------|-------------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/12/92    |
| Sample Matrix: | Soil                      | Date Analyzed:  | 09/18,19/92 |
|                |                           | Work Order No.: | K925609A    |

#### Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

| Sample Name | Lab Code | Lab Code MRL    |             |
|-------------|----------|-----------------|-------------|
| MW5-5       | K5609-1  | 10              | *22         |
| MW5-10      | K5609-2  | 10              | *183        |
| MW5-13      | K5609-3  | 10              | 36          |
| MW6-5       | K5609-4  | 10              | **28        |
| MW6-10      | K5609-5  | <sup>1</sup> 10 | ND          |
| MW6-13      | K5609-6  | 10              | ND          |
| SB3-5       | K5609-7  | 10              | *24         |
| SB3-10      | K5609-8  | 10              | <b>*</b> 19 |
| SB3-13      | K5609-9  | 10              | 24          |
| SB4-5       | K5609-10 | 10              | ND          |

MRL Method Reporting Limit

Response due primarily to the overlapping gasoline components within the diesel region.

\*\* Response due to the overlap of a high boiling product, possibly lube oil within the diesel region.

ND None Detected at or above the method reporting limit

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## Approved by

Date 10/7/92

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#### **Analytical Report**

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92    |
|----------------|---------------------------|-----------------|-------------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/12/92    |
| Sample Matrix: | Soil                      | Date Analyzed:  | 09/18,19/92 |
|                |                           | Work Order No.: | K925609A    |

#### Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

| Sample Name  | Lab Code           | MRL | Diesel |
|--------------|--------------------|-----|--------|
| SB4-10       | K5609-11           | 10  | ND     |
| SB4-13       | K5609-12           | 10  | ND     |
| Method Blank | K5609-MB1          | 10  | ND     |
| Method Blank | <b>К5609-МВ2</b> и | 10  | ND     |

MRL Method Reporting Limit

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ND None Detected at or above the method reporting limit

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Approved by

Date 10/7/92

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#### Analytical Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/11/92 |
| Sample Matrix: | Water                     | Date Analyzed:  | 09/18/92 |
|                |                           | Work Order No.: | K925609A |

#### Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3510/8100 Modified $\mu$ g/L (ppb)

| Sample Name  | Lab Code | MRL | Diesel |  |
|--------------|----------|-----|--------|--|
| Tool Rinse   | K5609-13 | 50  | ND     |  |
| Method Blank | K5609-MB | 50  | ND     |  |

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

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Approved by

Date 10/7/92

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Telephone 206/577-7222

## APPENDIX A

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# LABORATORY QC RESULTS

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#### QA/QC Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Cushman Texaco/#14803.00  | Date Analyzed:  | 09/29/92 |
| Sample Matrix: | Water                     | Work Order No.: | K925609A |

Surrogate Recovery Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH

Sample Name

Lab Code

Tool Rinse Method Blank K5609-13 K5609-MB

CAS Acceptance Criteria

Percent Recovery *a*,*a*,*a*-Trifluorotoluene

> 94 88

58-146

VPH Volatile Petroleum Hydrocarbons

Colm: Ellity

Approved by\_

Date\_10/7/42

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#### QA/QC Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/17/92 |
| Sample Matrix: | Soil                      | Date Analyzed:  | 09/18/92 |
|                |                           | Work Order No.: | K925609A |

#### Surrogate Recovery Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH

| Sample Name | Lab Code | Percent Recovery<br><i>a</i> , <i>a</i> , <i>a</i> -Trifluorotoluene |
|-------------|----------|----------------------------------------------------------------------|
| MW5-5       | K5609-1  | 124                                                                  |
| MW5-10      | К5609-2  | NA                                                                   |
| MW5-13      | К5609-3  | NA                                                                   |
| MW6-5       | К5609-4  | 107                                                                  |
| MW6-10      | К5609-5  | 95                                                                   |
| MW6-13      | K5609-6  | 99                                                                   |
| SB3-5       | K5609-7  | 102                                                                  |
| SB3-10      | К5609-8  | 96                                                                   |
| SB3-13      | К5609-9  | 119                                                                  |
| SB4-5       | K5609-10 | 97                                                                   |

CAS Acceptance Criteria

60-150

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VPH Volatile Petroleum Hydrocarbons

NA Not Applicable because of the sample matrix. The chromatogram showed target components that interfered with determination of the surrogate.

Approved by

alm. Ellinty

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Date 10/7/92

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#### QA/QC Report

Client:America North/EMCON, Inc.Date Received:09/10/92Project:Cushman Texaco/#14803.00Date Extracted:09/17/92Sample Matrix:SoilDate Analyzed:09/17,18/92Work Order No.:K925609A

#### Surrogate Recovery Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH

| Sample Name               | Lab Code   | Percent Recovery<br><i>a</i> , <i>a</i> , <i>a</i> -Trifluorotoluene |  |
|---------------------------|------------|----------------------------------------------------------------------|--|
| SB4-10                    | K5609-11   | 120                                                                  |  |
| SB4-13                    | K5609-12   | 118                                                                  |  |
| Method Blank              | K5609-MB   | 137                                                                  |  |
| Laboratory Control Sample | K5609-LCS  | 128                                                                  |  |
| MW5-5                     | K5609-1Dup | 129                                                                  |  |
| MW6-5                     | K5609-4MS  | 105                                                                  |  |

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CAS Acceptance Criteria

60-150

VPH Volatile Petroleum Hydrocarbons

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10/7/92 Date

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#### QA/QC Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/17/92 |
| Sample Matrix: | Soil                      | Date Analyzed:  | 09/18/92 |
|                |                           | Work Order No.: | K925609A |

#### Duplicate Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH mg/Kg (ppm) Dry Weight Basis

Sample Name: MW5-5 Lab Code: K5609-1

|                 |      | Sample | Duplicate<br>Sample |              | Relative<br>Percent |
|-----------------|------|--------|---------------------|--------------|---------------------|
| Analyte         | MRL  | Result | Result              | Average      | Difference          |
| Benzene         | 0.05 | ND     | ND                  | ND           |                     |
| Toluene         | 0.1  | 6.6    | 9.1                 | 7.8          | 32                  |
| Ethylbenzene    | 0.1  | 12.6   | 18.6                | 15.6         | 38                  |
| Total Xylenes   | 0.1  | 76.6   | 114                 | 95. <b>3</b> | 39                  |
| VPH as Gasoline | 5    | 480    | 56 <b>2</b>         | 521          | 16                  |

VPH Volatile Petroleum HydrocarbonsMRL Method Reporting LimitND None Detected at or above the method reporting limit

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Approved by

Date 10/7/92

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#### QA/QC Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/17/92 |
| Sample Matrix: | Soil                      | Date Analyzed:  | 09/18/92 |
|                |                           | Work Order No.: | K925609A |

#### Matrix Spike Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH mg/Kg (ppm) Dry Weight Basis

Sample Name: MW6-5 Lab Code: K5609-4

| Analyte      | Spike<br>Level | Sample<br>Result | Spiked<br>Sample<br>Result | Percent<br>Recovery | CAS<br>Percent<br>Recovery<br>Acceptance<br>Criteria |
|--------------|----------------|------------------|----------------------------|---------------------|------------------------------------------------------|
| Benzene      | 1.19           | ND               | 1.33                       | 112                 | 23-170                                               |
| Toluene      | 1.2            | ND               | 1.6                        | 133                 | 31-166                                               |
| Ethylbenzene | 1.2            | ND               | 1.3                        | 108                 | 30-164                                               |

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VPH Volatile Petroleum HydrocarbonsND None Detected at or above the method reporting limit

Colm: Ellit

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Approved by\_

Date 10/1/92

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#### QA/QC Report

| Client:     | America North/EMCON, Inc. | Date Extracted: | 09/17/92 |
|-------------|---------------------------|-----------------|----------|
| Project:    | Cushman Texaco/#14803.00  | Date Analyzed:  | 09/18/92 |
| LCS Matrix: | Soil                      | Work Order No.: | K925609A |

#### Laboratory Control Sample Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH mg/Kg (ppm)

|              |               |        |                     | CAS<br>Percent<br>Recovery |
|--------------|---------------|--------|---------------------|----------------------------|
| Analyte      | True<br>Value | Result | Percent<br>Recovery | Acceptance<br>Criteria     |
| Benzene      | 0.86          | 1.06   | 123                 | 23-170                     |
| Toluene      | 0.9           | 1.2    | 133                 | 31-166                     |
| Ethylbenzene | 0.9           | 1.0    | 111                 | 30-164                     |

VPH Volatile Petroleum Hydrocarbons

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Approved by\_\_\_

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Date 10/7/92

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#### QA/QC Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/ <b>10/92</b> |
|----------------|---------------------------|-----------------|------------------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/12/92         |
| Sample Matrix: | Soil                      | Date Analyzed:  | 09/18,19/92      |
|                |                           | Work Order No.: | K925609A         |

#### Surrogate Recovery Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified

| Sample Name | Lab Code | Percent Recovery<br><i>p</i> -Terphenyl |
|-------------|----------|-----------------------------------------|
| MW5-5       | K5609-1  | 98                                      |
| MW5-10      | К5609-2  | 99                                      |
| MW5-13      | К5609-3  | 89                                      |
| MW6-5       | К5609-4  | 87                                      |
| MW6-10      | K5609-5  | 87                                      |
| MW6-13      | К5609-6  | 89                                      |
| SB3-5       | К5609-7  | 87                                      |
| SB3-10      | К5609-8  | 89                                      |
| SB3-13      | K5609-9  | 86                                      |
| SB4-5       | К5609-10 | 91                                      |

CAS Acceptance Criteria

Approved by\_\_\_

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\_\_\_\_Date\_\_\_\_0/7/92\_\_\_\_

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50-114

#### QA/QC Report

Client:America North/EMCON, Inc.Date Received:09/10/92Project:Cushman Texaco/#14803.00Date Extracted:09/12/92Sample Matrix:SoilDate Analyzed:09/18,19/92Work Order No.:K925609A

#### Surrogate Recovery Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified

| Sample Name  | Lab Code         | Percent Recover<br><i>p</i> -Terphenyl |  |
|--------------|------------------|----------------------------------------|--|
| SB4-10       | K560 <b>9-11</b> | 98                                     |  |
| SB4-13       | K5609-12         | 96                                     |  |
| Method Blank | K5609-MB1        | 93                                     |  |
| Method Blank | K5609-MB2        | 84                                     |  |
| MW5-5        | K5609-1Dup       | 85                                     |  |
| SB4-13       | K5609-12Dup      | 92                                     |  |
| SB3-5        | K5609-7MS        | 88                                     |  |
| SB4-5        | K5609-10MS       | 93                                     |  |

CAS Acceptance Criteria

50-114

Approved by

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Date 10/7/92

#### QA/QC Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/11/92 |
| Sample Matrix: | Water                     | Date Analyzed:  | 09/18/92 |
|                |                           | Work Order No.: | K925609A |

#### Surrogate Recovery Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3510/8100 Modified

Sample Name

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Tool Rinse Method Blank Laboratory Control Sample K5609-13 K5609-MB K5609-LCS

Lab Code

*p*-Terphenyl 89 88

**Percent Recovery** 

88

CAS Acceptance Criteria

36-124

Approved by

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Cin: Ellutt

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\_\_\_\_\_Date\_\_\_/0/7/92\_\_\_\_

#### QA/QC Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/12/92 |
| Sample Matrix: | Soil                      | Date Analyzed:  | 09/18/92 |
|                |                           | Work Order No.: | K925609A |

#### Duplicate Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name: MW5-5 Lab Code: K5609-1

| Analyte | MBI | Sample<br>Besult | Duplicate<br>Sample<br>Besult | Average | Relative<br>Percent<br>Difference | CAS RPD<br>Acceptance<br>Criteria |
|---------|-----|------------------|-------------------------------|---------|-----------------------------------|-----------------------------------|
| Diesel  | 10  | 22               | 22                            | 22      | <1                                | 25                                |

MRL Method Reporting Limit

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Approved by

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Date 10/7/92

#### QA/QC Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/12/92 |
| Sample Matrix: | Soil                      | Date Analyzed:  | 09/19/92 |
|                |                           | Work Order No.: | K925609A |

Duplicate Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name: SB4-13 Lab Code: K5609-12

|         |     |                  | Duplicate        |         |                       | Duplicate Relative     |  | Relative | CAS RPD |  |
|---------|-----|------------------|------------------|---------|-----------------------|------------------------|--|----------|---------|--|
| Analyte | MRL | Sample<br>Result | Sample<br>Result | Average | Percent<br>Difference | Acceptance<br>Criteria |  |          |         |  |
| Diesel  | 10  | ND               | ND               | ND      |                       | 25                     |  |          |         |  |

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

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Approved by\_\_

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Date 10/7/92

#### QA/QC Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/12/92 |
| Sample Matrix: | Soil                      | Date Analyzed:  | 09/18/92 |
|                |                           | Work Order No.: | K925609A |

#### Matrix Spike Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name: SB3-5 Lab Code: K5609-7

| Analyte | Spike<br>Level | Sample<br>Result | Spiked<br>Sample<br>Result | Percent<br>Recovery | CAS<br>Percent<br>Recovery<br>Acceptance<br>Criteria |
|---------|----------------|------------------|----------------------------|---------------------|------------------------------------------------------|
| Diesel  | 260            | 24               | 317                        | 113                 | 41-136                                               |

Approved by\_

Colm: Ellutt

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\_\_\_\_Date\_\_10/7/92\_

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#### QA/QC Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/10/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Cushman Texaco/#14803.00  | Date Extracted: | 09/12/92 |
| Sample Matrix: | Soil                      | Date Analyzed:  | 09/19/92 |
|                |                           | Work Order No.: | K925609A |

#### Matrix Spike Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3540/8100 Modified mg/Kg (ppm) Dry Weight Basis

Sample Name: SB4-5 Lab Code: K5609-10

|         |                |                  | Spiked           |                     | CAS<br>Percent<br>Recovery |
|---------|----------------|------------------|------------------|---------------------|----------------------------|
| Analyte | Spike<br>Level | Sample<br>Result | Sample<br>Result | Percent<br>Recovery | Acceptance<br>Criteria     |
| Diesel  | 260            | ND               | 282              | 108                 | 41-136                     |

ND None Detected at or above the method reporting limit

Colm- Ellevit

\_\_\_\_Date\_\_\_10/7/92

#### QA/QC Report

| Client:     | America North/EMCON, Inc. | Date Extracted: | 09/11/92 |
|-------------|---------------------------|-----------------|----------|
| Project:    | Cushman Texaco/#14803.00  | Date Analyzed:  | 09/18/92 |
| LCS Matrix: | Water                     | Work Order No.: | K925609A |

#### Laboratory Control Sample Summary Extractable Petroleum Hydrocarbons as Diesel EPA Methods 3510/8100 Modified µg/L (ppb)

|         |               |        |                     | CAS<br>Percent         |
|---------|---------------|--------|---------------------|------------------------|
| Analyte | True<br>Value | Result | Percent<br>Recovery | Acceptance<br>Criteria |
| Diesel  | 3,500         | 3,150  | 90                  | 50-130                 |

Approved by

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Colm: Ellett

Date 10/7/92



# Laboratory Analysis Request

DATE 9-8-92 PAGE 1 OF 2

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| P                          | ROJECTCUSHIM.                                                                                                                | M TE                   | XACO                               | <u># 14803</u>                                                    | 3.00                     | AN/                                    | LYSIS                               | REQUE                                     | STED                  |                                  |                                        |                                     |                                    |                                       |               | GENER<br>(Specif | AL CH<br>y)                                              | EMIŞTI        | ₹Y         |             |             | OTHE<br>(Spec | ۲<br>ify) |                           |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------|-------------------------------------------------------------------|--------------------------|----------------------------------------|-------------------------------------|-------------------------------------------|-----------------------|----------------------------------|----------------------------------------|-------------------------------------|------------------------------------|---------------------------------------|---------------|------------------|----------------------------------------------------------|---------------|------------|-------------|-------------|---------------|-----------|---------------------------|
| C<br>C<br>A<br>T<br>S<br>S | LIENT INFO.<br>DOTACT $TERL$<br>DORESS $AW /E$<br>ELEPHONE# $45$<br>AMPLER'S NAME $TER$<br>AMPLER'S SIGNATURE<br>SAMPLE I.D. | = S.A<br>- /1911.e<br> | ن ' C<br>۲۵٬۹۵۷/۵<br>۲۰٫۵۰<br>۲۱ME | <u>Ареки сс</u><br>J<br>PHONE# <u>452-2</u><br>Долгос<br>LAB I.D. | <i>ی</i> ا ا             | BASE/NEU/ACID ORGAN.<br>GC/MS/625/8270 | VOLATILE ORGANICS<br>GC/MS/624/8240 | HALOGENATED VOLATILE<br>ORGANICS 601/8010 | PHENOLICS<br>604/8040 | POLYNUCLEAR<br>AROMATIC 610/8310 | TOTAL ORGANIC CARBON<br>(TOC) 415/9060 | TOTAL ORGANIC HALIDE<br>(TOX ) 9020 | EP TOX/TCLP METALS<br>(Circle One) | METALS (T0TAL)<br>(See Special Inst.) | TCLP ORGANICS | ph, cond<br>Alk  | N0 <sub>3</sub> /N0 <sub>2</sub> . CI<br>S0 <sub>4</sub> | Ca, Mg, Na, K | 8100 M-EPH | BOISM - NPH | 8020 - BIEX |               |           | L<br>NUMBER OF CONTAINERS |
|                            | MW5-5                                                                                                                        | 9/4/52                 |                                    |                                                                   | 5                        |                                        |                                     |                                           |                       |                                  | $\times$                               |                                     |                                    |                                       |               |                  |                                                          |               | ×          | X           | X           |               |           | 3                         |
|                            | MW5-10                                                                                                                       | 9/4/92                 |                                    |                                                                   |                          |                                        |                                     |                                           |                       |                                  |                                        |                                     |                                    |                                       |               |                  |                                                          |               |            |             |             |               |           | 2                         |
|                            | MW5-13                                                                                                                       | 9/4/92                 |                                    |                                                                   | <br>                     | 1                                      |                                     |                                           |                       |                                  |                                        |                                     |                                    |                                       |               |                  |                                                          |               |            |             |             |               |           | 2                         |
| 4                          | MW6-5                                                                                                                        | 9/4/41                 |                                    |                                                                   | <u>   </u>               |                                        |                                     |                                           | :                     | <br>                             |                                        |                                     |                                    |                                       |               |                  | <br>                                                     |               |            |             |             |               |           | Z                         |
| ļ                          | MW6-10                                                                                                                       | 9/4/42                 |                                    |                                                                   | <u>   </u>               |                                        |                                     |                                           |                       |                                  |                                        |                                     |                                    |                                       |               |                  |                                                          |               |            |             |             |               |           | 2                         |
| 4                          | . mw6-13                                                                                                                     | 9/4/12                 |                                    |                                                                   |                          |                                        | <u> </u>                            |                                           |                       |                                  |                                        |                                     |                                    |                                       |               |                  |                                                          |               |            |             |             |               |           | 2                         |
|                            | 583-5                                                                                                                        | 9/4/SL                 |                                    |                                                                   | $\left  \right _{\cdot}$ |                                        | <u> </u>                            |                                           |                       | <b> </b>                         |                                        |                                     |                                    |                                       |               |                  |                                                          |               |            | _           |             |               |           | 2                         |
| ł                          | SB3-10                                                                                                                       | 9/4/42                 | Detionulat                         |                                                                   | V                        | 0.1                                    |                                     |                                           |                       |                                  | X                                      |                                     |                                    |                                       |               |                  |                                                          |               |            |             |             | IDT           |           | 2                         |
|                            | Recent G                                                                                                                     |                        | Kelinquisi                         | 180 BY                                                            |                          | _ Ken                                  | Iquisne                             | аву                                       |                       |                                  |                                        |                                     | rnuje                              | 51 INF                                | UNMA          | IUN              |                                                          |               | 1          | MARTL       | C NEVE      | :171          |           |                           |
| F                          | JERRY BON                                                                                                                    | N                      | Signature                          |                                                                   |                          | Sign                                   | ature                               |                                           |                       |                                  |                                        | -                                   | Shippi                             | ng 1.D. 1                             | 10.           |                  |                                                          |               |            | Total No    | . of Cor    | ntainers      |           |                           |
|                            | AMERICA Naco                                                                                                                 | Ener                   | Printed Nar                        | ne                                                                |                          | Print                                  | od Name                             | 1                                         |                       |                                  |                                        |                                     |                                    |                                       |               |                  |                                                          |               |            | Chain of    | Custod      | y Seals       |           |                           |
| Ī                          | firm Gladan ala                                                                                                              |                        | Firm                               |                                                                   |                          | Firm                                   |                                     |                                           |                       |                                  |                                        |                                     | VIA                                |                                       |               |                  |                                                          |               |            | Received    | d in goo    | d conditio    | n         |                           |
| t                          |                                                                                                                              |                        | Date/Time                          |                                                                   |                          | Date                                   | Time                                |                                           |                       |                                  |                                        |                                     | Project                            | 1                                     |               |                  |                                                          |               |            | LAB NO      | •           |               |           |                           |
|                            | Received By                                                                                                                  | -                      | Received                           | By                                                                |                          | Rec                                    | elved By                            | Y                                         |                       |                                  |                                        |                                     | SPECIA                             | AL INST                               | RUCTI         | ONS/C            | OMME                                                     | NTS           |            |             |             |               |           | :                         |
| _ [                        | Signature Lon: K. Hawn                                                                                                       |                        | Signature                          | <u> </u>                                                          |                          | Sign                                   | iture                               |                                           |                       |                                  |                                        |                                     |                                    |                                       |               |                  |                                                          |               |            |             |             |               |           |                           |
| 50                         | Printed Name CAS                                                                                                             |                        | Printed Na                         | me                                                                |                          | Print                                  | d Name                              |                                           |                       |                                  |                                        |                                     |                                    |                                       |               |                  |                                                          |               |            |             |             |               |           |                           |
| 31                         | Firm 9/10/92 130                                                                                                             | 00                     | Firm                               |                                                                   |                          | Firm                                   |                                     |                                           |                       |                                  |                                        |                                     |                                    |                                       |               |                  |                                                          |               |            |             |             | •             |           |                           |
| ł                          | Date/Time                                                                                                                    |                        | Date/Time                          |                                                                   |                          | Date                                   | /Time                               |                                           |                       |                                  |                                        |                                     |                                    |                                       |               |                  |                                                          |               |            |             |             |               |           |                           |



# Laboratory Analysis Request

DATE \_ 9/3/92\_ PAGE \_ OF Z\_

| PROJECT _ Custom An Timacs                                                                                                                                                                       | # 14803-00                            | - ANA                            | LYSIS REQ                                          | UESTED                            |                            |                                  |                               |                             |                               |            | GENE<br>(Spec | RAL CH<br>ify) | IEMIST    | RY        |          |                        | OTH<br>(Sp | IER<br>ecify) |                      |   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------|----------------------------------------------------|-----------------------------------|----------------------------|----------------------------------|-------------------------------|-----------------------------|-------------------------------|------------|---------------|----------------|-----------|-----------|----------|------------------------|------------|---------------|----------------------|---|
| CLIENT INFO<br>CONTACT <u><i>Exest</i></u> O'CA<br>ADDRESS <u>AN/E</u> - FAIRBAWKS<br>TELEPHONE# <u>456</u> - 2011<br>SAMPLER'S NAME <u>SERRY</u> BONN<br>SAMPLER'S SIGNATURE <u><u>Kann</u></u> | PHONE# 416-2011                       | E/NEU/ACID ORGAN.<br>MS/625/8270 | ATILE ORGANICS<br>MS/624/8240<br>DGENATED VOLATILE | ANICS 501/8010<br>NOLICS<br>/8040 | YNUCLEAR<br>MATIC 610/8310 | AL ORGANIC CARBON<br>C) 415/9060 | AL ORGANIC HALIDE<br>X ) 9020 | FOX/TCLP METALS<br>cle One) | ALS (T0TAL)<br>Special Inst.) | P ORGANICS | COND          | 1/N02, CI      | Mg, Na, K | 100 M 60H | DITM-VPH | 27.13 - R.75           |            |               | IUMBER OF CONTAINERS |   |
| SAMPLE I.D. DATE TIMI                                                                                                                                                                            | E LAB I.D. TYPE                       | BAS<br>6C/                       | VOL<br>6C/                                         | PHE 046                           | POL                        | 10<br>L                          | E E                           | E P<br>(Cir                 | MET<br>(See                   |            | PH.           | So             | Ca,       | 8         | 3        | 1 02                   | ۹<br>      |               | <br>~                |   |
| 1. 5B 3-13 9/4/2                                                                                                                                                                                 | 5                                     |                                  |                                                    |                                   |                            |                                  |                               |                             |                               |            |               |                |           | X         | X        | X                      | <b> </b>   |               | <br>2                | ľ |
| 2534-5                                                                                                                                                                                           |                                       |                                  | <b> </b>                                           | ·                                 |                            | ļ                                |                               | ļ                           |                               |            |               | ļ              | ļ         |           |          | $\square$              | ļ          |               | <br>2                |   |
| 3. SBY-10                                                                                                                                                                                        |                                       |                                  | ļ                                                  |                                   |                            |                                  |                               |                             |                               |            |               | 1              | ļ         |           |          |                        |            |               | <br>2                |   |
| 4. SBY-13                                                                                                                                                                                        | · · · · · · · · · · · · · · · · · · · |                                  |                                                    | :                                 |                            |                                  |                               |                             |                               |            | ļ             |                | ,         | V         | V        | $  \mathbf{\Lambda}  $ | <br>       |               | <br>2                |   |
| 5. RUL BUSE 15:                                                                                                                                                                                  | IT W                                  |                                  |                                                    |                                   |                            |                                  |                               |                             |                               |            |               |                |           | X         |          |                        |            |               | 1                    |   |
| 6. TOUL RING V IT:                                                                                                                                                                               | 47 W                                  |                                  |                                                    |                                   |                            |                                  |                               |                             |                               |            |               |                |           |           | $\times$ | X                      |            |               | <br>2                |   |
| 7.                                                                                                                                                                                               |                                       |                                  |                                                    |                                   |                            | <u> </u>                         |                               |                             | <u> </u>                      |            |               |                |           |           |          |                        |            |               |                      |   |
| 8.                                                                                                                                                                                               |                                       |                                  |                                                    |                                   |                            |                                  |                               |                             |                               |            |               |                |           |           |          |                        |            |               |                      |   |
| Relinguished By America North/EMCON Inc. Relin                                                                                                                                                   | quished By                            | Reli                             | nquished By                                        | 1                                 |                            |                                  |                               | PROJE                       | CT INF                        | ORMA       | TION          |                |           |           | SAMPL    | E REC                  | EIPT       |               |                      |   |
| Signature Signat                                                                                                                                                                                 |                                       | Signa                            | ature                                              |                                   |                            |                                  | -                             | Shinnii                     | n i D                         |            |               |                |           |           | Total N  | o. of Co               | Intainers  |               | <br>                 | - |
| Printed Name Printe                                                                                                                                                                              | i Name                                | Print                            | ed Name                                            |                                   | <u></u> .                  |                                  |                               |                             |                               |            |               |                |           |           | Chain c  | t Custo                | dy Seals   |               | <br>                 | 1 |
| Firm Firm                                                                                                                                                                                        |                                       | Firm                             |                                                    |                                   |                            |                                  |                               | VIA                         |                               |            |               |                |           | <u> </u>  | Receive  | ed in go               | od cond    | ition         | <br>                 | - |
| Date/fime Date/                                                                                                                                                                                  | Time                                  | Date                             | /Time                                              |                                   |                            |                                  |                               | Project                     |                               |            |               |                |           |           | LAB NO   | ).                     |            |               |                      |   |
| Received By Dr. K. Com                                                                                                                                                                           | ived By                               | Rec                              | eived By                                           |                                   |                            |                                  |                               | SPECIA                      | AL INST                       | TRUCT      | IONS/         | сомм           | ENTS      |           |          |                        |            |               |                      |   |
| Signature Lori K. Hawn Signa                                                                                                                                                                     | ture                                  | Sign                             | ature                                              |                                   |                            |                                  |                               |                             |                               |            |               |                |           |           |          |                        |            |               |                      |   |
| Printed Name AS Printe                                                                                                                                                                           | d Name                                | Print                            | od Name                                            |                                   |                            |                                  |                               |                             |                               |            |               |                |           |           |          |                        |            |               |                      |   |
| Firm 9/10/92 1300 Firm                                                                                                                                                                           |                                       | Firm                             |                                                    |                                   |                            |                                  |                               |                             |                               |            |               |                |           |           |          |                        | ,          |               |                      |   |
| The Date                                                                                                                                                                                         | Time                                  | Date                             | /Time                                              |                                   | ·                          |                                  |                               |                             |                               |            |               |                |           |           |          |                        |            |               | <br>                 |   |



October 8, 1992

Teresa O'Carroll America North/EMCON, Inc. 520 Fourth Street, Graehl Fairbanks, AK 99701

Re: Texaco - TRMI/Project #14803.00

Dear Teresa:

Enclosed are the results of the samples submitted to our laboratory on September 17, 1992. Preliminary results were transmitted via facsimile on October 6, 1992. For your reference, these analyses have been assigned our work order number K925772A.

Several samples contained very high levels of BTEX and gasoline and required multiple dilutions to achieve instrument responses which were on-scale. Unfortunately for Samples 0404091592, 0506091592, 0207091592, and 0208091592, all available sample was analyzed before the correct dilution was performed. As indicated on the report form, several of the values are reported as estimates, since the responses of the final dilutions were still above the instrument calibration range.

All analyses were performed in accordance with our laboratory's quality assurance program. Reproduction of reports is allowed only in whole, not in part. Results apply only to the samples analyzed.

7 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-106

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Chi Ellit

Colin B. Elliott Senior Project Chemist

CBE/eaw

#### Analytical Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/17/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Texaco - TRMI             | Date Analyzed:  | 09/23/92 |
| Sample Matrix: | Water                     | Work Order No.: | K925772A |

Total Lead EPA Method 7421 μg/L (ppb)

| Sample Name  | Lab Code | MRL | Result |
|--------------|----------|-----|--------|
| 0301091492   | K5772-1  | 2   | 6 ·    |
| 0602091492   | К5772-2  | 2   | 4      |
| 0703091492   | К5772-3  | 2   | 5      |
| 0404091592   | K5772-4  | 2   | 36     |
| 0105091592   | K5772-5  | 2   | 8      |
| 0506091592   | K5772-6  | 2   | 71     |
| 0207091592   | K5772-7  | 2   | 18     |
| 0208091592   | K5772-8  | 2   | 18     |
| EQB091492    | K5772-9  | 2   | ND     |
| SWMW-1       | К5772-10 | 2   | 5      |
| SWMW-2       | K5772-11 | 2   | 25     |
| Method Blank | K5772-MB | 2   | ND     |

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

am Ellet

Date 10/8/92

#### Analytical Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/17/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Texaco - TRMI             | Work Order No.: | K925772A |
| Sample Matrix: | Water                     |                 |          |

# BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH $\mu$ g/L (ppb)

|                | Sample Name:<br>Lab Code:<br>Date Analyzed: |     | 0301091492<br>K5772-1<br>09/25/92 | 0602091492<br>K5772-2<br>09/25/92 | 0703091492<br>K5772-3<br>09/27/92 |
|----------------|---------------------------------------------|-----|-----------------------------------|-----------------------------------|-----------------------------------|
| Analyte        |                                             | MRL |                                   |                                   |                                   |
| Benzene        |                                             | 0.5 | 29.5                              | *5,500                            | 12,000                            |
| Toluene        |                                             | 1   | 26                                | 372                               | 5,300                             |
| Ethylbenzene   |                                             | 1   | 4                                 | 354                               | 670                               |
| Total Xylenes  |                                             | 1   | 15                                | 551                               | 2,200                             |
| VPH as Gasolir | ie                                          | 50  | 198                               | *14,000                           | 40,000                            |

VPH Volatile Petroleum Hydrocarbons

MRL Method Reporting Limit

Result is from the analysis of a diluted sample, performed on September 27, 1992.

Approved by\_

Colm: Ellett

\_\_\_\_Date\_<u>10/8/92</u>\_\_\_\_

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D. D. D. 470 A. Kata Wathiana 08626 . Telephone 206/577-7222 . Fax 206/636-106

#### Analytical Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/17/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Texaco - TRMI             | Work Order No.: | K925772A |
| Sample Matrix: | Water                     |                 |          |

#### BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH $\mu$ g/L (ppb)

|                 | Sample Name:<br>Lab Code:<br>Date Analyzed: |     | 0404091592<br>K5772-4<br>09/27/92 | 0105091592<br>K5772-5<br>09/27/92 | 0506091592<br>K5772-6<br>09/27/92 |
|-----------------|---------------------------------------------|-----|-----------------------------------|-----------------------------------|-----------------------------------|
| Analyte         |                                             | MRL |                                   |                                   |                                   |
| Benzene         |                                             | 0.5 | 20,000                            | 4,000                             | *54,000                           |
| Toluene         |                                             | 1   | *47,000                           | 14,000                            | *60,000                           |
| Ethylbenzene    |                                             | 1   | 3,600                             | 2,000                             | 4,000                             |
| Total Xylenes   |                                             | 1   | 19,000                            | 10,000                            | 20,000                            |
| VPH as Gasoline | Э                                           | 50  | 190,000                           | 71,000                            | *360,000                          |

#### VPH Volatile Petroleum Hydrocarbons

MRL Method Reporting Limit

Analyte concentration is an estimate because the result was above the instrument calibration range, and because insufficient sample quantity remained for additional analysis.

Approved by

Colm: Ellut

Date 10/8/92

#### Analytical Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/17/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Texaco - TRMI             | Work Order No.: | K925772A |
| Sample Matrix: | Water                     |                 |          |

#### BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH $\mu$ g/L (ppb)

| S<br>Da         | ample Name:<br>Lab Code:<br>ate Analyzed: | 0207091592<br>K5772-7<br>09/27/92 | 0208091592<br>K5772-8<br>09/27/92 | EQB091492<br>K5772-9<br>09/27/92 |
|-----------------|-------------------------------------------|-----------------------------------|-----------------------------------|----------------------------------|
| Analyte         | MRL                                       | •• •                              |                                   |                                  |
| Benzene         | 0.5                                       | *50,000                           | *52,000                           | 0.8                              |
| Toluene         | 1                                         | *50,000                           | *53,000                           | 1                                |
| Ethylbenzene    | 1                                         | 3,000                             | 3,200                             | ND                               |
| Total Xylenes   | 1                                         | 15,000                            | 16,000                            | ND                               |
| VPH as Gasoline | 50                                        | *300,000                          | *330,000                          | ND                               |

**VPH** Volatile Petroleum Hydrocarbons

MRL Method Reporting Limit

Analyte concentration is an estimate because the result was above the instrument calibration range, and because insufficient sample quantity remained for additional analysis.
 ND None Detected at or above the method reporting limit

Approved by

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an Ellit

Date\_\_\_\_ 10/8/92

#### Analytical Report

| Client:        | America North/EMCON, Inc. | Date Received:  | 09/17/92 |
|----------------|---------------------------|-----------------|----------|
| Project:       | Texaco - TRMI             | Work Order No.: | K925772A |
| Sample Matrix: | Water                     |                 |          |

#### BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH $\mu$ g/L (ppb)

| Samı<br>I<br>Date | ole Name:<br>Lab Code:<br>Analyzed: | SWMW-1<br>K5772-10<br>09/27/92 | SWMW-2<br>K5772-11<br>09/25/92 | Trip Blank-field<br>K5772-12<br>09/24/92 |
|-------------------|-------------------------------------|--------------------------------|--------------------------------|------------------------------------------|
| Analyte           | MRL                                 |                                |                                |                                          |
| Benzene           | 0.5                                 | 188                            | 105                            | ND                                       |
| Toluene           | 1                                   | 58                             | 151                            | ND                                       |
| Ethylbenzene      | 1                                   | 7                              | <b>~ 23</b>                    | ND                                       |
| Total Xylenes     | 1                                   | 26                             | 90                             | ND                                       |
| VPH as Gasoline   | 50                                  | 721                            | 964                            | ND                                       |

VPH Volatile Petroleum HydrocarbonsMRL Method Reporting LimitND None Detected at or above the method reporting limit

Approved by\_

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Date 10/8/92

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#### Analytical Report

Client:America North/EMCON, Inc.Project:Texaco - TRMISample Matrix:Water

Work Order No.: K925772A

**Method Blank** 

K5772-MB

09/24/92

#### BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH $\mu$ g/L (ppb)

Sample Name: Lab Code: Date Analyzed:

| Analyte         | MRL |    |
|-----------------|-----|----|
| Benzene         | 0.5 | ND |
| Toluene         | 1   | ND |
| Ethylbenzene    | 1   | ND |
| Total Xylenes   | 1   | ND |
| VPH as Gasoline | 50  | ND |

VPH Volatile Petroleum HydrocarbonsMRL Method Reporting LimitND None Detected at or above the method reporting limit

Approved by

ahi Ellet

Date\_\_\_10/8/92

# APPENDIX A

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## LABORATORY QC RESULTS

#### QA/QC Report

| ·              |                           |                 |             |
|----------------|---------------------------|-----------------|-------------|
| Client:        | America North/EMCON, Inc. | Date Received:  | 09/17/92    |
| Project:       | Texaco - TRMI             | Date Analyzed:  | 09/25-27/92 |
| Sample Matrix: | Water                     | Work Order No.: | K925772A    |

Surrogate Recovery Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH

| Sample Name | Lab Code        | Percent Recovery<br>4-Bromofluorobenzene |
|-------------|-----------------|------------------------------------------|
| 0301091492  | K5772-1         | 95                                       |
| 0602091492  | К5772-2         | 111                                      |
| 0703091492  | К5772-3         | 86                                       |
| 0404091592  | К5772-4         | 86                                       |
| 0105091592  | К5772-5         | 85                                       |
| 0506091592  | К5772-6         | 86                                       |
| 0207091592  | К5772-7         | . 90                                     |
| 0208091592  | К5772-8         | 88                                       |
| EQB091492   | K5 <b>772-9</b> | 78                                       |
| SWMW-1      | К5772-10        | 78                                       |
|             |                 |                                          |
|             |                 |                                          |

CAS Acceptance Criteria

VPH Volatile Petroleum Hydrocarbons

Approved by\_

al Ellit

Date 40/8/92

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59-139

#### QA/QC Report

| Sample Matrix: | Water                     | Work Order No.: | K925772A    |
|----------------|---------------------------|-----------------|-------------|
| Project:       | Texaco - TRMI             | Date Analyzed:  | 09/24-27/92 |
| Client:        | America North/EMCON, Inc. | Date Received:  | 09/17/92    |

Surrogate Recovery Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH

| Sample Name               | Lab Code                | Percent Recovery<br>4-Bromofluorobenzene |
|---------------------------|-------------------------|------------------------------------------|
| SWMW-2                    | К5772-11                | 94                                       |
| Trip Blank-field          | К5772-12                | 122                                      |
| Method Blank              | K5772-MB                | 113                                      |
| Laboratory Control Sample | K5772-LCS               | 88                                       |
|                           | CAS Acceptance Criteria | 59-139                                   |

VPH Volatile Petroleum Hydrocarbons

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Date 10/8/92

#### QA/QC Report

| Client:     | America North/EMCON, Inc. | Date Extracted: | 09/24/92 |
|-------------|---------------------------|-----------------|----------|
| Project:    | Texaco - TRMI             | Date Analyzed:  | 09/27/92 |
| LCS Matrix: | Water                     | Work Order No.: | K925772A |

#### Laboratory Control Sample Summary BTEX and VPH as Gasoline EPA Methods 5030/8020/8015 VPH $\mu$ g/L (ppb)

| Analyte         | True<br>Value | Result | Percent<br>Recovery | CAS<br>Percent<br>Recovery<br>Acceptance<br>Criteria |
|-----------------|---------------|--------|---------------------|------------------------------------------------------|
| VPH as Gasoline | 3,600         | 2,800  | 78                  | 70-140                                               |

VPH Volatile Petroleum Hydrocarbons

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ali Ellits Approved by

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Date 10/8/92

America North/EMCON, Inc. 201 East 56th. Suite 300 • Anchorage, AK 99518 (907) 562-3452 • FAX (907) 563-2814

Chain of Custody/ Laboratory Analysis Request

| (\$0)                               | JUZ-34JZ + 1                           | AA (907)   | 000-2014                                                                                         |         |                       |                   |                |               |                | y            | <i>a</i>                 |            | , <b>y</b> C |                         |            | 9 4             |               |                  |          |                         |      |         |             |              |      |                               |
|-------------------------------------|----------------------------------------|------------|--------------------------------------------------------------------------------------------------|---------|-----------------------|-------------------|----------------|---------------|----------------|--------------|--------------------------|------------|--------------|-------------------------|------------|-----------------|---------------|------------------|----------|-------------------------|------|---------|-------------|--------------|------|-------------------------------|
| V.                                  |                                        |            |                                                                                                  |         |                       |                   |                |               |                |              |                          |            |              |                         |            | 04              | TE            | 9-               | 16       | - 9                     | 2    | PAG     | ie/         | ;            | _ DF | 2                             |
| PROJECT TEXACO                      | - TRN                                  | nI         | <u>#_148c</u>                                                                                    | >3.     | $\infty$              | ANA               | LYSIS          | REQUE         | STED           |              |                          |            |              |                         |            | GENER<br>(Speci | RAL CH        | EMISTI           | RY       |                         |      |         | OTH<br>(Spe | ER<br>ecify) | T    |                               |
| CLIENT INFO.<br>CONTACT TERES       | AO                                     | CAF        | <i>rroll</i>                                                                                     |         |                       |                   |                |               |                |              |                          |            |              |                         |            | Ì               |               |                  |          |                         | Т    |         |             |              |      | ERS                           |
| ADDRESS AN/E                        | Fre                                    | RBAN       | ks                                                                                               |         |                       | IGAN.             | S              | ATILE         |                | 0            | RBON                     | LIDE       | rs           |                         |            |                 |               |                  | 1        | ] .                     | £    |         |             |              |      | TAINI                         |
| TELEPHONE# 456                      | - 201                                  | 1          |                                                                                                  |         |                       | 1D 0F<br>270      | ANIC<br>240    | 0 VOL         |                | 0/831        | C CA                     | IC HA      | META         | tL)<br>st.)             | S          |                 |               |                  | 510      |                         | 7    |         |             |              |      | CON                           |
| SAMPLER'S NAME JEIZR                | y Bo                                   | NN         | PHONE# 456-                                                                                      | 201     | 1/                    | U/AC<br>525/8     | : 0RG<br>324/8 | ATEL<br>S 601 | SS             | C 610        | 3GANI<br>5/906           | RGAN<br>20 | e) CLP       | (TOTA                   | GANIC      |                 | ō             | Na. K            | 18       |                         | d    |         |             |              |      | ER OF                         |
| SAMPLER'S SIGNATURE                 | ka                                     |            | Bon                                                                                              |         |                       | E/NE<br>MS/6      | ATILE<br>MS/6  | OGEN          | N0LIC<br>/8040 | YNUC<br>MATI | AL 0F                    | AL 05      | OX/T         | ALS                     | P OR(      | CON             | /N02,         | Mg, I            | 10       |                         | 0    |         |             |              |      | UMBI                          |
| SAMPLE I.D.                         | DATE                                   | TIME       | LAB I.D.                                                                                         | דו      | YPE                   | BAS<br>GC/        | ις ζί          | HAL<br>ORG    | PHE<br>604     | POL<br>ARO   | 10 E                     | 10<br>D    | Ğ EP         | MET<br>(See             | TCL        | ALK.            | so4           | Ca.              | 2        |                         | 9    |         |             |              |      | <i>Z</i>                      |
| 1. 0301091492                       | 9/14/92                                | 15:00      |                                                                                                  | WA      | TER                   |                   |                |               |                |              |                          |            |              |                         |            |                 |               |                  | $\times$ | >                       | <    |         |             |              |      | 3                             |
| 2.0602091492                        | 9/14/92                                | 14.30      |                                                                                                  |         |                       |                   |                |               |                |              |                          |            |              |                         |            |                 |               |                  |          |                         |      |         |             |              |      |                               |
| 3.0703091492                        | 9/14/82                                | 17:58      |                                                                                                  |         |                       | ĺ                 |                |               |                |              |                          |            |              |                         |            |                 |               |                  |          |                         |      |         |             |              |      |                               |
| 4. 0404091592                       | 9/15/82                                | 9:15       |                                                                                                  |         |                       |                   |                |               | <br>           |              |                          |            |              |                         |            |                 |               |                  |          |                         |      |         |             |              | -    |                               |
| 5.0105091592                        | 9/15/92                                | 10:45      |                                                                                                  |         |                       |                   |                |               |                |              |                          |            |              |                         |            |                 |               |                  |          |                         |      |         |             |              |      |                               |
| 6.0506091592                        | 9/15/92                                | 12:00      |                                                                                                  |         |                       |                   |                |               | ļ              |              |                          |            |              |                         |            |                 |               |                  |          |                         |      |         |             |              |      |                               |
| 1. 0207091592                       | 9/15/92                                | 13:20      |                                                                                                  | .<br>   |                       |                   |                |               |                |              |                          |            |              |                         |            |                 |               |                  |          |                         |      |         |             |              |      |                               |
| B. 0208091592                       | 9/15/82                                | 13:25      |                                                                                                  | 1       | $\bigvee$             |                   |                |               |                |              |                          |            |              |                         |            |                 |               |                  | V        |                         | 2    |         |             |              |      | $\checkmark$                  |
| Relinquished By America North/E     | MCON Inc.                              | Relinquis  | hed By                                                                                           |         |                       | Relinquished By F |                |               |                |              | PROJECT INFORMATION SAMP |            |              |                         |            |                 | AMPLE RECEIPT |                  |          |                         |      |         |             |              |      |                               |
| Signature                           | an                                     | Signature  | <u> </u>                                                                                         |         |                       | Signa             | ture           |               |                |              |                          |            |              |                         | . <u>.</u> |                 |               |                  |          | Total                   |      |         |             |              |      |                               |
| DERRY BONA                          | <u> </u>                               | Printed Na | ne                                                                                               |         |                       | Printe            | d Name         | )             |                |              |                          |            | Shippiı      | ng I.D. I               | No.        |                 |               |                  | ļ        | Total No. ol Containers |      |         |             |              |      |                               |
| AmERICA HARMY                       | Encow                                  |            |                                                                                                  |         |                       | -                 |                |               |                |              |                          | -          | VIA          |                         |            |                 |               |                  | [        | Chai                    |      | Custod  | y Seals     |              |      |                               |
| FILM 9-16-92 /11                    | 100                                    | Firm       |                                                                                                  |         |                       | Firm              |                |               |                |              |                          |            |              |                         |            |                 |               |                  |          | Rece                    | ived | in goo  | d condi     | tion         |      |                               |
| Date/Time                           |                                        | Date/Time  |                                                                                                  |         |                       | Date/             | Time           |               |                |              |                          |            | Project      |                         |            |                 |               |                  | [        | LAB                     | NO.  |         |             |              |      |                               |
| Received By oni K. Ha               | wy                                     | Received   | By                                                                                               |         |                       | Received By SF    |                |               |                | SPECIA       | AL INST                  | RUCT       | IONS/(       | COMME                   | NTS        |                 |               |                  |          |                         |      |         |             |              |      |                               |
| Signature AS                        |                                        | Signature  |                                                                                                  |         |                       | Signa             | ture           |               |                |              |                          |            |              |                         |            |                 |               |                  |          |                         |      |         |             |              |      |                               |
| Printed Name 9/17/97-               | Gin 1800 Printed Name                  |            |                                                                                                  |         |                       | Printe            | d Name         | 9             |                |              |                          |            |              |                         |            |                 |               |                  |          |                         |      |         |             |              |      |                               |
| Firm                                |                                        | Firm       |                                                                                                  |         |                       | Firm              |                |               |                |              |                          |            |              |                         |            |                 |               |                  |          |                         |      |         |             |              |      |                               |
| Date/Time                           | ······································ | Date/Time  | 1<br>1<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2 |         |                       | Date /            | 'Time          |               |                |              |                          | <u> </u>   |              |                         |            |                 |               | a                | <u> </u> |                         |      |         |             | <u> </u>     |      | •••••;·                       |
| beautonanonio kanno constante kanno | km                                     | DISTRI     | <u> เมษะ ราไฟฟ : คุณเบล</u>                                                                      | n to on | ត្ <del>ម</del> ពាតទៅ | ; YEees           | ow la          | b; im         | n ata          | Inedwoye     | onginate                 | ) <b>r</b> | aansin       | Relitive succession and | uá         | holoniaaaaa     | ud à          | องแมนสามสามารรรณ | 80       | aadriaan (maar          | omé  | فدریوسی |             | hannen       |      | Kanadami Militik da di kawa a |

America Norrn/EWICON, Inc. 201 East 56th, Suite 300 • Anchorage, AK 99518 (907) 562-3452 • FAX (907) 563-2814

# Laboratory Analysis Request

OATE <u>9-16-92</u> PAGE Z OF Z

| PROJECT TEXACO - TRME # /                                | 1803.00   | ANALYSIS REQUESTED |                     |          |              |       |                 |                   | GENERAL CHEMISTRY<br>(Specify) |                  |      |       |                   |        |              |              | OTHER<br>(Specify) |          |      |  |       |
|----------------------------------------------------------|-----------|--------------------|---------------------|----------|--------------|-------|-----------------|-------------------|--------------------------------|------------------|------|-------|-------------------|--------|--------------|--------------|--------------------|----------|------|--|-------|
| CLIENT INFO.<br>CONTACT <u>TERESA O'CARCOU</u>           |           | AN.                | L L                 | <u>i</u> |              |       | N               | DE                |                                |                  |      |       |                   |        |              | (01          |                    |          |      |  | UNERS |
| ADDRESS $TTN / F FAIRDAWKS$<br>TELEPHONE# $456 - 2.011$  |           | 0 0RG/<br>70       | NICS<br>40<br>VOLAT | 8010     |              | 8310  | CARB            | HALI              | ETALS                          | ⊂£               |      |       |                   |        | 510          | ر د نې       |                    |          |      |  | CONTA |
| SAMDIER'S NAME TERRY BOALD BUNNEY                        | 456-2011  | /ACI[<br>5/82      | 186A                |          | Q            | 610/  | ANIC<br>9060    |                   | A<br>N                         | DTAL<br>I Inst   | NICS |       | _                 | ×      | 13           | 0            | •                  |          |      |  | 0F    |
| SAMPLER'S SIGNATURE                                      |           | AS/62              | AS/62               | NICS     | 8040<br>8040 | AATIC | L 0RG<br>) 415/ | (L 0RG<br>() 902( | DX/TC<br>e One)                | VLS (T<br>Specia | ORGA | DNDC  | N02, C            | Ag, Na | 20           |              |                    |          |      |  | JMBER |
| SAMPLE I.D. DATE TIME LAB                                | I.D. TYPE | BASE<br>GC/N       | VOLA<br>GC/N        | DRG/     | 604/         | ARON  | 101A<br>(10C    | 4101<br>X01)      | EP 1<br>(Circl                 | MET/<br>(See     | TCLF | PH.   | NO <sub>3</sub> / | Ca, I  | Ø            |              | <b>*</b>           |          |      |  | Ň     |
| 1. EU BO91492 9/14/82 17:57                              | WARSE     |                    |                     |          |              |       |                 |                   |                                |                  |      |       |                   |        | X            | X            |                    |          |      |  | 3     |
| 2. SWINIW-1 /15/52 15:17                                 | WING      |                    |                     |          |              |       |                 |                   |                                |                  |      |       |                   |        |              |              |                    |          |      |  | 3     |
| 3. SWMW-2 9/15/82/6:30                                   | Warde     |                    |                     |          |              |       |                 |                   | ļ                              |                  |      |       |                   |        | $\checkmark$ | $\checkmark$ |                    | <br>     |      |  | 3     |
| 4. TRIP BLANK-FRED 1/14/82                               | Warice    |                    |                     |          |              |       |                 |                   |                                |                  |      |       |                   |        | X            |              |                    |          |      |  | 2     |
| 5.                                                       |           |                    |                     |          |              |       |                 |                   |                                | ļ                |      |       |                   |        |              |              |                    |          |      |  |       |
| 6.                                                       |           |                    |                     |          | <u></u>      |       |                 |                   |                                |                  |      |       |                   |        |              |              |                    |          |      |  |       |
| 7.                                                       |           |                    |                     |          |              |       |                 |                   |                                |                  |      |       |                   |        | ļ            |              |                    |          |      |  |       |
| 8.                                                       |           |                    |                     |          |              |       |                 |                   |                                |                  |      |       |                   |        |              |              |                    |          |      |  |       |
| Relinguished By America North/EMCON Inc. Relinguished By |           | Relinc             | quished             | By       |              |       |                 |                   | PROJE                          | CT INF           | ORMA | TION  |                   |        | 8            | SAMPL        | E REC              | EIPT     |      |  |       |
| Signature Signature Signature                            |           | Signati            | ure                 |          |              |       |                 | <br> -            | Shippi                         | ng i.D. I        |      |       |                   |        |              | Total N      | o. of Co           | ntainers |      |  |       |
| Printed Name                                             |           | Printed            | d Name              |          |              |       |                 |                   |                                |                  |      |       |                   |        |              | Chain o      | f Custo            | iy Seais |      |  |       |
| Firm Firm                                                |           | Firm               |                     |          |              |       |                 |                   | VIA                            |                  |      |       |                   |        | -            | Receive      | id in goi          | od condi | tion |  |       |
| Date/Time Date/Time                                      |           | Date/T             | lime                |          |              |       |                 |                   | Ртојес                         | 1                |      |       |                   |        |              | LAB NO       | ).                 |          |      |  |       |
| Received By                                              |           | Recei              | ved By              |          |              |       |                 |                   | SPECI                          | L INS            | RUCT | IONS/ | COMME             | NTS    |              |              |                    |          |      |  |       |
| Signature Lori K. Hann Signature                         |           | Signati            | ure                 |          |              |       |                 |                   |                                |                  |      |       |                   |        |              |              |                    |          |      |  |       |
| Printed Name                                             |           | Printed            | d Name              | ·····    |              |       |                 |                   |                                |                  |      |       |                   |        |              |              |                    |          |      |  |       |
| Firm 9/17/92 (800 Firm                                   |           | Firm               |                     |          |              |       |                 |                   |                                |                  |      |       |                   |        |              |              |                    |          |      |  |       |
| Date/Time Date/Time                                      |           | Date/1             | Time                |          |              |       |                 |                   | · ··-3                         |                  |      | ·     | 4 ,               |        | 2:           |              |                    |          |      |  |       |

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                             |                              | $\bigcirc$                                                                            |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------|---------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | CHEMICAL & G                                                                                                | EOLOGI<br>MMERCIAL TESTI     | CAL LABO                                                                              | RATORY              |
| LABORATORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5633 B STREET ANCHORAGE, ALAS                                                                               | SKA 99518 TELEF              | PHONE (907) 562-2343                                                                  | FAX: (907) 561-5301 |
| <b>_</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ANALYSIS RE                                                                                                 | SULTS for INVOICE            | <b>‡</b> 59067                                                                        | X                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Chemiad Kei. # 92.5                                                                                         | 351 Sampie +                 | 1 Matrix: SULL                                                                        |                     |
| Image: | <pre>@ 16:20 hrs.<br/>@ 09:40 hrs.<br/>ED</pre>                                                             | c                            | Client Name : AMERICA<br>Client Acct : AMNORTH<br>BPO# :850<br>Req# :<br>Ordered By : | NORTH INC<br>PO# :  |
| nalysis Completed : OCT S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 9 92<br>HPN C FDF                                                                                           |                              | Send Reports to:                                                                      |                     |
| B Ased By :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                             |                              | 2)                                                                                    |                     |
| (. /men                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                             |                              |                                                                                       |                     |
| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Results                                                                                                     | Units                        | Method Allo                                                                           | wable Limits        |
| PH. CORROSIVITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 8.4<br>87000                                                                                                |                              | EPA 9040                                                                              |                     |
| PHOSPHORUS (TOTAL)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 550                                                                                                         | mg/l                         | EPA 6010 ICP                                                                          |                     |
| NITRATE-N<br>KJELDAHL-N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ND(0.20)<br>267                                                                                             | mg/l EP<br>mg/l              | A 353.2/300.0<br>EPA 351.1                                                            | 10                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                             |                              |                                                                                       |                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                             |                              |                                                                                       |                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                             |                              |                                                                                       |                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                             |                              |                                                                                       |                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                             |                              |                                                                                       |                     |
| <b>€</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                             |                              |                                                                                       |                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                             |                              |                                                                                       |                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                             |                              |                                                                                       |                     |
| Srmple SAMPLE COLLECTED B<br>arks: CUSHMAN, FAIRBANKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | SY: BRET BERYLUM. PROJECT #14803.0<br>3.                                                                    | O TEXACO -                   |                                                                                       |                     |
| 5 Tests Performed<br>ND- None Detected<br>NA- Not Analyzed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul> <li>See Special Instruct:</li> <li>See Sample Remarks All</li> <li>LT-Less Than, GT-Greate:</li> </ul> | ions Above<br>bove<br>r Than | UA-Unavailable                                                                        |                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                             |                              |                                                                                       |                     |



|                                                                                                                                                                        | C                                     |                                                               |                                     |                                                          | $\bigcirc$                                  |                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------|-------------------------------------|----------------------------------------------------------|---------------------------------------------|-----------------------------------------|
|                                                                                                                                                                        | CHEMIC.                               | AL & GEC                                                      | DLOG                                | ICAL LA                                                  | ABORATO<br>EERING CO.                       | RY                                      |
| LABORATORY                                                                                                                                                             | 5633 B STREET ANC                     | HORAGE, ALASKA S<br>ANALISIS RESULT<br>lab Ref.‡ 92.5361      | 99518 TEL<br>S for INVC<br>Sample 4 | EPHONE (907) 5<br>ICE # 59067<br>2 Matrix:               | 62-2343 FAX: (907)<br>Soil                  | 561-5301                                |
| J       it Sample ID : SB1-MB-12         IS       : UA         Illected       : SEP 28 92         ic ved       : SEP 30 92         e       rved with       : AS REQUIR | @ 16:15 hrs.<br>@ 09:40 hrs.<br>ED    |                                                               |                                     | Client Name<br>Client Acct<br>BPO#<br>Req#<br>Ordered By | :AMERICA NORTH INC<br>:AMNORTH<br>:850<br>: | P0 <b>\$</b> :                          |
| alysis Completed : OCT :<br>b atory Supervisor : STEP<br>l sed By :                                                                                                    | 9 92<br>HEN C. EDE                    |                                                               |                                     | Send Repor<br>1)AMERICA NO<br>2)                         | ts to:<br>RTH INC                           |                                         |
| Parameter                                                                                                                                                              | , , , , , , , , , , , , , , , , , , , | Results Un                                                    | its                                 | Method                                                   | Allowable Lim                               | *************************************** |
| PH. CORROSIVITY<br>TOTAL PLATE COUNT<br>PHOSPHORUS (TOTAL)<br>NITRATE-N<br>KJELDAHL-N                                                                                  |                                       | 8.2<br>79000<br>410<br>ND(0.20)<br>261                        | col/gma<br>mg/l<br>mg/l<br>mg/l     | EPA 9040<br>EPA 6010 ICP<br>EPA 353.2/300.0<br>EPA 351.1 | 0 10                                        |                                         |
|                                                                                                                                                                        |                                       |                                                               |                                     |                                                          |                                             |                                         |
|                                                                                                                                                                        |                                       |                                                               |                                     |                                                          |                                             |                                         |
|                                                                                                                                                                        |                                       |                                                               |                                     |                                                          |                                             |                                         |
| a-le SAMPLE COLLECTED B<br>e rks: CUSHMAN, FAIRBANES                                                                                                                   | SI: BRET BERILUM. PRO<br>3.           | DJECT \$14803.00 T                                            | X1C0 -                              |                                                          |                                             |                                         |
| 5 Tests Performed<br>ND- None Detected<br>NA- Not Analyzed                                                                                                             | ° See Spe<br>"° See San<br>LT-Less Th | cial Instructions<br>ple Remarks Above<br>pan, GI=Greater The | Above                               | U <b>A-U</b> navailabl                                   | .0                                          |                                         |
| Instang <sup>b</sup>                                                                                                                                                   | acce                                  |                                                               |                                     |                                                          |                                             | ν.                                      |



X

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | CHEMICA<br>A DIVISI                        | L & GEO                                                    | LOGICAL L                                                                      | ABORATO                                     | RY             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------|----------------|
| LABORATORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5633 B STREET ANCHO                        | DRAGE, ALASKA 99                                           | 518 TELEPHONE (907)                                                            | 562-2343 FAX: (907) 5                       | 61-5301        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Chemla                                     | ANALISIS RESULTS<br>5 Ref.# 92.5361                        | for INVOICE \$ 59067<br>Sample \$ 3 Matrix:                                    | SOIL                                        |                |
| Image: Sep 28 92         Image: Sep 28 92 | e 16:30 hrs.<br>e 09:40 hrs.<br>ED         |                                                            | Client Name<br>Client Acct<br>BPO\$<br>Req\$<br>Ordered By                     | :AMERICA NORTH INC<br>:AMNORTH<br>:850<br>: | P0 <b>\$</b> : |
| inalysis Completed : OCT<br>a ratory Supervisor : STEP<br>ie ased By :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 9 92<br>HEN C. EDE                         |                                                            | Send Repo<br>1)AMERICA NG<br>2)                                                | rts to:<br>DRTH INC                         |                |
| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                            | lesults Unit                                               | s Method                                                                       | Allowable Limit:                            | ,              |
| PH. CORROSIVITY<br>TOTAL PLATE COUNT<br>PHOSPHORUS (TOTAL)<br>NITRATE-N<br>KJELDAHL-N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                            | 8.8<br>10000 co.<br>530 :<br>0.19 r<br>203 ;               | EPA 9040<br>l/gm<br>mg/l EPA 6010 ICl<br>mg/l EPA 353.2/300.<br>mg/l EPA 351.1 | e<br>.0 10                                  |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                            |                                                            |                                                                                |                                             |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                            |                                                            |                                                                                |                                             |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                            |                                                            |                                                                                |                                             |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                            |                                                            |                                                                                |                                             |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                            |                                                            |                                                                                |                                             |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                            |                                                            |                                                                                |                                             |                |
| Sample SAMPLE COLLECTED R<br>arks: CUSHMAN, FAIRBANK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | BY: BRET BERYLUM. PROJE<br>S.              | CT \$14803.00 TEXA                                         | .co -                                                                          |                                             |                |
| S Tests Performed<br>ND- None Detected<br>NA- Not Analyzed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | " See Speci<br>" See Sampl<br>LT-Less Than | al Instructions Ab<br>e Remarks Above<br>, GT-Greater Than | ove UA-Unavailab                                                               | le                                          |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | () ere                                     |                                                            |                                                                                |                                             |                |


| Results Uni<br>175000 | ts<br>col/g        | Client Name<br>Client Acct<br>BPO#<br>Req#<br>Ordered By<br>Send Repor<br>1)AMERICA NO<br>2)<br>Method | AMERICA )<br>AMNORTH<br>850<br>:<br>:<br>ts to:<br>RTH INC             | WORTH INC                                                              | PO <b>\$</b> :<br>1ts                                                   |                                                                         |
|-----------------------|--------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Results Uni<br>175000 | ts<br>col/g        | Method                                                                                                 | Allow                                                                  | wable Lim                                                              | its                                                                     |                                                                         |
| 175000                | col/g              |                                                                                                        |                                                                        |                                                                        |                                                                         |                                                                         |
|                       |                    |                                                                                                        |                                                                        |                                                                        |                                                                         |                                                                         |
| ROJECT \$14803.00. T  | EXACO -            |                                                                                                        | s 娄 永 达 达 美 谷 色 色 泽 i                                                  |                                                                        | 1 <b>4 0 6 4 0 6 8 1</b> 1                                              |                                                                         |
| ·F                    | OJECT #14803.00. T | ROJECT \$14803.00. TEXACO -                                                                            | NOJECT \$14803.00. TEXACO -<br>Decial Instructions Above UA-Unavailabl | NOJECT #14803.00. TEIACO -<br>Decial Instructions Above UA-Unavailable | ROJECT \$14803.00. TEXACO -<br>Decial Instructions Above UA-Unavailable | ROJECT \$14803.00. TEXACO -<br>Decial Instructions Above UA-Unavailable |



|                                                                                                         | C                                                                               |                                  | $\mathbb{C}$                                                                          |                     |
|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------|---------------------|
|                                                                                                         | CHEMICAL & G                                                                    | EOLOGI                           | CAL LABO                                                                              | RATORY<br>co.       |
|                                                                                                         | 5633 B STREET ANCHORAGE, ALAS                                                   | SKA 99518 TELE                   | PHONE (907) 562-2343                                                                  | FAX: (907) 561-5301 |
| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~                                                                  | ANALYSIS RE<br>Chemlab Ref.# 92.5                                               | SULTS for INVOID<br>361 Sample # | E # 59067<br>5 Matrix: SOIL                                                           |                     |
| nt Sample ID : SB1-MB-12<br>D : UA<br>lected : SEP 28 92<br>ived : OCT 30 92<br>erved with : AS REQUIRM | ONE WEEK LATER<br>@ 16:15 hrs.<br>@ 09:40 hrs.<br>&D                            |                                  | Client Name :AMERICA<br>Client Acct :AMMORTH<br>BPO\$ :850<br>Req\$ :<br>Ordered By : | NORTH INC<br>PO# :  |
| lysis Completed : OCT s<br>ratory Supervisor : STEPH<br>ased By :<br>-                                  | 9 92<br>ien c. ede                                                              |                                  | Send Reports to:<br>1)AMERICA NORTH INC<br>2)                                         |                     |
| Parameter                                                                                               | Results                                                                         | Units                            | Method All                                                                            | wable Limits        |
| TOTAL PLATE COUNT                                                                                       | 155000                                                                          | col/g                            |                                                                                       |                     |
| 19.<br>                                                                                                 |                                                                                 |                                  |                                                                                       |                     |
|                                                                                                         | .:                                                                              | -                                |                                                                                       |                     |
|                                                                                                         |                                                                                 |                                  |                                                                                       |                     |
|                                                                                                         |                                                                                 |                                  |                                                                                       |                     |
| 1                                                                                                       |                                                                                 |                                  |                                                                                       |                     |
| ÷<br>ė                                                                                                  |                                                                                 |                                  |                                                                                       |                     |
| 796<br>                                                                                                 | ř                                                                               |                                  |                                                                                       |                     |
| \$<br>                                                                                                  |                                                                                 |                                  |                                                                                       |                     |
|                                                                                                         |                                                                                 |                                  |                                                                                       |                     |
|                                                                                                         |                                                                                 |                                  |                                                                                       |                     |
| ple SAMPLE COLLECTED B<br>marks: CUSHMAN, FAIRBANKS                                                     | I: BRET BERYLUN. PROJECT \$14803.00                                             | ). TEXACO -                      |                                                                                       |                     |
| 1 Tests Performed<br>ND- None Detected<br>NA- Not Analyzed                                              | * See Special Instructi<br>** See Sample Remarks An<br>LT-Less Than, GT-Greater | lons Above<br>bove<br>r Than     | UA-Unavailable                                                                        |                     |
| :<br>                                                                                                   |                                                                                 |                                  |                                                                                       |                     |



|                                                                                                                                             | C                                                                          |                            |                                                            | $\sum_{i=1}^{n}$                            |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------|------------------------------------------------------------|---------------------------------------------|------------------|
| CHEM                                                                                                                                        | ICAL & GE                                                                  | OLOG<br>ERCIAL TES         | ICAL L                                                     | ABORA                                       | TORY             |
| 5633 B STREET                                                                                                                               | ANCHORAGE, ALASKA                                                          | 99518 TEL                  | EPHONE (907)                                               | 562-2343 FAX                                | : (907) 561-5301 |
|                                                                                                                                             | ANALISIS RESUL<br>Chemlab Ref.‡ 92.5361                                    | .TS for INVO<br>. Sample # | ICE # 59067<br>6 Matrix:                                   | SOIL                                        |                  |
| t Sample ID : MW5-MB-13 ONE WEEK LATER<br>: UA<br>ected : SEP 28 92 @ 16:30 hrs.<br>red : OCT 30 92 @ 09:40 hrs.<br>rved with : AS REQUIRED |                                                                            |                            | Client Name<br>Client Acct<br>BPO\$<br>Req\$<br>Ordered By | :AMERICA NORT<br>:AMNORTH<br>:850<br>:<br>: | H INC<br>PO# :   |
| sis Completed : OCT 9 92<br>atory Supervisor : STEPHEN C. EDE<br>based By :                                                                 |                                                                            |                            | Send Repor<br>1)AMERICA NG<br>2)                           | rts to:<br>DRTH INC                         |                  |
| Parameter                                                                                                                                   | Results O                                                                  | nits                       | Method                                                     | Allowable                                   | e Limits         |
| TOTAL PLATE COUNT                                                                                                                           | 289000                                                                     | col/g                      |                                                            |                                             |                  |
|                                                                                                                                             |                                                                            |                            |                                                            |                                             |                  |
|                                                                                                                                             |                                                                            | •<br>•                     |                                                            |                                             |                  |
|                                                                                                                                             |                                                                            |                            |                                                            |                                             |                  |
|                                                                                                                                             |                                                                            |                            |                                                            |                                             |                  |
| 19.<br>19.<br>19.<br>19.<br>19.<br>19.<br>19.<br>19.                                                                                        |                                                                            |                            |                                                            |                                             |                  |
| -<br>-<br>                                                                                                                                  |                                                                            |                            |                                                            |                                             |                  |
|                                                                                                                                             |                                                                            |                            |                                                            |                                             |                  |
| le SAMPLE COLLECTED BY: BRET BERYLUM<br>rks: CUSHMAN, FAIRBANKS.                                                                            | . PROJECT \$14803.00.                                                      | TEXACO -                   |                                                            |                                             |                  |
| 1 Tests Performed Si   ND- None Detected Si   NA- Not Analyzed LT-L                                                                         | ee Special Instruction<br>se Sample Remarks Abov<br>ess Than, GT-Greater T | s Above<br>e<br>han        | UA-Unavailab                                               | 10                                          |                  |
|                                                                                                                                             |                                                                            |                            |                                                            |                                             |                  |



|            |                                           | 92.5361                            |                        |         |             |          |           |          |          |          |             | 54.5         |          |          |              |              | FBK 92.0154                                     |
|------------|-------------------------------------------|------------------------------------|------------------------|---------|-------------|----------|-----------|----------|----------|----------|-------------|--------------|----------|----------|--------------|--------------|-------------------------------------------------|
|            |                                           |                                    |                        |         | _           |          | CH        | ain c    |          | UST      | OD          | YRE          | 20R      | D        |              |              |                                                 |
|            | PROJECT Texaco - C                        | OJECT Texaco - Cushman<br>14803.00 |                        |         |             | 1ERS     |           |          |          |          |             |              |          |          | PRESERVATION |              |                                                 |
|            | SALIFLERS: (Signatura)<br>Diet Mereeling) | r                                  |                        | r       |             | CONTAIN  |           | a        |          |          | 5<br>5<br>7 |              |          |          |              |              | SPECIFY<br>CHEMICALS                            |
|            | SAMPLE NUMBER                             | DATE                               | TIME                   | COMP.   | <b>GRAB</b> | NO.      | $\bigvee$ | Z =      |          | 2°7      |             | Z            |          |          |              |              | REMARKS<br>OR<br>SAMPLE LOCATION                |
| Z          | 5B4-MB-13                                 | 9/28/92                            | 16:20                  | X       |             | 3        | X         | Y        | K        | K        | 14          |              |          |          |              |              | 2 jars from X                                   |
| Q          | SBI-MB-12                                 | 9128192                            | 14:15                  | X       |             | 2        | $\times$  | x        | X        | X        | X           |              |          |          |              |              | each sample X                                   |
| (2)        | MW5-MB-13                                 | 7128/42                            | 16:30                  | X       |             | 2        | X         | X        | X        | X        | X           |              | [        |          |              | <b></b>      | interval - X                                    |
| $\bigcirc$ |                                           | ļ                                  |                        | ļ       | 1           |          |           |          |          |          | 1           |              |          |          |              |              | Please analyse                                  |
|            |                                           |                                    |                        |         |             | <u> </u> | <u> </u>  |          | <b> </b> | <u> </u> | 1           |              |          | <u> </u> |              | ļ            | 1's immediately                                 |
|            |                                           | <u> </u>                           | [                      |         | 1           | <b> </b> | 1         | -        |          | <u> </u> |             |              | ļ        | <u> </u> |              | <b> </b>     | and inalyse                                     |
|            |                                           |                                    |                        | 1       | 1           |          |           | <u> </u> |          |          | 1_          |              | 1        |          |              | <b> </b>     | 2's after                                       |
|            | L                                         | ·                                  | ļ                      |         | 1           | ļ        | <u> </u>  | 1        | 1        | <u> </u> | 1           |              |          |          | <b> </b>     | <u> </u>     | approximately                                   |
|            |                                           |                                    |                        | 1_      |             | <b>_</b> | 1         | 1        |          |          |             | - <b> </b> , |          |          | <b> </b>     |              | I wreck stimulation                             |
|            |                                           |                                    | <u> </u>               | 1       |             | <u> </u> | 1         | 1_       | 1_       |          |             |              | <u> </u> | <u> </u> | ŀ            | 1            | at room                                         |
|            |                                           |                                    | ļ                      | 1_      |             |          |           | 1        |          |          |             |              |          |          |              |              | temperature                                     |
|            |                                           | _                                  |                        | 1_      |             |          |           |          |          |          |             |              | 1        |          | <b>_</b>     |              | per discussion                                  |
|            |                                           |                                    |                        |         |             |          |           |          |          |          |             |              | <u> </u> |          |              | 1            | with Tito                                       |
|            |                                           |                                    |                        |         |             |          |           |          |          |          |             |              |          |          |              |              | Villas.                                         |
|            | $\square$                                 |                                    |                        |         |             |          |           |          |          |          |             |              |          |          |              |              |                                                 |
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## Appendix F

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## **R & M Engineering Consultants Laboratory Test Results**



R & M ENGINEERING CONSULTANTS • 4TH STREET & EAGLE, GRAEHL • BOX 2630 • FAIRBANKS, ALASKA 99707-2630 • PH. 907-452-1655 ENGINEERS BOOLOGISTS BURVEYORS

September 14, 1992

America North, Inc. 520 Fourth Street Fairbanks, AK 99701

Re: Texaco - Cushman America North Project 14803.00

Attached are results of laboratory testing of soils samples from the above referenced project performed at your request.

Please contact me if you have any questions regarding these tests.

Sincerely,

R&M ENGINEERING CONSULTANTS

Auren an

James H. Wellman

ROJECT NAME TELANDE CUSEN AND (ANTEL CANDER) ROJECT NO. 222010

## SUMMARY OF TEST DATA

POE OCITY PERCENTAGE COEFFICIANS OF HELDIERUJU (CM1/Sec) SAMPLE NO. PERCENT PASSING WATER GRAVEL FINES SAND DEPTH .50 40 CONTENT FEET 3/4" 1 1/2" 1" 1/2" 3/8\* 8 10 20 80 100 200 4 8 25 23 52 100 93 90 84 2 5 79 75 73 72 69 52 43 2 5 3.3 × 104 45 21.8 12.5 1 42 57 97 96 92 57 · 10 80 100 99 623 6.3×104 49 11.4 2.5 10 \* 99 14 4 6 90 4 94 90 89 61 100 1.6×102 47 4.7 10 З 2 95 3 13 8 3 98 98 98 35 100 4 3.3×102 46 7.5 9.6 5 100 98 2.5 7 56 42 2 85 69 59 44 39 38 30 2 5  $9.9 \times 10^{-3}$  52 5 8.7 6 37 97 67 44 21 7.5 100 91 78 51 46 49 30 21 27

**R & M ENGINEERING CONSULTANTS** 

DATE <u>2-14-92</u>

PAGE / OF /

SAMPLE BAG LACELED SB-2-33



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