



FLUOR DANIEL GTI

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00050

December 10, 1998

Mr. Robert Cochran
Chevron Products Company
6001 Bolinger Canyon Road
Building "L", Room 1102
P.O. Box 5004
San Ramon, CA 94583-0804

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DEC 14 1998

**ADEC STORAGE
TANK PROGRAM
FAIRBANKS**

Subject: Site Assessment Report
Chevron Service Station #9-5414
5210 Old Seward Highway
Anchorage, Alaska

Dear Mr. Cochran:

Attached you will find the final Site Assessment Report prepared by Fluor Daniel GTI, Inc. for the referenced facility. Please let me know if you have any questions or concerns regarding this report or the activities conducted at the site. I can be reached at (907) 297-2816.

Sincerely,
Fluor Daniel GTI, Inc.

Thomas J. Beckman
Project Manager

Attachment

C: Clint Adler – Alaska Department of Environmental Conservation, Fairbanks, Alaska





FLUOR DANIEL GTI

0051

November 16, 1998

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DEC 14 1998

**ADEC STORAGE
TANK PROGRAM
FAIRBANKS**

Mr. Robert Cochran
Chevron Products Company
6001 Bollinger Canyon Road
Building "L", Room 1102
P.O. Box 5004
San Ramon, CA 94583-0804

Subject: Site Assessment - Monitoring Well Installation
Chevron Service Station #9-5414
5210 Old Seward Highway
Anchorage, Alaska

Dear Mr. Cochran:

Fluor Daniel GTI, Inc. was retained by Chevron Products Company to conduct a site assessment at the service station referenced above. Field activities were initiated on August 31, 1998, which involved the completion of three soil borings and the collection of soil samples for field screening and laboratory analysis. Three groundwater monitoring wells were installed within the soil borings. Field personnel returned to the site on September 3, 1998 to gauge and sample the groundwater in the monitoring wells. This report has been prepared to document the site assessment field activities and summarize the sampling results.

Background

Between April 23 and May 5, 1996, five underground storage tanks (USTs) were removed and compliance soil samples were collected. Three gasoline USTs were located northwest of the service station building (two 10,000 gallon tanks and one 5000 gallon tank) and two additional USTs (a 1000 gallon - diesel fuel and a 1000 gallon - used oil) were located on the south side of the building. The USTs, product piping, and pump island dispensers were excavated and removed during service station renovation activities. Figure 1 shows the former locations of the USTs and the pump-island dispensers, as well as the current configuration of the site.

A site assessment was performed during UST removal in accordance with Alaska Department of Environmental Conservation (ADEC) UST regulations (18 AAC 78). Groundwater was encountered during the removal activities at approximately 8 feet below ground surface (bgs). The subsurface lithology is composed of 9 to 11 feet of coarse grained, sandy, gravel overlying a discontinuous layer of peat



approximately 1 to 2 feet thick. The peat layer is underlain by approximately two to three feet of sandy gravel, which is underlain by clay of an undetermined thickness.

In addition to assessment activities performed during UST removal, approximately 1,500 tons of soil containing residual petroleum hydrocarbons was excavated and removed from the site. Soil vapor extraction piping was installed in three areas where petroleum hydrocarbon concentrations in the soil were high (>1,000 ppm gasoline range organics). This piping was installed below the eastern most gasoline dispenser, in the new UST basin, and in the area of the old UST basin.

Monitoring Well Installation

To assess potential groundwater impacts, three monitoring wells, MW-1, MW-2, and MW-3 were installed on August 31, 1998 (Figure 1).

Soil boring lithology was logged in accordance with the Unified Soil Classification System. Drilling logs have been prepared and are presented in Attachment 2. Soil samples were collected at five foot intervals using two-foot long split spoons. The split spoons were decontaminated prior to each sampling event. A photoionization detector (PID) was used to screen the samples for the presence of headspace volatile organic compounds.

Drilling was terminated in all boreholes at 18 feet bgs. The soil sample with the highest PID response in each boring was submitted for laboratory analysis. The soil samples (MW1-10, MW2-10, and MW3-5) were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) according to EPA method 8020 and gasoline range organics (GRO) according to EPA method 8015 (modified). In addition, sample MW2-10 was analyzed for diesel range organics (DRO) and residual range organics (RRO) by Alaska method AK102/103

Soil cuttings from the drilling activities were stockpiled. Soil from MW-2 was stockpiled separately from that of MW-1 and MW-3. Soil sample SP-MW1/3 was collected from the stockpiled drill cuttings from monitoring wells MW-1 and MW-3 and analyzed for BTEX and GRO. Soil sample SP-MW2 was collected from the stockpiled drill cuttings from MW-2 and analyzed for BTEX, GRO, DRO, and RRO.

Quality control samples include sample MW1-10a, (a duplicate of soil sample MW1-10), a laboratory trip blank (TRIP BLANK), and a decontamination rinsate sample (DECON). All quality control samples were analyzed for BTEX and GRO.

The monitoring wells were constructed of 2-inch diameter, schedule 40 poly-vinyl chloride (PVC) casing with flush threads and 0.020-inch slot well screen. The well screen was installed from a depth of approximately 8 feet to a depth of approximately 18 feet bgs in each well. A Colorado 10-20 sand filter



was placed around the well screen to a height of approximately 2 feet above the top of the screen. The wells were completed with a bentonite and a neat-cement seal. The wellhead was protected by a locking cap and a traffic-rated street box with a bolted lid. Well construction details are presented in the drilling logs in Attachment 2. The monitoring wells were surveyed for horizontal and vertical control to evaluate the subsurface hydrology. The wells were developed by surging and bailing to remove fine-grained soil from the well and filter pack. Approximately 30 gallons of water was removed from each well during this process.

Groundwater Gauging and Sampling

On September 3, 1998, Fluor Daniel GTI gauged the monitoring wells to determine depth to groundwater, and collected samples for laboratory analysis. Groundwater samples were collected from each well in accordance with procedures approved by the ADEC. The groundwater samples from MW-1, MW-2, and MW-3 were analyzed for BTEX according to EPA method 8020 and GRO according to EPA method 8015 (modified). The groundwater sample from MW-2 was also analyzed for DRO and RRO by Alaska method AK102/103. Quality control samples included sample MW-A (a duplicate of MW-3) and a trip blank (TRIP BLANK). Both samples were analyzed for BTEX and GRO. The groundwater sampling protocol and a field data sheet are presented in Attachment 3.

Results and Discussion

Soil

Soil lithologies encountered in the boreholes consisted of 8 to 10 feet of well-graded gravelly sand overlying 0 to 3 feet of silty sand, 2 to 5 feet of gravelly sand, 5 feet of poorly graded, medium grained sand, and 0 to 1 foot of dense, gray-brown, clay.

Soil sample analytical results are summarized in Table 1 along with proposed ADEC cleanup standards. Soil concentrations exceeding the ADEC proposed cleanup standards are bolded and shaded to highlight these concentrations. The soil cleanup standards presented in Table 1, are based on the proposed ADEC matrix score sheet presented in Table 2. Two soil samples contain hydrocarbon constituents that exceeded ADEC level B cleanup standards. Soil sample MW3-5, collected from a depth of 5 feet in soil boring MW-3, contained 1440 mg/kg GRO and soil sample SP-M31/3, collected from the stockpiled drill cuttings from MW-1 and MW-3, contained 354 mg/kg DRO.



Groundwater

Groundwater elevations are summarized in Table 3 and are graphically represented in Figure 1. The inferred groundwater flow direction is to the west with a hydraulic gradient of 0.018 feet/feet.

Groundwater sample analytical results are presented in Table 3, with State of Alaska water quality standards (WQS) shown at the bottom of the table for comparison. Groundwater collected from all three monitoring wells yielded concentrations of volatile organic compounds exceeding State of Alaska WQS. GRO was also detected at significant concentrations in samples from all of the wells. The highest GRO concentration (18,700 $\mu\text{g/l}$) was detected in sample MW-3.

Quality Assurance/Quality Control

Field and laboratory quality assurance/quality control (QA/QC) results were found to be within acceptable limits. These results suggest that sample integrity was maintained during sample collection, handling, shipment, and analysis. Laboratory results and chain-of-custody records are attached.

If you have any questions or concerns regarding the results of the assessment, please contact Tom Beckman at (907) 297-2816.

Sincerely,
Fluor Daniel GTI, Inc.
Written by:



Lisa C. Nicholson
Associate Geologist

Fluor Daniel GTI, Inc.
Reviewed/Approved by:



Thomas J. Beckman
Project Manager

Attachments

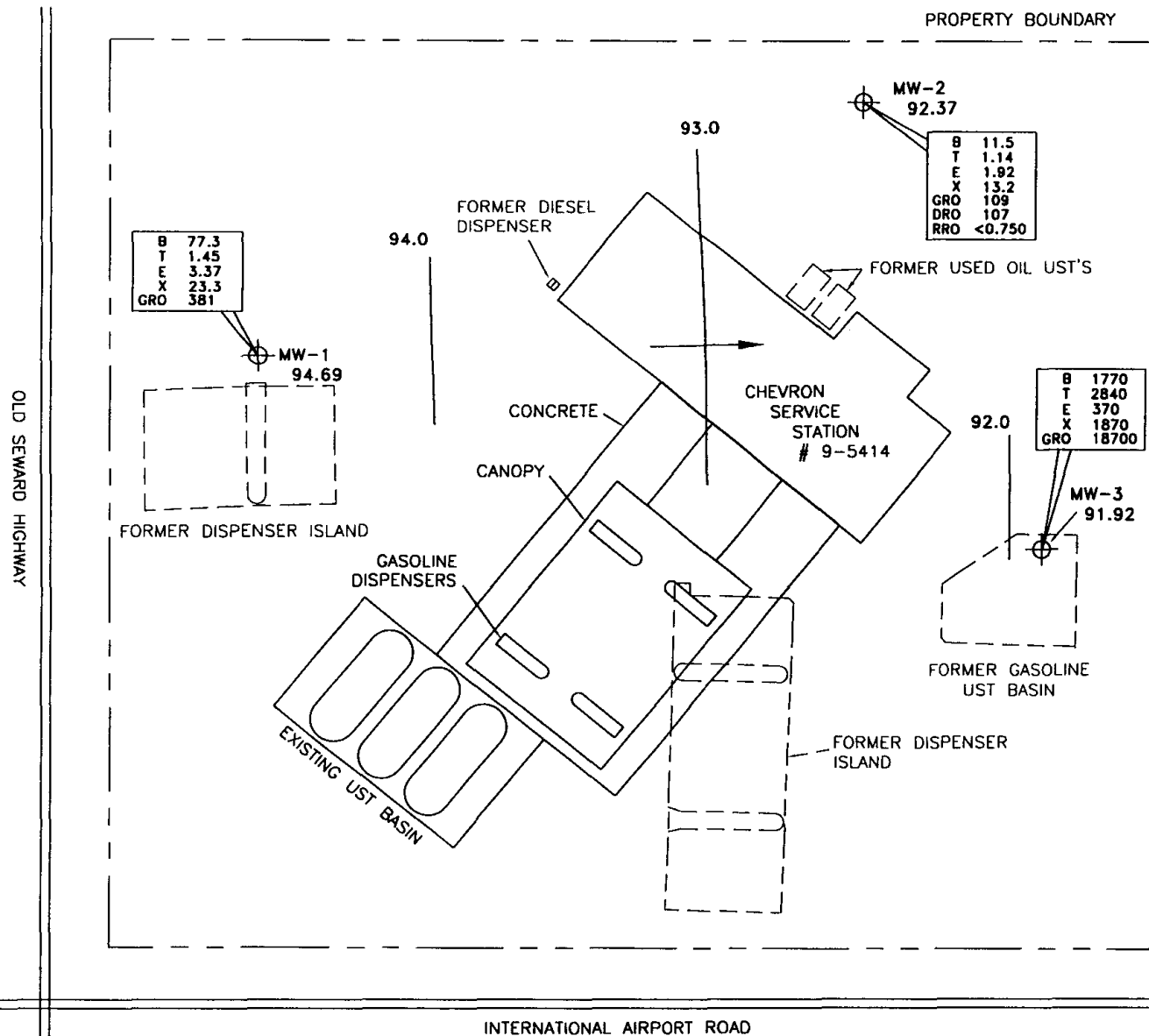
1. Figure 1, Site Map
2. Drilling Logs
3. Groundwater Sampling Protocol and Field Data Sheet
4. Table 1, Summary of Soil Sampling and Analytical Results
5. Table 2, ADEC Matrix Score Sheet
6. Table 3, Summary of Groundwater Elevations and Analytical Results
7. Laboratory Results and Chain of Custody Records



LEGEND

- PREVIOUS FUEL STORAGE
- NEW SITE LAYOUT
- 94.0 POTENTIOMETRIC CONTOUR
- ⊕ MW-1 94.69 MONITORING WELL WITH ELEVATION IN FEET
- GROUNDWATER FLOW DIRECTION

- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X TOTAL XYLENES
- GRO GASOLINE RANGE ORGANICS
- DRO DIESEL RANGE ORGANICS
- RRR RESIDUAL RANGE ORGANICS
- <0.750 INDICATES COMPOUND WAS NOT DETECTED AT SHOWN DETECTION LIMITS
- ALL UNITS SHOWN IN µg/l



FLUOR DANIEL GTI

0 FEET 20
SCALE
APPROXIMATE

SITE MAP

CLIENT: CHEVRON PRODUCTS COMPANY SERVICE STATION # 9-5414			
LOCATION: 5210 OLD SEWARD HIGHWAY ANCHORAGE, ALASKA			
ACAD FILE:	5414	PROJECT NO.:	020610060.01
REV.:	1		
DES.:	LN	DET.:	LN
		DATE:	10/26/98
PM:	T. BECKMAN	PE/RG:	
			FIGURE: 1

0055



Drilling Log

0056
Monitoring Well MW-1

Project Chevron Service Station 9-5414 Owner Chevron Products Company
 Location Anchorage, Alaska Proj. No. 020610060.01
 Surface Elev. N/A ft. Total Hole Depth 18 ft. Diameter 8.25 in.
 Top of Casing 101.92 ft. Water Level Initial 7.23 ft. Static 7.20 ft.
 Screen: Dia 2 in. Length 10 ft. Type/Size .020 in.
 Casing: Dia 2 in. Length 8 ft. Type Sch. 40 PVC
 Fill Material Colorado Sand 10/20 Rig/Core CME-75
 Drill Co. Discovery Drilling Method Hollow stem auger
 Driller Eric Brown Log By LN/NB Date 08/31/98 Permit # N/A
 Checked By _____ License No. N/A

See Site Map
For Boring Location

COMMENTS:

Near parking area next to the Old Seward Highway.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							Begin drilling, 08/31/98, 09:45
0					Asphalt		ASPHALT, 3" thick
2							
4		1.7	MWI-5	27 26 25 23		SW	GRAVELLY SAND: 40% medium gray, medium grained gravel and 60% gray, fine grained, sand (moderately sorted, subrounded).
6							
8		59.8	MWI-10	10 7 3 11		SM	Wood debris at 10 feet. SILTY SAND: 50% fine gray sand, 30% brown silt, 20% medium grained, gray gravel (weakly sorted, subrounded, very moist).
10							
12							
14		12.5	MWI-15	10 17 19 22		SW	GRAVELLY SAND: 60% gray, medium sand and 40% fine, subrounded gravel.
16							SAND: 100% speckled dark gray and white, medium sand (well sorted, subrounded, wet)
18		4.6	MWI-19	10 15 27 29		SP	SAND: 100% speckled dark gray and white, medium sand (well sorted, subrounded, wet).
20							End of boring @ 20' bgs, 08/31/98, 1:30
22							Well Construction Summary: Set monitoring well at 18 feet with 10 feet of screen, blank casing to surface. Colorado sand was used to pack the screen from 7 to 18 feet, Bentonite from 2 to 7 feet. Well construction completed, 08/31/98, 11:00.
24							



Drilling Log

0057
Monitoring Well MW-2

Project Chevron Service Station 9-5414 Owner Chevron Products Company
 Location Anchorage, Alaska Proj. No. 020610060.01
 Surface Elev. N/A ft. Total Hole Depth 18 ft. Diameter 8.25 in.
 Top of Casing 100.96 ft. Water Level Initial 8.59 ft. Static 8.51 ft.
 Screen: Dia 2 in. Length 10 ft. Type/Size .020 in.
 Casing: Dia 2 in. Length 8 ft. Type Sch. 40 PVC
 Fill Material Colorado Sand 10/20 Rig/Core CME-75
 Drill Co. Discovery Drilling Method Hollow stem auger
 Driller Eric Brown Log By LN/NB Date 08/31/98 Permit # N/A
 Checked By _____ License No. N/A

See Site Map
For Boring Location

COMMENTS:

Within the parking area south of the building.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							Begin drilling, 08/31/98, 15:30
0					Asphalt		ASPHALT, 3" thick
2					SW		
4		0.3	MW2-5	12 4 4 3			GRAVELLY SAND: 40% gray, fine grained gravel and 60% gray, fine grained, sand. (moderately sorted, subrounded).
6							SAND: 100% very fine, brown-gray sand.
8					SP		SAND: 100% very fine, brown-gray sand.
10		5.0	MW2-10	7 4 8 11	SM		SILTY SAND: 60% gray, very fine sand and 40% silt. GRAVELLY SAND: 40% medium grained gravel, and 60% medium to coarse grained sand with silty inclusions (moderately sorted, subrounded).
12							
14		4.3	MW2-15	11 14 16 17	SW		GRAVELLY SAND: 40% medium grained gravel and 60% medium to coarse grained sand with silty inclusions (moderately sorted, subrounded).
16							SAND: 100% gray, medium to fine, sand (well sorted, subrounded).
18		4.5	MW2-19	8 11 10 44	SP		SAND: 80% gray, medium grained sand and 20% speckled gray, coarse sand (moderately sorted, subrounded).
20							End of boring @ 20' bgs, 08/31/98, 16:30
22							Well Construction Summary: Set monitoring well at 18 feet with 10 feet of screen, blank casing to surface. Colorado sand was used to pack the screen from 7 to 18 feet, bentonite from 2 to 7 feet. Well construction completed, 08/31/98, 17:00.
24							



Drilling Log

0058

Monitoring Well MW-3

Project Chevron Service Station 9-5414 Owner Chevron Products Company
 Location Anchorage, Alaska Proj. No. 020610060.01
 Surface Elev. N/A ft. Total Hole Depth 18 ft. Diameter 8.25 in.
 Top of Casing 100.55 ft. Water Level Initial 8.63 ft. Static 8.61 ft.
 Screen: Dia 2 in. Length 10 ft. Type/Size .020 in.
 Casing: Dia 2 in. Length 8 ft. Type Sch. 40 PVC
 Fill Material Colorado Sand 10/20 Rig/Core CME-75
 Drill Co. Discovery Drilling Method Hollow stem auger
 Driller Eric Brown Log By LN/NB Date 08/31/98 Permit # N/A
 Checked By _____ License No. N/A

See Site Map
For Boring Location

COMMENTS:

Approximately 40 feet west of the northwest corner of the building.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							Begin drilling, 08/31/98, 11:15
0						SPH	ASPHALT, 3" thick
2							
4		2283	MW3-5	14 16 15 12		SW	GRAVELLY SAND: 30% gray, fine grained gravel and 70% gray, fine grained, sand. (moderately sorted, subrounded).
6							
8		662	MW3-10	6 10 10 7		GW	SANDY GRAVEL: 60% gray, medium to very coarse grained gravel and 40% gray, fine grained sand (moderately sorted, subrounded, moist).
10							GRAVELLY SAND: 20% gray, fine grained gravel and 80% gray, fine grained sand (moderately sorted, subrounded, moist).
12						SW	
14		1150	MW3-15	10 10 10			GRAVELLY SAND: 20% gray, fine grained gravel and 80% gray, fine grained sand (moderately sorted, subrounded, wet).
16						CH	CLAY: 100% dark gray to brown, very dense, moist clay.
18							End of boring @ 18' bgs, 08/31/98, 14:30
20							
22							Well Construction Summary: Set monitoring well at 18 feet with 10 feet of screen, blank casing to surface. Colorado sand was used to pack the screen from 7 to 18 feet, bentonite from 2 to 7 feet. Well construction completed, 08/31/98, 17:00.
24							

FLUOR DANIEL GTI GROUNDWATER MONITORING AND SAMPLE COLLECTION PROTOCOL 0059

Groundwater Monitoring

Groundwater monitoring is accomplished using an INTERFACE PROBE™ Well Monitoring System. The INTERFACE PROBE™ Well Monitoring System is a hand held, battery operated device for measuring the depth to separate-phase hydrocarbons and depth to water. The INTERFACE PROBE™ Well Monitoring System consists of a dual-sensing probe which utilizes an optical liquid sensor and electrical conductivity to distinguish between water and petroleum products.

Monitoring is accomplished by measuring from the surveyed top of well casing or grade to groundwater and separate-phase hydrocarbons if present. The static water elevation is then calculated for each well and a potentiometric surface map is constructed. If separate-phase hydrocarbons are detected the water elevation is adjusted by the following calculation:

$$(\text{Product thickness}) \times (0.8) + (\text{Water elevation}) = \text{Corrected water elevation}$$

Groundwater monitoring wells are monitored in order of wells with lowest concentration of volatile organic compounds to wells with the highest concentrations, based upon historical concentrations. If separate-phase hydrocarbons are encountered in a well, the product is visually inspected to confirm and note color, amount and viscosity. Monitoring equipment is washed with laboratory grade detergent and rinsed with distilled or deionized water before monitoring each well.

Groundwater Sampling

Before groundwater samples are collected, sufficient water is purged from each well to ensure representative formation water is entering the well. Wells are purged and sampled in the same order as monitoring, from wells with the lowest concentrations of volatile organic compounds to wells with the highest concentrations. Wells are purged using either a polyvinyl chloride (PVC) bailer fitted with a check valve, disposable bailers or with a stainless steel submersible Grundfos pump. The purge equipment is decontaminated before use in each well by washing with laboratory grade detergent and triple rinsing with deionized or distilled water. A minimum of 3 well-casing volumes of water are removed from each well verify that "fresh" formation water is being sampled and the parameters have stabilized. If the well is low yielding, it may be purged dry and sampled before 3 casing volumes are purged. The wells are then allowed to recharge to approximately 80 percent of the initial water level before a sample is collected.

Groundwater samples are collected from each well using a new, prepackaged disposable bailer and string. The water sample is decanted from the bailer into laboratory-provided containers (appropriate for the analyses required) so that there is no headspace in the containers. Samples are collected and preserved in accordance with protocols established by the laboratory, specific to the analysis to be conducted. All samples are labeled immediately upon collection and logged on the chain-of-custody record. Sample label and chain-of-custody recorded information includes the project name and number, sample identification, date and time of collection, analyses requested, and the sampler's name. Sample bottles are placed in plastic bags (to protect the bottles and labels) and on ice (frozen water) in an insulated cooler and are shipped under chain-of-custody protocol to the laboratory.

The chain-of-custody record documents who has possession of the samples until the analyses is performed. Other pertinent information is also noted for the laboratory use on the chain-of-custody record.

Trip blanks (TBLBs) are used for each project as a quality assurance/quality control measure. The TBLBs are prepared by the laboratory and are placed in the insulated cooler and accompany the field samples throughout the sampling event.



Table 1
Summary of Soil Sampling and Analytical Results
Chevron Service Station #9-5414
Site Assessment Report
November 16, 1998
(all concentrations in ppm unless otherwise noted)

Sample ID	Sample Depth (ft)	Date Sampled	Matrix (S=soil) (W=water)	PID Reading	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	GRO	DRO	RRO	Comments
MW1-10	10	08/31/98	S	59.8	<0.0500	<0.0500	<0.0500	0.129	0.129	<5.00	NA	NA	see drill log for MW-1
MW1-10a	10	08/31/98	S	59.8	<0.0500	<0.0500	<0.0500	0.175	1.75	5.78	NA	NA	duplicate of MW1-10
MW2-10	10	08/31/98	S	5	<0.0500	<0.0500	<0.0500	<0.100	--	<5.00	24.4	131	see drill log for MW-2
MW3-5	5	08/31/98	S	662	<0.0500	<0.0500	<0.0500	<0.100	--	1,440	NA	NA	see drill log for MW-3
SP-MW2	NA	08/31/98	S	NA	<0.0500	<0.0500	<0.0500	<0.100	--	<5.00	25.9	79.2	stockpile from MW-2
SP-MW1/3	NA	08/31/98	S	NA	<0.0500	<0.0500	<0.0500	<0.100	--	<5.00	354	223	stockpile from MW-1 and MW-3
TRIP BLANK	NA	08/31/98	W	NA	<0.0500 (ppb)	<0.0500 (ppb)	<0.0500 (ppb)	<0.100 (ppb)	--	<5.00 (ppb)	NA	NA	
DECON	NA	08/31/98	W	NA	<0.0500 (ppb)	<0.0500 (ppb)	<0.0500 (ppb)	<0.100 (ppb)	--	<5.00 (ppb)	NA	NA	decon rinsate
Cleanup standards (ADEC Matrix Level B)					0.5	NA	NA	NA	15	100.0	200	2000	

Notes: NA = Not applicable/not analyzed/not available.
Total BTEX = Sum of benzene, toluene, ethylbenzene, and total xylenes.
-- = Total BTEX cannot be determined based on non-detect results for individual components.
GRO = Gasoline range organics as determined by ADEC Method AK101.
RRO = Residual range organics as determined by ADEC Method AK103.
ppb = Parts per billion
Bolded and shaded values exceed proposed ADEC level B cleanup standards.

Table 2
ADEC MATRIX SCORE SHEET
 Chevron Service Station 9-5414

1. *Depth to Subsurface Water		
< 5 feet	[10]	10
5 - 15 feet	[8]	
16 - 25 feet	[6]	
26 - 50 feet	[4]	
> 50 feet	[1]	
2. Mean Annual Precipitation		
> 40 inches	[10]	3
26 - 40 inches	[5]	
16 - 25 inches	[3]	
< 15 inches	[1]	
3. *Soil Type (Unified Soil Classification)		
Clean, coarse-grained soils	[10]	8
Coarse-grained soils with fines	[8]	
Fine-grained soils (low organic carbon)	[3]	
Fine-grained soils (high organic carbon)	[1]	
4. Potential Receptors		
Public water system within 1000 feet, or private water system within 500 feet	[15]	8
Public/private water system within 1/2 mile	[12]	
Public/private water system within one mile	[8]	
No water system within one mile	[4]	
Nonpotable groundwater	[1]	
5. Volume of Contaminated Soil		
> 500 cubic yards	[10]	10
101 - 500 cubic yards	[8]	
26 - 100 cubic yards	[5]	
> De Minimis - 25 cubic yards	[2]	
De Minimis	[0]	
MATRIX SCORE		39

*From lowest point of contamination to groundwater

Matrix Score	Cleanup Level in mg/kg				
	diesel range organics	gasoline range organics	residual range organics	Benzene	Total BTEX
Level A > 40	100	50	2000	0.1	10
Level B 27-40	200	100	2000	0.5	15
Level C 21-26	1000	500	2000	0.5	50
Level D < 21	2000	1000	2000	0.5	100



Table 3
Summary of Groundwater Elevations and Analytical Results
Chevron Service Station #9-5414
Site Assessment Report
November 16, 1998

Sample ID	Date Sampled	Analytical Results								Gauging Data				Comments
		Benzene (ug/L)	Toluene (ug/L)	Ethyl- benzene (ug/L)	Total Xylenes (ug/L)	Total BTEX (ug/L)	GRO (ug/L)	DRO (ug/L)	RRO (ug/L)	TOC (ft.)	DTW (ft.)	SPT (ft.)	WTE (ft.)	
MW-1	09/03/98	77.3	1.45	3.37	23.3	105.4	381	NA	NA	101.92	7.20	NA	94.72	
MW-2	09/03/98	11.5	1.14	1.92	13.2	27.8	109	1,070	<750	100.96	8.51	NA	92.45	
MW-3	09/03/98	1,770	2,840	370	1,870	6,850	18,700	NA	NA	100.55	8.60	NA	91.95	
MW-A	09/03/98	1,770	2,870	369	1,860	6,869	17,700	NA	NA	NA	NA	NA	NA	duplicate of MW-3
TRIP BLANK	NA	<0.500	<0.500	<0.500	<0.500	--	<50.0	NA	NA	NA	NA	NA	NA	
STATE WQS		5	1,000	700	10,000		2,200	1,500	1,100					

- Notes:
- NA = Not applicable/not analyzed/not available.
 - Total BTEX = Sum of benzene, toluene, ethylbenzene, and total xylenes.
 - = Total BTEX cannot be determined based on non-detect results for individual components.
 - GRO = Gasoline range organics as determined by EPA Method 8015 using ADEC Method AK101 reporting limits.
 - DRO = Diesel range organics as determined by EPA Method 8100 (modified using ADEC Method AK102 reporting limits).
 - TOC = Top of casing elevation.
 - DTW = Depth to water.
 - SPT = Separate-phase thickness.
 - WTE = Water table elevation.
 - WQS = Water quality standards.
- Bolded and shaded values exceed proposed ADEC water quality standards.

0062



**NORTH
CREEK
ANALYTICAL**
Environmental Laboratory Services

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SEP 23 1998

BOTHELL ■ (425) 420-9200 ■ FAX 420-9210
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

Fluor Daniel - GTI. Inc. - Alaska
900 W 5th Avenue, Suite 300
Anchorage, AK 99501

Project: Chevron #9-5414, 9081425
Project Number: 020610060.01
Project Manager: Tom Beckman

Sampled: 8/31/98
Received: 9/2/98
Reported: 9/22/98 18:20

ANALYTICAL REPORT FOR SAMPLES:

0063

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW1-10	B809046-01	Soil	8/31/98
MW1-10A	B809046-02	Soil	8/31/98
MW2-10	B809046-03	Soil	8/31/98
MW3-5	B809046-04	Soil	8/31/98
SP-MW2	B809046-05	Soil	8/31/98
SP-MW1/3	B809046-06	Soil	8/31/98
TRIP BLANK	B809046-07	Water	8/31/98
DECON	B809046-08	Water	8/31/98



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ▪ (425) 420-9200 ▪ FAX 420-9210
 SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
 PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Fluor Daniel - GTI, Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414. 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 8/31/98 Received: 9/2/98 Reported: 9/22/98 18:20
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Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101 and EPA 8021B
North Creek Analytical - Bothell

0064

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW1-10				B809046-01		Soil		
Gasoline Range Hydrocarbons	0980377	9/11/98	9/17/98		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	0.129	"	
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		128	%	1
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		122	"	1
MW1-10A				B809046-02		Soil		
Gasoline Range Hydrocarbons	0980377	9/11/98	9/18/98		5.00	5.78	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	0.175	"	
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		117	%	
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		110	"	
MW2-10				B809046-03		Soil		
Gasoline Range Hydrocarbons	0980377	9/11/98	9/17/98		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		55.3	%	
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		53.0	"	
MW3-5				B809046-04		Soil		
Gasoline Range Hydrocarbons	0980377	9/11/98	9/18/98		250	1440	mg/kg dry	2
Benzene	"	"	"		2.50	ND	"	
Toluene	"	"	"		2.50	ND	"	
Ethylbenzene	"	"	"		2.50	ND	"	
Xylenes (total)	"	"	"		37.5	ND	"	3
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		NR	%	4
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		NR	"	4
SP-MW2				B809046-05		Soil		
Gasoline Range Hydrocarbons	0980377	9/11/98	9/17/98		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	

North Creek Analytical - Bothell

*Refer to end of report for text of notes and definitions.

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NORTH CREEK ANALYTICAL

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Fluor Daniel - GTI. Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414. 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 8/31/98 Received: 9/2/98 Reported: 9/22/98 18:20
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Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101 and EPA 8021B
North Creek Analytical - Bothell

0065

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
SP-MW2 (continued)				B809046-05			Soil	
Toluene	0980377	9/11/98	9/17/98		0.0500	ND	mg/kg dry	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		115	%	
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		115	"	
SP-MW1/3				B809046-06			Soil	
Gasoline Range Hydrocarbons	0980377	9/11/98	9/17/98		5.00	75.4	mg/kg dry	2
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.100	ND	"	3
Xylenes (total)	"	"	"		1.00	ND	"	3
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		NR	%	4
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		56.0	"	4
TRIP BLANK				B809046-07			Water	
Gasoline Range Hydrocarbons	0980360	9/11/98	9/11/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		104	%	
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		108	"	
DECON				B809046-08			Water	
Gasoline Range Hydrocarbons	0980360	9/11/98	9/11/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		105	%	
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		108	"	



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Fluor Daniel - GTI, Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414. 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 8/31/98 Received: 9/2/98 Reported: 9/22/98 18:20
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Diesel Hydrocarbons (C10-C25) and Heavy Oil (C25-C36) by AK102 and AK103
North Creek Analytical - Bothell

n 0066

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW2-10				<u>B809046-03</u>			Soil	
Diesel Range Hydrocarbons	0980534	9/16/98	9/17/98		4.00	24.4	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	131	"	
Surrogate: 2-FBP	"	"	"	50.0-150		95.3	%	
SP-MW2				<u>B809046-05</u>			Soil	
Diesel Range Hydrocarbons	0980534	9/16/98	9/17/98		4.00	25.9	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	79.2	"	
Surrogate: 2-FBP	"	"	"	50.0-150		67.1	%	
SP-MW1/3				<u>B809046-06</u>			Soil	
Diesel Range Hydrocarbons	0980534	9/16/98	9/17/98		4.00	354	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	223	"	
Surrogate: 2-FBP	"	"	"	50.0-150		93.7	%	



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Fluor Daniel - GTI. Inc. - Alaska
900 W 5th Avenue, Suite 300
Anchorage, AK 99501

Project: Chevron #9-5414, 9081425
Project Number: 020610060.01
Project Manager: Tom Beckman

Sampled: 8/31/98
Received: 9/2/98
Reported: 9/22/98 18:20

Dry Weight Determination
North Creek Analytical - Bothell

n - 0067

Sample Name	Lab ID	Matrix	Result	Units
MW1-10	B809046-01	Soil	80.7	%
MW1-10A	B809046-02	Soil	76.1	%
MW2-10	B809046-03	Soil	77.4	%
MW3-5	B809046-04	Soil	93.6	%
SP-MW2	B809046-05	Soil	88.2	%
SP-MW1/3	B809046-06	Soil	92.9	%

North Creek Analytical - Bothell

Joy B Chang, Project Manager

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Fluor Daniel - GTI, Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414, 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 8/31/98 Received: 9/2/98 Reported: 9/22/98 18:20
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Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101 and EPA 8021B/Quality Control North Creek Analytical - Bothell

0068

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
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Batch: 0980360

Date Prepared: 9/11/98

Extraction Method: EPA 5030B (P/T)

Blank

0980360-BLK1

Gasoline Range Hydrocarbons	9/11/98			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (FID)	"	48.0		51.0	"	60.0-120	106			
Surrogate: 4-BFB (PID)	"	48.0		52.0	"	60.0-120	108			

LCS

0980360-BS1

Gasoline Range Hydrocarbons	9/11/98	500		470	ug/l	60.0-120	94.0			
Surrogate: 4-BFB (FID)	"	48.0		50.2	"	60.0-120	105			

LCS Dup

0980360-BSD1

Gasoline Range Hydrocarbons	9/11/98	500		463	ug/l	60.0-120	92.6	20.0	1.50	
Surrogate: 4-BFB (FID)	"	48.0		51.7	"	60.0-120	108			

Matrix Spike

0980360-MS1

B809046-08

Benzene	9/11/98	10.0	ND	10.0	ug/l	60.0-120	100			
Toluene	"	10.0	ND	9.88	"	60.0-120	98.8			
Ethylbenzene	"	10.0	ND	9.82	"	60.0-120	98.2			
Xylenes (total)	"	30.0	ND	29.2	"	60.0-120	97.3			
Surrogate: 4-BFB (PID)	"	48.0		51.8	"	60.0-120	108			

Matrix Spike Dup

0980360-MSD1

B809046-08

Benzene	9/11/98	10.0	ND	9.72	ug/l	60.0-120	97.2	20.0	2.84	
Toluene	"	10.0	ND	9.50	"	60.0-120	95.0	20.0	3.92	
Ethylbenzene	"	10.0	ND	9.43	"	60.0-120	94.3	20.0	4.05	
Xylenes (total)	"	30.0	ND	27.6	"	60.0-120	92.0	20.0	5.60	
Surrogate: 4-BFB (PID)	"	48.0		51.9	"	60.0-120	108			

Batch: 0980377

Date Prepared: 9/11/98

Extraction Method: EPA 5030B (MeOH)

Blank

0980377-BLK1

Gasoline Range Hydrocarbons	9/14/98			ND	mg/kg dry	5.00				
Benzene	"			ND	"	0.0500				
Toluene	"			ND	"	0.0500				
Ethylbenzene	"			ND	"	0.0500				
Xylenes (total)	"			ND	"	0.100				

North Creek Analytical - Bothell

*Refer to end of report for text of notes and definitions.

Joy B Chang, Project Manager

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Fluor Daniel - GTI, Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414, 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 8/31/98 Received: 9/2/98 Reported: 9/22/98 18:20
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Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101 and EPA 8021B/Quality Control
North Creek Analytical - Bothell

0069

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Blank (continued)										
0980377-BLK1										
Surrogate: 4-BFB (FID)	9/14/98	4.00		5.04	mg/kg dry	60.0-120	126			1
Surrogate: 4-BFB (PID)	"	4.00		4.66	"	60.0-120	116			
LCS										
0980377-BS1										
Gasoline Range Hydrocarbons	9/14/98	25.0		21.8	mg/kg dry	60.0-120	87.2			
Surrogate: 4-BFB (FID)	"	4.00		5.94	"	60.0-120	149			1
LCS Dup										
0980377-BSD1										
Gasoline Range Hydrocarbons	9/14/98	25.0		23.9	mg/kg dry	60.0-120	95.6	20.0	9.19	
Surrogate: 4-BFB (FID)	"	4.00		6.08	"	60.0-120	152			1
Matrix Spike										
0980377-MS1 B809250-03										
Benzene	9/15/98	0.562	ND	0.433	mg/kg dry	60.0-120	77.0			
Toluene	"	0.562	ND	0.469	"	60.0-120	83.5			
Ethylbenzene	"	0.562	ND	0.488	"	60.0-120	86.8			
Xylenes (total)	"	1.68	ND	1.56	"	60.0-120	92.9			
Surrogate: 4-BFB (PID)	"	4.49		5.60	"	60.0-120	125			1
Matrix Spike Dup										
0980377-MSD1 B809250-03										
Benzene	9/15/98	0.562	ND	0.546	mg/kg dry	60.0-120	97.2	20.0	23.2	5
Toluene	"	0.562	ND	0.553	"	60.0-120	98.4	20.0	16.4	
Ethylbenzene	"	0.562	ND	0.570	"	60.0-120	101	20.0	15.1	
Xylenes (total)	"	1.68	ND	1.86	"	60.0-120	111	20.0	17.8	
Surrogate: 4-BFB (PID)	"	4.49		5.90	"	60.0-120	131			1

Fluor Daniel - GTI, Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414. 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 8/31/98 Received: 9/2/98 Reported: 9/22/98 18:20
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Diesel Hydrocarbons (C10-C25) and Heavy Oil (C25-C36) by AK102 and AK103/Quality Control
 North Creek Analytical - Bothell

0070

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0980534			Date Prepared: 9/16/98		Extraction Method: EPA 3550B				
Blank			0980534-BLK1						
Diesel Range Hydrocarbons	9/17/98			ND	mg/kg dry	4.00			
Heavy Oil Range Hydrocarbons	"			ND	"	25.0			
Surrogate: 2-FBP	"	13.2		9.12	"	50.0-150	59.1		
LCS			0980534-BS1						
Diesel Range Hydrocarbons	9/17/98	80.0		74.7	mg/kg dry	60.0-120	93.4		
Surrogate: 2-FBP	"	13.2		12.4	"	50.0-150	93.9		
LCS			0980534-BS2						
Heavy Oil Range Hydrocarbons	9/17/98	80.0		81.9	mg/kg dry	60.0-100	102		1
Surrogate: 2-FBP	"	13.2		8.87	"	50.0-150	67.2		
LCS Dup			0980534-BSD1						
Diesel Range Hydrocarbons	9/17/98	80.0		74.2	mg/kg dry	60.0-120	92.7	20.0	0.752
Surrogate: 2-FBP	"	13.2		11.2	"	50.0-150	84.8		
LCS Dup			0980534-BSD2						
Heavy Oil Range Hydrocarbons	9/17/98	80.0		88.3	mg/kg dry	60.0-100	110	20.0	7.55
Surrogate: 2-FBP	"	13.2		9.10	"	50.0-150	68.9		



Fluor Daniel - GTI, Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414, 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 8/31/98 Received: 9/2/98 Reported: 9/22/98 18:20
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Notes and Definitions

0071

#	Note
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- 1 The surrogate/spike recovery for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
- 2 The chromatogram for this sample does not resemble a typical gasoline pattern.
- 3 The reporting limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
- 4 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.
- 5 The RPD value for this QC sample is above the established control limit. Review of associated QC indicates the high RPD does not represent an out-of-control condition for the batch.

- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- Recov. Recovery
- RPD Relative Percent Difference

Joy B Chang, Project Manager



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0073

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Fluor Daniel - GTI, Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414, 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 9/3/98 Received: 9/4/98 Reported: 9/17/98 12:49
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ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-1	B809112-01	Water	9/3/98
MW-2	B809112-02	Water	9/3/98
MW-3	B809112-03	Water	9/3/98
MW-A	B809112-04	Water	9/3/98
TRIP BLANK	B809112-05	Water	9/3/98



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

0074

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Fluor Daniel - GTI, Inc. - Alaska	Project: Chevron #9-5414, 9081425	Sampled: 9/3/98
900 W 5th Avenue, Suite 300	Project Number: 020610060.01	Received: 9/4/98
Anchorage, AK 99501	Project Manager: Tom Beckman	Reported: 9/17/98 12:49

**Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101 and EPA 8021B
 North Creek Analytical - Bothell**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-1				B809112-01			Water	
Gasoline Range Hydrocarbons	0980360	9/11/98	9/11/98		50.0	381	ug/l	
Benzene	"	"	"		0.500	77.3	"	
Toluene	"	"	"		0.500	1.45	"	
Ethylbenzene	"	"	"		0.500	3.37	"	
Xylenes (total)	"	"	"		1.00	23.3	"	
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		111	%	
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		109	"	
MW-2				B809112-02			Water	
Gasoline Range Hydrocarbons	0980360	9/11/98	9/11/98		50.0	109	ug/l	
Benzene	"	"	"		0.500	11.5	"	
Toluene	"	"	"		0.500	1.14	"	
Ethylbenzene	"	"	"		0.500	1.92	"	
Xylenes (total)	"	"	"		1.00	13.2	"	
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		105	%	
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		110	"	
MW-3				B809112-03			Water	
Gasoline Range Hydrocarbons	0980360	9/11/98	9/11/98		2500	18700	ug/l	
Benzene	"	"	"		25.0	1770	"	
Toluene	"	"	"		25.0	2340	"	
Ethylbenzene	"	"	"		25.0	370	"	
Xylenes (total)	"	"	"		50.0	1870	"	
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		107	%	
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		109	"	
MW-A				B809112-04			Water	
Gasoline Range Hydrocarbons	0980360	9/11/98	9/12/98		2500	17700	ug/l	
Benzene	"	"	"		25.0	1770	"	
Toluene	"	"	"		25.0	2370	"	
Ethylbenzene	"	"	"		25.0	369	"	
Xylenes (total)	"	"	"		50.0	1860	"	
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		112	%	
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		107	"	
TRIP BLANK				B809112-05			Water	
Gasoline Range Hydrocarbons	0980360	9/11/98	9/12/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	

North Creek Analytical - Bothell

*Refer to end of report for text of notes and definitions.

Joy B Chang, Project Manager

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NORTH CREEK ANALYTICAL

Environmental Laboratory Services

0075

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 SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
 PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Fluor Daniel - GTI, Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414. 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 9/3/98 Received: 9/4/98 Reported: 9/17/98 12:49
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**Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101 and EPA 8021B
 North Creek Analytical - Bothell**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
<u>TRIP BLANK (continued)</u>				<u>B809112-05</u>			<u>Water</u>	
Toluene	0980360	9/11/98	9/12/98		0.500	ND	ug/l	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	60.0-120		0.2	%	
Surrogate: 4-BFB (PID)	"	"	"	60.0-120		0.4	"	

Joy B Chang, Project Manager



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PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Fluor Daniel - GTI, Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414, 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 9/3/98 Received: 9/4/98 Reported: 9/17/98 12:49
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**Diesel Hydrocarbons (C10-C25) and Heavy Oil (C25-C36) by AK102 and AK103
North Creek Analytical - Bothell**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
<u>MW-2</u>				<u>B809112-02</u>			<u>Water</u>	
Diesel Range Hydrocarbons	0980298	9/10/98	9/16/98		0.100	1.07	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		91.8	%	



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 PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

Fluor Daniel - GTI, Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414, 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 9/3/98 Received: 9/4/98 Reported: 9/17/98 12:49
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Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101 and EPA 8021B/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. Recov. Limits	RPD % Limit	RPD % Notes*
Batch: 0980360			Date Prepared: 9/11/98		Extraction Method: EPA 5030B (P/T)			
Blank			0980360-BLK1					
Gasoline Range Hydrocarbons	9/11/98			ND	ug/l	50.0		
Benzene	"			ND	"	0.500		
Toluene	"			ND	"	0.500		
Ethylbenzene	"			ND	"	0.500		
Xylenes (total)	"			ND	"	1.00		
Surrogate: 4-BFB (FID)	"	48.0		51.0	"	60.0-120	106	
Surrogate: 4-BFB (PID)	"	48.0		52.0	"	60.0-120	108	
LCS			0980360-BS1					
Gasoline Range Hydrocarbons	9/11/98	500		470	ug/l	60.0-120	94.0	
Surrogate: 4-BFB (FID)	"	48.0		50.2	"	60.0-120	105	
LCS Dup			0980360-BSD1					
Gasoline Range Hydrocarbons	9/11/98	500		463	ug/l	60.0-120	92.6 20.0	1.50
Surrogate: 4-BFB (FID)	"	48.0		51.7	"	60.0-120	108	
Matrix Spike			0980360-MS1 B809046-08					
Benzene	9/11/98	10.0	ND	10.0	ug/l	60.0-120	100	
Toluene	"	10.0	ND	9.88	"	60.0-120	98.8	
Ethylbenzene	"	10.0	ND	9.82	"	60.0-120	98.2	
Xylenes (total)	"	30.0	ND	29.2	"	60.0-120	97.3	
Surrogate: 4-BFB (PID)	"	48.0		51.8	"	60.0-120	108	
Matrix Spike Dup			0980360-MSD1 B809046-08					
Benzene	9/11/98	10.0	ND	9.72	ug/l	60.0-120	97.2 20.0	2.84
Toluene	"	10.0	ND	9.50	"	60.0-120	95.0 20.0	3.92
Ethylbenzene	"	10.0	ND	9.43	"	60.0-120	94.3 20.0	4.05
Xylenes (total)	"	30.0	ND	27.6	"	60.0-120	92.0 20.0	5.60
Surrogate: 4-BFB (PID)	"	48.0		51.9	"	60.0-120	108	



Fluor Daniel - GTI, Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414, 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 9/3/98 Received: 9/4/98 Reported: 9/17/98 12:49
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**Diesel Hydrocarbons (C10-C25) and Heavy Oil (C25-C36) by AK102 and AK103/Quality Control
North Creek Analytical - Bothell**

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
<u>Batch: 0980298</u>			<u>Date Prepared: 9/10/98</u>			<u>Extraction Method: EPA 3520C/600 Series</u>				
<u>Blank</u>			<u>0980298-BLK1</u>							
Diesel Range Hydrocarbons	9/16/98			ND	mg/l	0.100				
Heavy Oil Range Hydrocarbons	"			ND	"	0.750				
Surrogate: 2-FBP	"	0.330		0.233	"	50.0-150	70.6			
<u>LCS</u>			<u>0980298-BS1</u>							
Diesel Range Hydrocarbons	9/16/98	2.00		1.77	mg/l	60.0-120	88.5			
Surrogate: 2-FBP	"	0.330		0.314	"	50.0-150	95.2			
<u>LCS</u>			<u>0980298-BS2</u>							
Heavy Oil Range Hydrocarbons	9/16/98	2.00		1.90	mg/l	60.0-100	95.0			
Surrogate: 2-FBP	"	0.330		0.303	"	50.0-150	91.8			
<u>LCS Dup</u>			<u>0980298-BSD1</u>							
Diesel Range Hydrocarbons	9/16/98	2.00		2.08	mg/l	60.0-120	104	20.0	16.1	
Surrogate: 2-FBP	"	0.330		0.276	"	50.0-150	83.6			
<u>LCS Dup</u>			<u>0980298-BSD2</u>							
Heavy Oil Range Hydrocarbons	9/16/98	2.00		2.18	mg/l	60.0-100	109	20.0	13.7	
Surrogate: 2-FBP	"	0.330		0.268	"	50.0-150	81.2			



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Fluor Daniel - GTI. Inc. - Alaska 900 W 5th Avenue, Suite 300 Anchorage, AK 99501	Project: Chevron #9-5414, 9081425 Project Number: 020610060.01 Project Manager: Tom Beckman	Sampled: 9/3/98 Received: 9/4/98 Reported: 9/17/98 12:49
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Notes and Definitions

#	Note
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- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- Recov. Recovery
- RPD Relative Percent Difference

Joy B Chang, Project Manager

NORTH CREEK ANALYTICAL FedEx 807631839346

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011 9508 (206) 481-9200 FAX 485-2992
 East 11115 Montgomery, Suite B, Spokane, WA 99206 4779 (509) 924-9200 FAX 924-9290
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008 7132 (503) 643-9200 FAX 644-2202

CHEVRON U.S.A., Inc. CHAIN OF CUSTODY REPORT B809112

CHEVRON INFORMATION

CHEVRON Facility #: 9-5414
 Facility Address: 815 W. International Airport Rd
 City, State, ZIP: Anchorage AK
 CHEVRON Contact Name: Bob Cochran
 CHEVRON Telephone #: (510) 842-9655
 Laboratory Release #: 9081425

CONSULTANT INFORMATION

Name: Fluor Daniel GTI Consultant Project #: 02061-0060-01
 Address: 900 W. 5th Ave Suite 300
 Anchorage AK 99501
 Phone: 907 276-2688 Fax:
 Project Manager: Tom Beckman Consultant Project #: 020610060.01
 Sample Collection by: L. Nicholson/Tim Patin Inbill #:

Turnaround Times

Standard Analyses (DAYS)

10

RUSH Analyses (HOURS)

24 48

RUSH Analyses (DAYS)

5

PER CHEVRON CONTRACT

Oregon Washington Alaska Other - Hydrocarbon Methods

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O,A)	# OF CONTAINERS
MW-1	9/3/98 - 11:30	W	3
MW-2	" 12:00	W	3
MW-3	" 12:30	W	3
MW-A	" 12:30	W	3
TRIP BLANK	" 12:45	W	2

TPH-Acid	TPH-Gas	BTEX (EPA 8020 Mod.)	TPH-Gas - BTEX (EPA 8020/8015)	TPH-Diesel	TPH-Diesel Extended (EPA 8020)	TPH-118	Halogen Volatiles (EPA 8010)	Aromatic Volatiles (EPA 8020)	Polynuclear Aromatics (EPA 8020)	GCMS Volatiles (EPA 8240/8260)	GCMS Semivolatiles (EPA 8270)	PAHs by HPLC (EPA 8310)	Lead	Total or Dissolved TCLP Metals (8)
			X											
			X		X									
			X											
			X											
			X											

NCA Sample Number

B809112-01

REMARKS

DRO/RRD by
 -02 - AK102 & AK103
 -03
 -04
 -05

0800

Relinquished by: Lisa Nicholson Firm: FDGTI Date & Time: 9-3-98 1:30
 Received by: Cathy Nichols NCA Firm: Date & Time: 9-4-98 9:00

REPORTS: Level 1 Level 2

SAMPLE PRESERVATION (Lead): Yes No

Fax Copy of Lab Report & COC to CHEVRON: Yes No

PER CHEVRON CONTRACT