Consulting Engineers
and Geoscientists

0073

GeoEngineers

Results of Quarterly Ground Water Monitoring and Sampling

November 2001

Texaco Service Station 63-057-0010

1501 West Northern Lights Boulevard

Anchorage, Alaska

December 21, 2001

For

Equiva Services, LLC

GeoEngineers

0075

December 21, 2001

Equiva Services, LLC
10602 NE 38th Place
Kirkland, Washington 98033

Attention: Anthony J. Palagyi

Results of Quarterly Ground Water
Monitoring and Sampling
November 2001
Texaco Service Station #63-057-0010
1501 West Northern Lights Boulevard
Anchorage, Alaska
ADEC File No. L25.20
GEI File No. 0401-064-02

INTRODUCTION

This letter presents the results of GeoEngineers' November 8, 2001, ground water monitoring and sampling at Texaco Service Station #63-057-0010, located at 1501 West Northern Lights Boulevard in Anchorage, Alaska. The Alaska Department of Environmental Conservation (ADEC) file number for this site is L25.20. The site relative to surrounding physical features is shown on Figure 1. Existing site facilities include a service station building with a convenience store and an automotive maintenance facility, three service islands located east and south of the building, four product underground storage tanks (USTs) and associated buried product lines. The station also operates an automated car wash along the northwest corner of the site. The general layout of the service station facilities and approximate locations of the monitoring wells are shown on Figure 2.

Statewide Petroleum Services removed a 550-gallon waste oil UST and replaced the fuel dispensers in October 1996. GeoEngineers provided environmental compliance monitoring and sampling during removal of the tank. In 1997, GeoEngineers performed a site assessment consisting of drilling four borings (B-1 through B-4). Monitoring well MW-1 was installed by GeoEngineers in the vicinity of the former waste oil UST in December 1997. Four monitoring wells, MW-A through MW-D, were installed by GeoEngineers in November 1999. The wells were positioned to monitor ground water contamination from the former waste oil UST, the northeast dispensing island and the south dispensing island. Two additional downgradient wells

GeoEngineers, Inc.
4951 Eagle Street
Anchorage, AK 99503-7432
Telephone (907) 561-3478
Fax (907) 561-5123
anchorage@geoengineers.com

(MW-E and MW-F) were installed by GeoEngineers in August 2001 to further characterize the extent of ground water contamination.

The purpose of our services in November 2001 was to monitor ground water conditions beneath the site. All wells to be monitored quarterly were sampled during the November 2001 sampling event. Monitoring wells MW-A and MW-B were not sampled during this ground water monitoring event. The ground water samples from monitoring wells MW-C, MW-D, MW-E and MW-F were analyzed for benzene, ethylbenzene, toluene and xylenes (BETX) and gasoline-range organics (GRO) by Method AK101. Additionally, the ground water sample collected from MW-1 was analyzed for diesel-range organics (DRO) by Method AK102 and residual-range organics (RRO) by Method AK103.

NOVEMBER 2001 MONITORING AND SAMPLING

GROUND WATER MONITORING

- Approximate depths to ground water in the wells during the November 2001 monitoring ranged from 13.08 feet below the top of the well casing at MW-E to 14.60 feet below the top of the well casing at MW-D.
- Water table elevations measured from October 1999 through November 2001 are presented in Table 1.
- The apparent shallow ground water flow direction indicated by the November 2001 measurements is generally toward the south-southwest, which is consistent with previous ground water monitoring data.
- Free product was not encountered during our November 2001 monitoring activities.
- Approximately 11 gallons of purge water were generated during the November 2001 sampling event. The purge water is temporarily stored on site pending transport by Alaska Pollution Control to their Palmer, Alaska, facility for treatment.
- A field duplicate ground water sample was collected from well MW-E. The sample was identified as "Duplicate" on the laboratory chain-of-custody. Benzene, toluene, xylenes and GRO were detected in samples from MW-E and the duplicate sample. A comparison of these values indicated that the relative percent differences (RPD) were within acceptable control limits. Toluene was not detected in either sample so a comparison could not be made.
- The ground water BETX, GRO, DRO and RRO chemical analytical data for samples collected on November 8, 2001, are summarized in Table 2 and shown on Figure 3.
- The laboratory reports and chain-of-custody records for the ground water samples collected during the November 2001 monitoring are included in Attachment A.

FUTURE MONITORING AND SAMPLING

- Measure ground water levels and collect representative ground water samples from accessible monitoring wells on a quarterly basis.
- The next quarterly monitoring event is scheduled for February 2002.

0077

LIMITATIONS

We have prepared this report for use by Equiva Services, LLC. This report may be made available to regulatory agencies and to other parties, as designated by Equiva. The report is not intended for use by others, and the information contained herein is not applicable to other sites.

Our interpretation of ground water conditions is based on field observations, our review of chemical analytical data and our review of information prepared by others.

Within the limitation of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

We appreciate the opportunity to be of service to Equiva Services, LLC. Please contact us if you have questions regarding this project.

Yours very truly,

GeoEngineers, Inc.

Deanne K. Raiha
Geotechnical Engineer

Scott E. Widness, P.E.
Principal

DKR:SEW:skl
Document ID: 040106402gw.doc

Attachments

Two copies submitted

cc: Robert Weimer
ADEC - Anchorage Office

TABLE 1
SUMMARY OF GROUND WATER ELEVATION DATA
TEXACO SERVICE STATION 63-057-0010
1501 WEST NORTHERN LIGHTS BOULEVARD
ANCHORAGE, ALASKA
GEI JOB #0401-064-02

Monitoring Well	Top of Casing Elevation[1] (feet)	Date	Depth to Water From Top of Casing (feet)	Ground Water Elevation (feet)
MW-1	98.99	10/28/99	13.67	85.32
		12/07/99	13.82	85.17
		08/07/01	13.74	85.25
		11/08/01	14.18	84.81
MW-A	98.35	10/28/99	12.89	85.46
		12/07/99	13.04	85.31
		08/07/01	12.97	85.38
		11/08/01	13.43	84.92
MW-B	98.37	10/28/99	13.12	85.25
		12/07/99	13.28	85.09
		08/07/01	13.21	85.16
		11/08/01	13.66	84.71
MW-C	98.69	10/28/99	13.36	85.33
		12/07/99	13.39	85.30
		08/07/01	13.31	85.38
		11/08/01	13.76	84.93
MW-D	99.27	10/28/99	14.17	85.10
		12/07/99	14.21	85.06
		08/07/01	14.18	85.09
		11/08/01	14.60	84.67
MW-E	97.66	08/07/01	12.70	84.96
		11/08/01	13.08	84.58
MW-F	98.14	08/07/01	13.19	84.95
		11/08/01	13.59	84.55

Notes:
[1]Elevations are relative to an assumed site datum (southeast building corner)

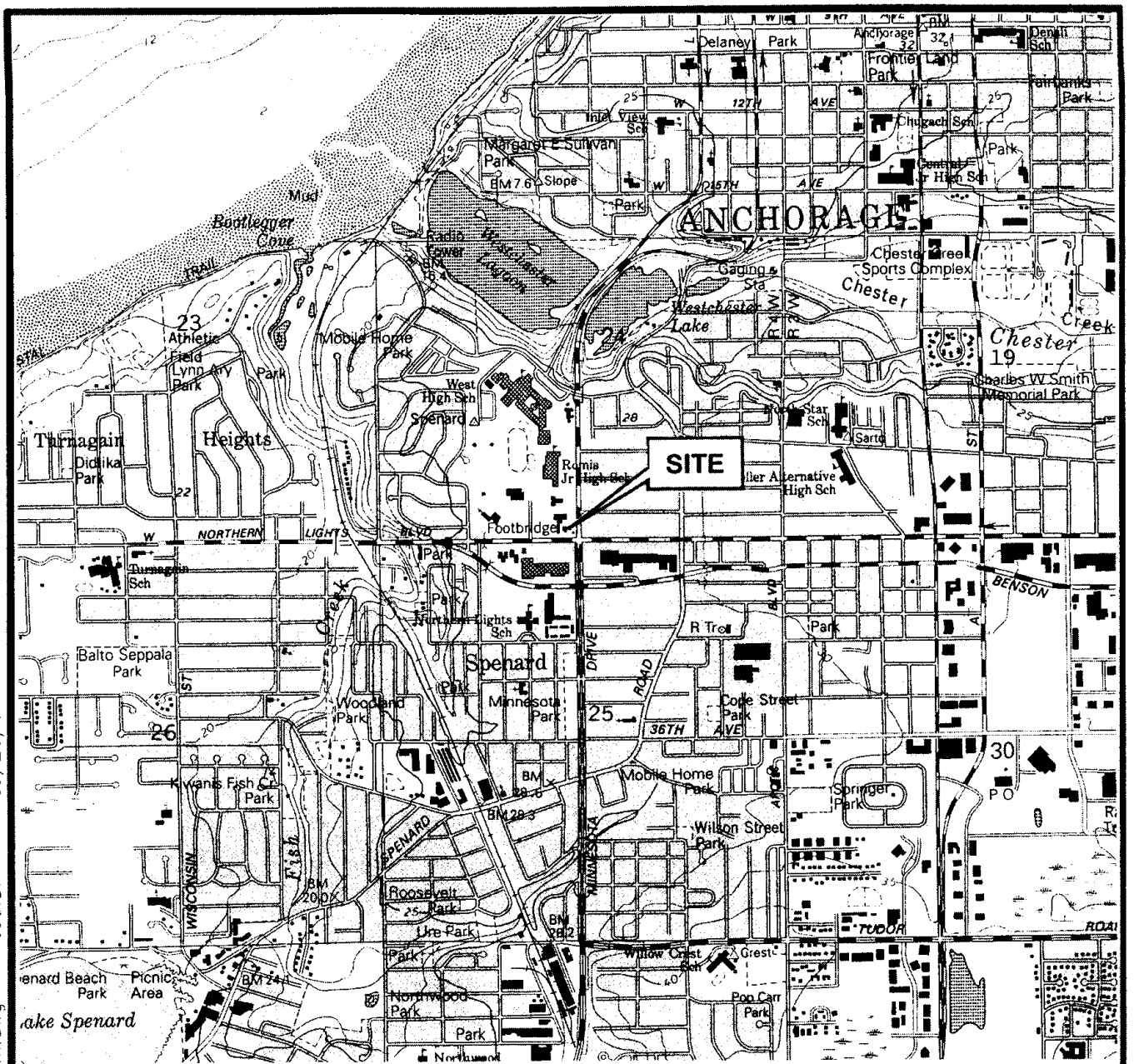
TABLE 2 (Page 1 of 2)
SUMMARY OF RECENT AND HISTORICAL
CHEMICAL ANALYTICAL RESULTS - GROUND WATER [1]
TEXACO SERVICE STATION 63-057-0010
1501 WEST NORTHERN LIGHTS BOULEVARD, ANCHORAGE, ALASKA
GEI JOB #0401-064-02

Well ID	Date Sampled	BETX[2] EPA Method 8021B (µg/l) B	E	T	X	GRO[3] (µg/l)	DRO[4] (mg/l)	RRO[5] (mg/l)
MW-1	12/03/97	<0.05	<0.05	<0.05	<1.0	<50.0	5.77	--
	12/07/99	--	--	--	--	--	1.34 [6]	3.57
	08/07/01	--	--	--	--	--	0.581 [6]	1.69
	11/08/01	--	--	--	--	--	0.433 [8]	1.12
MW-A	12/07/99	--	--	--	--	--	<0.100 [6]	<0.750
MW-B	12/07/99	--	--	--	--	--	0.112	<0.750
MW-C	12/07/99	<50.0 [7]	789	72.3	9,560	30,800	1.89 [8]	<0.750
	12/07/99*	27.9	801	120	9,470	30,600	2.05 [8]	<0.750
	08/07/01	1.96	3.34	0.867	54.2	1,490	--	--
	08/07/01*	5.54	7.70	1.98	107	3,440	--	--
	11/08/01	1.35	1.46	0.907	10.3	1,620	--	--
MW-D	12/07/99	<28.6 [7]	<3.40 [7]	<14.6 [7]	84.4	2,730	0.829	<0.750
	08/07/01	4.38	39.6	0.675	72.1	1,030	--	--
	11/08/01	4.31	49.7	<1.00	104	1,120	--	--
MW-E	08/07/01	25.0	231	61.9	3,110	4,850	0.957 [7]	<0.750
	11/08/01	20.9	173	<10.0	1,720	5,390	--	--
	11/08/01*	22.2	170	<10.0	1,690	5,340	--	--
MW-F	08/07/01	2.20	28.4	0.728	45.6	487	0.273 [7]	<0.750
	11/08/01	3.38	40.2	1.49 [7]	62.2	771	--	--
ADEC Ground Water Cleanup Levels		5	700	1,000	10,000	1,300	1.5	1.1

Notes appear on page 2 of 2.

TABLE 2 (Page 2 of 2)

Notes:
[1]Laboratory analysis conducted by North Creek Analytical in Bothell, Washington.
[2]B = benzene, E = ethylbenzene, T = toluene, X = xylenes
[3]GRO = Gasoline-Range Organics by ADEC Method AK101
[4]DRO = Diesel-Range Organics by ADEC Method AK102
[5]RRO = Residual-Range Organics by ADEC Method AK103
[6]Laboratory notes indicate that results in the diesel range are primarily due to overlap from a heavy-oil-range product.
[7]Laboratory reporting limit for this sample was raised to account for interference from coeluting organic compounds present in the sample.
[8]Laboratory notes indicate that results in the diesel range are primarily due to overlap from a gasoline-range product.
EPA = U.S. Environmental Protection Agency
µg/l = micrograms per liter
mg/l = milligrams per liter
"<" = analyte not detected at or above laboratory method reporting limits
"--" = not analyzed
"*" = duplicate sample
ADEC = Alaska Department of Environmental Conservation
Shading indicates concentrations greater than ADEC ground water cleanup levels.



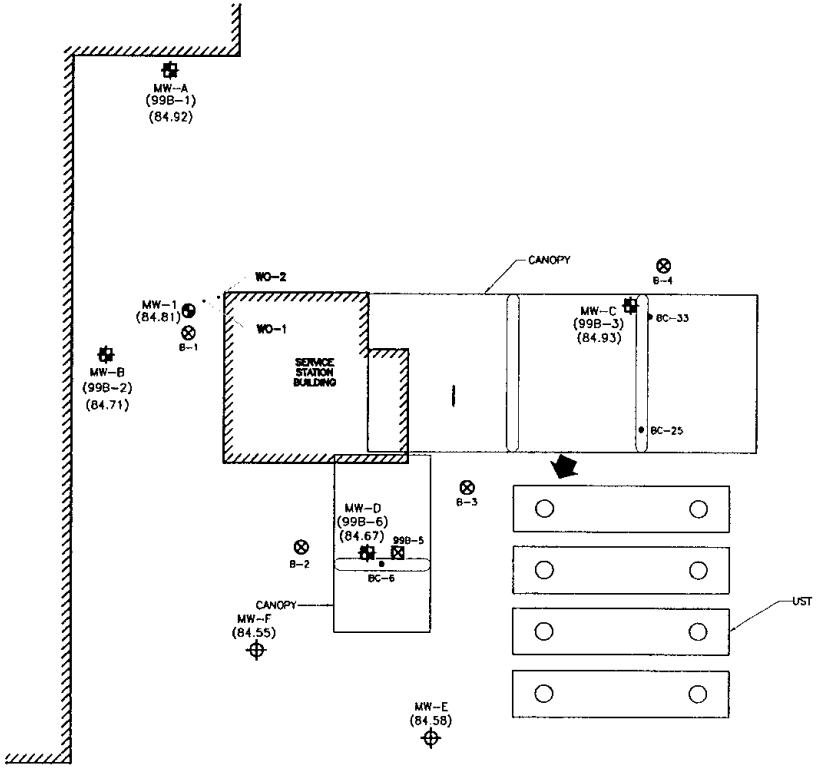
Reference:
USGS 7.5' topographic quadrangle map "Anchorage A-8, NW, AK." 1979 photorevised in 1994.

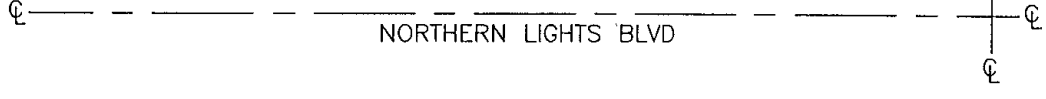
Anchorage P:\0401064\02\AutoCAD\040106402 F1 vm.dwg 09/20/01 JO:DKR

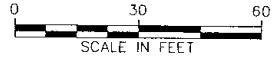
Geo Engineers

VICINITY MAP

FIGURE 1







EXPLANATION

- BC-6 • — SOIL SAMPLE BY GEOENGINEERS ON 09/24/96 AND 10/04/96
- B-2 ⊗ — SOIL BORING BY GEOENGINEERS ON 08/06/97
- MW-1 (84.81) ⊕ — MONITORING WELL BY GEOENGINEERS ON 12/02/97, WITH GROUND WATER ELEVATION, IN FEET
- 99B-5 ⊠ — BORING BY GEOENGINEERS ON 10/27/99
- MW-C (99B-3) (84.93) ⊕ — BORING AND MONITORING WELL BY GEOENGINEERS ON 10/26/99 - 10/28/99, WITH GROUND WATER ELEVATION, IN FEET
- MW-E (84.58) ⊕ — BORING AND MONITORING WELL BY GEOENGINEERS ON 08/07/01, WITH GROUND WATER ELEVATION, IN FEET
- ◆ — INFERRED GROUND WATER FLOW DIRECTION

TEXACO FACILITY No. 63-057-0010
1501 NORTHERN LIGHTS BLVD
ANCHORAGE, AK

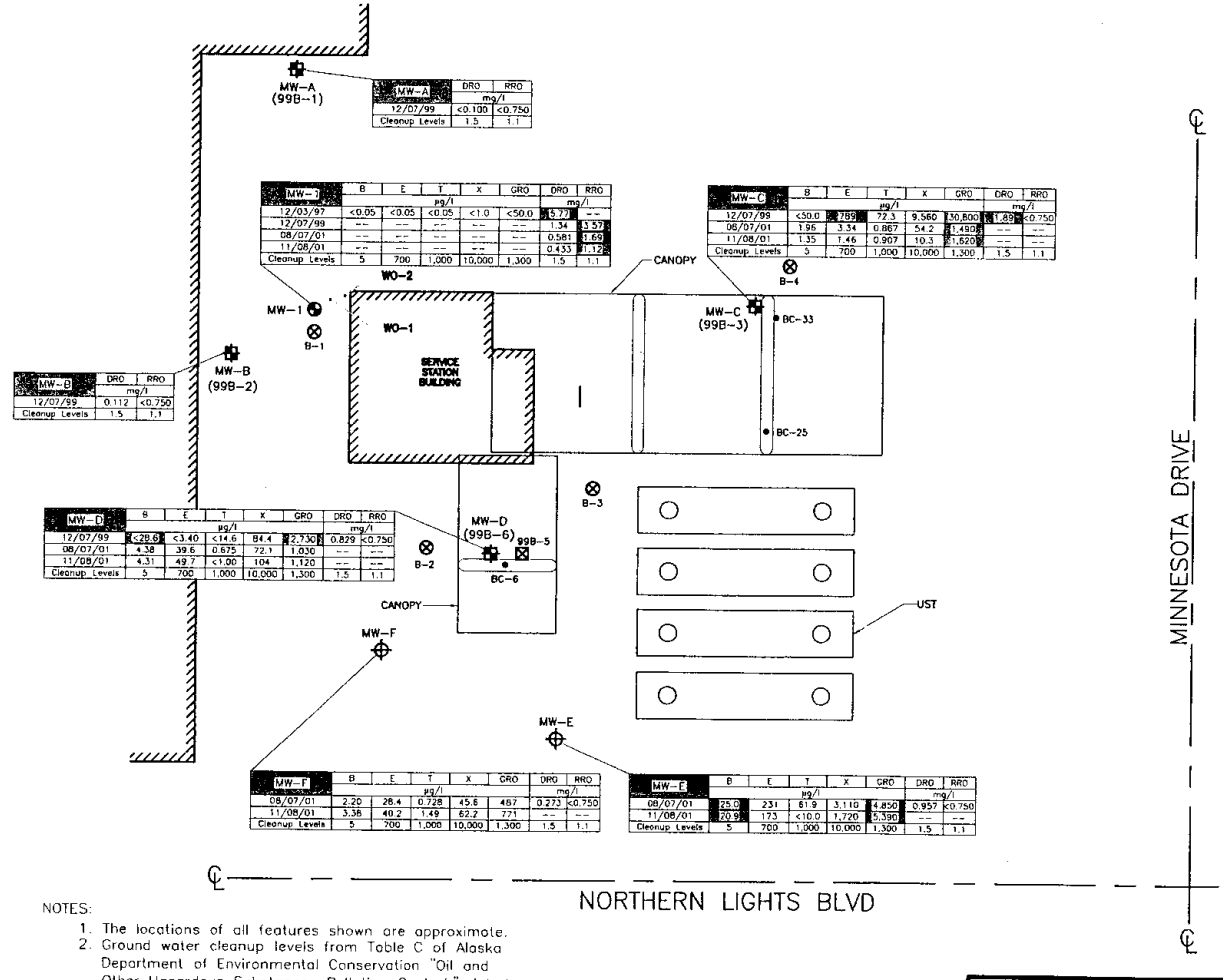
Note: The locations of all features shown are approximate.

GeoEngineers

SITE PLAN

FIGURE 2

P:\Anchorage\0401064\02\AutoCAD\0401-064-02 F2gw.dwg JJO:DKR 09/18/01 rev JJO:DKR 12/04/01



MW-A	DRO	RRO
	mg/l	
12/07/99	<0.100	<0.750
Cleanup Levels	1.5	1.1

MW-B	DRO	RRO
	mg/l	
12/07/99	0.112	<0.750
Cleanup Levels	1.5	1.1

MW-3	B	E	T	X	GRO	DRO	RRO
	µg/l					mg/l	
12/03/97	<0.05	<0.05	<0.05	<1.0	<50.0	5.77	--
12/07/99	--	--	--	--	--	1.34	3.57
08/07/01	--	--	--	--	--	0.581	1.69
11/08/01	--	--	--	--	--	0.453	1.12
Cleanup Levels	5	700	1,000	10,000	1,300	1.5	1.1

MW-C	B	E	T	X	GRO	DRO	RRO
	µg/l					mg/l	
12/07/99	<50.0	789	72.3	9,560	30,800	1.89	<0.750
08/07/01	1.95	3.34	0.867	54.2	1,490	--	--
11/08/01	1.35	1.46	0.907	10.3	1,620	--	--
Cleanup Levels	5	700	1,000	10,000	1,300	1.5	1.1

MW-D	B	E	T	X	GRO	DRO	RRO
	µg/l					mg/l	
12/07/99	<28.6	<3.40	<14.6	84.4	2,730	0.829	<0.750
08/07/01	4.38	39.6	0.675	72.1	1,030	--	--
11/08/01	4.31	49.7	<1.00	104	1,120	--	--
Cleanup Levels	5	700	1,000	10,000	1,300	1.5	1.1

MW-F	B	E	T	X	GRO	DRO	RRO
	µg/l					mg/l	
08/07/01	2.20	26.4	0.728	45.6	467	0.273	<0.750
11/08/01	3.38	40.2	1.49	62.2	771	--	--
Cleanup Levels	5	700	1,000	10,000	1,300	1.5	1.1

MW-E	B	E	T	X	GRO	DRO	RRO
	µg/l					mg/l	
08/07/01	25.0	231	61.9	3,110	4,850	0.957	<0.750
11/08/01	20.9	173	<10.0	1,720	5,390	--	--
Cleanup Levels	5	700	1,000	10,000	1,300	1.5	1.1

0 30 60
SCALE IN FEET

EXPLANATION

BC-6 ●	SOIL SAMPLE BY GEOENGINEERS ON 09/24/96 AND 10/04/96
B-2 ⊗	SOIL BORING BY GEOENGINEERS ON 08/06/97
MW-1 ◒	MONITORING WELL BY GEOENGINEERS ON 12/02/97
99B-5 ⊠	BORING BY GEOENGINEERS ON 10/27/99
MW-C (99B-3) ⊕	BORING AND MONITORING WELL BY GEOENGINEERS ON 10/26/99 - 10/28/99
MW-E ⊕	BORING AND MONITORING WELL BY GEOENGINEERS ON 08/07/01
µg/l	MICROGRAMS PER LITER (PARTS PER BILLION)
mg/l	MILLIGRAMS PER LITER (PARTS PER MILLION)
"<"	ANALYTE NOT DETECTED AT OR ABOVE LABORATORY METHOD REPORTING LIMITS
"--"	SAMPLE NOT ANALYZED FOR THIS PARAMETER

NOTES:
1. The locations of all features shown are approximate.
2. Ground water cleanup levels from Table C of Alaska Department of Environmental Conservation "Oil and Other Hazardous Substances Pollution Control," dated October 28, 2000.
3. Shading indicates concentration exceeds ADEC ground water cleanup levels.

TEXACO FACILITY No. 63-057-0010
1501 NORTHERN LIGHTS BLVD
ANCHORAGE, AK

Geo Engineers

CHEMICAL ANALYTICAL RESULTS - GROUND WATER

FIGURE 3

ATTACHMENT A

nca™
www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

0085

GeoEngineers
ANCHORAGE

DEC 5 2001

Routing. . 330 . . . ☒ File . . ☐
. . . . . . ☐ . . . . . . ☐ . . . . . . ☐
File. . . 0401-064-02 . . . .

26 November 2001

Jamie Oakley
Geo Engineers - Alaska
4951 Eagle St
Anchorage, AK/USA 99503-7432
RE: Equilon SAP #120686

Enclosed are the results of analyses for samples received by the laboratory on 11/09/01 09:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

S. Wo

Scott A. Woerman
Project Manager

COPY

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

9300

Geo Engineers - Alaska	Project: Equilon SAP #120686	
4951 Eagle St	Project Number: 0401-064-02	**Reported:**
Anchorage AK/USA, 99503-7432	Project Manager: Jamie Oakley	11/26/01 20:07

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	B1K0252-01	Water	11/08/01 13:00	11/09/01 09:30
MW-C	B1K0252-02	Water	11/08/01 11:10	11/09/01 09:30
MW-D	B1K0252-03	Water	11/08/01 11:30	11/09/01 09:30
MW-E	B1K0252-04	Water	11/08/01 12:00	11/09/01 09:30
MW-F	B1K0252-05	Water	11/08/01 12:30	11/09/01 09:30
Duplicate	B1K0252-06	Water	11/08/01 12:30	11/09/01 09:30
Trip Blank	B1K0252-07	Water	11/08/01 12:00	11/09/01 09:30

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

www.ncalabs.com

0087

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane,.WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Geo Engineers - Alaska	Project: Equilon SAP #120686	
4951 Eagle St	Project Number: 0401-064-02	**Reported:**
Anchorage AK/USA, 99503-7432	Project Manager: Jamie Oakley	11/26/01 20:07

Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-C (B1K0252-02) Water Sampled: 11/08/01 11:10 Received: 11/09/01 09:30									
Gasoline Range Hydrocarbons	**1620**	50.0	ug/l	1	1K21008	11/21/01	11/21/01	AK 101	
Benzene	**1.35**	0.200	"	"	"	"	"	"	
Toluene	**0.907**	0.500	"	"	"	"	"	"	
Ethylbenzene	**1.46**	0.500	"	"	"	"	"	"	
Xylenes (total)	**10.3**	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*169 %*	*60-120*			"	"	"	"	*S-04*
Surrogate: 4-BFB (PID)	*117 %*	*60-120*			"	"	"	"	
MW-D (B1K0252-03) Water Sampled: 11/08/01 11:30 Received: 11/09/01 09:30									
Gasoline Range Hydrocarbons	**1120**	100	ug/l	2	1K21008	11/21/01	11/21/01	AK 101	
Benzene	**4.31**	0.400	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	**49.7**	1.00	"	"	"	"	"	"	
Xylenes (total)	**104**	2.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*98.8 %*	*60-120*			"	"	"	"	
Surrogate: 4-BFB (PID)	*108 %*	*60-120*			"	"	"	"	
MW-E (B1K0252-04) Water Sampled: 11/08/01 12:00 Received: 11/09/01 09:30									
Gasoline Range Hydrocarbons	**5390**	1000	ug/l	20	1K21008	11/21/01	11/21/01	AK 101	
Benzene	**20.9**	4.00	"	"	"	"	"	"	
Toluene	ND	10.0	"	"	"	"	"	"	
Ethylbenzene	**173**	10.0	"	"	"	"	"	"	
Xylenes (total)	**1720**	20.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*98.3 %*	*60-120*			"	"	"	"	
Surrogate: 4-BFB (PID)	*96.2 %*	*60-120*			"	"	"	"	

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

0088

Geo Engineers - Alaska	Project: Equilon SAP #120686	
4951 Eagle St	Project Number: 0401-064-02	**Reported:**
Anchorage AK/USA, 99503-7432	Project Manager: Jamie Oakley	11/26/01 20:07

Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-F (B1K0252-05) Water Sampled: 11/08/01 12:30 Received: 11/09/01 09:30									
Gasoline Range Hydrocarbons	**771**	125	ug/l	2.5	1K21008	11/21/01	11/21/01	AK 101	
Benzene	**3.38**	0.500	"	"	"	"	"	"	
Toluene	**1.49**	1.25	"	"	"	"	"	"	I-06
Ethylbenzene	**40.2**	1.25	"	"	"	"	"	"	
Xylenes (total)	**62.2**	2.50	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*102 %*	*60-120*			"	"	"	"	
Surrogate: 4-BFB (PID)	*111 %*	*60-120*			"	"	"	"	
Duplicate (B1K0252-06) Water Sampled: 11/08/01 12:30 Received: 11/09/01 09:30									
Gasoline Range Hydrocarbons	**5340**	1000	ug/l	20	1K21008	11/21/01	11/21/01	AK 101	
Benzene	**22.2**	4.00	"	"	"	"	"	"	
Toluene	ND	10.0	"	"	"	"	"	"	
Ethylbenzene	**170**	10.0	"	"	"	"	"	"	
Xylenes (total)	**1690**	20.0	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*99.4 %*	*60-120*			"	"	"	"	
Surrogate: 4-BFB (PID)	*96.5 %*	*60-120*			"	"	"	"	
Trip Blank (B1K0252-07) Water Sampled: 11/08/01 12:00 Received: 11/09/01 09:30									
Gasoline Range Hydrocarbons	ND	50.0	ug/l	1	1K21008	11/21/01	11/21/01	AK 101	
Benzene	ND	0.200	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	*93.5 %*	*60-120*			"	"	"	"	
Surrogate: 4-BFB (PID)	*94.8 %*	*60-120*			"	"	"	"	

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

www.ncalabs.com

0089

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Geo Engineers - Alaska	Project: Equilon SAP #120686	
4951 Eagle St	Project Number: 0401-064-02	**Reported:**
Anchorage AK/USA, 99503-7432	Project Manager: Jamie Oakley	11/26/01 20:07

Diesel Hydrocarbons (C10-C25) and Heavy Oil (C25-C36) by AK102 and AK103

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (B1K0252-01) Water Sampled: 11/08/01 13:00 Received: 11/09/01 09:30									
Diesel Range Hydrocarbons	**0.433**	0.100	mg/l	1	1K14014	11/14/01	11/16/01	AK102/103	D-09
Residual Range Organics	**1.12**	0.750	"	"	"	"	"	"	
Surrogate: 2-FBP	*92.1 %*	*50-150*			"	"	"	"	
Surrogate: Octacosane	*107 %*	*50-150*			"	"	"	"	

Scott A. Woerman, Project Manager

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

1090

Geo Engineers - Alaska	Project: Equilon SAP #120686	
4951 Eagle St	Project Number: 0401-064-02	**Reported:**
Anchorage AK/USA, 99503-7432	Project Manager: Jamie Oakley	11/26/01 20:07

Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101 - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1K21008: Prepared 11/21/01 Using EPA 5030B (P/T)										
Blank (1K21008-BLK1)										
Gasoline Range Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.200	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Surrogate: 4-BFB (FID)	*44.6*		"	*48.0*		*92.9*	*60-120*			
Surrogate: 4-BFB (PID)	*46.1*		"	*48.0*		*96.0*	*60-120*			
LCS (1K21008-BS1)										
Gasoline Range Hydrocarbons	479	50.0	ug/l	500		95.8	60-120			
Benzene	5.56	0.200	"	6.01		92.5	60-120			
Toluene	29.0	0.500	"	35.8		81.0	60-120			
Ethylbenzene	7.70	0.500	"	8.37		92.0	60-120			
Xylenes (total)	36.3	1.00	"	41.4		87.7	60-120			
Surrogate: 4-BFB (FID)	*49.6*		"	*48.0*		*103*	*60-120*			
Surrogate: 4-BFB (PID)	*43.0*		"	*48.0*		*89.6*	*60-120*			
LCS Dup (1K21008-BSD1)										
Gasoline Range Hydrocarbons	478	50.0	ug/l	500		95.6	60-120	0.209	20	
Benzene	5.68	0.200	"	6.01		94.5	60-120	2.14	20	
Toluene	29.9	0.500	"	35.8		83.5	60-120	3.06	20	
Ethylbenzene	7.90	0.500	"	8.37		94.4	60-120	2.56	20	
Xylenes (total)	37.3	1.00	"	41.4		90.1	60-120	2.72	20	
Surrogate: 4-BFB (FID)	*49.1*		"	*48.0*		*102*	*60-120*			
Surrogate: 4-BFB (PID)	*43.5*		"	*48.0*		*90.6*	*60-120*			
Matrix Spike (1K21008-MS1)					**Source: B1K0254-04**					
Gasoline Range Hydrocarbons	489	50.0	ug/l	500	ND	88.0	60-120			
Benzene	5.91	0.200	"	6.01	0.499	90.0	60-120			
Toluene	29.2	0.500	"	35.8	ND	81.2	60-120			
Ethylbenzene	7.69	0.500	"	8.37	ND	91.9	60-120			
Xylenes (total)	36.4	1.00	"	41.4	ND	87.9	60-120			
Surrogate: 4-BFB (FID)	*48.5*		"	*48.0*		*101*	*60-120*			
Surrogate: 4-BFB (PID)	*43.4*		"	*48.0*		*90.4*	*60-120*			

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

www.ncalabs.com

0091

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

Geo Engineers - Alaska	Project: Equilon SAP #120686	
4951 Eagle St	Project Number: 0401-064-02	**Reported:**
Anchorage AK/USA, 99503-7432	Project Manager: Jamie Oakley	11/26/01 20:07

Gasoline Hydrocarbons (n-Hexane to <n-Decane) and BTEX by AK101 - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1K21008: Prepared 11/21/01 Using EPA 5030B (P/T)										
Matrix Spike Dup (1K21008-MSD1)					**Source: B1K0254-04**					
Gasoline Range Hydrocarbons	490	50.0	ug/l	500	ND	88.2	60-120	0.204	20	
Benzene	5.87	0.200	"	6.01	0.499	89.4	60-120	0.679	20	
Toluene	28.9	0.500	"	35.8	ND	80.4	60-120	1.03	20	
Ethylbenzene	7.61	0.500	"	8.37	ND	90.9	60-120	1.05	20	
Xylenes (total)	35.8	1.00	"	41.4	ND	86.5	60-120	1.66	20	
Surrogate: 4-BFB (FID)	*48.4*		"	*48.0*		*101*	*60-120*			
Surrogate: 4-BFB (PID)	*42.4*		"	*48.0*		*88.3*	*60-120*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Scott A. Woerman, Project Manager

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

C092

Geo Engineers - Alaska	Project: Equilon SAP #120686	
4951 Eagle St	Project Number: 0401-064-02	**Reported:**
Anchorage AK/USA, 99503-7432	Project Manager: Jamie Oakley	11/26/01 20:07

Diesel Hydrocarbons (C10-C25) and Heavy Oil (C25-C36) by AK102 and AK103 - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1K14014: Prepared 11/14/01 Using EPA 3520C										
Blank (1K14014-BLK1)										
Diesel Range Hydrocarbons	ND	0.100	mg/l							
Residual Range Organics	ND	0.750	"							
Surrogate: 2-FBP	*0.291*		"	*0.320*		*90.9*	*50-150*			
Surrogate: Octacosane	*0.306*		"	*0.320*		*95.6*	*50-150*			
LCS (1K14014-BS1)										
Diesel Range Hydrocarbons	1.97	0.100	mg/l	2.00		98.5	75-125			
Surrogate: 2-FBP	*0.311*		"	*0.320*		*97.2*	*50-150*			
LCS (1K14014-BS2)										
Residual Range Organics	1.97	0.750	mg/l	2.00		98.5	60-120			
Surrogate: Octacosane	*0.304*		"	*0.320*		*95.0*	*50-150*			
LCS Dup (1K14014-BSD1)										
Diesel Range Hydrocarbons	2.00	0.100	mg/l	2.00		100	75-125	1.51	20	
Surrogate: 2-FBP	*0.319*		"	*0.320*		*99.7*	*50-150*			
LCS Dup (1K14014-BSD2)										
Residual Range Organics	2.06	0.750	mg/l	2.00		103	60-120	4.47	20	
Surrogate: Octacosane	*0.304*		"	*0.320*		*95.0*	*50-150*			
Matrix Spike (1K14014-MS1)					**Source: B1K0235-04**					
Diesel Range Hydrocarbons	3.72	0.100	mg/l	1.92	1.98	90.6	75-125			
Surrogate: 2-FBP	*0.323*		"	*0.307*		*105*	*50-150*			
Matrix Spike Dup (1K14014-MSD1)					**Source: B1K0235-04**					
Diesel Range Hydrocarbons	4.49	0.100	mg/l	1.89	1.98	133	75-125	18.8	40	
Surrogate: 2-FBP	*0.294*		"	*0.302*		*97.4*	*50-150*			

Scott A. Woerman, Project Manager

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

0093

Geo Engineers - Alaska	Project: Equilon SAP #120686	
4951 Eagle St	Project Number: 0401-064-02	**Reported:**
Anchorage AK/USA, 99503-7432	Project Manager: Jamie Oakley	11/26/01 20:07

Notes and Definitions

D-09	Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
I-06	The analyte concentration may be artificially elevated due to coeluting compounds or components.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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
RPD	Relative Percent Difference

nca™
North Creek Analytical, Inc.
Environmental Laboratory Network
www.ncalabs.com

11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244 (425) 420-9200 FAX 420-9210
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #: B1K0252

CLIENT: Equiva

REPORT TO: Jamie Oakley – GeoEngineers
ADDRESS: 4957 Eagle St
Anchorage, AK 99503
PHONE: (907) 561-3479 FAX: 561-5123

INVOICE TO: Equiva Services
Attn: Tony Palaggi
10602 NE 38th Place
Kirkland, WA 98033

P.O. NUMBER:

PROJECT NAME: Big Corners Texaco 63-057-0018
PROJECT NUMBER: 0401-064-02
SAMPLED BY: DKR

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: (10) 7 5 4 3 2 1 <1
STD. Petroleum Hydrocarbon Analyses: 5 4 3 2 1 <1
STD. OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	GRO/BETX AK101	DRO AK102	RRO AK103	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. MW-1	11/8/01-1300		X	X	W	2		-01
2. MW-C	11/8/01-1110	X			W	3		-02
3. MW-D	11/8/01-1130	X			W	3		-03
4. MW-E	11/8/01-1200	X			W	3		-04
5. MW-F	11/8/01-1230	X			W	3		-05
6. Duplicate	11/8/01	X			W	3	DUP	-06
7. Trip Blank	11/8/01	X			W	2		
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								

RELINQUISHED BY: Deanne Raiha
PRINT NAME: Deanne Raiha FIRM: GEI DATE: 11/8/01 TIME: 1300
RECEIVED BY: Cathy McGuire
PRINT NAME: C. McGuire FIRM: NCA DATE: 11/9/01 TIME: 9:30

RELINQUISHED BY:
PRINT NAME: FIRM: DATE: TIME:
RECEIVED BY:
PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS:

TEMP: 6.9 1.1

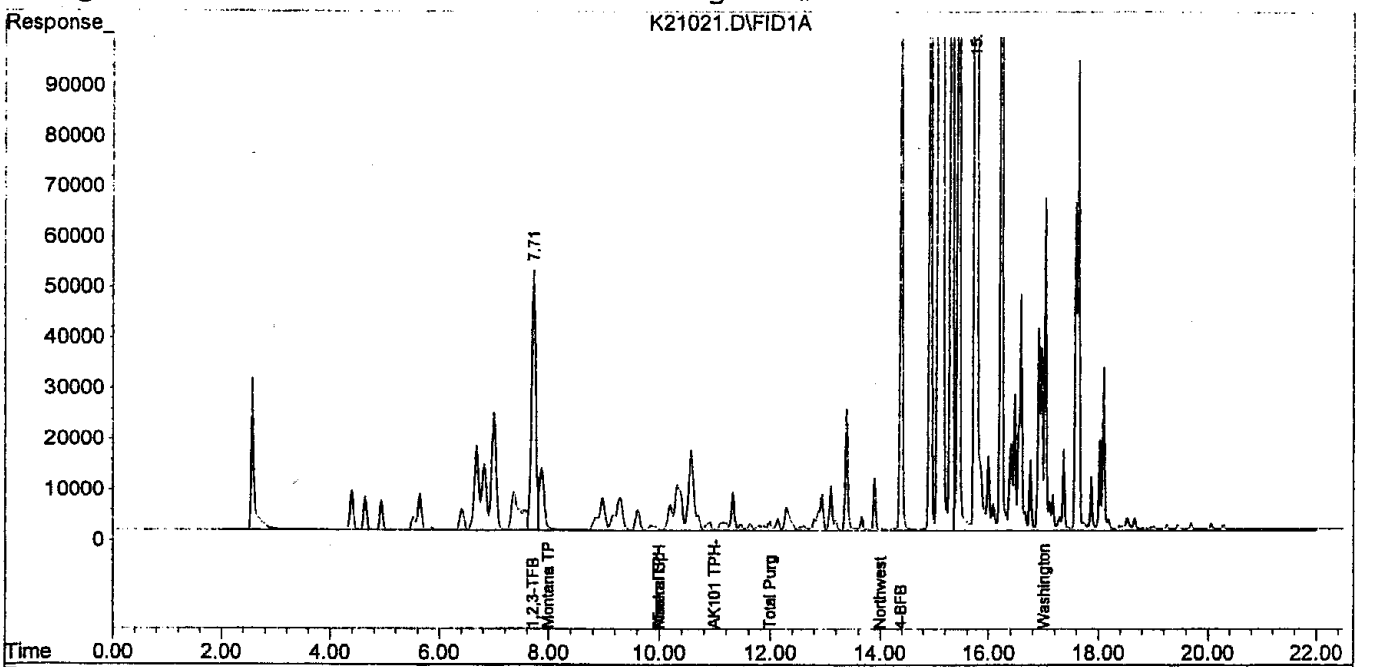
COC REV 2.00

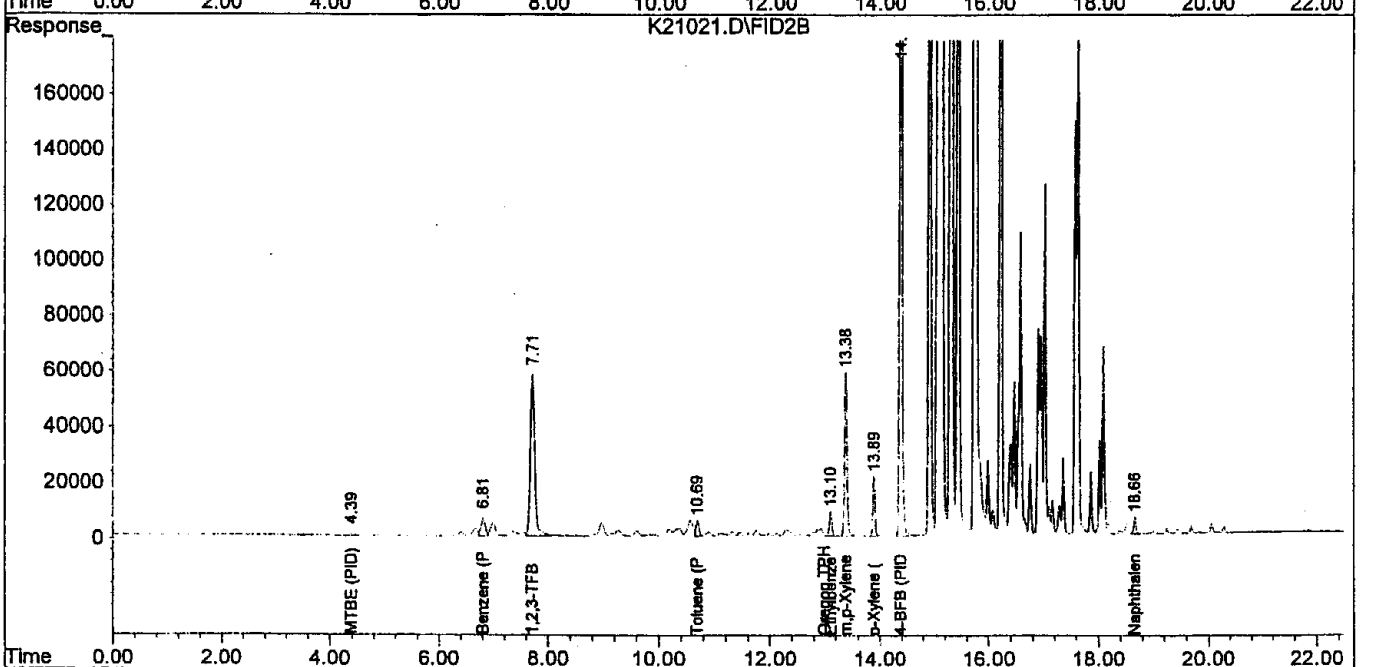
Signal #1 : D:\HPCHEM\4\DATA\112101\K21021.D\FID1A.CH Vial: 21
Signal #2 : D:\HPCHEM\4\DATA\112101\K21021.D\FID2B.CH
Acq On : 21 Nov 2001 5:04 pm Operator: sk
Sample : B1K0252-02 r1 0095 Inst : GC #8
Misc : 1x 5 ml (2.5+2.5) Multiplr: 1.00
Sample Amount: 0.00
IntFile Signal #1: TPH.E IntFile Signal #2: SURR2.E

Quant Time: Nov 21 17:27 2001 Quant Results File: TEST1101.RES

Quant Method : D:\HPCHEM\4\METHODS\TEST1101.M (Chemstation Integrator)
Title : TPH-G Water Method
Last Update : Wed Nov 14 09:16:46 2001
Response via : Multiple Level Calibration
DataAcq Meth : TEST1101.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



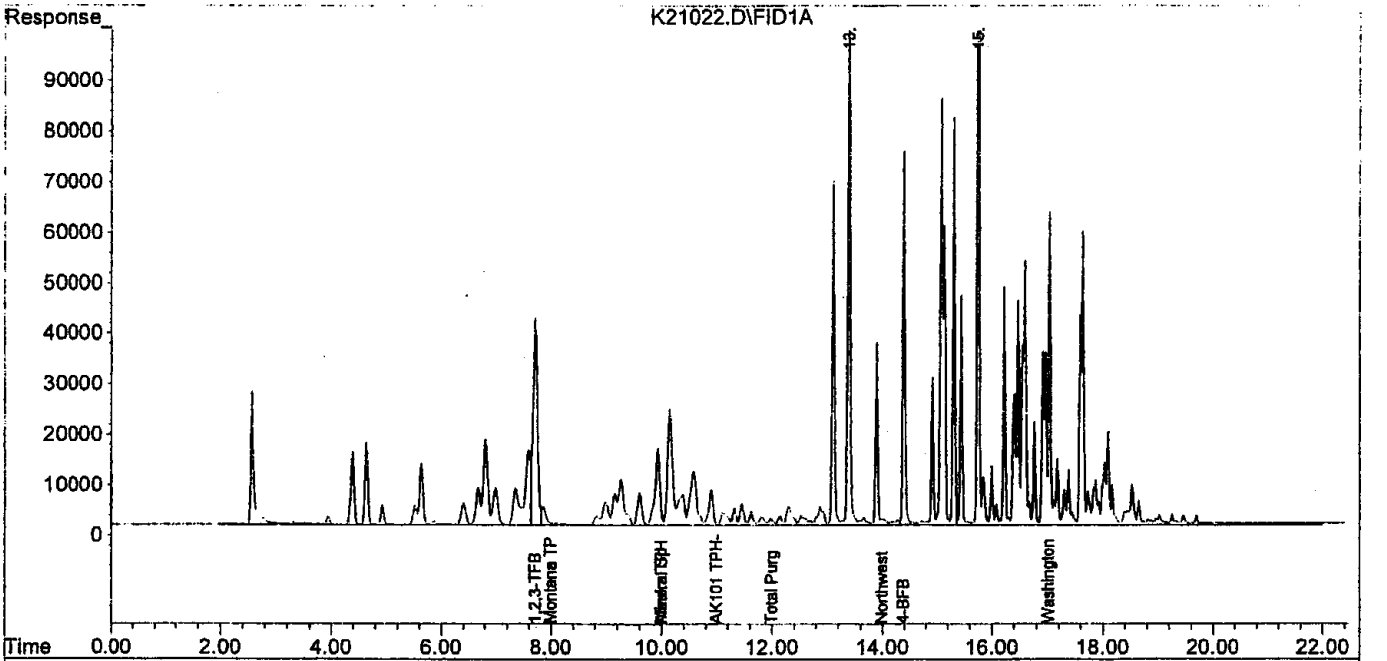


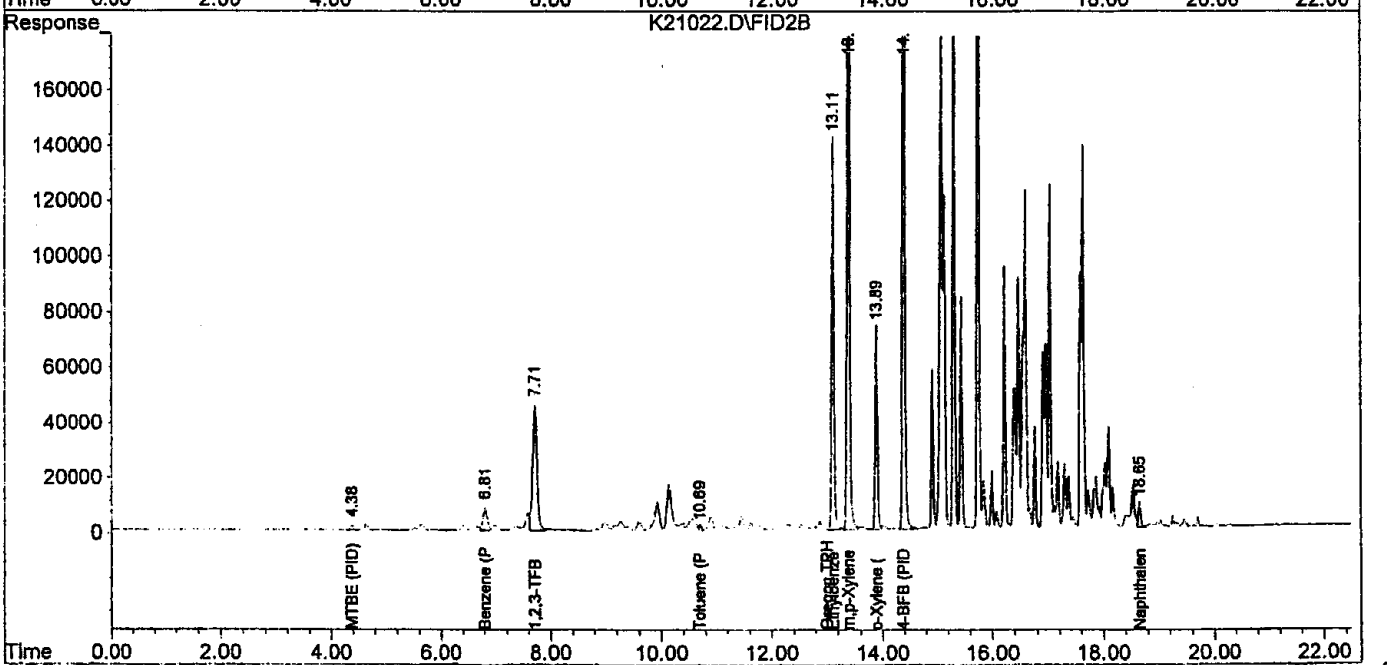
Signal #1 : D:\HPCHEM\4\DATA\112101\K21022.D\FID1A.CH Vial: 22
Signal #2 : D:\HPCHEM\4\DATA\112101\K21022.D\FID2B.CH
Acq On : 21 Nov 2001 5:34 pm Operator: sk
Sample : B1K0252-03 r1 Inst : GC #8
Misc : 2x 2.5 ml 0096 Multiplr: 1.00
Sample Amount: 0.00
IntFile Signal #1: TPH.E IntFile Signal #2: SURR2.E

Quant Time: Nov 21 17:57 2001 Quant Results File: TEST1101.RES

Quant Method : D:\HPCHEM\4\METHODS\TEST1101.M (Chemstation Integrator)
Title : TPH-G Water Method
Last Update : Wed Nov 14 09:16:46 2001
Response via : Multiple Level Calibration
DataAcq Meth : TEST1101.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





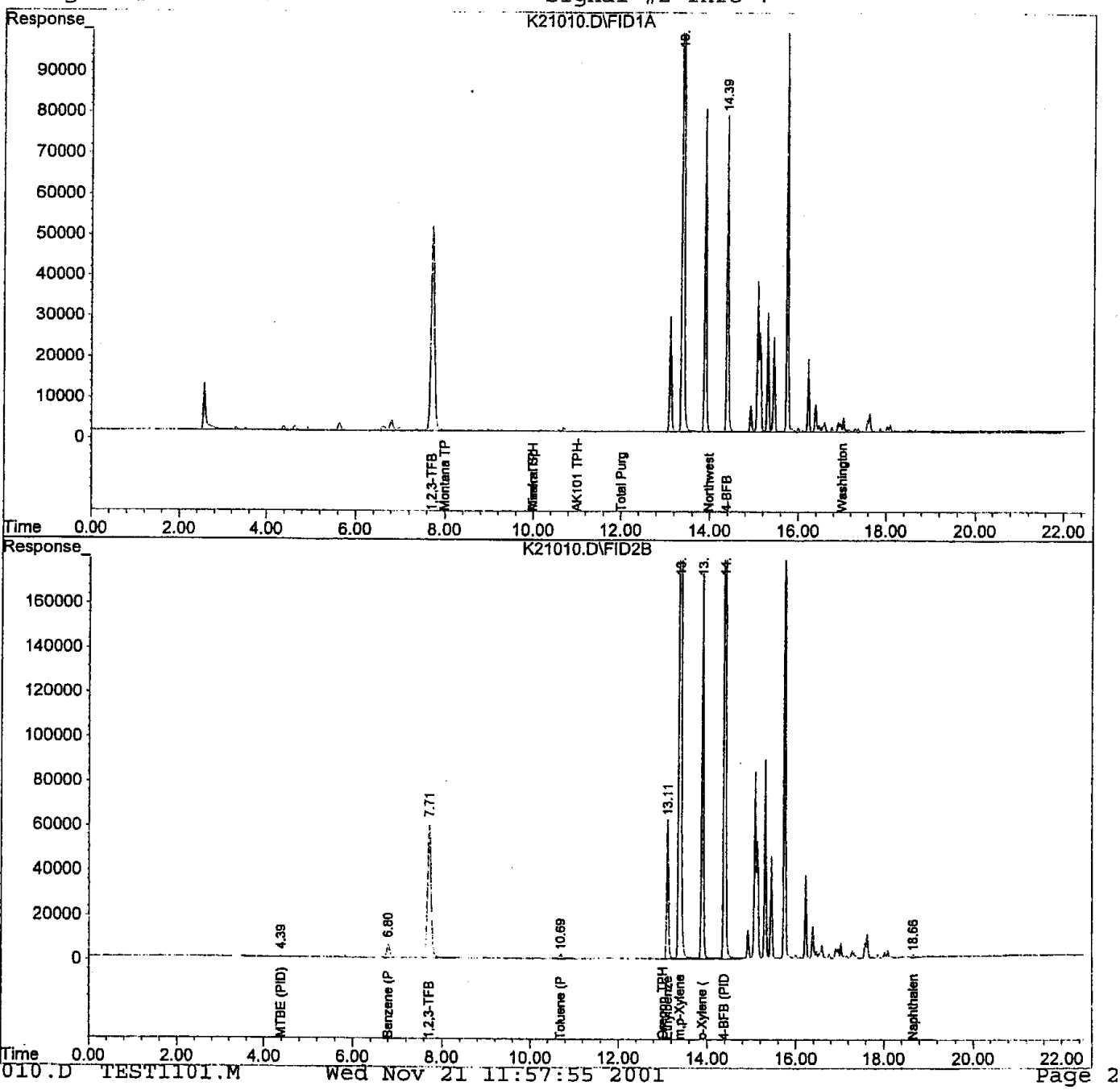
Signal #1 : D:\HPCHEM\4\DATA\112101\K21010.D\FID1A.CH Vial: 10
Signal #2 : D:\HPCHEM\4\DATA\112101\K21010.D\FID2B.CH
Acq On : 21 Nov 2001 11:34 am Operator: sk
Sample : B1K0252-04 Inst : GC #8
Misc : 20x 250 ul 0097 Multiplr: 1.00
Sample Amount: 0.00

IntFile Signal #1: TPH.E IntFile Signal #2: SURR2.E

Quant Time: Nov 21 11:57 2001 Quant Results File: TEST1101.RES

Quant Method : D:\HPCHEM\4\METHODS\TEST1101.M (Chemstation Integrator)
Title : TPH-G Water Method
Last Update : Wed Nov 14 09:16:46 2001
Response via : Multiple Level Calibration
DataAcq Meth : TEST1101.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

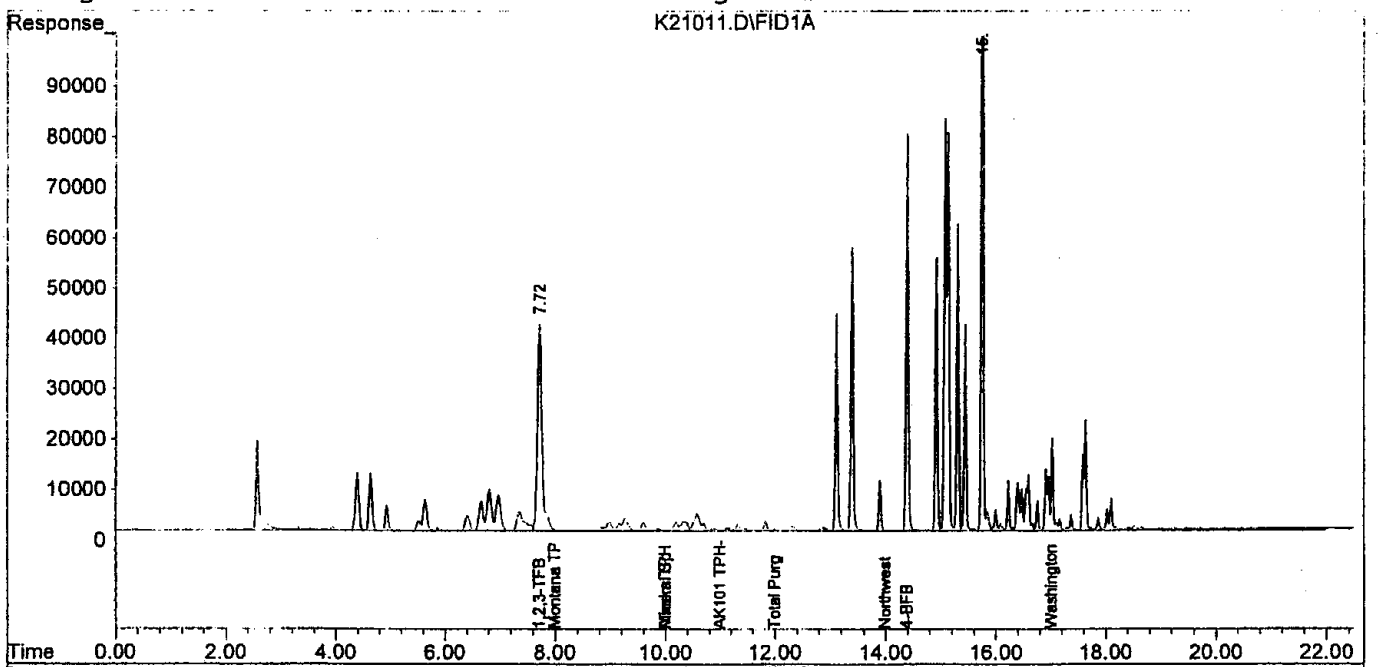


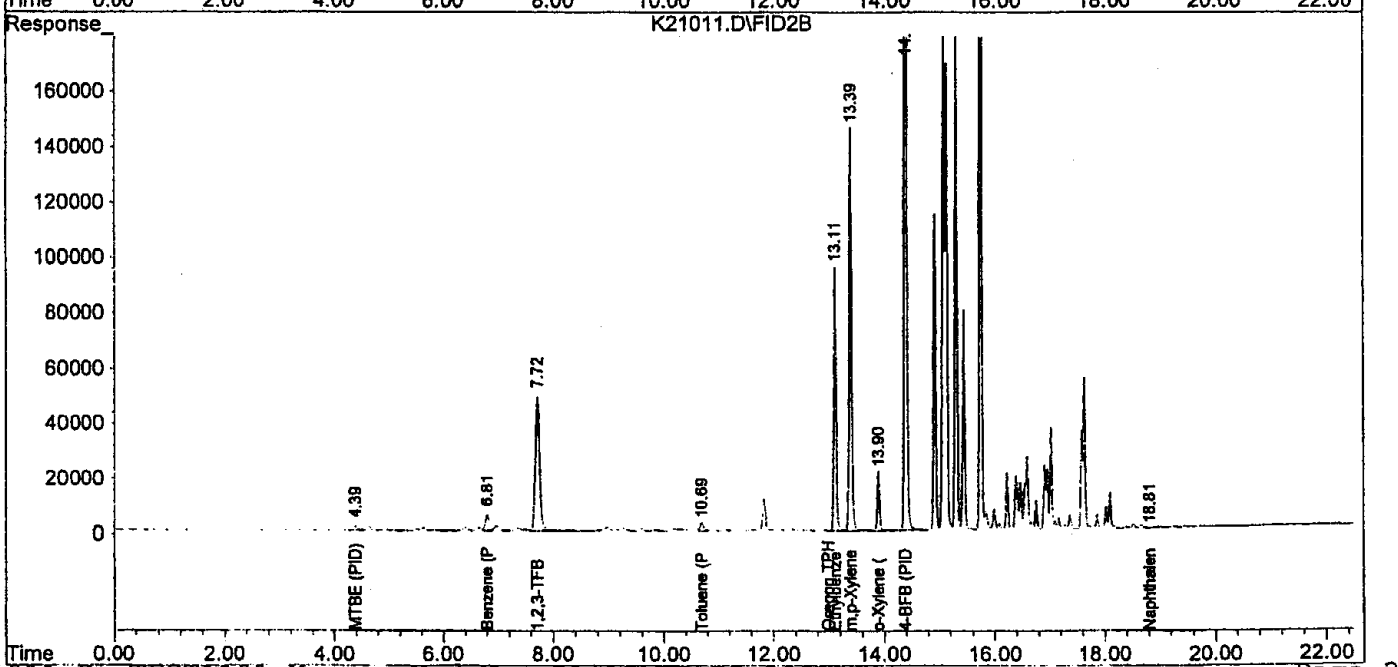
Signal #1 : D:\HPCHEM\4\DATA\112101\K21011.D\FID1A.CH Vial: 11
Signal #2 : D:\HPCHEM\4\DATA\112101\K21011.D\FID2B.CH
Acq On : 21 Nov 2001 12:04 pm Operator: sk
Sample : B1K0252-05 Inst : GC #8
Misc : 2.5x 2 ml 1098 Multiplr: 1.00
Sample Amount: 0.00
IntFile Signal #1: TPH.E IntFile Signal #2: SURR2.E

Quant Time: Nov 21 12:27 2001 Quant Results File: TEST1101.RES

Quant Method : D:\HPCHEM\4\METHODS\TEST1101.M (Chemstation Integrator)
Title : TPH-G Water Method
Last Update : Wed Nov 14 09:16:46 2001
Response via : Multiple Level Calibration
DataAcq Meth : TEST1101.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



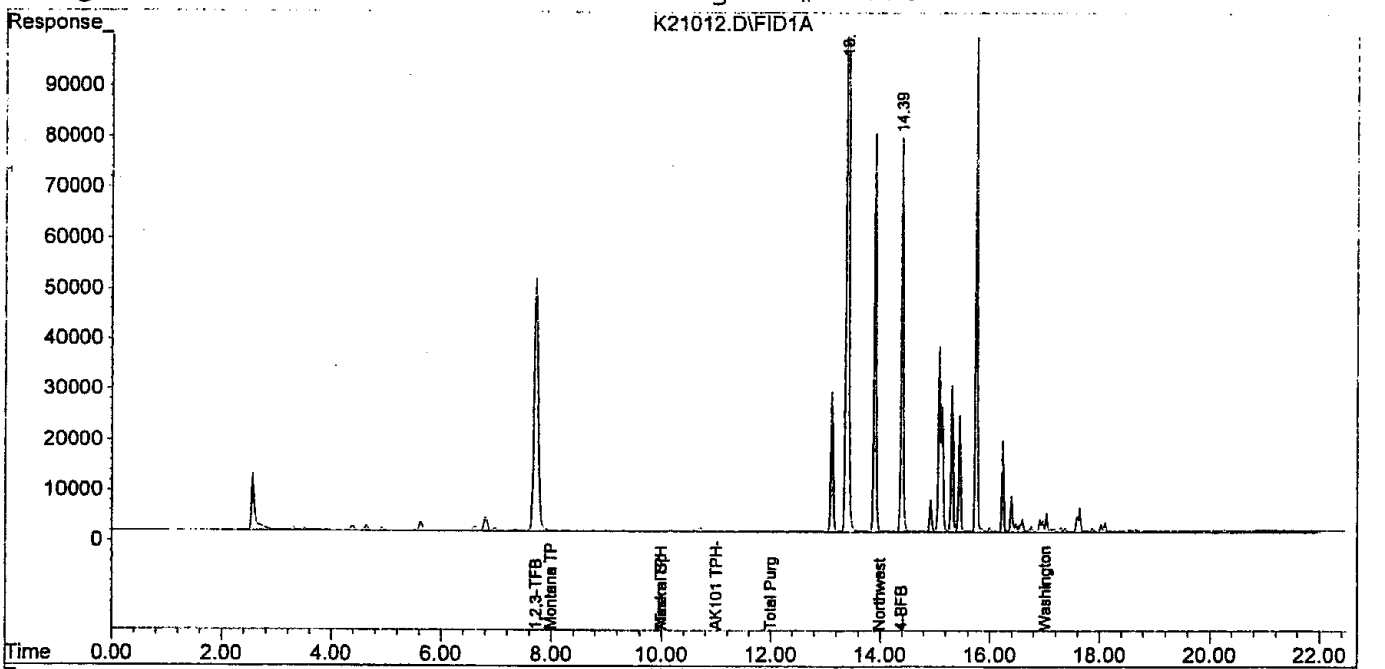


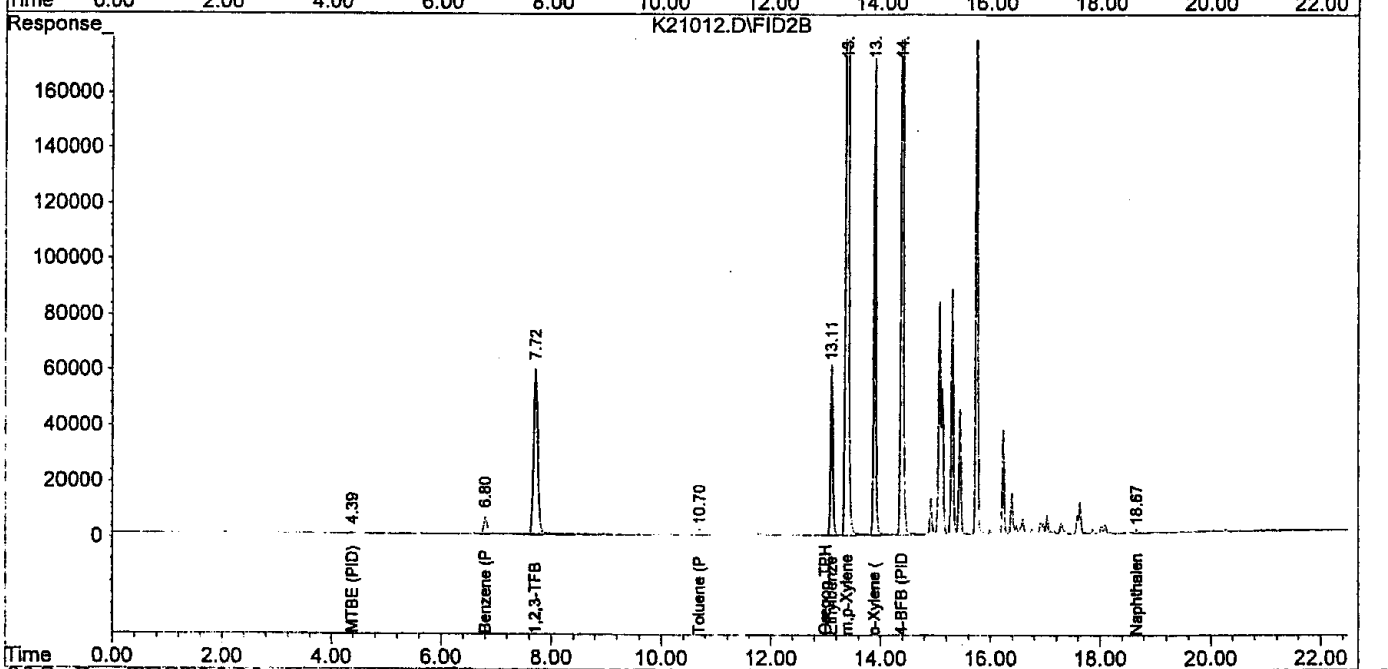
Signal #1 : D:\HPCHEM\4\DATA\112101\K21012.D\FID1A.CH Vial: 12
Signal #2 : D:\HPCHEM\4\DATA\112101\K21012.D\FID2B.CH
Acq On : 21 Nov 2001 12:34 pm Operator: sk
Sample : B1K0252-06 0099 Inst : GC #8
Misc : 20x 250 ul Multiplr: 1.00
Sample Amount: 0.00
IntFile Signal #1: TPH.E IntFile Signal #2: SURR2.E

Quant Time: Nov 21 12:57 2001 Quant Results File: TEST1101.RES

Quant Method : D:\HPCHEM\4\METHODS\TEST1101.M (Chemstation Integrator)
Title : TPH-G Water Method
Last Update : Wed Nov 14 09:16:46 2001
Response via : Multiple Level Calibration
DataAcq Meth : TEST1101.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Signal #1 : D:\HPCHEM\4\DATA\112101\K21013.D\FID1A.CH Vial: 13
Signal #2 : D:\HPCHEM\4\DATA\112101\K21013.D\FID2B.CH
Acq On : 21 Nov 2001 1:04 pm Operator: sk
Sample : B1K0252-07 Inst : GC #8
Misc : 1x 5 ml TB Multiplr: 1.00
Sample Amount: 0.00

IntFile Signal #1: TPH.E IntFile Signal #2: SURR2.E

Quant Time: Nov 21 13:27 2001 Quant Results File: TEST1101.RES

Quant Method : D:\HPCHEM\4\METHODS\TEST1101.M (Chemstation Integrator)
Title : TPH-G Water Method
Last Update : Wed Nov 14 09:16:46 2001
Response via : Multiple Level Calibration
DataAcq Meth : TEST1101.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :