

TOSCO 6380

LUST 471259

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BY 10-30  
2002

**Product Line Removal and Underground  
Remediation Piping Installation  
Activities**

**76 Service Station No. 256380  
200 South 36<sup>th</sup> Street  
Bellingham, Washington**

**July 18, 2002**

**RECEIVED**

**JUL 24 2002**

**ENVIRONMENTAL DEPARTMENT  
NORTHWEST REGION**

**Tosco Corporation,  
a subsidiary of  
Phillips Petroleum Company**

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**DEPT OF ECOLOGY**

July 18, 2002

**Consulting Engineers  
and Geoscientists**

Tosco Corporation, a subsidiary of  
Phillips Petroleum Company  
3977 Leary Way Northwest  
Seattle, Washington 98107

Attention: Timothy D. Johnson

Product Line Removal and Underground  
Remediation Piping Installation Activities  
76 Service Station No. 256380  
200 South 36<sup>th</sup> Street  
Bellingham, Washington  
GEI File No. 4823-410-00

### **INTRODUCTION**

This report summarizes May 2002 product line removal and June remediation piping installation at the 76 service station and convenience store located at 200 South 36<sup>th</sup> Street, Bellingham, Washington. Our services were conducted in general accordance with the Tosco Environmental Consultant Services Agreement and the authorized Work Order submitted on April 11, 2002.

The Washington State Department of Ecology (Ecology) leaking underground storage tank (LUST) Incident Number is 8394. Tosco Corporation (Tosco) purchased the site from Unocal, and subsequently sold the site to the current owner, Keith Oil Company. The site is shown relative to surrounding features in Figure 1. The general layout of the site, former facilities, monitoring wells, excavation and sample locations are shown in Figure 2.

### **SCOPE OF SERVICES**

The scope of services for observation of the product line removal and remediation piping installation is presented below. The purposes of our services were to (1) monitor the removal of the former product lines on behalf of Tosco, (2) characterize soil conditions at the limits of excavation, and (3) assist the on-site contractor in installation of underground remediation piping. GeoEngineers' specific scope of services completed follows:

1. Assisted Tosco in obtaining authorization for soil recycling at TPS Technologies in Tacoma, Washington, based on previous subsurface assessment data from the site.
2. Observed the removal of the distribution product lines. The dispensers had already been removed when we visited the site.
3. Observed remedial excavation at the product line trenches.
4. Submitted selected soil samples from the sidewalls and/or base of the product line excavations for chemical analyses, as summarized in Table 1.
5. Evaluated the field and laboratory data with regard to 2001 MTCA Method A cleanup levels.
6. Assisted the on-site contractor in installation of underground air sparging points and horizontal vapor extraction lines in trenches excavated in the dispenser island area.

### **SITE CONDITIONS AND BRIEF HISTORY**

The site is a 76 service station, currently owned by Keith Oil Company. Tosco purchased the site from Unocal in 1997 and sold the site to Keith Oil in 2002. The site is located just west of Interstate 5, at the southwest corner of the intersection between 36<sup>th</sup> Street (Samish Way) and Bill McDonald Parkway (formerly Byron Avenue/College Parkway). The site elevation is approximately 200 feet above Mean Sea Level. The nearest surface water body is Padden Creek, approximately ¼ mile southwest of the site. Adjacent properties include the following: Bill McDonald Parkway and a Burger King restaurant to the north, a shopping mall and mall parking to the west and south, and 36<sup>th</sup> Street and a Denny's restaurant to the east.

We reviewed the following reports that summarize previous environmental research and assessment at the site:

- "Phase I Environmental Site Assessment" dated May 4, 1995 by GeoEngineers for Unocal (this report also provided a review of a property history report by PHR Environmental Consultants, Inc. provided by Unocal).
- "Soil Gas Survey Results" dated October 29, 1997 by Pacific Environmental Group, Inc. (PEG) for Tosco.
- "Environmental Investigation" dated October 9, 1998 by Pacific Environmental Group, Inc. for Tosco.
- "Environmental Investigation" dated December 21, 1998 by Pacific Environmental Group, Inc. for Tosco.
- "Supplemental Environmental Investigation" dated April 29, 1999 by IT Corporation for Tosco.
- "Groundwater Monitoring Report" dated April 4, 2001 by Environmental Resolutions, Inc. (ERI) for Tosco.

According to information provided in the above reports, the site was developed with a service station since about 1965. Unocal purchased the site in 1971. Original Unocal facilities included the service station building with two hoists, two 5,000-gallon USTs, one 8,000-gallon UST, one 500-gallon waste oil UST, two dispenser islands and likely one 5000-gallon heating oil UST.

Product piping was replaced with fiberglass product lines in 1981, and the fuel USTs were replaced with two 12,000-gallon fiberglass USTs in 1984. One of the hoists was replaced in 1983 because the hoist had an air leak. The other hoist was replaced in 1985 because of an oil leak.

PEG conducted a soil gas survey at the site in 1997. Seven soil gas probes were installed near the USTs, dispenser islands and product lines. Benzene, ethylbenzene, toluene and xylenes (BETX), methyl tert-butyl ether (MTBE) and/or gasoline-range hydrocarbons were detected in the vapors obtained from five of the locations located near the tanks, product lines and dispensers.

PEG documented the removal of the heating oil and waste oil USTs in 1998. The dispenser islands were also modified in 1998. Diesel- and heavy oil-impacted soil remained in the south and east sidewalls and/or base of the heating oil/waste oil UST excavation. Approximately 38 tons of soil removed from the excavation was hauled to TPS Technologies' facility in Tacoma for recycling.

PEG completed eight direct-push borings at the site in 1998. Soil beneath the site consisted of silty sand underlain by clay, with the contact at approximately 4 to 9 feet below ground surface (bgs). Groundwater was encountered at depths ranging from 7 to 17 feet bgs. Petroleum compounds were detected at concentrations exceeding the 1996 MTCA Method A cleanup levels in the following locations: (1) diesel and gasoline in soil and gasoline in groundwater to the west of the former heating oil/waste oil USTs, (2) diesel in groundwater in the vicinity of the former waste oil UST, (3) benzene in groundwater north of the gasoline USTs and west of the dispenser islands, and (4) gasoline and benzene in soil and gasoline and BETX compounds in water north of the east dispenser islands.

The IT Group installed four monitoring wells (MW-1 through MW-4) at the site in 1999. Drilling was completed to depths ranging from approximately 21 to 26.5 feet bgs. Soil observed consisted primarily of silt and clay. Ground water was observed at depths of approximately 11 to 13 feet bgs during drilling and at depths of 5 to 8 feet in the monitoring wells, with the gradient to the southwest. Gasoline-range hydrocarbons were detected at a concentration exceeding the 1996 MTCA Method A cleanup level in the 6.5-foot sample from MW-3, located downgradient of the dispenser islands. Total lead was detected at concentrations exceeding the 1996 MTCA Method A cleanup levels in groundwater samples from MW-2 through MW-4. BETX and petroleum hydrocarbons were not detected in the groundwater samples.

ERI monitors groundwater at the site on a periodic basis. Based on their April 2001 report, BETX and petroleum hydrocarbon concentrations have been less than 1996 MTCA cleanup levels, with one exception. Benzene was detected at a concentration of 12.4 micrograms per liter in the February 2001 sample from MW-1, located near the northeast site corner. Dissolved lead was not detected in the February 2001 samples from the wells.

## **PRODUCT LINE REMOVAL, SAMPLING AND CHEMICAL ANALYTICAL RESULTS**

### **GENERAL**

Keith Oil Company's contractor, W.L. Repair, also was subcontracted by GeoEngineers to assist GeoEngineers with sampling of the excavations completed at the product lines and dispenser islands. A representative of GeoEngineers who is registered with Ecology to perform UST site assessment was on site on May 15 and 16 to observe the product line removal, to assist the contractor in identifying some overexcavation of the product line and dispenser island trenches, and to obtain soil samples from the limits of the product line and dispenser island excavations. The approximate locations of the former product lines and dispenser islands and the soil samples are shown in Figure 2. GeoEngineers also visited the site on May 23 during excavation for the two new canopy footings. Two soil samples were obtained from the canopy footing excavations for chemical analysis. Details of the field procedures are presented in Attachment A. Chemical analytical data are presented in Table 1 and in Attachment B.

### **SOIL SAMPLING DURING DEMOLITION**

#### **Field Screening**

GeoEngineers field screened soil samples obtained from the excavations. Soil encountered in the excavations generally consisted of structural fill consisting of sand overlying silty sand and sandy clay. Field screening results indicated the likely presence of hydrocarbons beneath both dispenser islands, and beneath the product lines between the dispenser islands. Based on these field screening results, the trenches were excavated deeper. No excavations exceeded approximately 9 feet in depth because that was the maximum practical extent of excavation with the backhoe. Field screening results indicated petroleum-impacted soils would likely be present below 9 feet bgs. Tosco provided guidance regarding the vertical limits of excavations. Field screening results did not indicate petroleum-impacted soil beneath the product lines near the USTs; this product line excavation extended to approximately 3 feet bgs. Field screening and soil sampling methods are described in Attachment A.

#### **Chemical Analysis**

Twenty-one soil samples were submitted from the product line and dispenser island excavations. Some areas of soil represented by samples were overexcavated, as indicated by shading in Table 1. All samples were submitted for chemical analysis of BETX, EDB, EDC, MTBE, naphthalene, and gasoline-, diesel- and heavy oil-range hydrocarbons.

BETX and/or petroleum hydrocarbons were detected at concentrations exceeding the 2001 MTCA Method A soil cleanup levels in the following areas:

Area exceeding MTCA Method A Soil Cleanup Levels	Depth (feet bgs)
Dispenser 1	3 and 7
Dispenser 2	6
North of Dispenser 2	3, 4 and 9
West of Dispenser 2	9
Dispenser 3	4 and 8
Dispenser 4	7 and 9
Midway Between Dispensers 2 and 4	3
Canopy Footings	7

EDB, EDC and MTBE were not detected in the samples (Table 1). Naphthalene was detected at concentrations exceeding the 2001 MTCA Method A cleanup levels in four samples, as summarized in Table 1.

#### **UNDERGROUND REMEDIATION SYSTEM PIPING INSTALLATION**

GeoEngineers discussed with Tosco the possible remedial alternatives to treat residual hydrocarbons in the dispenser island area. Because of the clay soil (silty sand mentioned below) and relatively shallow groundwater at the site, GeoEngineers and Tosco decided on combination air sparging and vapor extraction as being the most feasible, with the air sparging points placed in trenches and the vapor extraction piping laid horizontally in the same trenches.

A senior remediation technician from GeoEngineers and the on-site contractor completed the trenching and piping installation from June 6 to 10, 2002. Three trenches were excavated to depths of approximately 11 feet bgs, as shown in Figure 3. Soil observed in the trenches included silty sand to depths of approximately 10.5 feet bgs, interbedded with layers of 0.5 foot- to 1-foot-thick clay and peat at depths of approximately 3.5 and 5 feet bgs. Glacial till consisting of very dense silty sand with gravel was observed at the base of the trenches at approximately 10.5 feet bgs. Based on sheens and incidental odors, we observed petroleum-impacted soil in the three trenches from approximately 2 feet bgs extending to depths of approximately 10.5 to 11 feet bgs. An apparently abandoned, 6-inch concrete sewer line was encountered while excavating the eastern trench, parallel to the trench. After completing the trench, the pipe was removed in the trench, and capped at either end. Loose soil between the former dispenser islands prevented complete trenching across the area in the middle trench.

Four air sparging points were installed in the three trenches. Sloughing of the trench sidewalls prevented installation of additional sparging points. Each 2-inch-diameter air sparging point was completed in the lower foot with slotted pipe. The air sparging points were connected by horizontal piping to a vault near the service station building. Two-inch-diameter vapor extraction piping was laid in the three trenches and extended back to the vault. The vapor

extraction lines are buried approximately 2.5 feet bgs. The trenches were backfilled with pea gravel to above the vapor extraction lines. A seal, consisting of visqueen sheeting and lean mix concrete, was subsequently placed over the pea gravel to prevent short-circuiting through the backfill. The remainder of the trench was backfilled with imported backfill material. GeoEngineers did not observe backfilling of the upper 1.5 feet. The piping that ends at the vault was not hooked up to aboveground equipment at this time.

### **SOIL DISPOSITION AND PRODUCT LINE/DISPENSER EXCAVATION BACKFILLING**

Based on field screening results, excavated soil was segregated into noncontaminated overburden and likely contaminated soil stockpiles. Approximately 5 cubic yards of overburden soil was temporarily stockpiled.

Following sampling, the product line and dispenser excavations were backfilled with the segregated overburden that appeared noncontaminated, based on field screening results, and with imported soil. GeoEngineers did not monitor backfilling activities. The underground remediation piping trenches were backfilled as described above.

Based on field screening results, petroleum-impacted soil was truck-hauled to TPS Technologies' facility in Tacoma, Washington for recycling. TPS reported that 378.90 tons (approximately 230 cubic yards, assuming a conversion factor of 1.6 tons per cubic yard) were recycled. The tipping summary is provided in Attachment C.

Three soil samples (SP-1, SP-2 and SPS060702) were obtained from excavated soil with relatively high field screening results to characterize the contaminated soil. The results for these samples are summarized in Table 1.

### **CONCLUSIONS**

GeoEngineers observed the May 2002 removal of product lines at the 76 service station. Dispensers also were removed prior to our site visit. Soil samples were obtained at the limits of the product line trenches and limits of the overexcavation. Based on field screening and chemical analytical data, petroleum-impacted soil remains to depths of approximately 10.5 to 11 feet bgs in the dispenser island area. Approximately 230 cubic yards of petroleum-impacted soil was excavated from the product line and dispenser island excavations, new canopy footing excavations and the underground remediation piping trenches. Excavated soil containing petroleum hydrocarbons were hauled to TPS' facility in Tacoma, Washington for recycling. Underground air sparging and vapor extraction piping was installed in the dispenser island area in June 2002. The underground remediation piping was stubbed at a vault near the service station building, and can be plumbed to aboveground remediation equipment in the future.

## LIMITATIONS

We have prepared this report for use by Tosco Corporation for former Unocal Site No. 256380 in Bellingham, Washington.

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

Please refer to the attachment titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.



Please do not hesitate to contact us if you have any questions regarding this report.

Respectfully submitted,

GeoEngineers, Inc.

Lisa J. Bona, P.G.  
Senior Geologist



Kurt S. Anderson, P.G.  
Principal

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Four copies submitted

TABLE 1 ( Page 1 of 2)  
 SUMMARY OF SOIL FIELD SCREENING AND CHEMICAL ANALYTICAL DATA  
 DISPENSER ISLAND/ PRODUCT LINE REPLACEMENT ACTIVITIES

FORMER UNOCAL SITE NO. 256380  
 BELLINGHAM, WASHINGTON

Sample Number - Depth (feet) <sup>1</sup>	Date Sampled	Field Screening Results <sup>2</sup>		BETX <sup>3</sup> (mg/kg)				Gasoline-range Hydrocarbons <sup>4</sup> (mg/kg)	Diesel-range Hydrocarbons <sup>5</sup> (mg/kg)	Heavy Oil-range Hydrocarbons <sup>5</sup> (mg/kg)	Gasoline Additives <sup>6</sup> (mg/kg)	Naphthalene <sup>6</sup> (mg/kg)
		Headspace Vapors (ppm)	Sheen	B	E	T	X					
<b>Product Line and Dispenser Island Excavation Samples</b>												
PL-1-3	05/15/02	<100	NS	<0.0500	<0.0500	<0.0500	<0.100	<5.00	<10.0	<25.0	ND	<0.0050
PL-2-3	05/15/02	900	SS	0.217	0.0858	<0.0500	1.26	15.6	14.1	52.3	ND	<0.0050
PL-3-4	05/15/02	300	NS	0.236	0.348	0.165	1.03	39.4	14.4	32.9	ND	<0.0050
PL-4-2.5	05/15/02	>10,000	HS	<2.50	17.4	8.62	123	1,220	17.5	<25.0	ND	5.1
PL-5-3	05/15/02	>10,000	MS	4.61	28.2	4.60	169	3,550	49.1	<25.0	ND	20
PL-6-3.5	05/15/02	<100	NS	<0.0500	<0.0500	<0.0500	<0.100	22.1	12.2	<25.0	ND	0.18
PL-7-3	05/15/02	<100	NS	<0.0500	<0.0500	<0.0500	<0.100	<5.00	<10.0	<25.0	ND	<0.0050
PL-8-3	05/15/02	<100	SS	<0.0500	<0.0500	<0.0500	<0.100	<5.00	<10.0	<25.0	ND	<0.0050
PL-9-3	05/15/02	400	SS	0.422	0.415	0.262	2.48	163	30.3	117	ND	<0.025
PL-10-7	05/15/02	4,000	NS	9.87	16.8	39.6	99.9	1,230	20.9	<25.0	ND	1.9
PL-11-6	05/15/02	10,000	SS	3.34	14.1	1.63	70.2	909	23.5	<25.0	ND	6.3
PL-12-9	05/16/02	8,000	NS	1.69	13.9	21.2	86.6	899	22.2	<25.0	ND	7.9
PL-13-9	05/16/02	700	NS	<0.0500	0.0679	0.0619	0.332	17	<10.0	<25.0	ND	0.39
PL-14-7	05/16/02	500	NS	0.324	0.361	0.131	2.66	33	<10.0	<25.0	ND	0.27
PL-15-9	05/16/02	9,000	SS	0.419	1.95	0.428	10.8	274	12.3	<25.0	ND	0.68
PL-16-9	05/16/02	9,000	SS	23.9	73.6	145	443	5,730	14.3	<25.0	ND	3.8
D1-1-2	05/15/02	<100	NS	<0.0500	<0.500	<0.0500	<0.100	<5.00	<10.0	<25.0	ND	<0.0050
D3-2-4	05/15/02	<100	NS	0.150	0.851	0.0719	1.79	45.4	<10.0	<25.0	ND	0.61
D3-3-3	05/15/02	200	NS	<0.0500	<0.0500	<0.0500	<0.100	<5.00	<10.0	<25.0	ND	<0.0050
D3-4-8	05/16/02	5,000	SS	1.04	2.11	0.616	2.21	167	<10.0	<25.0	ND	0.86
D4-1-2	05/15/02	<100	NS	<0.0500	0.0733	<0.0500	0.197	11.4	<10.0	<25.0	ND	0.030
<b>New Canopy Footing Excavation Samples</b>												
EX-1-7	05/23/02	8,000	HS	3.21	11.8	1.16	64.4	854	10.6	<25.0	---	2.71 <sup>7</sup>
EX-2-7	05/15/02	9,000	MS	2.44	12.9	3.15	81.6	853	23.4	<25.0	---	<2.00 <sup>7</sup>
<b>Stockpiled Soil Samples</b>												
SP-1	05/16/02	9,000	SS	4.83	11	26.5	65.7	768	15.5	<25.0	ND	4.3
SP-2	05/23/02	9,000	MS	2.61	9.42	0.764	49.7	696	20.2	<25.0	---	---
SPS060702	06/07/02	---	---	0.818	0.537	0.380	1.35	106	<10.0	<25.0	---	---
2001 MTCA Method A Cleanup Levels				0.03	6	7	9	30	2,000	2,000	varies	5

TABLE 1 ( Page 2 of 2)

Notes:

<sup>1</sup>Approximate sample locations shown in Figure 1.

<sup>2</sup>NS=no sheen; SS=slight sheen; MS=moderate sheen; HS=heavy sheen Field screening methods are described in Appendix A.

<sup>3</sup>B=benzene, E=ethylbenzene, T=toluene, X=xylenes. BETX analyzed by EPA Method 8021B.

<sup>4</sup>Analyzed by Ecology Method WTPH-G.

<sup>5</sup>Analyzed by Ecology Method WTPH-D extended.

<sup>6</sup>Analyzed by Ecology Method 8260B. Gasoline additives include 1, 2 - dibromoethane (EDB), 1-2 - dichloroethane (EDC) and methylterbutylether (MTBE)

<sup>7</sup>Analyzed by EPA Method 8021B.

ppm= parts per million

mg/kg=milligrams per kilogram

--- = Not Analyzed

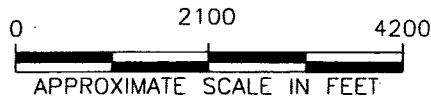
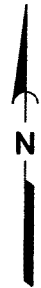
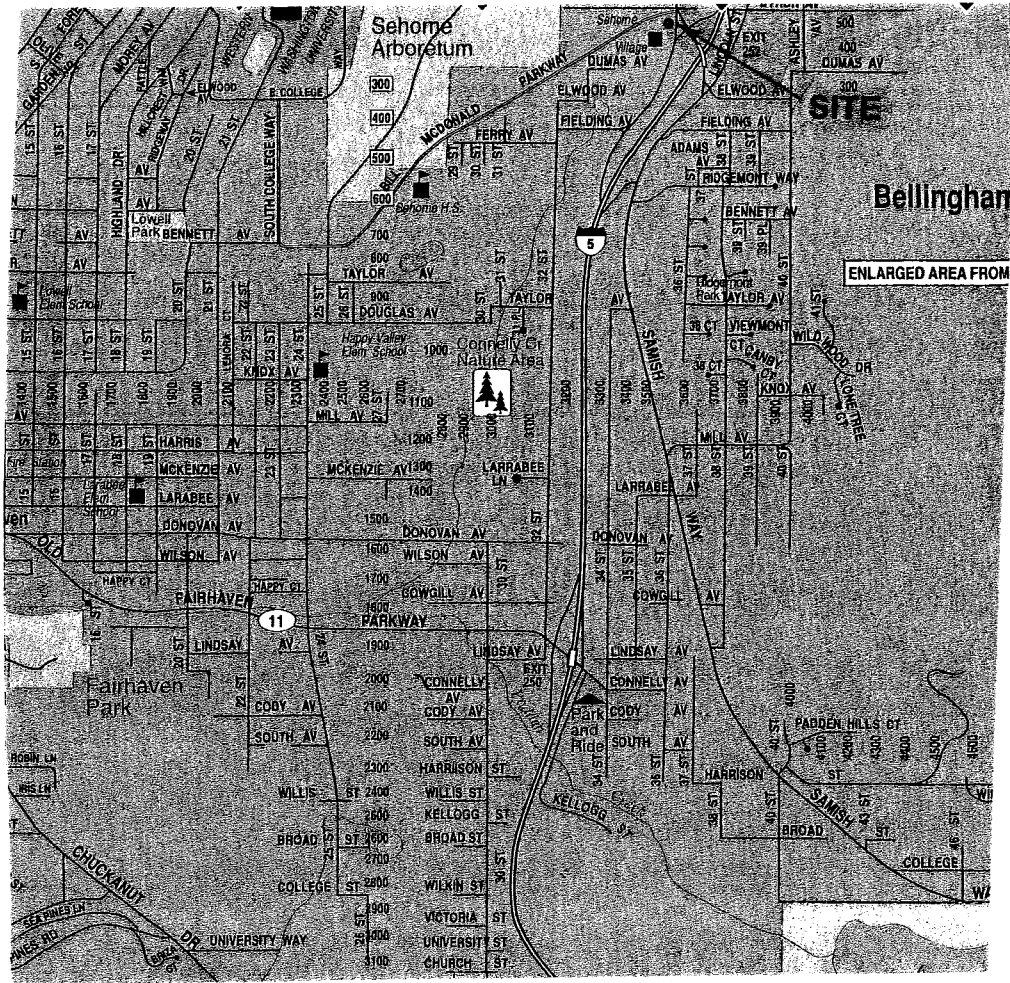
Bolding indicates a concentration exceeding the 2001 MTCA Method A cleanup level.

Shading indicates soil represented by the sample was subsequently removed.

07-18-02f

RMB:ADS 06/25/02

Bellingham: P:\4 4823410\00\CAD\482341000.DWG



Reference:

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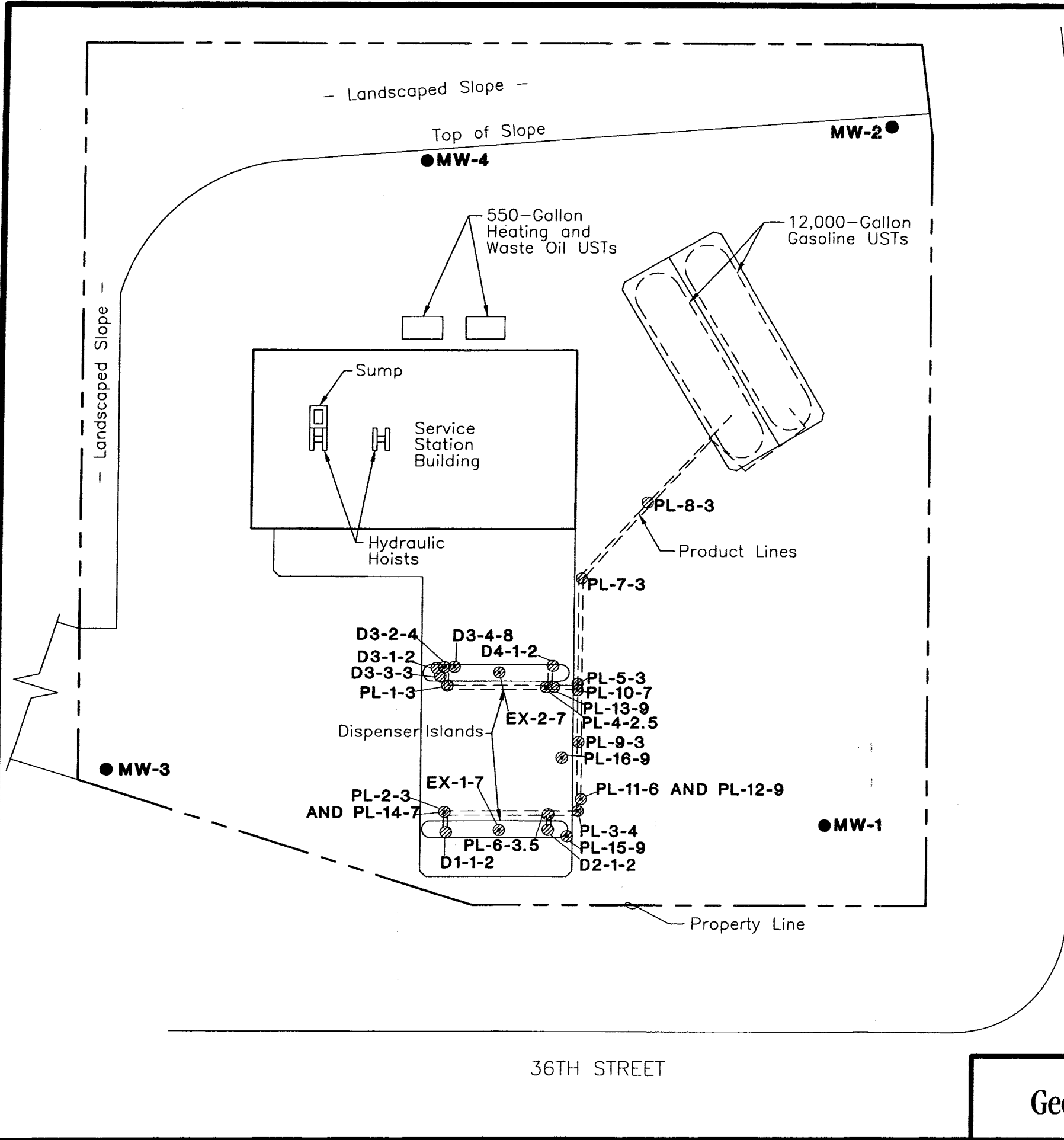
- A.W. Tanner.



VICINITY MAP

FIGURE 1

EVER\PI\4823410\00\CAD\482341000A.DWG LJB:HLA 06/27/02  
 04-10-02F



EXPLANATION:

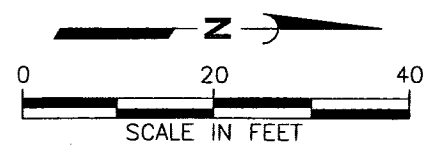
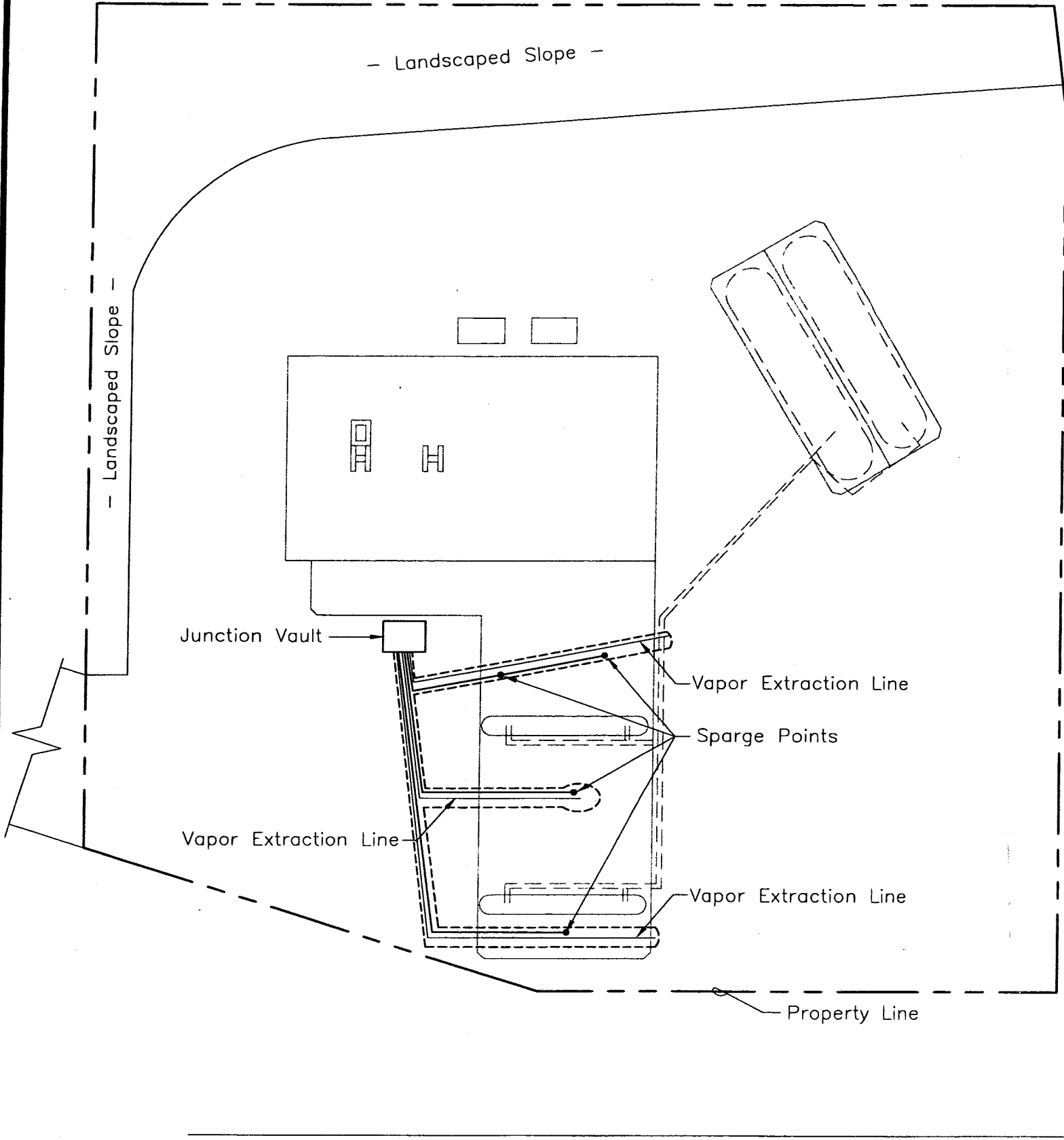
- MW-1** ● GROUNDWATER MONITORING WELL
- ⊗ SOIL SAMPLE WITH BENZENE AND/OR TPH CONCENTRATIONS LESS THAN THE 2001 MTCA METHOD A CLEANUP LEVELS
- ⊙ SOIL SAMPLE WITH BENZENE AND/OR TPH CONCENTRATIONS EXCEEDING THE 2001 MTCA METHOD A CLEANUP LEVELS

Notes: 1. The locations of all features shown are approximate.  
 2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

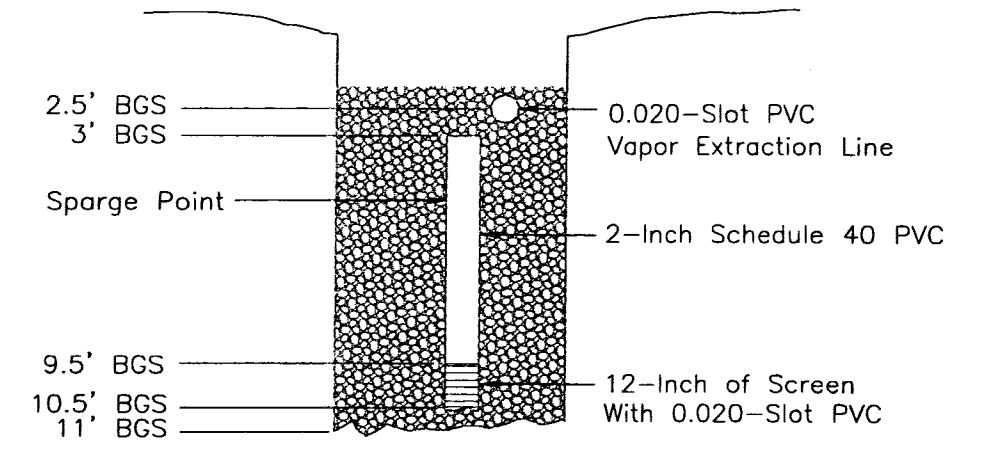
Reference: Drawing entitled "General Arrangement," by Unocal, dated 04/04/72.

	<b>SITE PLAN</b>
<b>FIGURE 2</b>	

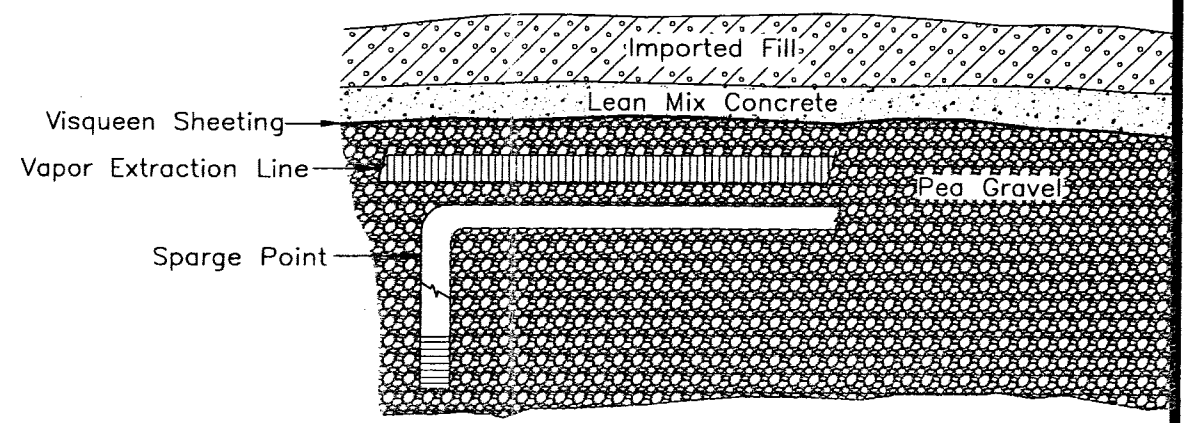
EVER\PI\4823410\00\CAD\482341000B.DWG LJB:HLA 06/28/02  
 04-10-02f



BILL McDONALD PARKWAY



**DETAIL: Cross-Section View Across Trench (Typ.)**  
Not to Scale



**DETAIL: Cross-Section View Along Trench (Typ.)**  
Not to Scale

Notes: 1. The locations of all features shown are approximate.  
 2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.  
 Reference: Drawing entitled "General Arrangement," by Unocal, dated 04/04/72.

	<b>UNDERGROUND REMEDIATION PIPING LAYOUT</b>
<b>FIGURE 3</b>	

**ATTACHMENT A**  
**FIELD METHODS**

## **ATTACHMENT A FIELD METHODS**

### **SOIL SAMPLING**

Soil samples were collected from the excavations and stockpiles using new, inverted plastic bags. A portion of the soil was transferred to glass sample jars. Soil samples were labeled and placed in a cooler with blue ice pending delivery to the analytical laboratory.

### **FIELD SCREENING METHODS**

Our representative conducted field screening on each of the soil samples obtained from the excavation. Field screening results are used as a general guideline to delineate areas of possible petroleum-related contamination in soils. In addition, screening results are often used as a basis for selecting soil samples for chemical analysis. The screening methods employed included (1) visual examination, (2) water sheen testing, and (3) headspace vapor testing using a Bacharach TLV Sniffer.

Visual screening consists of inspecting the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons such as motor oil, or when hydrocarbon concentrations are high. Water sheen screening and headspace vapor screening are more sensitive screening methods which can be effective in detecting petroleum based products in concentrations lower than regulatory cleanup guidelines. However, field screening results are site-specific. The effectiveness of field screening results will vary with temperature, moisture content, soil lithology, organic content and type of contaminant. The presence or absence of a sheen or headspace vapors does not necessarily indicate the presence or absence of petroleum hydrocarbons.

Water sheen testing involves placing soil in water and observing the water surface for signs of sheen. The results of water sheen testing on soil samples from the excavation were recorded in GeoEngineers' field logs. Sheens are classified as follows:

No Sheen (NS)	No visible sheen on water surface.
Slight Sheen (SS)	Light colorless film, spotty to globular; spread is irregular, not rapid; areas of no sheen remain; film dissipates rapidly.
Moderate Sheen (MS)	Light to heavy film, may have some color or iridescence, globular to stringy, spread is irregular to flowing; few remaining areas of no sheen on water surface.
Heavy Sheen (HS)	Heavy colorful film with iridescence; stringy, spread is rapid; sheen flows off the sample; most of water surface may be covered with sheen.

Headspace vapor screening involves placing a soil sample in a sealable plastic bag. Air is captured in the bag and the bag is shaken to expose the soil to the air trapped in the bag. The probe of the Bacharach TLV is inserted into the bag and the TLV measures the concentration of combustible vapors in the sample bag headspace. The TLV is calibrated to hexane and is designed to quantify combustible vapor concentrations up to 10,000 ppm (parts per million). The lower threshold of significance of the TLV in this application is 100 ppm. The results of headspace vapor measurements were recorded in GeoEngineers' field logs.

**ATTACHMENT B**  
**CHEMICAL ANALYTICAL PROGRAM**

## **ATTACHMENT B CHEMICAL ANALYTICAL PROGRAM**

### **SAMPLES**

Chain-of-custody procedures were followed during the transport of the field samples to the accredited analytical laboratory. The samples were held in cold storage pending extraction and/or analysis. The analytical results and quality control records are included in this attachment.

### **ANALYTICAL DATA REVIEW**

The laboratory maintains an internal quality control (QC) program as documented in its laboratory quality assurance manual. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries and blank spike duplicate recoveries to evaluate the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals were included in the laboratory reports. The laboratory compared each group of samples with the existing data quality goals and noted any exceptions in the laboratory report. Any data quality exceptions documented by the accredited laboratory were reviewed by GeoEngineers and are addressed in the data quality exception section of this attachment.

### **DATA QUALITY EXCEPTION SUMMARY**

No significant data quality exceptions were noted in the laboratory report or during our review. Based on our data quality review, it is our opinion that the analytical data are of acceptable quality for their intended use.



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Geo Engineers-Everett 2924 Colby Ave Everett WA/USA, 98201-4011	Project: Former Unocal #6380 Project Number: 4823-410-00 Project Manager: Lisa Bona	Reported: 05/30/02 14:43
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**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PL-1-3	B2E0493-01	Soil	05/15/02 11:30	05/17/02 10:00
PL-2-3	B2E0493-02	Soil	05/15/02 11:50	05/17/02 10:00
PL-3-4	B2E0493-03	Soil	05/15/02 12:00	05/17/02 10:00
PL-4-2.5	B2E0493-04	Soil	05/15/02 12:20	05/17/02 10:00
PL-5-3	B2E0493-05	Soil	05/15/02 12:30	05/17/02 10:00
PL-6-3.5	B2E0493-06	Soil	05/15/02 12:40	05/17/02 10:00
PL-7-3	B2E0493-07	Soil	05/15/02 13:00	05/17/02 10:00
PL-8-3	B2E0493-08	Soil	05/15/02 13:50	05/17/02 10:00
PL-9-3	B2E0493-09	Soil	05/15/02 13:20	05/17/02 10:00
PL-10-7	B2E0493-10	Soil	05/15/02 16:00	05/17/02 10:00
PL-11-6	B2E0493-11	Soil	05/15/02 16:30	05/17/02 10:00
PL-12-9	B2E0493-12	Soil	05/16/02 09:00	05/17/02 10:00
PL-13-9	B2E0493-13	Soil	05/16/02 09:20	05/17/02 10:00
PL-14-7	B2E0493-14	Soil	05/16/02 10:20	05/17/02 10:00
PL-15-9	B2E0493-15	Soil	05/16/02 12:30	05/17/02 10:00
PL-16-9	B2E0493-16	Soil	05/16/02 13:05	05/17/02 10:00
D1-1-2	B2E0493-17	Soil	05/15/02 08:50	05/17/02 10:00
D3-2-4	B2E0493-18	Soil	05/15/02 15:15	05/17/02 10:00
D3-3-3	B2E0493-19	Soil	05/15/02 15:20	05/17/02 10:00
D3-4-8	B2E0493-20	Soil	05/16/02 14:30	05/17/02 10:00
D4-1-2	B2E0493-21	Soil	05/15/02 09:50	05/17/02 10:00
SP-1	B2E0493-22	Soil	05/16/02 13:00	05/17/02 10:00

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported: 05/30/02 14:43

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-1-3 (B2E0493-01) Soil Sampled: 05/15/02 11:30 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	2E22026	05/22/02	05/23/02	WTPH-G/8021B	
Benzene	ND	0.0500	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	89.5 %	50-147			"	"	"	"	
Surrogate: 4-BFB (PID)	98.2 %	54-123			"	"	"	"	
<b>PL-2-3 (B2E0493-02) Soil Sampled: 05/15/02 11:50 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	15.6	5.00	mg/kg dry	1	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	0.217	0.0500	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	0.0858	0.0500	"	"	"	"	"	"	
Xylenes (total)	1.26	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	91.3 %	50-147			"	"	"	"	
Surrogate: 4-BFB (PID)	87.5 %	54-123			"	"	"	"	
<b>PL-3-4 (B2E0493-03) Soil Sampled: 05/15/02 12:00 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	39.4	5.00	mg/kg dry	1	2E22026	05/22/02	05/23/02	WTPH-G/8021B	
Benzene	0.236	0.0500	"	"	"	"	"	"	
Toluene	0.165	0.0500	"	"	"	"	"	"	I-06
Ethylbenzene	0.348	0.0500	"	"	"	"	"	"	
Xylenes (total)	1.03	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	91.9 %	50-147			"	"	"	"	
Surrogate: 4-BFB (PID)	85.5 %	54-123			"	"	"	"	

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00 Reported:  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona 05/30/02 14:43

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-4-2.5 (B2E0493-04) Soil Sampled: 05/15/02 12:20 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	1220	250	mg/kg dry	50	2E22026	05/22/02	05/23/02	WTPH-G/8021B	
Benzene	ND	2.50	"	"	"	"	"	"	
Toluene	8.62	2.50	"	"	"	"	"	"	I-06
Ethylbenzene	17.4	2.50	"	"	"	"	"	"	
Xylenes (total)	123	5.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	%	50-147			"	"	"	"	S-01
Surrogate: 4-BFB (PID)	%	54-123			"	"	"	"	S-01
<b>PL-5-3 (B2E0493-05) Soil Sampled: 05/15/02 12:30 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	3550	250	mg/kg dry	50	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	4.61	2.50	"	"	"	"	"	"	
Toluene	4.60	2.50	"	"	"	"	"	"	I-06
Ethylbenzene	28.2	2.50	"	"	"	"	"	"	
Xylenes (total)	169	5.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	%	50-147			"	"	"	"	S-01
Surrogate: 4-BFB (PID)	%	54-123			"	"	"	"	S-01
<b>PL-6-3.5 (B2E0493-06) Soil Sampled: 05/15/02 12:40 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	22.1	5.00	mg/kg dry	1	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	ND	0.0500	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	89.5 %	50-147			"	"	"	"	
Surrogate: 4-BFB (PID)	89.5 %	54-123			"	"	"	"	

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Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-7-3 (B2E0493-07) Soil</b> Sampled: 05/15/02 13:00 Received: 05/17/02 10:00									
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	ND	0.0500	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	86.5 %	50-147			"	"	"	"	
Surrogate: 4-BFB (PID)	87.2 %	54-123			"	"	"	"	
<b>PL-8-3 (B2E0493-08) Soil</b> Sampled: 05/15/02 13:50 Received: 05/17/02 10:00									
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	ND	0.0500	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	88.5 %	50-147			"	"	"	"	
Surrogate: 4-BFB (PID)	85.7 %	54-123			"	"	"	"	
<b>PL-9-3 (B2E0493-09) Soil</b> Sampled: 05/15/02 13:20 Received: 05/17/02 10:00									
Gasoline Range Hydrocarbons	163	5.00	mg/kg dry	1	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	0.422	0.0500	"	"	"	"	"	"	
Toluene	0.262	0.0500	"	"	"	"	"	"	I-06
Ethylbenzene	0.415	0.0500	"	"	"	"	"	"	
Xylenes (total)	2.48	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	131 %	50-147			"	"	"	"	
Surrogate: 4-BFB (PID)	92.2 %	54-123			"	"	"	"	

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Geo Engineers-Everett  
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 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-10-7 (B2E0493-10) Soil Sampled: 05/15/02 16:00 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	1230	100	mg/kg dry	20	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	9.87	1.00	"	"	"	"	"	"	I-0
Toluene	39.6	1.00	"	"	"	"	"	"	
Ethylbenzene	16.8	1.00	"	"	"	"	"	"	
Xylenes (total)	99.9	2.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	%	50-147			"	"	"	"	S-0
Surrogate: 4-BFB (PID)	174 %	54-123			"	"	"	"	S-0
<b>PL-11-6 (B2E0493-11) Soil Sampled: 05/15/02 16:30 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	909	100	mg/kg dry	20	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	3.34	1.00	"	"	"	"	"	"	
Toluene	1.63	1.00	"	"	"	"	"	"	I-0
Ethylbenzene	14.1	1.00	"	"	"	"	"	"	
Xylenes (total)	70.2	2.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	%	50-147			"	"	"	"	S-0
Surrogate: 4-BFB (PID)	177 %	54-123			"	"	"	"	S-0
<b>PL-12-9 (B2E0493-12) Soil Sampled: 05/16/02 09:00 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	899	100	mg/kg dry	20	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	1.69	1.00	"	"	"	"	"	"	
Toluene	21.2	1.00	"	"	"	"	"	"	
Ethylbenzene	13.9	1.00	"	"	"	"	"	"	
Xylenes (total)	86.6	2.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	%	50-147			"	"	"	"	S-0
Surrogate: 4-BFB (PID)	183 %	54-123			"	"	"	"	S-0

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Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Limit							
<b>PL-13-9 (B2E0493-13) Soil Sampled: 05/16/02 09:20 Received: 05/17/02 10:00</b>										
Gasoline Range Hydrocarbons	17.0	5.00		mg/kg dry	1	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	ND	0.0500		"	"	"	"	"	"	
Toluene	0.0619	0.0500		"	"	"	"	"	"	I-06
Ethylbenzene	0.0679	0.0500		"	"	"	"	"	"	
Xylenes (total)	0.332	0.100		"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	95.3 %	50-147				"	"	"	"	
Surrogate: 4-BFB (PID)	97.6 %	54-123				"	"	"	"	
<b>PL-14-7 (B2E0493-14) Soil Sampled: 05/16/02 10:20 Received: 05/17/02 10:00</b>										
Gasoline Range Hydrocarbons	33.0	5.00		mg/kg dry	1	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	0.324	0.0500		"	"	"	"	"	"	
Toluene	0.131	0.0500		"	"	"	"	"	"	
Ethylbenzene	0.361	0.0500		"	"	"	"	"	"	
Xylenes (total)	2.66	0.100		"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	90.3 %	50-147				"	"	"	"	
Surrogate: 4-BFB (PID)	82.6 %	54-123				"	"	"	"	
<b>PL-15-9 (B2E0493-15) Soil Sampled: 05/16/02 12:30 Received: 05/17/02 10:00</b>										
Gasoline Range Hydrocarbons	274	20.0		mg/kg dry	4	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	0.419	0.200		"	"	"	"	"	"	
Toluene	0.428	0.200		"	"	"	"	"	"	I-06
Ethylbenzene	1.95	0.200		"	"	"	"	"	"	
Xylenes (total)	10.8	0.400		"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	130 %	50-147				"	"	"	"	
Surrogate: 4-BFB (PID)	94.6 %	54-123				"	"	"	"	

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00 Reported:  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona 05/30/02 14:43

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-16-9 (B2E0493-16) Soil Sampled: 05/16/02 13:05 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	5730	250	mg/kg dry	50	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	23.9	2.50	"	"	"	"	"	"	I-06
Toluene	145	2.50	"	"	"	"	"	"	
Ethylbenzene	73.6	2.50	"	"	"	"	"	"	
Xylenes (total)	443	5.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	%	50-147			"	"	"	"	S-01
Surrogate: 4-BFB (PID)	%	54-123			"	"	"	"	S-01
<b>D1-1-2 (B2E0493-17) Soil Sampled: 05/15/02 08:50 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	ND	0.0500	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	86.6 %	50-147			"	"	"	"	
Surrogate: 4-BFB (PID)	91.8 %	54-123			"	"	"	"	
<b>D3-2-4 (B2E0493-18) Soil Sampled: 05/15/02 15:15 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	45.4	5.00	mg/kg dry	1	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	0.150	0.0500	"	"	"	"	"	"	
Toluene	0.0719	0.0500	"	"	"	"	"	"	I-06
Ethylbenzene	0.851	0.0500	"	"	"	"	"	"	
Xylenes (total)	1.79	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	95.5 %	50-147			"	"	"	"	
Surrogate: 4-BFB (PID)	95.5 %	54-123			"	"	"	"	

North Creek Analytical - Bothell

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Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>D3-3-3 (B2E0493-19) Soil</b> Sampled: 05/15/02 15:20 Received: 05/17/02 10:00										
Gasoline Range Hydrocarbons	ND	5.00		mg/kg dry	1	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	ND	0.0500		"	"	"	"	"	"	
Toluene	ND	0.0500		"	"	"	"	"	"	
Ethylbenzene	ND	0.0500		"	"	"	"	"	"	
Xylenes (total)	ND	0.100		"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	88.7 %	50-147				"	"	"	"	
Surrogate: 4-BFB (PID)	98.3 %	54-123				"	"	"	"	
<b>D3-4-8 (B2E0493-20) Soil</b> Sampled: 05/16/02 14:30 Received: 05/17/02 10:00										
Gasoline Range Hydrocarbons	167	5.00		mg/kg dry	1	2E22026	05/22/02	05/24/02	WTPH-G/8021B	
Benzene	1.04	0.0500		"	"	"	"	"	"	
Toluene	0.616	0.0500		"	"	"	"	"	"	I-06
Ethylbenzene	2.11	0.0500		"	"	"	"	"	"	
Xylenes (total)	2.21	0.100		"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	142 %	50-147				"	"	"	"	
Surrogate: 4-BFB (PID)	85.0 %	54-123				"	"	"	"	
<b>D4-1-2 (B2E0493-21) Soil</b> Sampled: 05/15/02 09:50 Received: 05/17/02 10:00										
Gasoline Range Hydrocarbons	11.4	5.00		mg/kg dry	1	2E22027	05/22/02	05/23/02	WTPH-G/8021B	
Benzene	ND	0.0500		"	"	"	"	"	"	
Toluene	ND	0.0500		"	"	"	"	"	"	
Ethylbenzene	0.0733	0.0500		"	"	"	"	"	"	
Xylenes (total)	0.197	0.100		"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	89.6 %	50-147				"	"	"	"	
Surrogate: 4-BFB (PID)	97.0 %	54-123				"	"	"	"	

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00 Reported: 05/30/02 14:43  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>SP-1 (B2E0493-22) Soil Sampled: 05/16/02 13:00 Received: 05/17/02 10:00</b>									
Gasoline Range Hydrocarbons	768	100	mg/kg dry	20	2E22027	05/22/02	05/23/02	WTPH-G/8021B	
Benzene	4.83	1.00	"	"	"	"	"	"	
Toluene	26.5	1.00	"	"	"	"	"	"	
Ethylbenzene	11.0	1.00	"	"	"	"	"	"	
Xylenes (total)	65.7	2.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	173 %	50-147			"	"	"	"	S-06
Surrogate: 4-BFB (PID)	130 %	54-123			"	"	"	"	S-06

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported: 05/30/02 14:43

**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C36 by WTPH-D (extended)  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
<b>PL-1-3 (B2E0493-01) Soil Sampled: 05/15/02 11:30 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry	1	2E28020	05/28/02	05/29/02	WTPH-D	
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	65.7 %	50-138			"	"	"	"	
Surrogate: Octacosane	92.4 %	56-139			"	"	"	"	
<b>PL-2-3 (B2E0493-02) Soil Sampled: 05/15/02 11:50 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	14.1	10.0	mg/kg dry	1	2E28020	05/28/02	05/29/02	WTPH-D	D-0
Heavy Oil Range Hydrocarbons	52.3	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	60.9 %	50-138			"	"	"	"	
Surrogate: Octacosane	87.6 %	56-139			"	"	"	"	
<b>PL-3-4 (B2E0493-03) Soil Sampled: 05/15/02 12:00 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	14.4	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	D-09
Heavy Oil Range Hydrocarbons	32.9	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	66.1 %	50-138			"	"	"	"	
Surrogate: Octacosane	90.6 %	56-139			"	"	"	"	
<b>PL-4-2.5 (B2E0493-04) Soil Sampled: 05/15/02 12:20 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	17.5	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	D-0
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	83.6 %	50-138			"	"	"	"	
Surrogate: Octacosane	95.9 %	56-139			"	"	"	"	
<b>PL-5-3 (B2E0493-05) Soil Sampled: 05/15/02 12:30 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	49.1	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	D-0
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	87.9 %	50-138			"	"	"	"	
Surrogate: Octacosane	96.0 %	56-139			"	"	"	"	

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Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C36 by WTPH-D (extended)  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note:
<b>PL-6-3.5 (B2E0493-06) Soil Sampled: 05/15/02 12:40 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	12.2	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	D-0
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	68.5 %	50-138			"	"	"	"	
Surrogate: Octacosane	95.1 %	56-139			"	"	"	"	
<b>PL-7-3 (B2E0493-07) Soil Sampled: 05/15/02 13:00 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	62.0 %	50-138			"	"	"	"	
Surrogate: Octacosane	91.1 %	56-139			"	"	"	"	
<b>PL-8-3 (B2E0493-08) Soil Sampled: 05/15/02 13:50 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	72.0 %	50-138			"	"	"	"	
Surrogate: Octacosane	96.0 %	56-139			"	"	"	"	
<b>PL-9-3 (B2E0493-09) Soil Sampled: 05/15/02 13:20 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	30.3	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	D-0
Heavy Oil Range Hydrocarbons	117	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	79.3 %	50-138			"	"	"	"	
Surrogate: Octacosane	99.3 %	56-139			"	"	"	"	
<b>PL-10-7 (B2E0493-10) Soil Sampled: 05/15/02 16:00 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	20.9	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	D-0
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	80.3 %	50-138			"	"	"	"	
Surrogate: Octacosane	95.6 %	56-139			"	"	"	"	

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported: 05/30/02 14:43

**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C36 by WTPH-D (extended))**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>PL-11-6 (B2E0493-11) Soil Sampled: 05/15/02 16:30 Received: 05/17/02 10:00</b>										
Diesel Range Hydrocarbons	23.5	10.0		mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	D-08
Heavy Oil Range Hydrocarbons	ND	25.0		"	"	"	"	"	"	
Surrogate: 2-FBP	75.1 %	50-138				"	"	"	"	
Surrogate: Octacosane	90.1 %	56-139				"	"	"	"	
<b>PL-12-9 (B2E0493-12) Soil Sampled: 05/16/02 09:00 Received: 05/17/02 10:00</b>										
Diesel Range Hydrocarbons	22.2	10.0		mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	D-08
Heavy Oil Range Hydrocarbons	ND	25.0		"	"	"	"	"	"	
Surrogate: 2-FBP	79.0 %	50-138				"	"	"	"	
Surrogate: Octacosane	90.6 %	56-139				"	"	"	"	
<b>PL-13-9 (B2E0493-13) Soil Sampled: 05/16/02 09:20 Received: 05/17/02 10:00</b>										
Diesel Range Hydrocarbons	ND	10.0		mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	
Heavy Oil Range Hydrocarbons	ND	25.0		"	"	"	"	"	"	
Surrogate: 2-FBP	68.2 %	50-138				"	"	"	"	
Surrogate: Octacosane	90.7 %	56-139				"	"	"	"	
<b>PL-14-7 (B2E0493-14) Soil Sampled: 05/16/02 10:20 Received: 05/17/02 10:00</b>										
Diesel Range Hydrocarbons	ND	10.0		mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	
Heavy Oil Range Hydrocarbons	ND	25.0		"	"	"	"	"	"	
Surrogate: 2-FBP	84.5 %	50-138				"	"	"	"	
Surrogate: Octacosane	94.4 %	56-139				"	"	"	"	
<b>PL-15-9 (B2E0493-15) Soil Sampled: 05/16/02 12:30 Received: 05/17/02 10:00</b>										
Diesel Range Hydrocarbons	12.3	10.0		mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	D-08
Heavy Oil Range Hydrocarbons	ND	25.0		"	"	"	"	"	"	
Surrogate: 2-FBP	72.5 %	50-138				"	"	"	"	
Surrogate: Octacosane	72.5 %	56-139				"	"	"	"	

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported: 05/30/02 14:43

**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C36 by WTPH-D (extended)  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-16-9 (B2E0493-16) Soil Sampled: 05/16/02 13:05 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	14.3	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	D-08
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	77.5 %	50-138			"	"	"	"	
Surrogate: Octacosane	90.7 %	56-139			"	"	"	"	
<b>D1-1-2 (B2E0493-17) Soil Sampled: 05/15/02 08:50 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	79.3 %	50-138			"	"	"	"	
Surrogate: Octacosane	78.0 %	56-139			"	"	"	"	
<b>D3-2-4 (B2E0493-18) Soil Sampled: 05/15/02 15:15 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	79.7 %	50-138			"	"	"	"	
Surrogate: Octacosane	95.1 %	56-139			"	"	"	"	
<b>D3-3-3 (B2E0493-19) Soil Sampled: 05/15/02 15:20 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	85.4 %	50-138			"	"	"	"	
Surrogate: Octacosane	79.3 %	56-139			"	"	"	"	
<b>D3-4-8 (B2E0493-20) Soil Sampled: 05/16/02 14:30 Received: 05/17/02 10:00</b>									
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	84.8 %	50-138			"	"	"	"	
Surrogate: Octacosane	90.2 %	56-139			"	"	"	"	

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported: 05/30/02 14:43

**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C36 by WTPH-D (extended))  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>D4-1-2 (B2E0493-21) Soil Sampled: 05/15/02 09:50 Received: 05/17/02 10:00</b>										
Diesel Range Hydrocarbons	ND	10.0		mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	
Heavy Oil Range Hydrocarbons	ND	25.0		"	"	"	"	"	"	
Surrogate: 2-FBP	84.7 %	50-138				"	"	"	"	
Surrogate: Octacosane	79.4 %	56-139				"	"	"	"	
<b>SP-1 (B2E0493-22) Soil Sampled: 05/16/02 13:00 Received: 05/17/02 10:00</b>										
Diesel Range Hydrocarbons	15.5	10.0		mg/kg dry	1	2E28030	05/28/02	05/29/02	WTPH-D	D-0
Heavy Oil Range Hydrocarbons	ND	25.0		"	"	"	"	"	"	
Surrogate: 2-FBP	83.2 %	50-138				"	"	"	"	
Surrogate: Octacosane	94.2 %	56-139				"	"	"	"	

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Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
<b>PL-1-3 (B2E0493-01) Soil Sampled: 05/15/02 11:30 Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E23036	05/22/02	05/22/02	EPA 8260B	
1,2-Dichloroethane	ND	0.0012	"	"	"	"	"	"	
Naphthalene	ND	0.0050	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	73 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	82 %	60-140			"	"	"	"	
Surrogate: 4-BFB	77 %	60-140			"	"	"	"	
<b>PL-2-3 (B2E0493-02) Soil Sampled: 05/15/02 11:50 Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E23033	05/23/02	05/23/02	EPA 8260B	
1,2-Dichloroethane	ND	0.0012	"	"	"	"	"	"	
Naphthalene	ND	0.0050	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	88 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	75 %	60-140			"	"	"	"	
Surrogate: 4-BFB	150 %	60-140			"	"	"	"	S-0
<b>PL-3-4 (B2E0493-03) Soil Sampled: 05/15/02 12:00 Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E21037	05/20/02	05/20/02	EPA 8260B	
1,2-Dichloroethane	ND	0.0012	"	"	"	"	"	"	
Naphthalene	ND	0.0050	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	85 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	81 %	60-140			"	"	"	"	
Surrogate: 4-BFB	75 %	60-140			"	"	"	"	

North Creek Analytical - Bothell

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Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-4-2.5 (B2E0493-04) Soil</b> Sampled: 05/15/02 12:20 Received: 05/17/02 10:00									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E22063	05/22/02	05/22/02	EPA 8260B	
1,2-Dichloroethane	ND	0.10	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>5.1</b>	<b>0.10</b>	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	87 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	89 %	60-140			"	"	"	"	
Surrogate: 4-BFB	85 %	60-140			"	"	"	"	
<b>PL-5-3 (B2E0493-05) Soil</b> Sampled: 05/15/02 12:30 Received: 05/17/02 10:00									
1,2-Dibromoethane (EDB)	ND	0.025	mg/kg dry	5	2E22063	05/22/02	05/24/02	EPA 8260B	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>20</b>	<b>0.50</b>	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0050	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	100 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	93 %	60-140			"	"	"	"	
Surrogate: 4-BFB	93 %	60-140			"	"	"	"	
<b>PL-6-3.5 (B2E0493-06) Soil</b> Sampled: 05/15/02 12:40 Received: 05/17/02 10:00									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E21037	05/20/02	05/20/02	EPA 8260B	
1,2-Dichloroethane	ND	0.0012	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>0.16</b>	<b>0.0050</b>	"	"	"	"	"	"	E
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	68 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	85 %	60-140			"	"	"	"	
Surrogate: 4-BFB	81 %	60-140			"	"	"	"	

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Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-6-3.5 (B2E0493-06RE1) Soil Sampled: 05/15/02 12:40 Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.010	mg/kg dry	2	2E23033	05/23/02	05/23/02	EPA 8260B	
1,2-Dichloroethane	ND	0.0025	"	"	"	"	"	"	
Naphthalene	0.18	0.010	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0020	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	100 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	96 %	60-140			"	"	"	"	
Surrogate: 4-BFB	130 %	60-140			"	"	"	"	
<b>PL-7-3 (B2E0493-07) Soil Sampled: 05/15/02 13:00 Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E23036	05/22/02	05/22/02	EPA 8260B	
1,2-Dichloroethane	ND	0.0012	"	"	"	"	"	"	
Naphthalene	ND	0.0050	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	89 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	70 %	60-140			"	"	"	"	
Surrogate: 4-BFB	87 %	60-140			"	"	"	"	
<b>PL-8-3 (B2E0493-08) Soil Sampled: 05/15/02 13:50 Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E21037	05/20/02	05/20/02	EPA 8260B	
1,2-Dichloroethane	ND	0.0012	"	"	"	"	"	"	
Naphthalene	ND	0.0050	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	77 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	83 %	60-140			"	"	"	"	
Surrogate: 4-BFB	85 %	60-140			"	"	"	"	

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Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
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**Volatile Organic Compounds (Special List) by EPA Method 8260B**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-9-3 (B2E0493-09) Soil</b> Sampled: 05/15/02 13:20 Received: 05/17/02 10:00									
1,2-Dibromoethane (EDB)	ND	0.025	mg/kg dry	5	2E21037	05/20/02	05/20/02	EPA 8260B	
1,2-Dichloroethane	ND	0.0062	"	"	"	"	"	"	
Naphthalene	ND	0.025	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0050	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	88 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	59 %	60-140			"	"	"	"	S-04
Surrogate: 4-BFB	100 %	60-140			"	"	"	"	
<b>PL-10-7 (B2E0493-10) Soil</b> Sampled: 05/15/02 16:00 Received: 05/17/02 10:00									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E22063	05/22/02	05/22/02	EPA 8260B	
1,2-Dichloroethane	ND	0.10	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Naphthalene	1.9	0.10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	67 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	61 %	60-140			"	"	"	"	
Surrogate: 4-BFB	57 %	60-140			"	"	"	"	S-04
<b>PL-11-6 (B2E0493-11) Soil</b> Sampled: 05/15/02 16:30 Received: 05/17/02 10:00									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E22063	05/22/02	05/22/02	EPA 8260B	
1,2-Dichloroethane	ND	0.10	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Naphthalene	7.7	0.10	"	"	"	"	"	"	E
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	100 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	88 %	60-140			"	"	"	"	
Surrogate: 4-BFB	78 %	60-140			"	"	"	"	

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00 Reported: 05/30/02 14:43  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona

**Volatile Organic Compounds (Special List) by EPA Method 8260B**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-11-6 (B2E0493-11RE1) Soil Sampled: 05/15/02 16:30 Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.025	mg/kg dry	5	2E22063	05/22/02	05/24/02	EPA 8260B	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
Naphthalene	6.3	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0050	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	97 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	97 %	60-140			"	"	"	"	
Surrogate: 4-BFB	93 %	60-140			"	"	"	"	
<b>PL-12-9 (B2E0493-12) Soil Sampled: 05/16/02 09:00 Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E22063	05/22/02	05/22/02	EPA 8260B	
1,2-Dichloroethane	ND	0.10	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Naphthalene	7.1	0.10	"	"	"	"	"	"	E
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	94 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	90 %	60-140			"	"	"	"	
Surrogate: 4-BFB	80 %	60-140			"	"	"	"	
<b>PL-12-9 (B2E0493-12RE1) Soil Sampled: 05/16/02 09:00 Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.025	mg/kg dry	5	2E22063	05/22/02	05/24/02	EPA 8260B	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
Naphthalene	7.9	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0050	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	100 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	97 %	60-140			"	"	"	"	
Surrogate: 4-BFB	90 %	60-140			"	"	"	"	

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Project: Former Unocal #6380  
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 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-13-9 (B2E0493-13) Soil</b> <b>Sampled: 05/16/02 09:20</b> <b>Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E22063	05/22/02	05/24/02	EPA 8260B	
1,2-Dichloroethane	ND	0.10	"	"	"	"	"	"	
Naphthalene	0.39	0.10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	90 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	88 %	60-140			"	"	"	"	
Surrogate: 4-BFB	86 %	60-140			"	"	"	"	
<b>PL-14-7 (B2E0493-14) Soil</b> <b>Sampled: 05/16/02 10:20</b> <b>Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E22063	05/22/02	05/22/02	EPA 8260B	
1,2-Dichloroethane	ND	0.10	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Naphthalene	0.27	0.10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	93 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	85 %	60-140			"	"	"	"	
Surrogate: 4-BFB	80 %	60-140			"	"	"	"	
<b>PL-15-9 (B2E0493-15) Soil</b> <b>Sampled: 05/16/02 12:30</b> <b>Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E22063	05/22/02	05/22/02	EPA 8260B	
1,2-Dichloroethane	ND	0.10	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
Naphthalene	0.68	0.10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	90 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	88 %	60-140			"	"	"	"	
Surrogate: 4-BFB	81 %	60-140			"	"	"	"	

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Reported:  
 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Note:
		Limit								
<b>PL-16-9 (B2E0493-16) Soil Sampled: 05/16/02 13:05 Received: 05/17/02 10:00</b>										
1,2-Dibromoethane (EDB)	ND	0.0050		mg/kg dry	1	2E22063	05/22/02	05/23/02	EPA 8260B	
1,2-Dichloroethane	ND	0.10		"	"	"	"	"	"	
Methylene chloride	ND	1.0		"	"	"	"	"	"	
Naphthalene	3.8	0.10		"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010		"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	98 %	60-140				"	"	"	"	
Surrogate: Toluene-d8	90 %	60-140				"	"	"	"	
Surrogate: 4-BFB	80 %	60-140				"	"	"	"	
<b>D1-1-2 (B2E0493-17) Soil Sampled: 05/15/02 08:50 Received: 05/17/02 10:00</b>										
1,2-Dibromoethane (EDB)	ND	0.0050		mg/kg dry	1	2E23036	05/22/02	05/23/02	EPA 8260B	
1,2-Dichloroethane	ND	0.0012		"	"	"	"	"	"	
Naphthalene	ND	0.0050		"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010		"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	91 %	60-140				"	"	"	"	
Surrogate: Toluene-d8	28 %	60-140				"	"	"	"	S-0.
Surrogate: 4-BFB	74 %	60-140				"	"	"	"	
<b>D3-2-4 (B2E0493-18) Soil Sampled: 05/15/02 15:15 Received: 05/17/02 10:00</b>										
1,2-Dibromoethane (EDB)	ND	0.0050		mg/kg dry	1	2E22063	05/22/02	05/23/02	EPA 8260B	
1,2-Dichloroethane	ND	0.10		"	"	"	"	"	"	
Methylene chloride	ND	1.0		"	"	"	"	"	"	
Naphthalene	0.61	0.10		"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010		"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	94 %	60-140				"	"	"	"	
Surrogate: Toluene-d8	87 %	60-140				"	"	"	"	
Surrogate: 4-BFB	79 %	60-140				"	"	"	"	

North Creek Analytical - Bothell

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported: 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>D3-3-3 (B2E0493-19) Soil</b> Sampled: 05/15/02 15:20 Received: 05/17/02 10:00									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E23036	05/22/02	05/23/02	EPA 8260B	
1,2-Dichloroethane	ND	0.0012	"	"	"	"	"	"	
Naphthalene	ND	0.0050	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	98 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	87 %	60-140			"	"	"	"	
Surrogate: 4-BFB	89 %	60-140			"	"	"	"	
<b>D3-4-8 (B2E0493-20) Soil</b> Sampled: 05/16/02 14:30 Received: 05/17/02 10:00									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E22063	05/22/02	05/24/02	EPA 8260B	
1,2-Dichloroethane	ND	0.10	"	"	"	"	"	"	
Naphthalene	0.86	0.10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	160 %	60-140			"	"	"	"	S-04
Surrogate: Toluene-d8	140 %	60-140			"	"	"	"	
Surrogate: 4-BFB	130 %	60-140			"	"	"	"	
<b>D4-1-2 (B2E0493-21) Soil</b> Sampled: 05/15/02 09:50 Received: 05/17/02 10:00									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E23036	05/22/02	05/23/02	EPA 8260B	
1,2-Dichloroethane	ND	0.0012	"	"	"	"	"	"	
Naphthalene	0.030	0.0050	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	96 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	91 %	60-140			"	"	"	"	
Surrogate: 4-BFB	81 %	60-140			"	"	"	"	

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Geo Engineers-Everett 2924 Colby Ave Everett WA/USA, 98201-4011	Project: Former Unocal #6380 Project Number: 4823-410-00 Project Manager: Lisa Bona	Reported: 05/30/02 14:43
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**Volatile Organic Compounds (Special List) by EPA Method 8260B**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>SP-1 (B2E0493-22) Soil Sampled: 05/16/02 13:00 Received: 05/17/02 10:00</b>									
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg dry	1	2E22063	05/22/02	05/24/02	EPA 8260B	
1,2-Dichloroethane	ND	0.10	"	"	"	"	"	"	
Naphthalene	4.3	0.10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.0010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	84 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	94 %	60-140			"	"	"	"	
Surrogate: 4-BFB	80 %	60-140			"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.050	"	10	2E23033	05/23/02	05/23/02	"	
1,2-Dichloroethane	ND	0.012	"	"	"	"	"	"	
Naphthalene	2.8	0.050	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.010	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	98 %	60-140			"	"	"	"	
Surrogate: Toluene-d8	120 %	60-140			"	"	"	"	
Surrogate: 4-BFB	75 %	60-140			"	"	"	"	

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Geo Engineers-Everett  
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 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Physical Parameters by APHA/ASTM/EPA Methods  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Limit							
<b>PL-1-3 (B2E0493-01) Soil</b>	<b>Sampled: 05/15/02 11:30</b>		<b>Received: 05/17/02 10:00</b>							
Dry Weight	90.9	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07		
<b>PL-2-3 (B2E0493-02) Soil</b>	<b>Sampled: 05/15/02 11:50</b>		<b>Received: 05/17/02 10:00</b>							
Dry Weight	76.9	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07		
<b>PL-3-4 (B2E0493-03) Soil</b>	<b>Sampled: 05/15/02 12:00</b>		<b>Received: 05/17/02 10:00</b>							
Dry Weight	77.1	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07		
<b>PL-4-2.5 (B2E0493-04) Soil</b>	<b>Sampled: 05/15/02 12:20</b>		<b>Received: 05/17/02 10:00</b>							
Dry Weight	87.5	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07		
<b>PL-5-3 (B2E0493-05) Soil</b>	<b>Sampled: 05/15/02 12:30</b>		<b>Received: 05/17/02 10:00</b>							
Dry Weight	86.3	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07		
<b>PL-6-3.5 (B2E0493-06) Soil</b>	<b>Sampled: 05/15/02 12:40</b>		<b>Received: 05/17/02 10:00</b>							
Dry Weight	75.1	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07		
<b>PL-7-3 (B2E0493-07) Soil</b>	<b>Sampled: 05/15/02 13:00</b>		<b>Received: 05/17/02 10:00</b>							
Dry Weight	87.0	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07		
<b>PL-8-3 (B2E0493-08) Soil</b>	<b>Sampled: 05/15/02 13:50</b>		<b>Received: 05/17/02 10:00</b>							
Dry Weight	85.4	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07		
<b>PL-9-3 (B2E0493-09) Soil</b>	<b>Sampled: 05/15/02 13:20</b>		<b>Received: 05/17/02 10:00</b>							
Dry Weight	78.1	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07		

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Geo Engineers-Everett  
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 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
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**Physical Parameters by APHA/ASTM/EPA Methods  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>PL-10-7 (B2E0493-10) Soil</b> Sampled: 05/15/02 16:00    Received: 05/17/02 10:00									
Dry Weight	79.1	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07	
<b>PL-11-6 (B2E0493-11) Soil</b> Sampled: 05/15/02 16:30    Received: 05/17/02 10:00									
Dry Weight	82.2	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07	
<b>PL-12-9 (B2E0493-12) Soil</b> Sampled: 05/16/02 09:00    Received: 05/17/02 10:00									
Dry Weight	78.5	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07	
<b>PL-13-9 (B2E0493-13) Soil</b> Sampled: 05/16/02 09:20    Received: 05/17/02 10:00									
Dry Weight	81.5	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07	
<b>PL-14-7 (B2E0493-14) Soil</b> Sampled: 05/16/02 10:20    Received: 05/17/02 10:00									
Dry Weight	74.6	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07	
<b>PL-15-9 (B2E0493-15) Soil</b> Sampled: 05/16/02 12:30    Received: 05/17/02 10:00									
Dry Weight	77.3	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07	
<b>PL-16-9 (B2E0493-16) Soil</b> Sampled: 05/16/02 13:05    Received: 05/17/02 10:00									
Dry Weight	82.4	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07	
<b>D1-1-2 (B2E0493-17) Soil</b> Sampled: 05/15/02 08:50    Received: 05/17/02 10:00									
Dry Weight	86.7	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07	
<b>D3-2-4 (B2E0493-18) Soil</b> Sampled: 05/15/02 15:15    Received: 05/17/02 10:00									
Dry Weight	75.1	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSPL003R07	

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**Physical Parameters by APHA/ASTM/EPA Methods  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>D3-3-3 (B2E0493-19) Soil</b> Sampled: 05/15/02 15:20 Received: 05/17/02 10:00									
Dry Weight	87.0	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSP003R07	
<b>D3-4-8 (B2E0493-20) Soil</b> Sampled: 05/16/02 14:30 Received: 05/17/02 10:00									
Dry Weight	82.0	1.00	%	1	2E22019	05/22/02	05/23/02	BSOPSP003R07	
<b>D4-1-2 (B2E0493-21) Soil</b> Sampled: 05/15/02 09:50 Received: 05/17/02 10:00									
Dry Weight	84.6	1.00	%	1	2E22020	05/22/02	05/23/02	BSOPSP003R07	
<b>SP-1 (B2E0493-22) Soil</b> Sampled: 05/16/02 13:00 Received: 05/17/02 10:00									
Dry Weight	78.4	1.00	%	1	2E22020	05/22/02	05/23/02	BSOPSP003R07	

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 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2E22026: Prepared 05/22/02 Using EPA 5030B (P/T)

**Blank (2E22026-BLK1)**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg							
Benzene	ND	0.0500	"							
Toluene	ND	0.0500	"							
Ethylbenzene	ND	0.0500	"							
Xylenes (total)	ND	0.100	"							
Surrogate: 4-BFB (FID)	3.72		"	4.00		93.0	50-147			
Surrogate: 4-BFB (PID)	4.00		"	4.00		100	54-123			

**LCS (2E22026-BS1)**

Gasoline Range Hydrocarbons	27.8	5.00	mg/kg	27.5		101	80-120			
Benzene	0.405	0.0500	"	0.340		119	80-120			
Toluene	1.92	0.0500	"	2.06		93.2	80-120			
Ethylbenzene	0.515	0.0500	"	0.485		106	80-120			
Xylenes (total)	2.52	0.100	"	2.44		103	80-120			
Surrogate: 4-BFB (FID)	4.30		"	4.00		108	50-147			
Surrogate: 4-BFB (PID)	4.08		"	4.00		102	54-123			

**LCS Dup (2E22026-BSD1)**

Gasoline Range Hydrocarbons	26.1	5.00	mg/kg	27.5		94.9	80-120	6.31	40	
Benzene	0.401	0.0500	"	0.340		118	80-120	0.993	40	
Toluene	1.89	0.0500	"	2.06		91.7	80-120	1.57	40	
Ethylbenzene	0.504	0.0500	"	0.485		104	80-120	2.16	40	
Xylenes (total)	2.47	0.100	"	2.44		101	80-120	2.00	40	
Surrogate: 4-BFB (FID)	4.16		"	4.00		104	50-147			
Surrogate: 4-BFB (PID)	4.17		"	4.00		104	54-123			

**Matrix Spike (2E22026-MS1)**

Source: B2E0493-01

Gasoline Range Hydrocarbons	29.2	5.00	mg/kg dry	30.2	ND	96.7	53-120			
Benzene	0.433	0.0500	"	0.374	ND	113	64-130			
Toluene	2.04	0.0500	"	2.27	ND	89.9	66-130			
Ethylbenzene	0.546	0.0500	"	0.533	ND	99.5	72-130			
Xylenes (total)	2.71	0.100	"	2.69	ND	98.7	73-130			
Surrogate: 4-BFB (FID)	4.45		"	4.40		101	50-147			
Surrogate: 4-BFB (PID)	4.33		"	4.40		98.4	54-123			

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported: 05/30/02 14:43

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2E22026: Prepared 05/22/02 Using EPA 5030B (P/T)**

Matrix Spike Dup (2E22026-MSD1)				Source: B2E0493-01						
Gasoline Range Hydrocarbons	29.5	5.00	mg/kg dry	30.2	ND	97.7	53-120	1.02	40	
Benzene	0.435	0.0500	"	0.374	ND	114	64-130	0.461	40	
Toluene	2.05	0.0500	"	2.27	ND	90.3	66-130	0.489	40	
Ethylbenzene	0.551	0.0500	"	0.533	ND	100	72-130	0.912	40	
Xylenes (total)	2.75	0.100	"	2.69	ND	100	73-130	1.47	40	
Surrogate: 4-BFB (FID)	4.47		"	4.40		102	50-147			
Surrogate: 4-BFB (PID)	4.30		"	4.40		97.7	54-123			

**Batch 2E22027: Prepared 05/22/02 Using EPA 5030B (P/T)**

Blank (2E22027-BLK1)										
Gasoline Range Hydrocarbons	ND	5.00	mg/kg							
Benzene	ND	0.0500	"							
Toluene	ND	0.0500	"							
Ethylbenzene	ND	0.0500	"							
Xylenes (total)	ND	0.100	"							
Surrogate: 4-BFB (FID)	3.57		"	4.00		89.2	50-147			
Surrogate: 4-BFB (PID)	3.60		"	4.00		90.0	54-123			
LCS (2E22027-BS1)										
Gasoline Range Hydrocarbons	26.3	5.00	mg/kg	27.5		95.6	80-120			
Benzene	0.342	0.0500	"	0.340		101	80-120			
Toluene	1.64	0.0500	"	2.06		79.6	80-120			Q-01
Ethylbenzene	0.452	0.0500	"	0.485		93.2	80-120			
Xylenes (total)	2.10	0.100	"	2.44		86.1	80-120			
Surrogate: 4-BFB (FID)	3.80		"	4.00		95.0	50-147			
Surrogate: 4-BFB (PID)	3.89		"	4.00		97.2	54-123			

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Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2E22027: Prepared 05/22/02 Using EPA 5030B (P/T)**

**LCS Dup (2E22027-BSD1)**

Gasoline Range Hydrocarbons	26.7	5.00	mg/kg	27.5		97.1	80-120	1.51	40	
Benzene	0.348	0.0500	"	0.340		102	80-120	1.74	40	
Toluene	1.67	0.0500	"	2.06		81.1	80-120	1.81	40	
Ethylbenzene	0.457	0.0500	"	0.485		94.2	80-120	1.10	40	
Xylenes (total)	2.12	0.100	"	2.44		86.9	80-120	0.948	40	
Surrogate: 4-BFB (FID)	3.72		"	4.00		93.0	50-147			
Surrogate: 4-BFB (PID)	3.92		"	4.00		98.0	54-123			

**Source: B2E0551-01**

**Matrix Spike (2E22027-MS1)**

Gasoline Range Hydrocarbons	31.0	5.00	mg/kg dry	31.5	ND	95.0	53-120			
Benzene	0.365	0.0500	"	0.390	ND	93.6	64-130			
Toluene	1.76	0.0500	"	2.37	ND	73.6	66-130			
Ethylbenzene	0.488	0.0500	"	0.556	ND	85.1	72-130			
Xylenes (total)	2.26	0.100	"	2.80	ND	79.7	73-130			
Surrogate: 4-BFB (FID)	4.40		"	4.58		96.1	50-147			
Surrogate: 4-BFB (PID)	4.19		"	4.58		91.5	54-123			

**Source: B2E0551-01**

**Matrix Spike Dup (2E22027-MSD1)**

Gasoline Range Hydrocarbons	32.5	5.00	mg/kg dry	31.5	ND	99.7	53-120	4.72	40	
Benzene	0.362	0.0500	"	0.390	ND	92.8	64-130	0.825	40	
Toluene	1.76	0.0500	"	2.37	ND	73.6	66-130	0.00	40	
Ethylbenzene	0.487	0.0500	"	0.556	ND	84.9	72-130	0.205	40	
Xylenes (total)	2.26	0.100	"	2.80	ND	79.7	73-130	0.00	40	
Surrogate: 4-BFB (FID)	4.40		"	4.58		96.1	50-147			
Surrogate: 4-BFB (PID)	4.09		"	4.58		89.3	54-123			

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 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C36 by WTPH-D (extended) - Quality Control  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2E28020: Prepared 05/28/02 Using EPA 3550B**

**Blank (2E28020-BLK1)**

Diesel Range Hydrocarbons	ND	10.0	mg/kg						
Heavy Oil Range Hydrocarbons	ND	25.0	"						
Surrogate: 2-FBP	8.67		"	10.7		81.0	50-138		
Surrogate: Octacosane	11.9		"	10.7		111	56-139		

**LCS (2E28020-BS1)**

Diesel Range Hydrocarbons	59.5	10.0	mg/kg	66.7		89.2	72-120		
Surrogate: 2-FBP	10.7		"	10.7		100	50-138		

**LCS Dup (2E28020-BSD1)**

Diesel Range Hydrocarbons	57.0	10.0	mg/kg	66.7		85.5	72-120	4.29	40
Surrogate: 2-FBP	10.9		"	10.7		102	50-138		

**Duplicate (2E28020-DUP1)**

Source: B2E0493-01

Diesel Range Hydrocarbons	ND	10.0	mg/kg dry		ND			17.2	40
Heavy Oil Range Hydrocarbons	ND	25.0	"		ND				40
Surrogate: 2-FBP	7.18		"	11.8		60.8	50-138		
Surrogate: Octacosane	11.0		"	11.8		93.2	56-139		

**Batch 2E28030: Prepared 05/28/02 Using EPA 3550B**

**Blank (2E28030-BLK1)**

Diesel Range Hydrocarbons	ND	10.0	mg/kg						
Heavy Oil Range Hydrocarbons	ND	25.0	"						
Surrogate: 2-FBP	6.53		"	10.7		61.0	50-138		
Surrogate: Octacosane	9.78		"	10.7		91.4	56-139		

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Geo Engineers-Everett  
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 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C36 by WTPH-D (extended) - Quality Control  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2E28030: Prepared 05/28/02 Using EPA 3550B</b>										
<b>LCS (2E28030-BS1)</b>										
Diesel Range Hydrocarbons	57.1	10.0	mg/kg	66.7		85.6	72-120			
Surrogate: 2-FBP	9.54		"	10.7		89.2	50-138			
<b>LCS Dup (2E28030-BSD1)</b>										
Diesel Range Hydrocarbons	57.5	10.0	mg/kg	66.7		86.2	72-120	0.698	40	
Surrogate: 2-FBP	9.54		"	10.7		89.2	50-138			
<b>Duplicate (2E28030-DUP1) Source: B2E0493-08</b>										
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry		ND			9.81	40	
Heavy Oil Range Hydrocarbons	ND	25.0	"		ND				40	
Surrogate: 2-FBP	7.91		"	12.5		63.3	50-138			
Surrogate: Octacosane	12.2		"	12.5		97.6	56-139			

North Creek Analytical - Bothell

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 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2E21037: Prepared 05/20/02 Using EPA 5030B [MeOH]

**Blank (2E21037-BLK1)**

Benzene	ND	0.0015	mg/kg							
Chlorobenzene	ND	0.0020	"							
1,2-Dibromoethane (EDB)	ND	0.0050	"							
1,2-Dichloroethane	ND	0.0012	"							
1,1-Dichloroethene	ND	0.0030	"							
Naphthalene	ND	0.0050	"							
Toluene	ND	0.0015	"							
Trichloroethene	ND	0.0025	"							
Methyl tert-butyl ether	ND	0.0010	"							
Surrogate: 1,2-DCA-d4	0.033		"	0.040		82	60-140			
Surrogate: Toluene-d8	0.037		"	0.040		92	60-140			
Surrogate: 4-BFB	0.036		"	0.040		90	60-140			

**LCS (2E21037-BS1)**

Benzene	0.017	0.0015	mg/kg	0.020		85	70-130			
Chlorobenzene	0.018	0.0020	"	0.020		90	70-130			
1,1-Dichloroethene	0.017	0.0030	"	0.020		85	70-130			
Toluene	0.018	0.0015	"	0.020		90	70-130			
Trichloroethene	0.017	0.0025	"	0.020		85	70-130			
Surrogate: 1,2-DCA-d4	0.048		"	0.040		120	60-140			
Surrogate: Toluene-d8	0.049		"	0.040		120	60-140			
Surrogate: 4-BFB	0.051		"	0.040		130	60-140			

**LCS Dup (2E21037-BSD1)**

Benzene	0.016	0.0015	mg/kg	0.020		80	70-130	6.1	30	
Chlorobenzene	0.017	0.0020	"	0.020		85	70-130	5.7	30	
1,1-Dichloroethene	0.017	0.0030	"	0.020		85	70-130	0.0	30	
Toluene	0.017	0.0015	"	0.020		85	70-130	5.7	30	
Trichloroethene	0.016	0.0025	"	0.020		80	70-130	6.1	30	
Surrogate: 1,2-DCA-d4	0.045		"	0.040		110	60-140			
Surrogate: Toluene-d8	0.046		"	0.040		120	60-140			
Surrogate: 4-BFB	0.049		"	0.040		120	60-140			

North Creek Analytical - Bothell

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Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B - Quality Control  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2E22063: Prepared 05/22/02 Using EPA 5030B [MeOH]</b>										
<b>Blank (2E22063-BLK1)</b>										
Benzene	ND	0.10	mg/kg							
Chlorobenzene	ND	0.10	"							
1,2-Dibromoethane (EDB)	ND	0.0050	"							
1,2-Dichloroethane	ND	0.10	"							
1,1-Dichloroethene	ND	0.10	"							
Naphthalene	ND	0.10	"							
Trichloroethene	ND	0.10	"							
Methyl tert-butyl ether	ND	0.0010	"							
Surrogate: 1,2-DCA-d4	3.8		"	4.0		95	60-140			
Surrogate: Toluene-d8	3.7		"	4.0		92	60-140			
Surrogate: 4-BFB	3.7		"	4.0		92	60-140			
<b>Blank (2E22063-BLK2)</b>										
1,2-Dibromoethane (EDB)	ND	0.0050	mg/kg							
1,2-Dichloroethane	ND	0.10	"							
Naphthalene	ND	0.10	"							
Methyl tert-butyl ether	ND	0.0010	"							
Surrogate: 1,2-DCA-d4	3.6		"	4.0		90	60-140			
Surrogate: Toluene-d8	3.7		"	4.0		92	60-140			
Surrogate: 4-BFB	3.6		"	4.0		90	60-140			
<b>LCS (2E22063-BS1)</b>										
Benzene	0.96	0.10	mg/kg	1.0		96	70-130			
Chlorobenzene	1.0	0.10	"	1.0		100	70-130			
1,1-Dichloroethene	0.85	0.10	"	1.0		85	70-130			
Trichloroethene	0.91	0.10	"	1.0		91	70-130			
Surrogate: 1,2-DCA-d4	3.7		"	4.0		92	60-140			
Surrogate: Toluene-d8	3.6		"	4.0		90	60-140			
Surrogate: 4-BFB	3.6		"	4.0		90	60-140			

North Creek Analytical - Bothell

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Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B - Quality Control  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2E22063: Prepared 05/22/02 Using EPA 5030B [MeOH]**

**LCS Dup (2E22063-BSD1)**

Benzene	0.92	0.10	mg/kg	1.0		92	70-130	4.3	30	
Chlorobenzene	0.93	0.10	"	1.0		93	70-130	7.3	30	
1,1-Dichloroethene	0.80	0.10	"	1.0		80	70-130	6.1	30	
Trichloroethene	0.88	0.10	"	1.0		88	70-130	3.4	30	
Surrogate: 1,2-DCA-d4	3.8		"	4.0		95	60-140			
Surrogate: Toluene-d8	3.6		"	4.0		90	60-140			
Surrogate: 4-BFB	3.6		"	4.0		90	60-140			

**Matrix Spike (2E22063-MS1)**

**Source: B2E0532-01**

Benzene	1.0	0.10	mg/kg dry	1.1	ND	91	60-140			
Chlorobenzene	0.98	0.10	"	1.1	ND	89	60-140			
1,1-Dichloroethene	1.0	0.10	"	1.1	ND	91	60-140			
Trichloroethene	0.96	0.10	"	1.1	ND	87	60-140			
Surrogate: 1,2-DCA-d4	3.8		"	4.3		88	60-140			
Surrogate: Toluene-d8	3.9		"	4.3		91	60-140			
Surrogate: 4-BFB	3.5		"	4.3		81	60-140			

**Matrix Spike Dup (2E22063-MSD1)**

**Source: B2E0532-01**

Benzene	1.1	0.10	mg/kg dry	1.1	ND	100	60-140	9.5	30	
Chlorobenzene	1.1	0.10	"	1.1	ND	100	60-140	12	30	
1,1-Dichloroethene	1.1	0.10	"	1.1	ND	100	60-140	9.5	30	
Trichloroethene	1.1	0.10	"	1.1	ND	100	60-140	14	30	
Surrogate: 1,2-DCA-d4	3.5		"	4.3		81	60-140			
Surrogate: Toluene-d8	3.9		"	4.3		91	60-140			
Surrogate: 4-BFB	3.6		"	4.3		84	60-140			

**Batch 2E23033: Prepared 05/23/02 Using EPA 5030B [MeOH]**

**Blank (2E23033-BLK1)**

Benzene	ND	0.0015	mg/kg							
Chlorobenzene	ND	0.0020	"							
1,2-Dibromoethane (EDB)	ND	0.0050	"							
1,2-Dichloroethane	ND	0.0012	"							
1,1-Dichloroethene	ND	0.0030	"							
Naphthalene	ND	0.0050	"							
Toluene	ND	0.0015	"							
Trichloroethene	ND	0.0025	"							

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported: 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2E23033: Prepared 05/23/02 Using EPA 5030B [MeOH]**

**Blank (2E23033-BLK1)**

Methyl tert-butyl ether	ND	0.0010	mg/kg							
Surrogate: 1,2-DCA-d4	0.040		"	0.040		100	60-140			
Surrogate: Toluene-d8	0.036		"	0.040		90	60-140			
Surrogate: 4-BFB	0.040		"	0.040		100	60-140			

**LCS (2E23033-BS1)**

Benzene	0.020	0.0015	mg/kg	0.020		100	70-130			
Chlorobenzene	0.019	0.0020	"	0.020		95	70-130			
1,1-Dichloroethene	0.019	0.0030	"	0.020		95	70-130			
Toluene	0.019	0.0015	"	0.020		95	70-130			
Trichloroethene	0.020	0.0025	"	0.020		100	70-130			
Surrogate: 1,2-DCA-d4	0.039		"	0.040		98	60-140			
Surrogate: Toluene-d8	0.039		"	0.040		98	60-140			
Surrogate: 4-BFB	0.041		"	0.040		100	60-140			

**LCS Dup (2E23033-BSD1)**

Benzene	0.020	0.0015	mg/kg	0.020		100	70-130	0.0	30	
Chlorobenzene	0.019	0.0020	"	0.020		95	70-130	0.0	30	
1,1-Dichloroethene	0.019	0.0030	"	0.020		95	70-130	0.0	30	
Toluene	0.018	0.0015	"	0.020		90	70-130	5.4	30	
Trichloroethene	0.020	0.0025	"	0.020		100	70-130	0.0	30	
Surrogate: 1,2-DCA-d4	0.043		"	0.040		110	60-140			
Surrogate: Toluene-d8	0.039		"	0.040		98	60-140			
Surrogate: 4-BFB	0.057		"	0.040		140	60-140			

**Batch 2E23036: Prepared 05/22/02 Using EPA 5035M**

**Blank (2E23036-BLK1)**

Acetone	ND	0.030	mg/kg							
Benzene	ND	0.0015	"							
Bromobenzene	ND	0.0050	"							
Bromochloromethane	ND	0.0050	"							
Bromodichloromethane	ND	0.0050	"							
Bromoform	ND	0.0050	"							
Bromomethane	ND	0.010	"							
2-Butanone	ND	0.015	"							
n-Butylbenzene	ND	0.0050	"							

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*Jeff Gerdes*

Jeff Gerdes, Project Manager

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Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2E23036: Prepared 05/22/02 Using EPA 5035M

**Blank (2E23036-BLK1)**

sec-Butylbenzene	ND	0.0050	mg/kg							
tert-Butylbenzene	ND	0.0050	"							
Carbon disulfide	ND	0.0030	"							
Carbon tetrachloride	ND	0.0050	"							
Chlorobenzene	ND	0.0020	"							
Chloroethane	ND	0.0050	"							
Chloroform	ND	0.0025	"							
Chloromethane	ND	0.010	"							
2-Chlorotoluene	ND	0.0050	"							
4-Chlorotoluene	ND	0.0050	"							
Dibromochloromethane	ND	0.0050	"							
1,2-Dibromo-3-chloropropane	ND	0.010	"							
1,2-Dibromoethane (EDB)	ND	0.0050	"							
Dibromomethane	ND	0.0050	"							
1,2-Dichlorobenzene	ND	0.0050	"							
1,3-Dichlorobenzene	ND	0.0050	"							
1,4-Dichlorobenzene	ND	0.0050	"							
Dichlorodifluoromethane	ND	0.0050	"							
1,1-Dichloroethane	ND	0.0020	"							
1,2-Dichloroethane	ND	0.0012	"							
1,1-Dichloroethene	ND	0.0030	"							
cis-1,2-Dichloroethene	ND	0.0030	"							
trans-1,2-Dichloroethene	ND	0.0025	"							
1,2-Dichloropropane	ND	0.0050	"							
1,3-Dichloropropane	ND	0.0050	"							
2,2-Dichloropropane	ND	0.010	"							
1,1-Dichloropropene	ND	0.0050	"							
cis-1,3-Dichloropropene	ND	0.0050	"							
trans-1,3-Dichloropropene	ND	0.0012	"							
Ethylbenzene	ND	0.0040	"							
Hexachlorobutadiene	ND	0.0050	"							
2-Hexanone	ND	0.020	"							
Isopropylbenzene	ND	0.0050	"							
p-Isopropyltoluene	ND	0.0050	"							

North Creek Analytical - Bothell

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported: 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2E23036: Prepared 05/22/02 Using EPA 5035M**

**Blank (2E23036-BLK1)**

Methylene chloride	ND	0.0035	mg/kg							
4-Methyl-2-pentanone	ND	0.020	"							
Naphthalene	ND	0.0050	"							
n-Propylbenzene	ND	0.0050	"							
Styrene	ND	0.0010	"							
1,1,1,2-Tetrachloroethane	ND	0.0050	"							
1,1,2,2-Tetrachloroethane	ND	0.0050	"							
Tetrachloroethene	ND	0.0020	"							
Toluene	ND	0.0015	"							
1,2,3-Trichlorobenzene	ND	0.0050	"							
1,2,4-Trichlorobenzene	ND	0.0050	"							
1,1,1-Trichloroethane	ND	0.0025	"							
1,1,2-Trichloroethane	ND	0.0012	"							
Trichloroethene	ND	0.0025	"							
Trichlorofluoromethane	ND	0.0050	"							
1,2,3-Trichloropropane	ND	0.0050	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Vinyl chloride	ND	0.0025	"							
Total Xylenes	ND	0.010	"							
Methyl tert-butyl ether	ND	0.0010	"							
Surrogate: 1,2-DCA-d4	0.035		"	0.040		88	60-140			
Surrogate: Toluene-d8	0.037		"	0.040		92	60-140			
Surrogate: 4-BFB	0.038		"	0.040		95	60-140			

**LCS (2E23036-BS1)**

Benzene	0.017	0.0015	mg/kg	0.020		85	70-130			
Chlorobenzene	0.017	0.0020	"	0.020		85	70-130			
1,1-Dichloroethene	0.017	0.0030	"	0.020		85	70-130			
Toluene	0.017	0.0015	"	0.020		85	70-130			
Trichloroethene	0.017	0.0025	"	0.020		85	70-130			
Surrogate: 1,2-DCA-d4	0.042		"	0.040		100	60-140			
Surrogate: Toluene-d8	0.035		"	0.040		88	60-140			
Surrogate: 4-BFB	0.038		"	0.040		95	60-140			

North Creek Analytical - Bothell

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Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Volatile Organic Compounds (Special List) by EPA Method 8260B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 2E23036: Prepared 05/22/02 Using EPA 5035M

**LCS Dup (2E23036-BSD1)**

Benzene	0.017	0.0015	mg/kg	0.020		85	70-130	0.0	30	
Chlorobenzene	0.017	0.0020	"	0.020		85	70-130	0.0	30	
1,1-Dichloroethene	0.018	0.0030	"	0.020		90	70-130	5.7	30	
Toluene	0.017	0.0015	"	0.020		85	70-130	0.0	30	
Trichloroethene	0.017	0.0025	"	0.020		85	70-130	0.0	30	
Surrogate: 1,2-DCA-d4	0.039		"	0.040		98	60-140			
Surrogate: Toluene-d8	0.038		"	0.040		95	60-140			
Surrogate: 4-BFB	0.039		"	0.040		98	60-140			

**Matrix Spike (2E23036-MS1)**

Source: B2E0523-01

Benzene	0.020	0.0015	mg/kg dry	0.023	ND	87	60-140			
Chlorobenzene	0.018	0.0020	"	0.023	ND	78	60-140			
1,1-Dichloroethene	0.019	0.0030	"	0.023	ND	83	60-140			
Toluene	0.019	0.0015	"	0.023	ND	83	60-140			
Trichloroethene	0.019	0.0025	"	0.023	ND	83	60-140			
Surrogate: 1,2-DCA-d4	0.046		"	0.045		100	60-140			
Surrogate: Toluene-d8	0.042		"	0.045		93	60-140			
Surrogate: 4-BFB	0.043		"	0.045		96	60-140			

**Matrix Spike Dup (2E23036-MSD1)**

Source: B2E0523-01

Benzene	0.017	0.0015	mg/kg dry	0.023	ND	74	60-140	16	30	
Chlorobenzene	0.013	0.0020	"	0.023	ND	57	60-140	32	30	Q-01
1,1-Dichloroethene	0.018	0.0030	"	0.023	ND	78	60-140	5.4	30	
Toluene	0.015	0.0015	"	0.023	ND	65	60-140	24	30	
Trichloroethene	0.016	0.0025	"	0.023	ND	70	60-140	17	30	
Surrogate: 1,2-DCA-d4	0.036		"	0.045		80	60-140			
Surrogate: Toluene-d8	0.036		"	0.045		80	60-140			
Surrogate: 4-BFB	0.068		"	0.045		150	60-140			S-03

North Creek Analytical - Bothell

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 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 05/30/02 14:43

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2E22019: Prepared 05/22/02 Using Dry Weight</b>										
<b>Blank (2E22019-BLK1)</b>										
Dry Weight	100	1.00	%							
<b>Batch 2E22020: Prepared 05/22/02 Using Dry Weight</b>										
<b>Blank (2E22020-BLK1)</b>										
Dry Weight	100	1.00	%							

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Geo Engineers-Everett 2924 Colby Ave Everett WA/USA, 98201-4011	Project: Former Unocal #6380 Project Number: 4823-410-00 Project Manager: Lisa Bona	Reported: 05/30/02 14:43
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**Notes and Definitions**

- D-08 Results in the diesel organics range are primarily due to overlap from a gasoline range product.
- D-09 Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
- E Estimated value. The reported value exceeds the calibration range of the analysis.
- I-06 The analyte concentration may be artificially elevated due to coeluting compounds or components.
- Q-01 The 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.
- S-01 The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
- S-03 The surrogate recovery for this sample is outside of established control limits. Review of associated QC indicates the recovery for this surrogate does not represent an out-of-control condition.
- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interferences.
- 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

North Creek Analytical - Bothell

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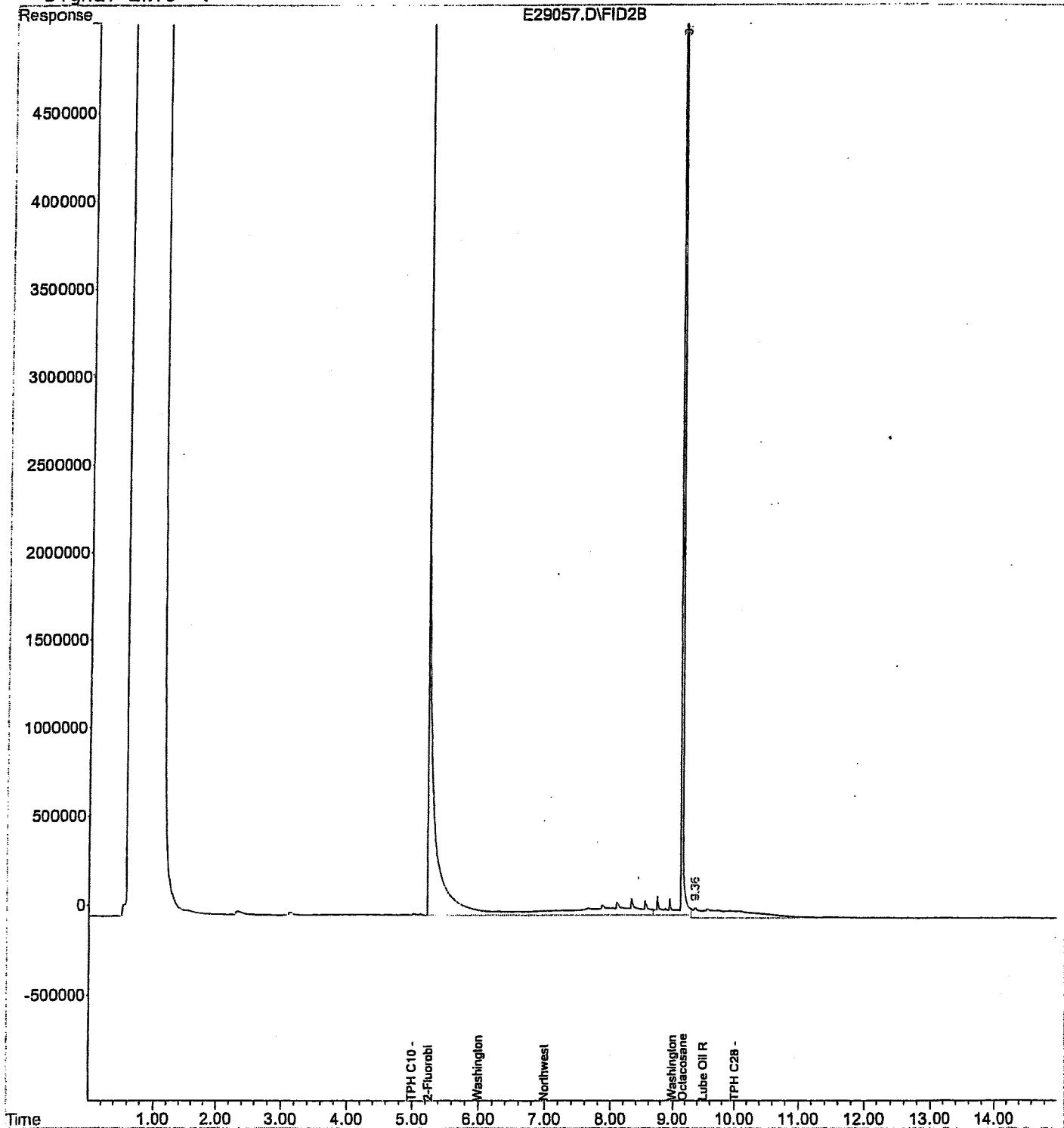
**North Creek Analytical, Inc.**  
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Sample : b2e0493-01  
Misc : 1x s INTPH-Dx s  
IntFile : SURR.E  
Quant Time: May 29 18:54 2002

vial: 8  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

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Title : TPH-D Rear  
Last Update : Thu May 16 06:27:13 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 08402!9A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



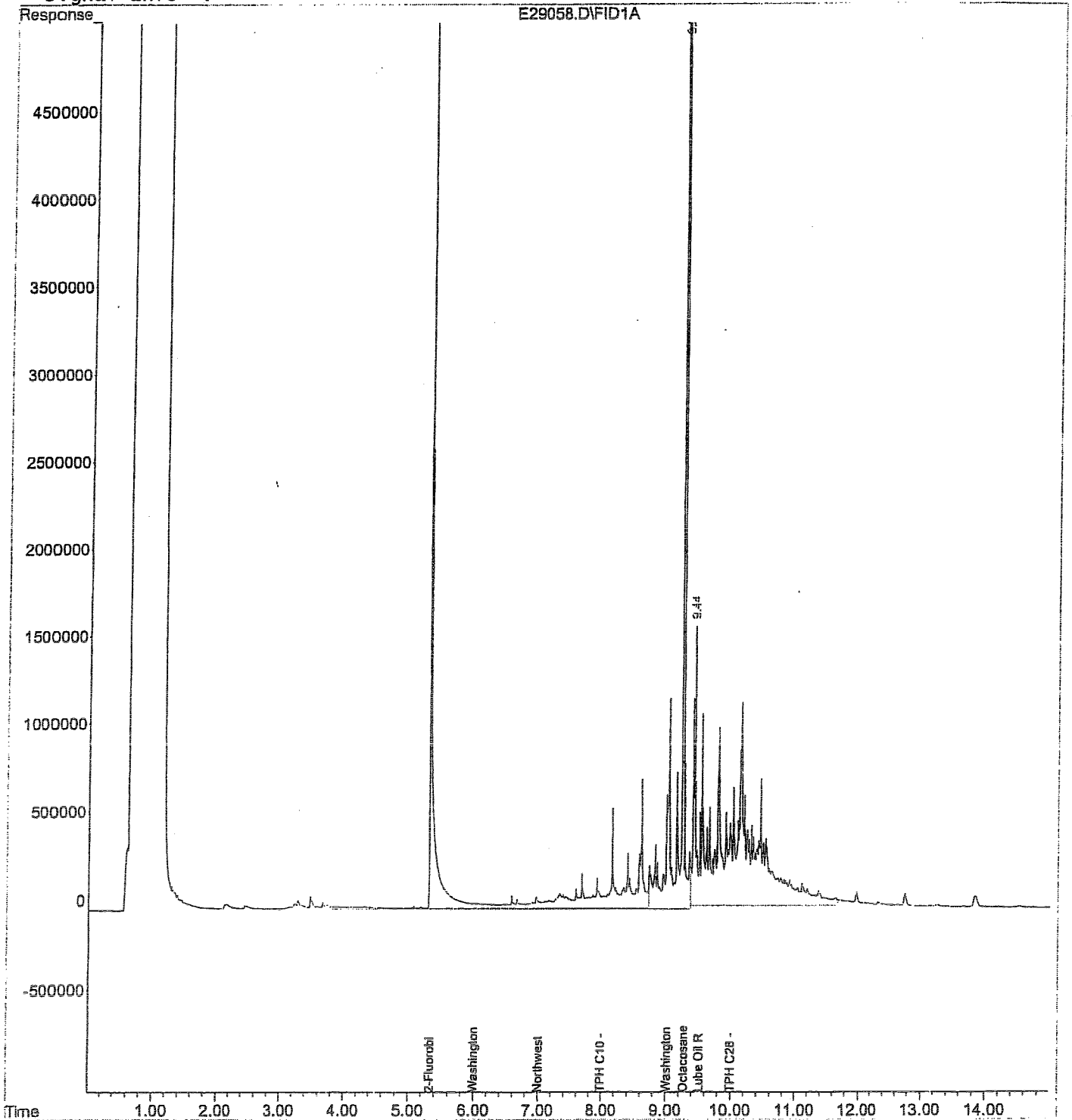
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IntFile : SURR.E  
Quant Time: May 29 18:54 2002

Vial: 9  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Results File: 08402!9A.RES

Quant Method : C:\HPCHEM\1\METHODS\08402!9A.M (Chemstation Integrator)  
Title : TPH-D Front  
Last Update : Tue Mar 26 08:00:15 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 08402!9A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



Data File : C:\HPCHEM\1\DATA\E29014.D

Acq On : 5-29-02 10:13:40 AM

sample : B2E0493-03

Misc : 1x s WTPH-Dext

IntFile : SURR.E

Quant Time: May 29 10:28 2002 Quant Results File: 08402!9A.RES

Vial: 8

Operator: EDL

Inst : GC #9

Multiplr: 1.00

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Title : TPH-D Front

Last Update : Tue Mar 26 08:00:15 2002

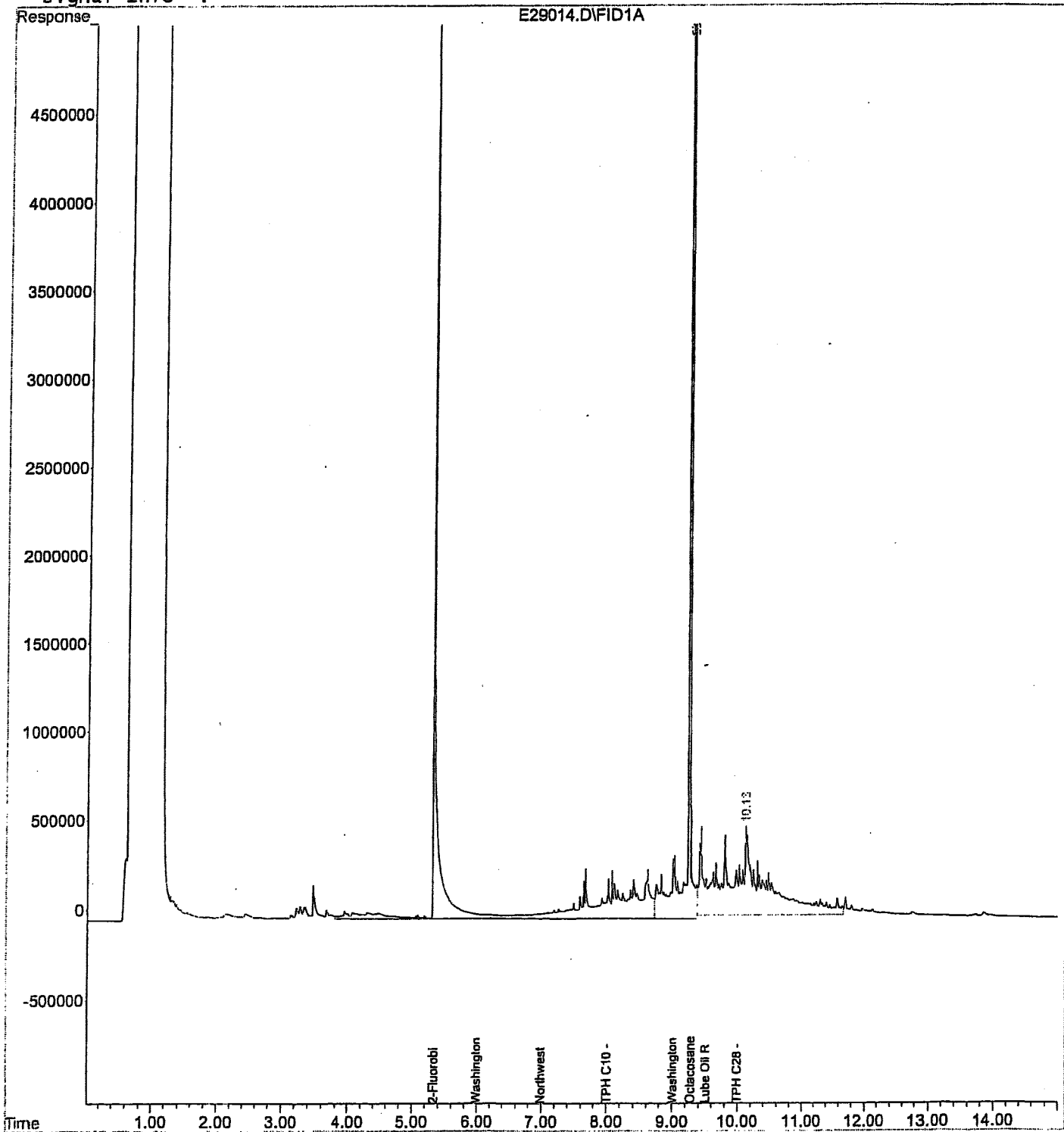
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DataAcq Meth : 08402!9A.M

Volume Inj. :

Signal Phase :

Signal Info :

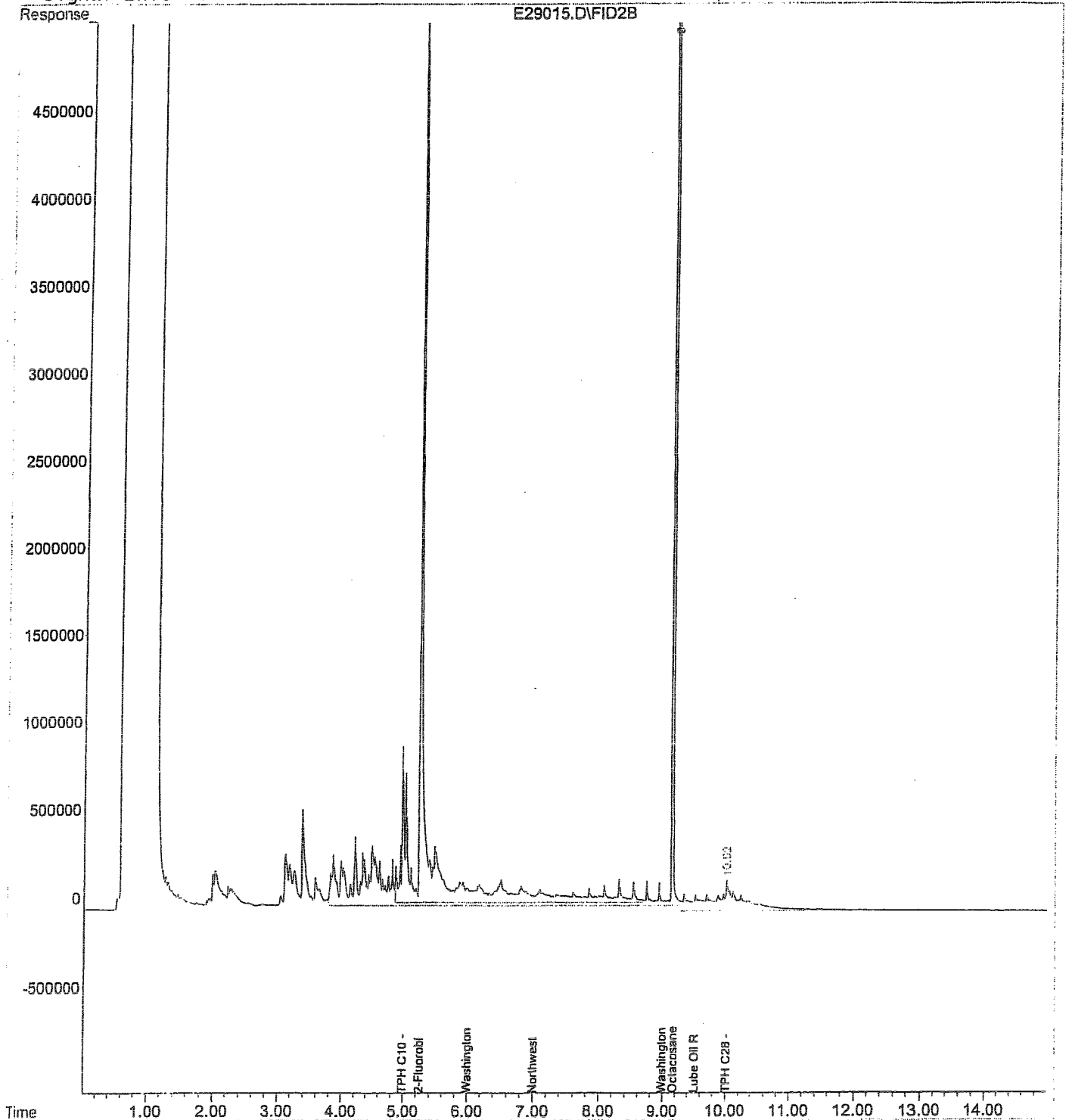


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Misc : 1x s WTPH-Dext  
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Quant Time: May 29 10:51 2002

Vial: 9  
Operator: EDL  
Inst : GC #9  
Multiplier: 1.00

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Title : TPH-D Rear  
Last Update : Thu May 16 06:27:13 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 0840219A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



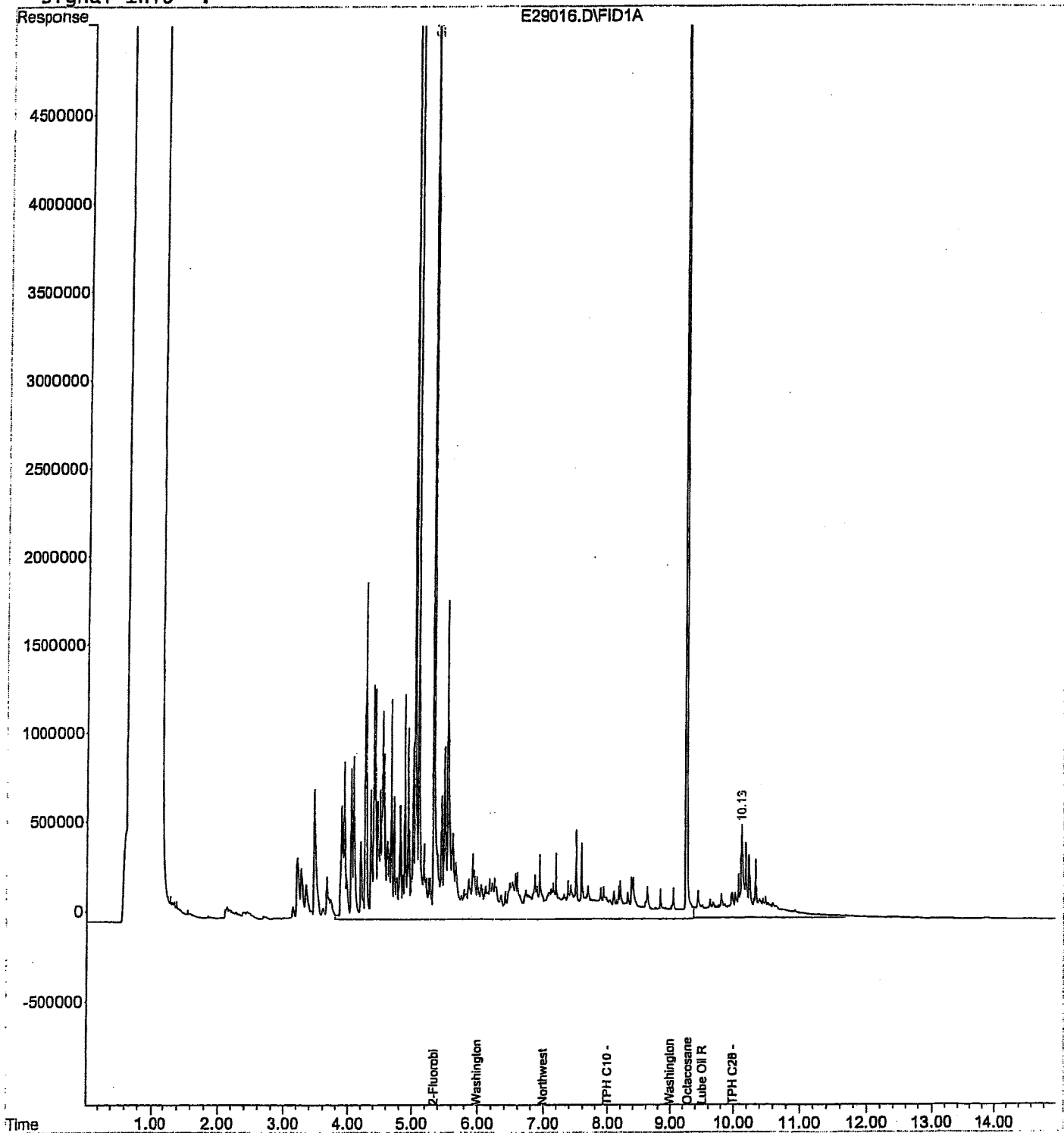
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Misc : 1x s WTPH-Dext  
IntFile : SURR.E  
Quant Time: May 29 10:51 2002

Vial: 10  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Results File: 08402!9A.RES

Quant Method : C:\HPCHEM\1\METHODS\08402!9A.M (Chemstation Integrator)  
Title : TPH-D Front  
Last Update : Tue Mar 26 08:00:15 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 08402!9A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



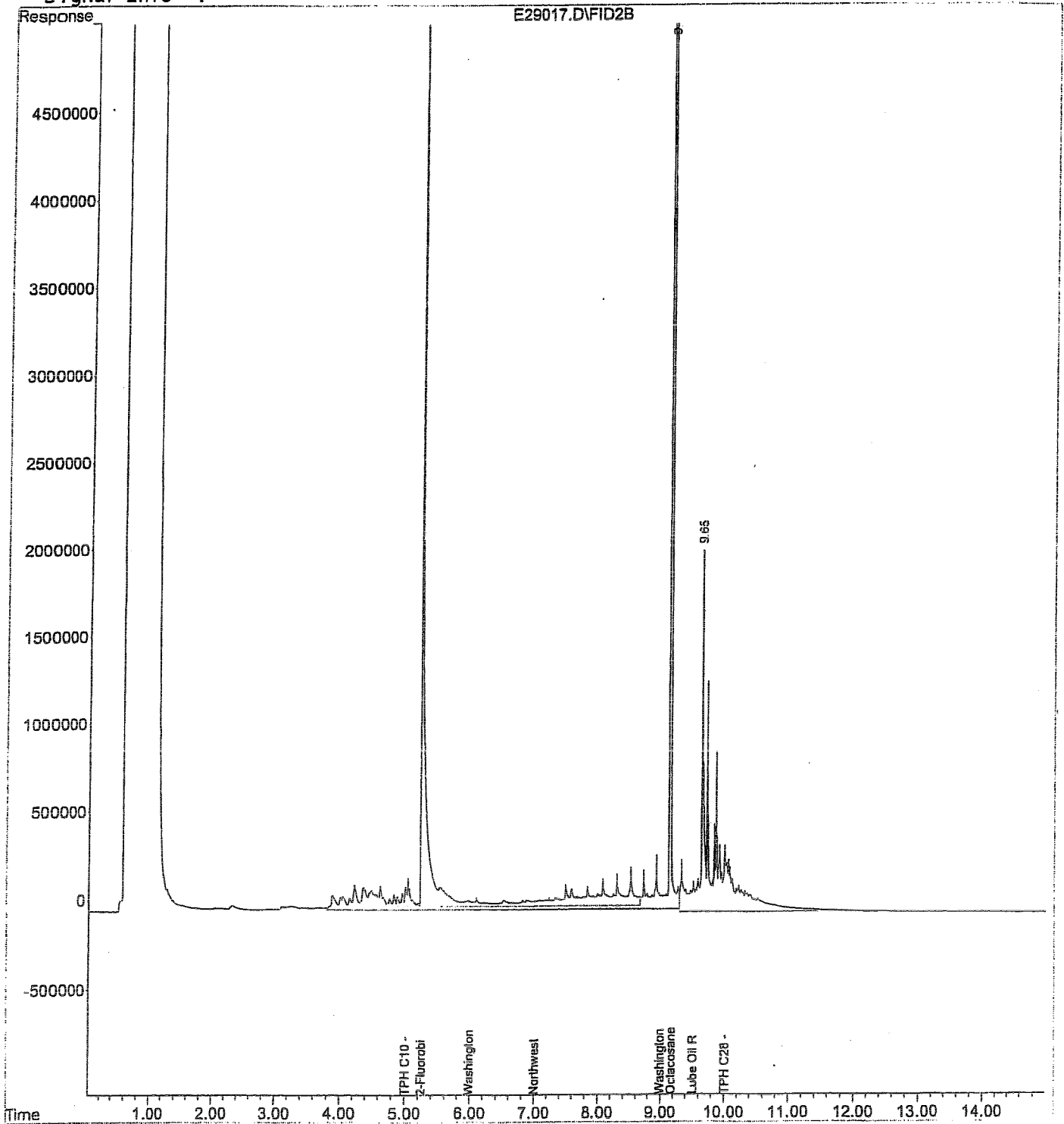
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Quant Time: May 29 11:14 2002

Vial: 11  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Results File: 0840219B.RES

Quant Method : C:\HPCHEM\1\METHODS\0840219B.M (Chemstation Integrator)  
Title : TPH-D Rear  
Last Update : Thu May 16 06:27:13 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 0840219A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



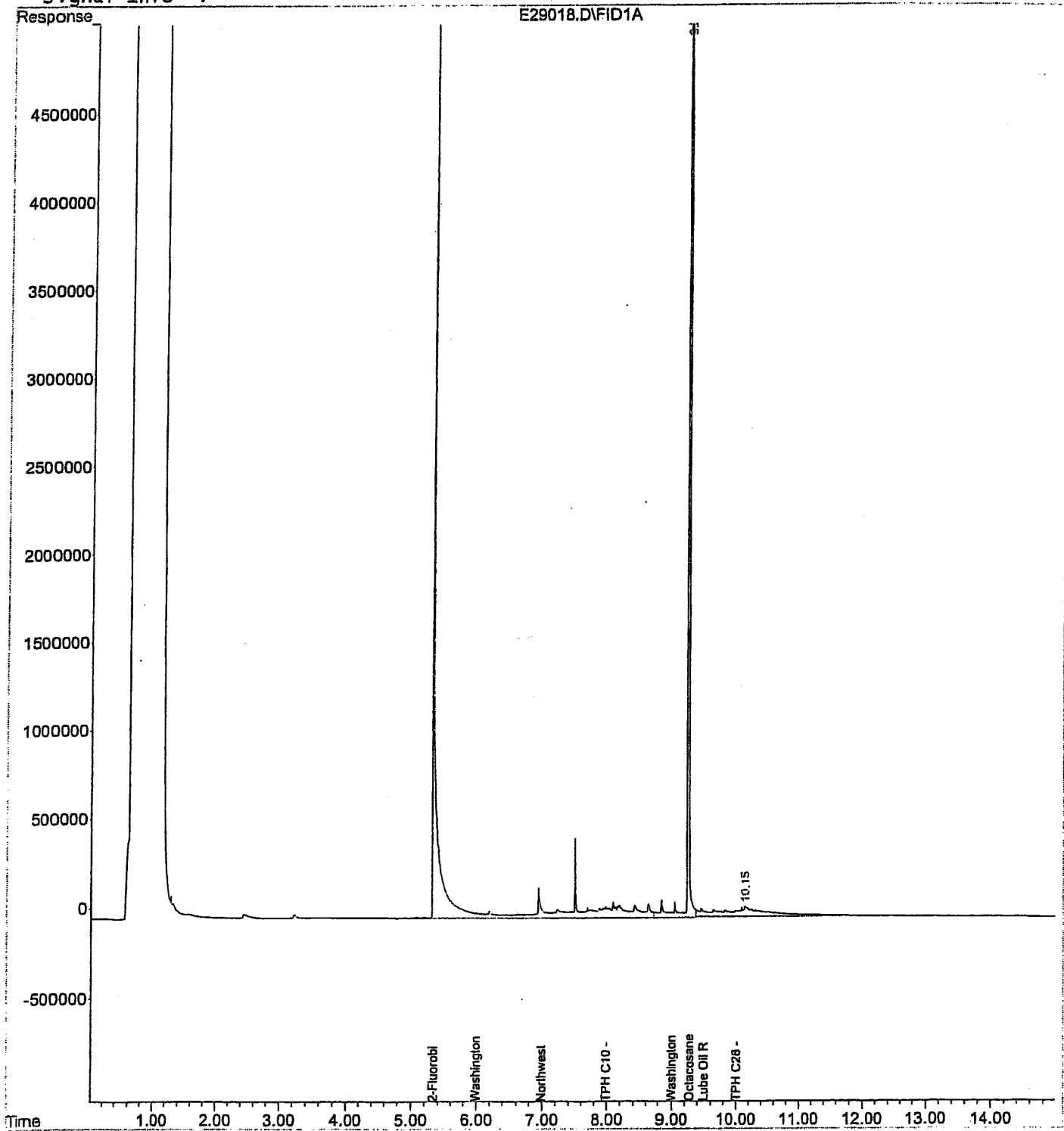
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Misc : 1x s WTPH-Dext  
IntFile : SURR.E  
Quant Time: May 29 11:14 2002

Vial: 12  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Results File: 08402!9A.RES

Quant Method : C:\HPCHEM\1\METHODS\08402!9A.M (Chemstation Integrator)  
Title : TPH-D Front  
Last Update : Tue Mar 26 08:00:15 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 08402!9A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



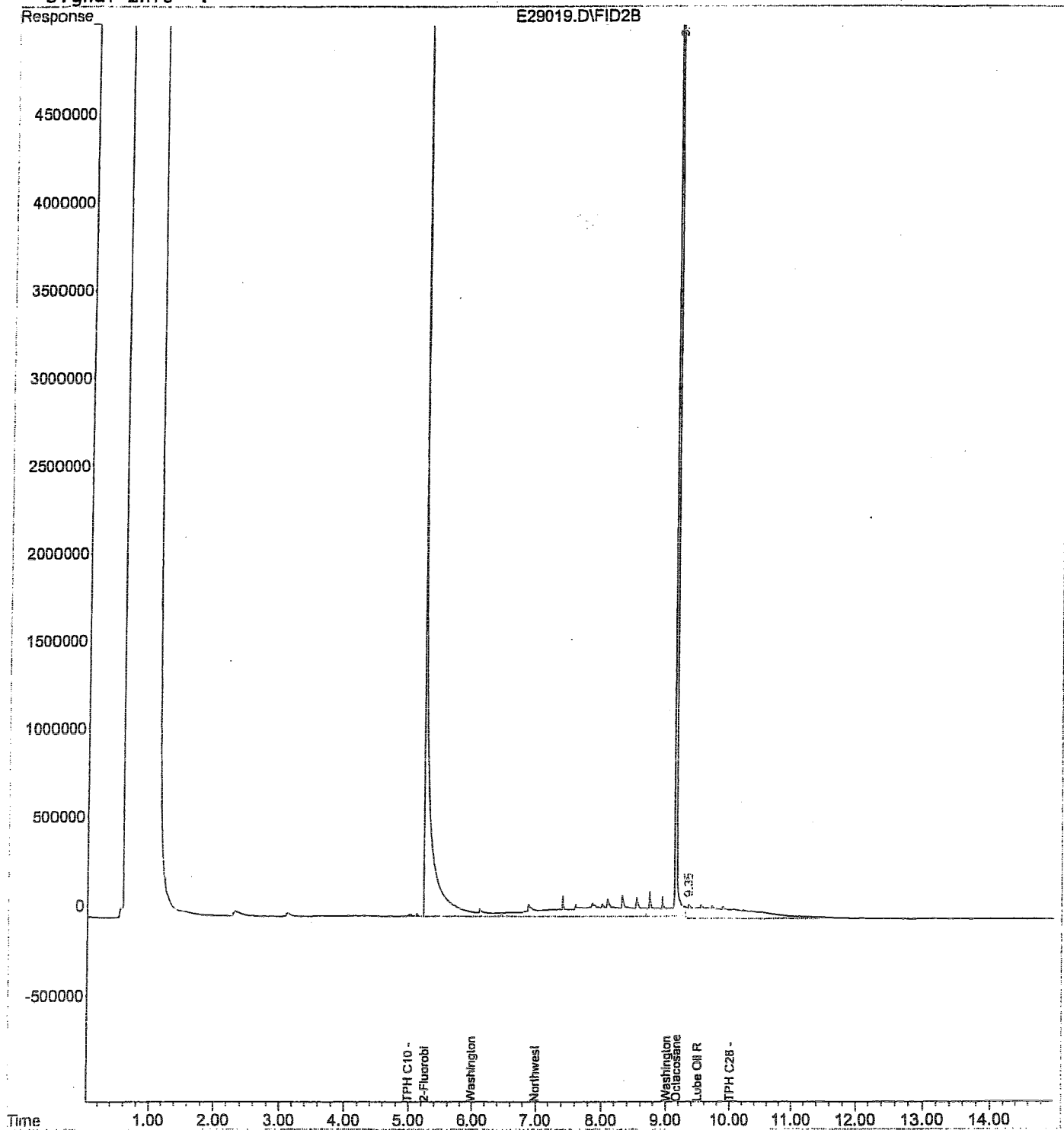
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IntFile : SURR.E  
Quant Time: May 29 11:37 2002

Vial: 13  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Results File: 08402!9B.RES

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Title : TPH-D Rear  
Last Update : Thu May 16 06:27:13 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 08402!9A.M

Volume Inj. :  
Signal Phase :  
Signal Info :

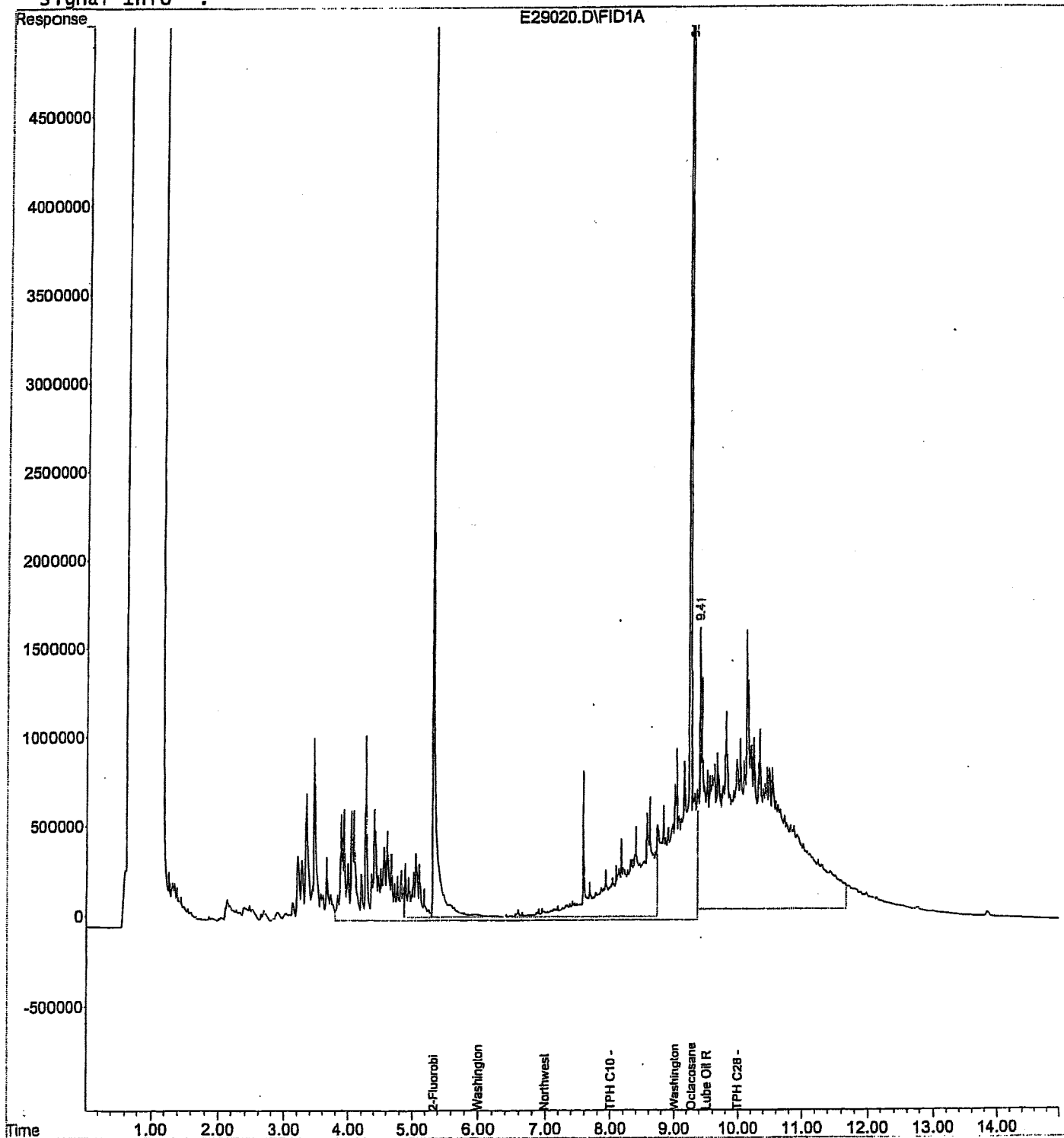


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Misc : 1x s WTPH-Dext  
IntFile : SURR.E  
Quant Time: May 29 11:37 2002

Vial: 14  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\08402!9A.M (Chemstation Integrator)  
Title : TPH-D Front  
Last Update : Tue Mar 26 08:00:15 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 08402!9A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



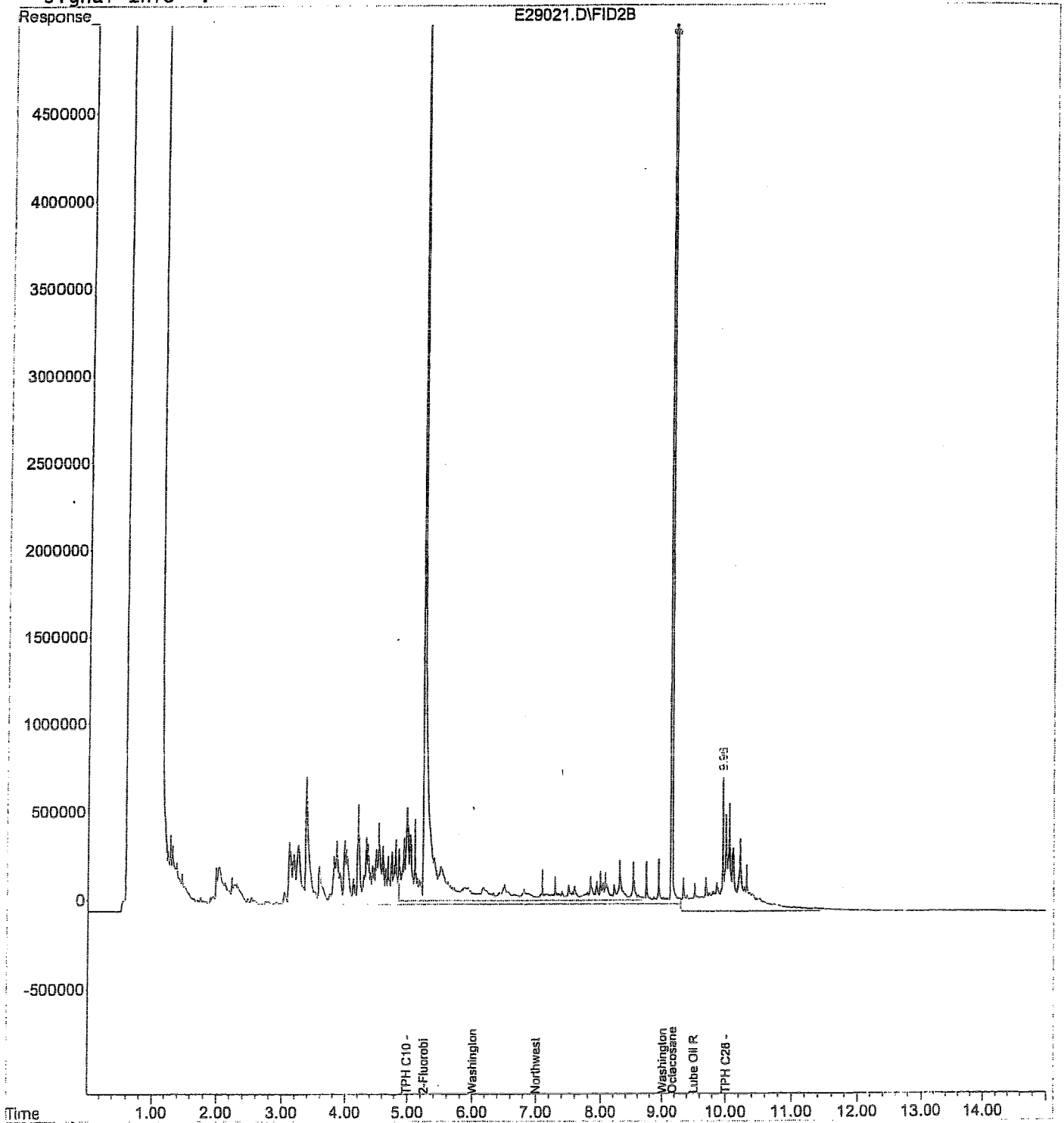
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Misc : 1x s WTPH-Dext  
IntFile : SURR.E  
Quant Time: May 29 12:00 2002

Vial: 15  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Results File: 0840219B.RES

Quant Method : C:\HPCHEM\1\METHODS\0840219B.M (Chemstation Integrator)  
Title : TPH-D Rear  
Last Update : Thu May 16 06:27:13 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 0840219A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



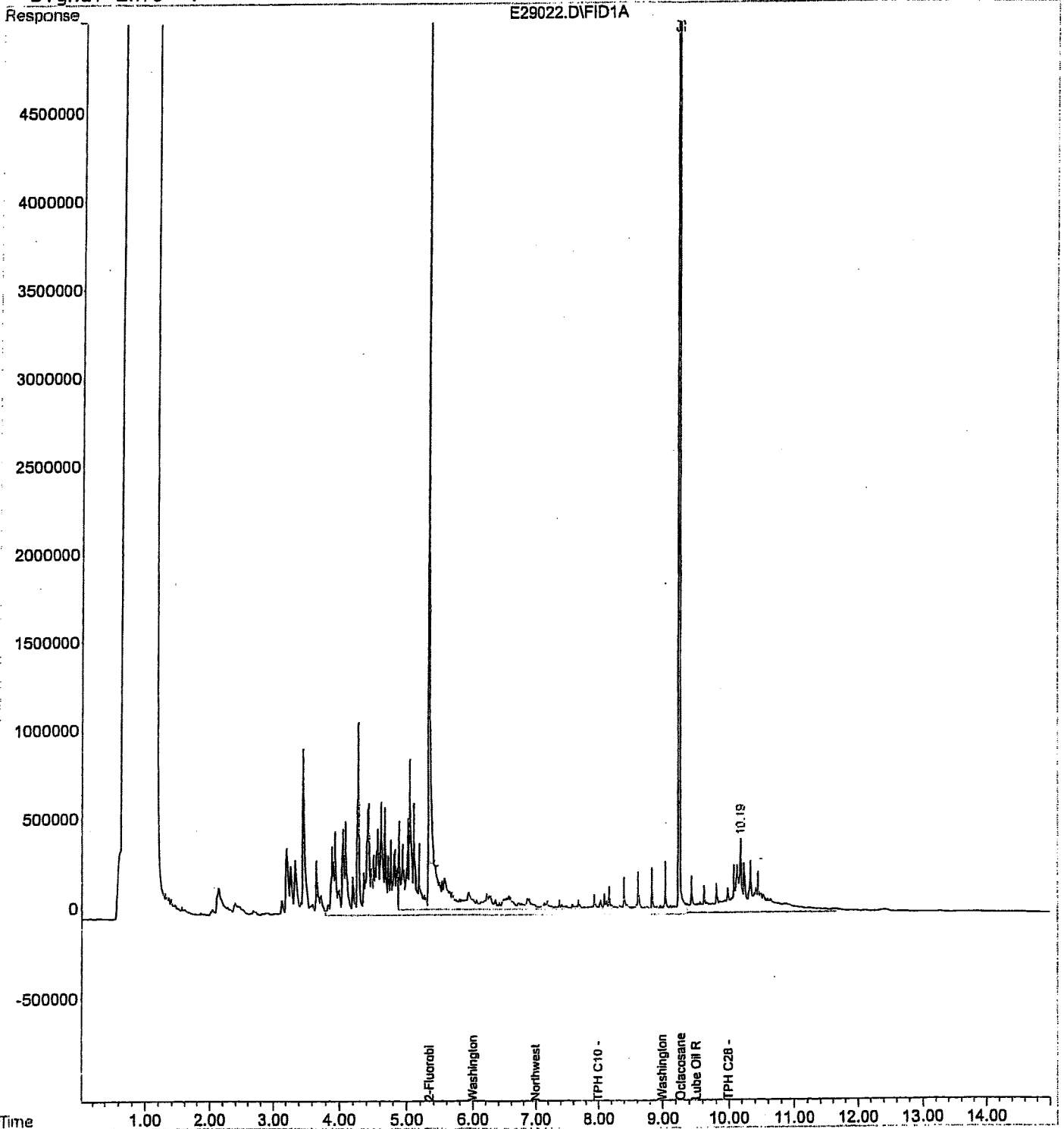
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Misc : 1x s WTPH-Dext  
IntFile : SURR.E  
Quant Time: May 29 12:00 2002

Vial: 16  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Results File: 0840219A.RES

Quant Method : C:\HPCHEM\1\METHODS\0840219A.M (Chemstation Integrator)  
Title : TPH-D Front  
Last Update : Tue Mar 26 08:00:15 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 0840219A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



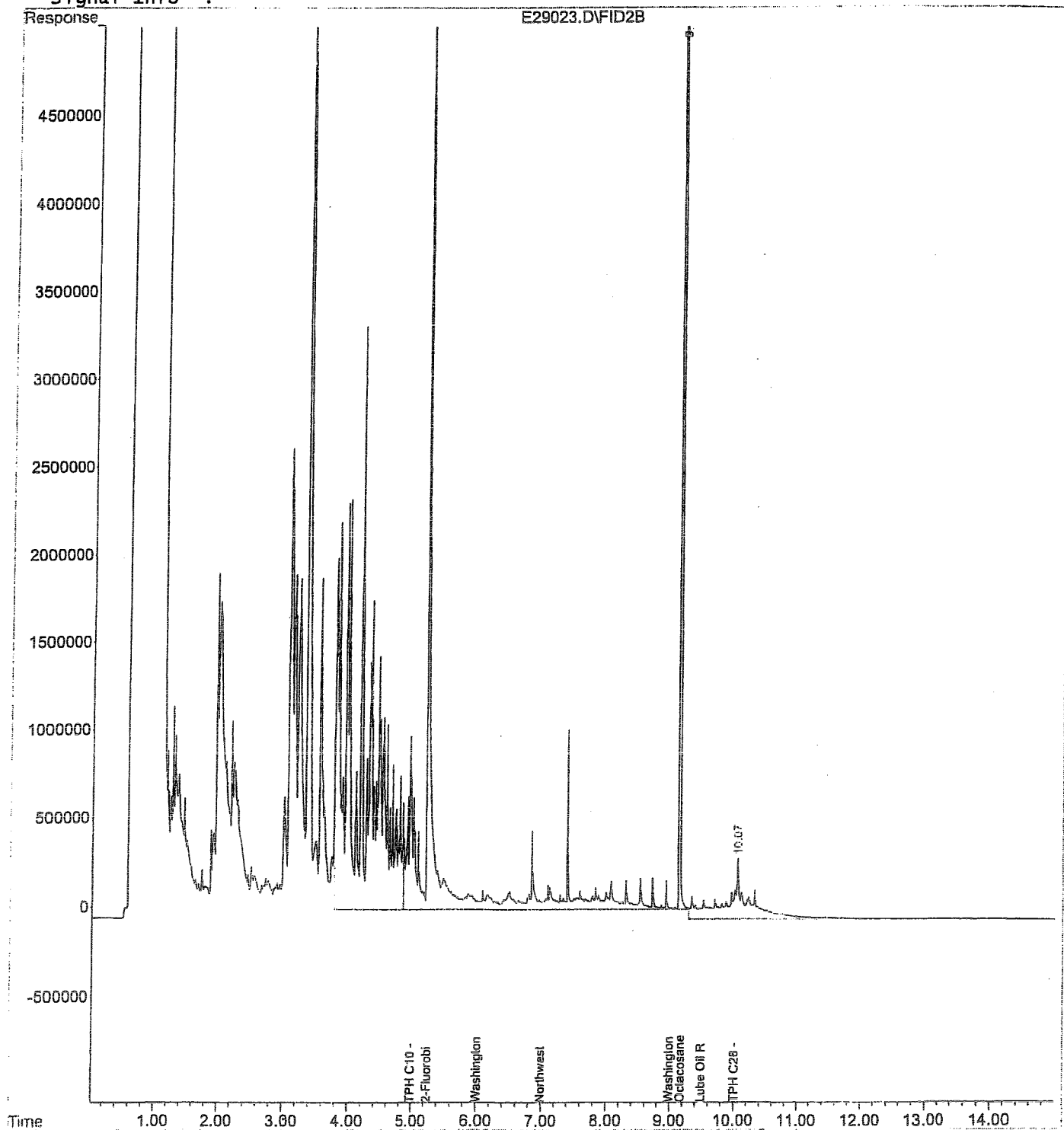
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IntFile : SURR.E  
Quant Time: May 29 12:25 2002

Vial: 17  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Results File: 0840219B.RES

Quant Method : C:\HPCHEM\1\METHODS\0840219B.M (Chemstation Integrator)  
Title : TPH-D Rear  
Last Update : Thu May 16 06:27:13 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 0840219A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



Data File : C:\HPCHEM\1\DATA\E29024.D

Acq On : 5-29-02 12:07:42 PM

Sample : B2E0493-13

Misc : 1x s WTPH-Dext

IntFile : SURR.E

Quant Time: May 29 12:25 2002 Quant Results File: 08402!9A.RES

Vial: 18

Operator: EDL

Inst : GC #9

Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\08402!9A.M (Chemstation Integrator)

Title : TPH-D Front

Last Update : Tue Mar 26 08:00:15 2002

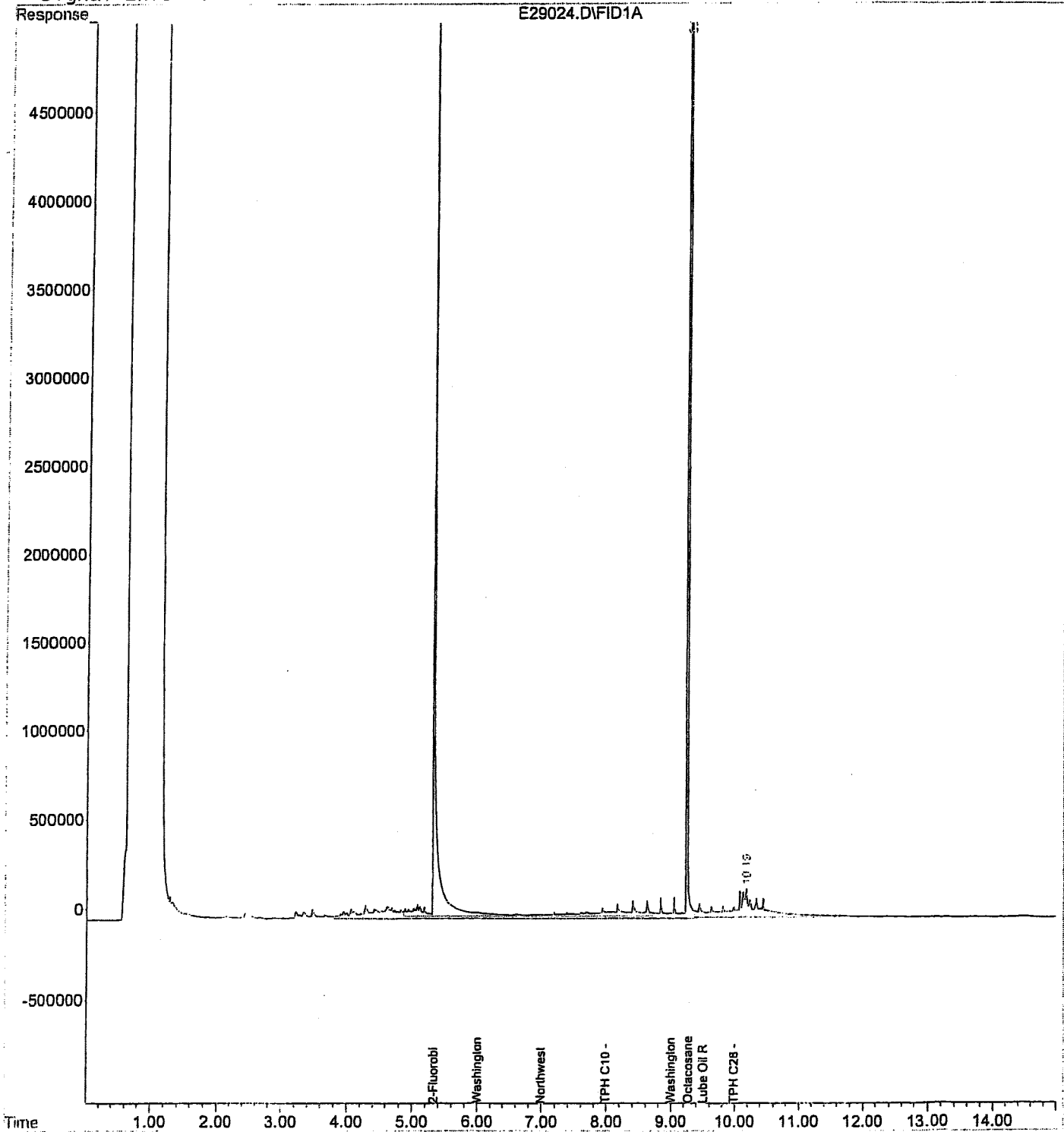
Response via : Multiple Level Calibration

DataAcq Meth : 08402!9A.M

Volume Inj. :

Signal Phase :

Signal Info :



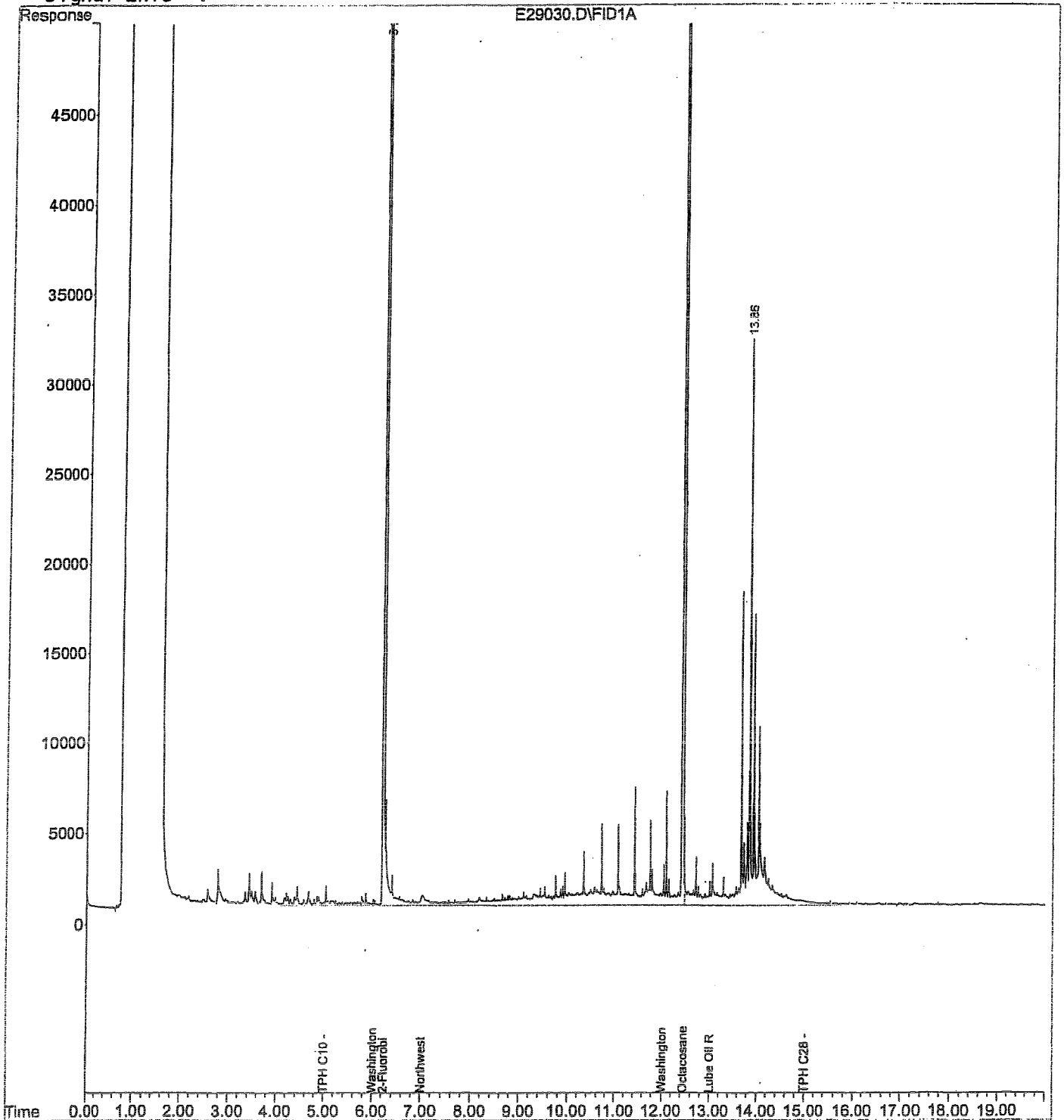
Data File : C:\HPCHEM\4\DATA\E29030.D  
Acq On : 29 May 2002 2:28 pm  
Sample : b2e0493-14  
Misc : 1x wtpH-dx  
IntFile : SURR.E  
Quant Time: May 29 14:48 2002

Vial: 5  
Operator: EDL  
Inst : GC #1  
Multiplier: 1.00

Quant Results File: 1340211A.RES

Quant Method : C:\HPCHEM\4\METHODS\1340211A.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue May 14 13:32:05 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 1340211A.M

Volume Inj. :  
Signal Phase :  
Signal Info :

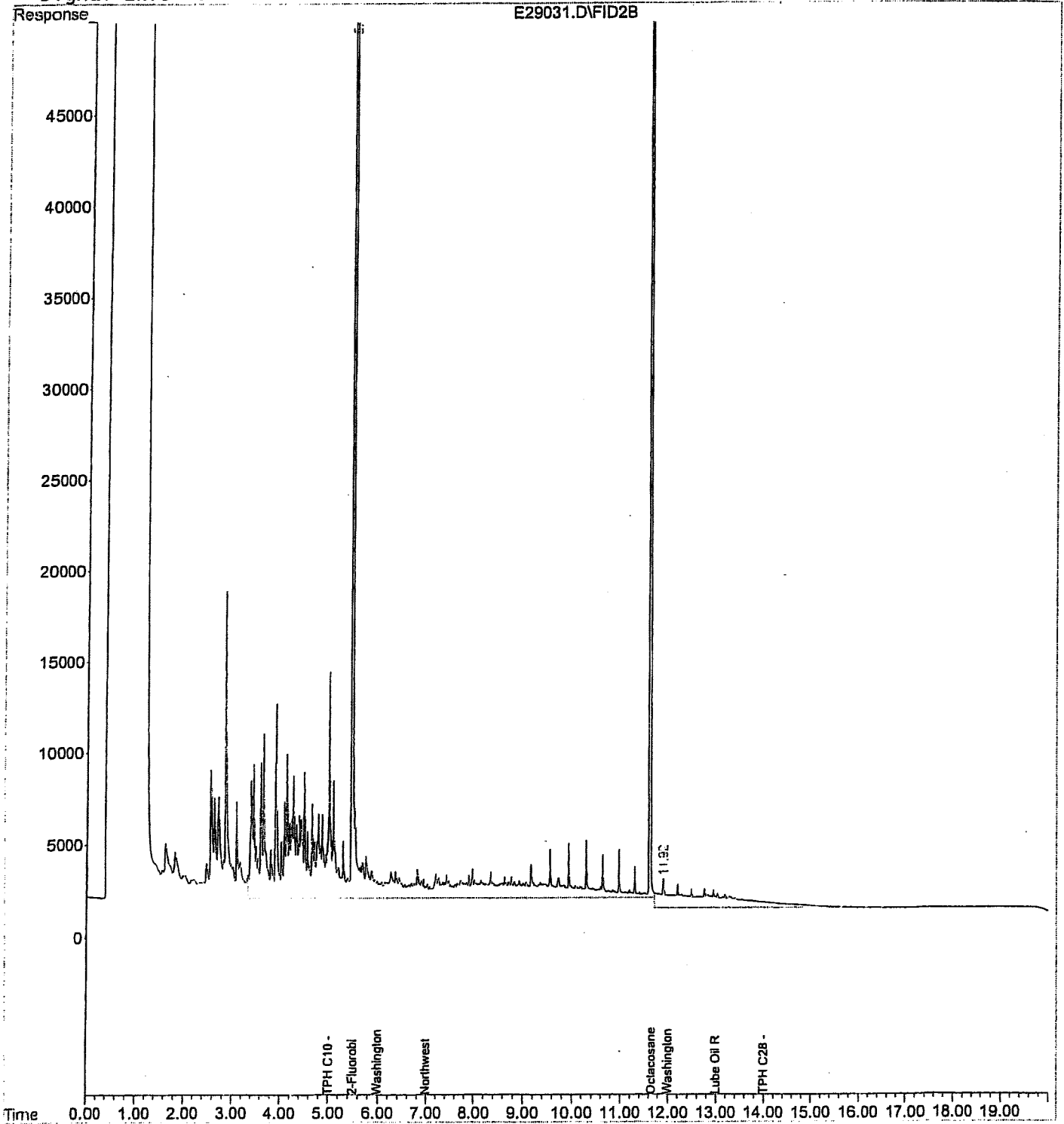


Data File : C:\HPCHEM\4\DATA.SEC\E29031.D  
Acq On : 29 May 2002 2:59 pm  
Sample : b2e0493-15  
Misc : 1x wtph-dx  
IntFile : SURR.E  
Quant Time: May 29 15:19 2002

Vial: 6  
Operator: EDL  
Inst : GC #1  
Multiplr: 1.00

Quant Method : C:\HPCHEM\4\METHODS\13402!1B.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue May 14 13:32:54 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 13402!1A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



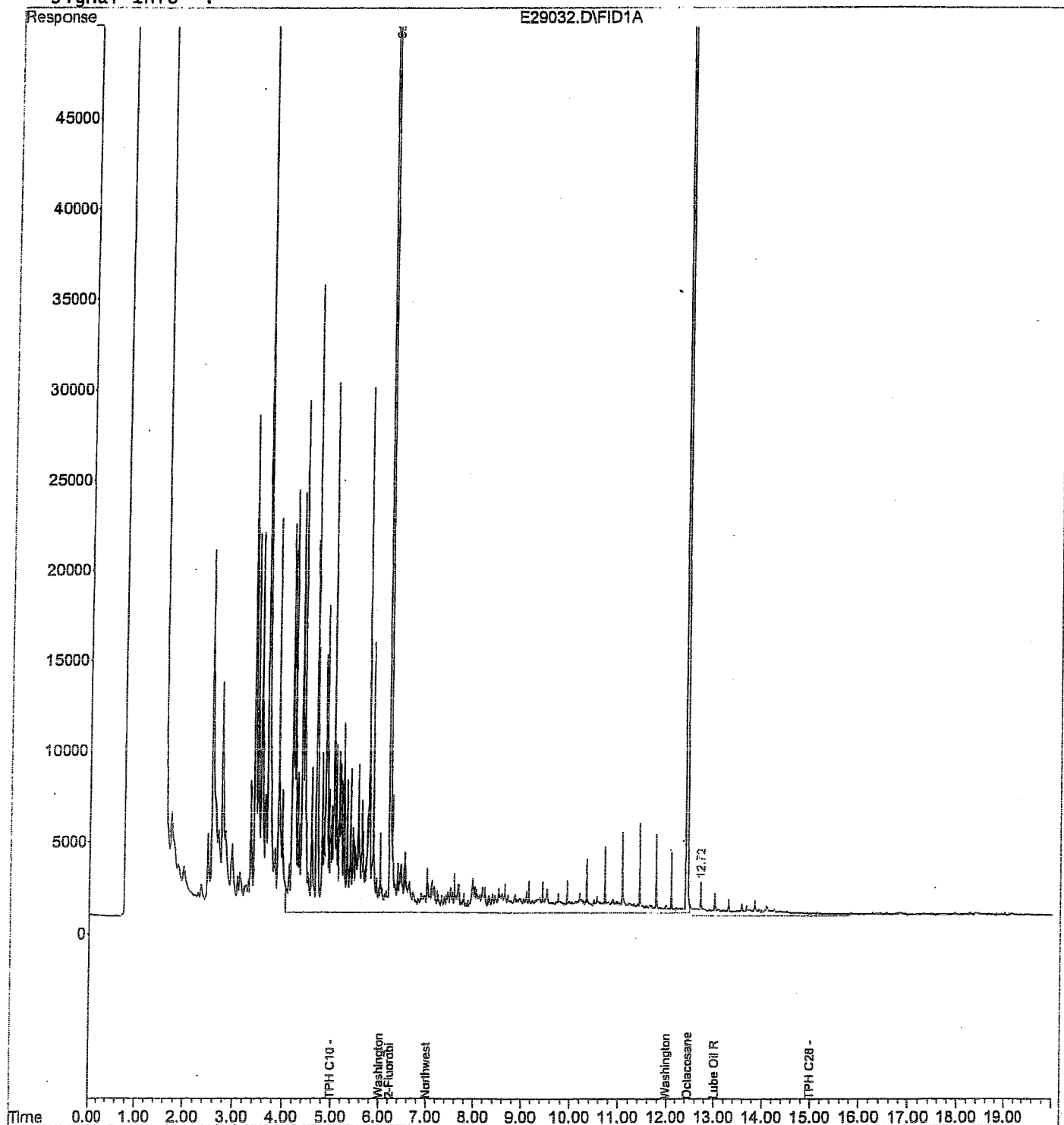
Data File : C:\HPCHEM\4\DATA\E29032.D  
Acq On : 29 May 2002 2:59 pm  
Sample : b2e0493-16  
Misc : 1x wtph-dx  
IntFile : SURR.E  
Quant Time: May 29 15:19 2002

Vial: 7  
Operator: EDL  
Inst : GC #1  
Multiplr: 1.00

Quant Results File: 1340211A.RES

Quant Method : C:\HPCHEM\4\METHODS\1340211A.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue May 14 13:32:05 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 1340211A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



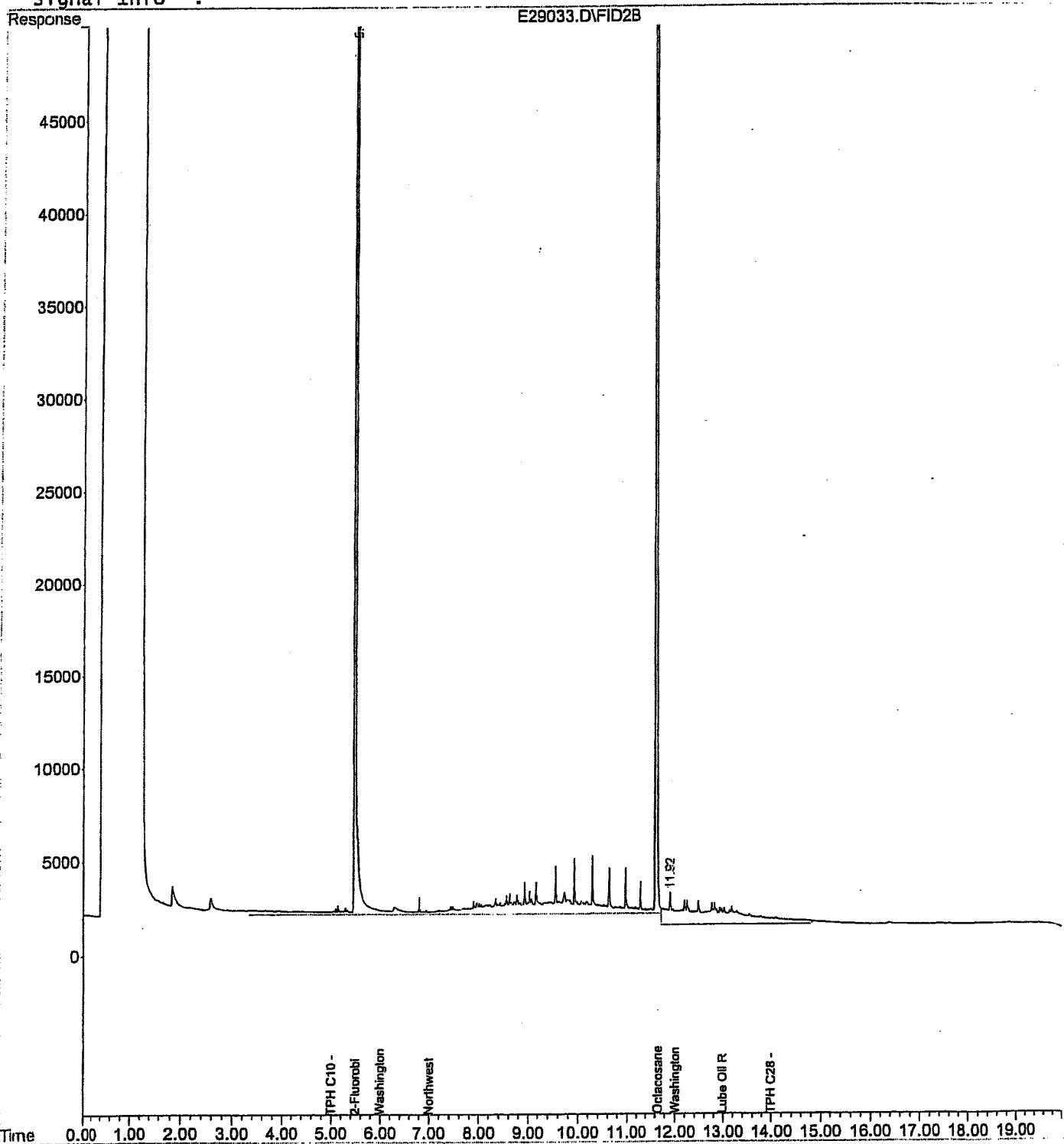
Data File : C:\HPCHEM\4\DATA.SEC\E29033.D  
Acq On : 29 May 2002 3:29 pm  
Sample : b2e0493-17  
Misc : 1x wtph-dx  
IntFile : SURR.E  
Quant Time: May 29 15:50 2002

Vial: 8  
Operator: EDL  
Inst : GC #1  
Multiplr: 1.00

Quant Results File: 13402!1B.RES

Quant Method : C:\HPCHEM\4\METHODS\13402!1B.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue May 14 13:32:54 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 13402!1A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



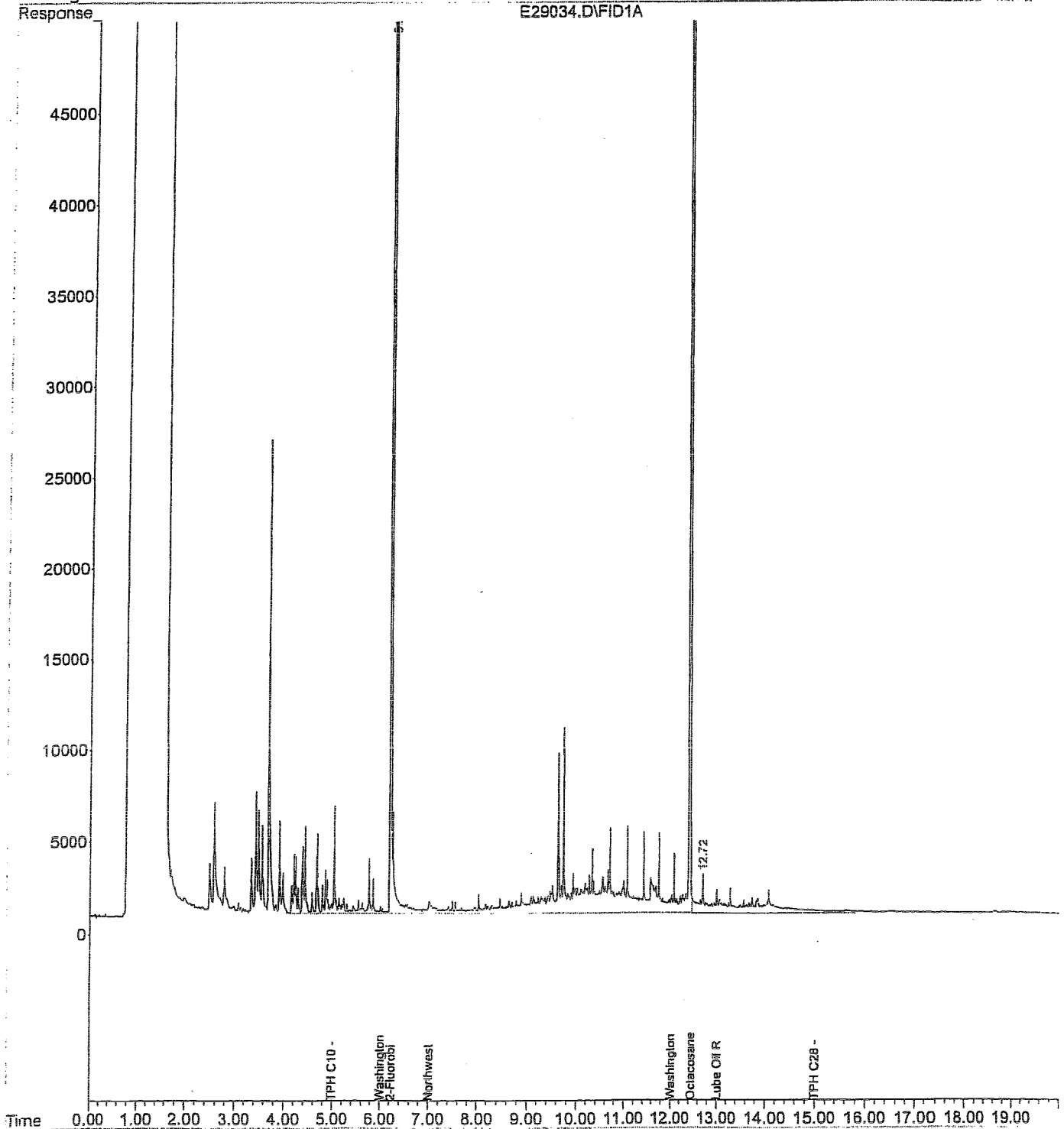
Data File : C:\HPCHEM\4\DATA\E29034.D  
Acq On : 29 May 2002 3:29 pm  
Sample : b2e0493-18  
Misc : 1x wtph-dx  
IntFile : SURR.E  
Quant Time: May 29 15:49 2002

Vial: 9  
Operator: EDL  
Inst : GC #1  
Multiplr: 1.00

Quant Results File: 1340211A.RES

Quant Method : C:\HPCHEM\4\METHODS\1340211A.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue May 14 13:32:05 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 1340211A.M

Volume Inj. :  
Signal Phase :  
Signal Info :

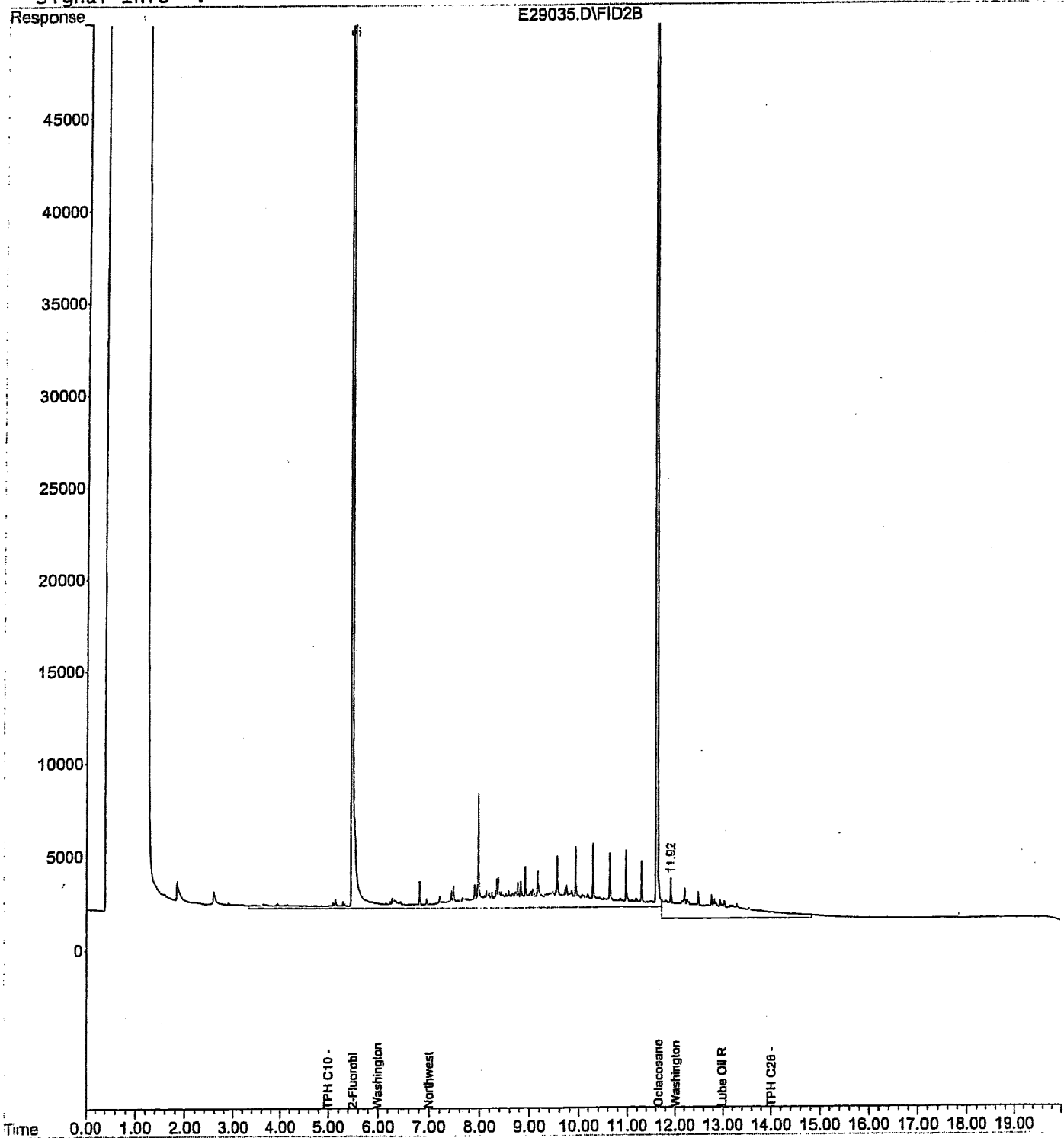


Data File : C:\HPCHEM\4\DATA.SEC\E29035.D  
Acq On : 29 May 2002 4:00 pm  
Sample : b2e0493-19  
Misc : 1x wtph-dx  
IntFile : SURR.E  
Quant Time: May 29 16:20 2002

Vial: 10  
Operator: EDL  
Inst : GC #1  
Multiplr: 1.00

Quant Results File: 13402!1B.RES  
Quant Method : C:\HPCHEM\4\METHODS\13402!1B.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue May 14 13:32:54 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 13402!1A.M

Volume Inj. :  
Signal Phase :  
Signal Info :

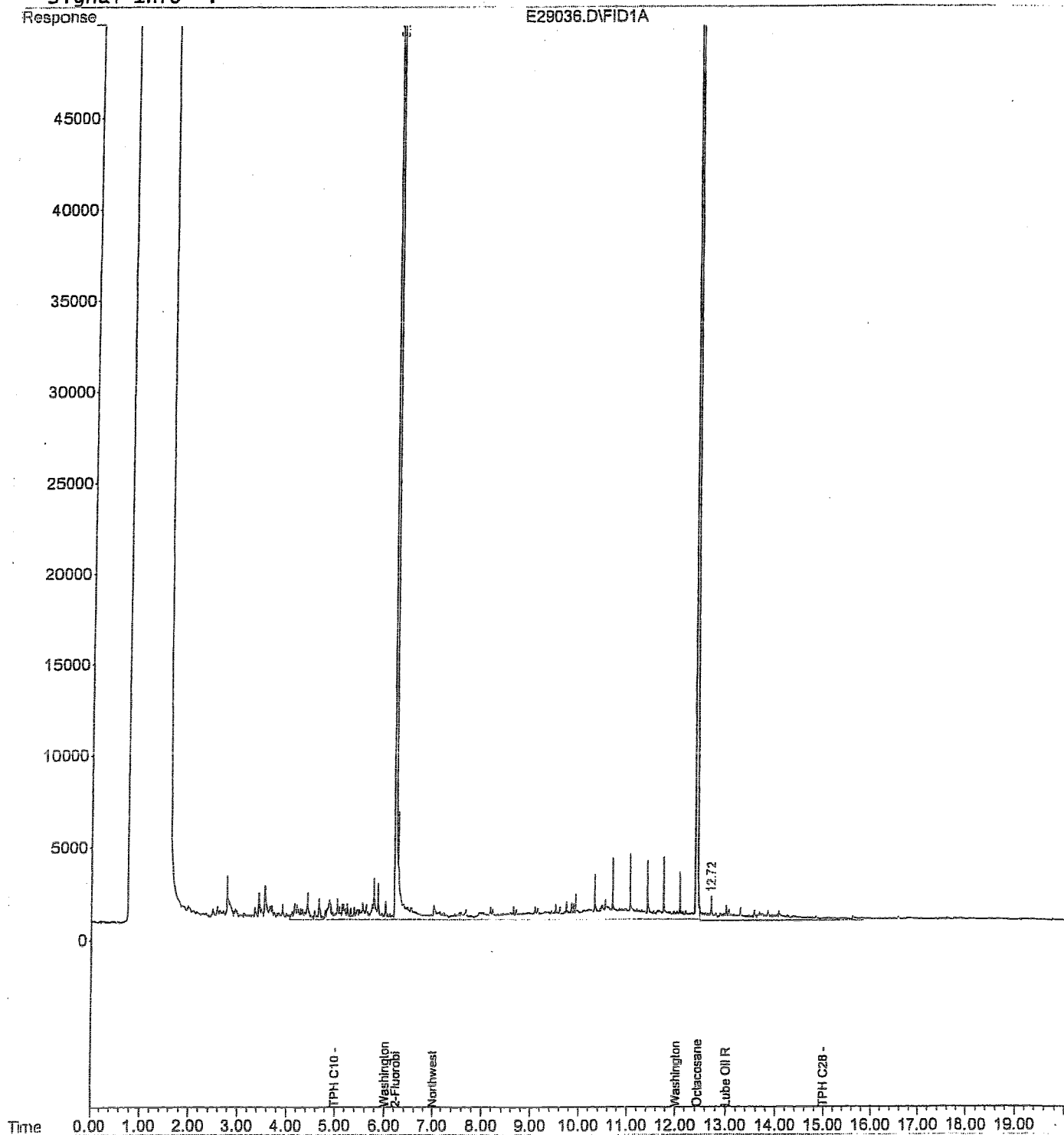


Data File : C:\HPCHEM\4\DATA\E29036.D  
Acq On : 29 May 2002 4:00 pm  
Sample : b2e0493-20  
Misc : 1x wtph-dx  
IntFile : SURR.E  
Quant Time: May 29 16:20 2002

Vial: 11  
Operator: EDL  
Inst : GC #1  
Multiplr: 1.00

Quant Method : C:\HPCHEM\4\METHODS\13402!1A.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue May 14 13:32:05 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 13402!1A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



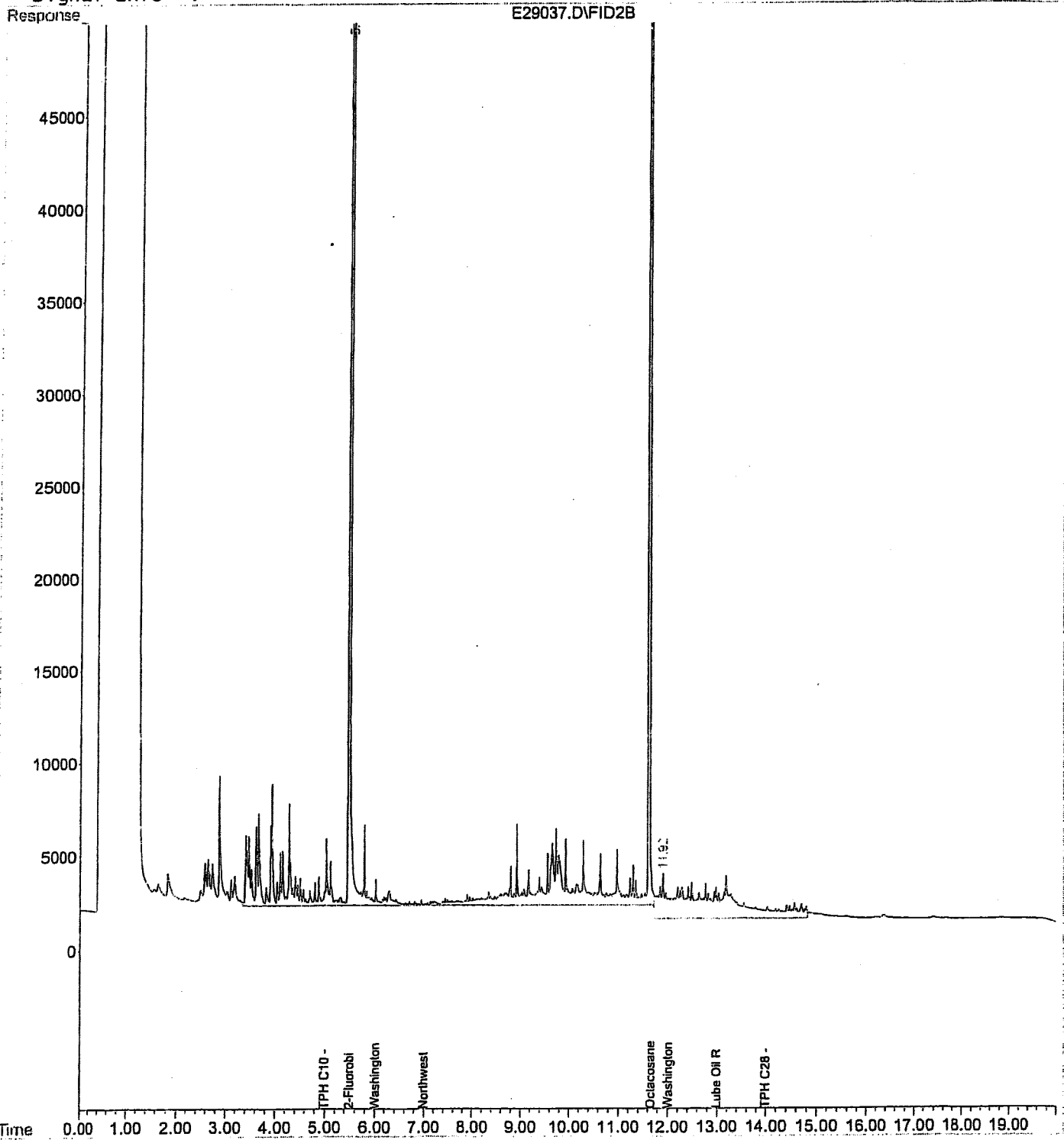
Data File : C:\HPCHEM\4\DATA.SEC\E29037.D  
Acq On : 29 May 2002 4:31 pm  
Sample : b2e0493-21  
Misc : 1x wtph-dx  
IntFile : SURR.E  
Quant Time: May 29 16:51 2002

Vial: 12  
Operator: EDL  
Inst : GC #1  
Multiplr: 1.00

Quant Results File: 13402!1B.RES

Quant Method : C:\HPCHEM\4\METHODS\13402!1B.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue May 14 13:32:54 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 13402!1A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



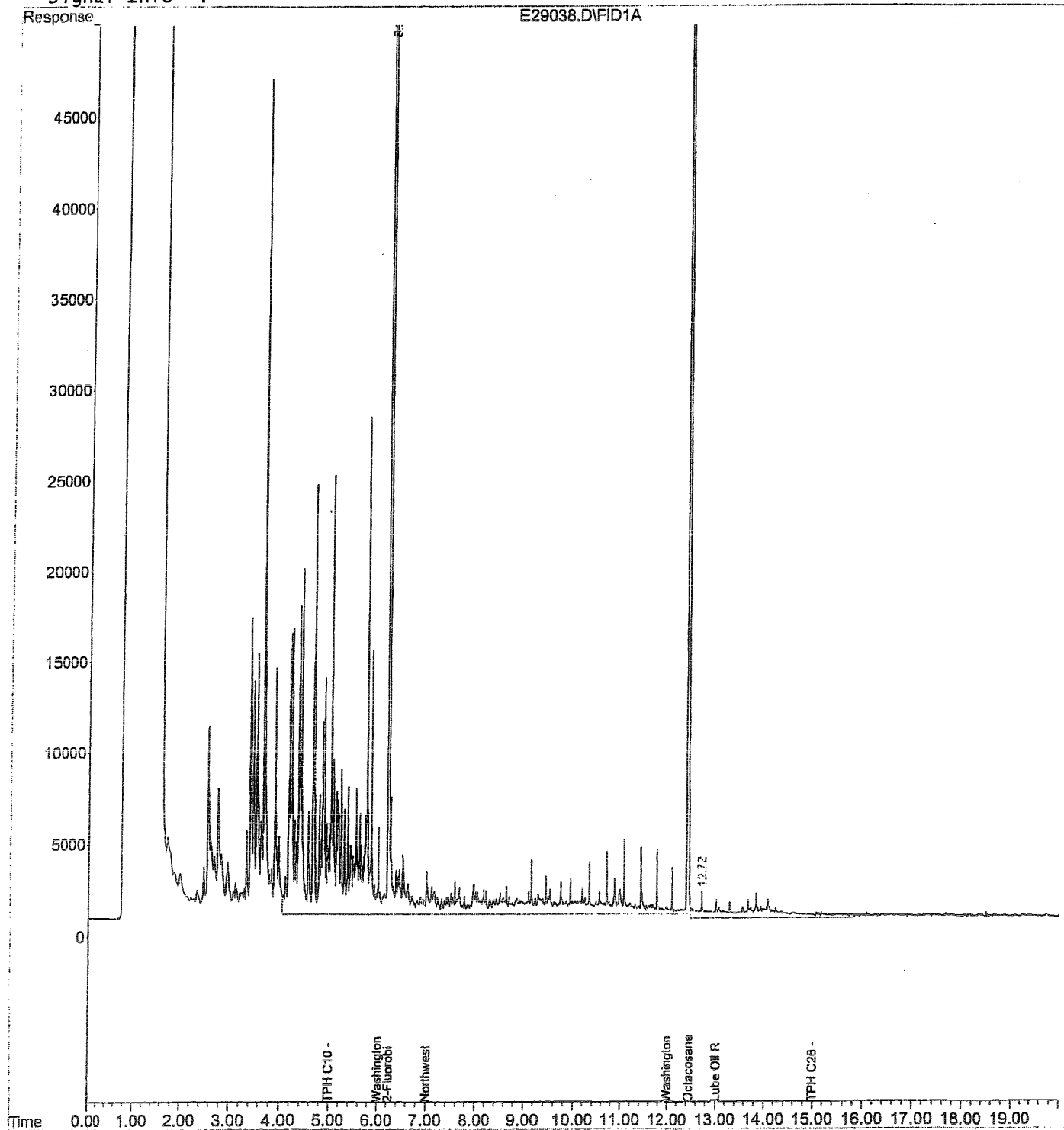
Data File : C:\HPCHEM\4\DATA\E29038.D  
Acq On : 29 May 2002 4:31 pm  
Sample : b2e0493-22  
Misc : 1x wtph-dx  
IntFile : SURR.E  
Quant Time: May 29 16:51 2002

Vial: 13  
Operator: EDL  
Inst : GC #1  
Multiplr: 1.00

Quant Results File: 13402!1A.RES

Quant Method : C:\HPCHEM\4\METHODS\13402!1A.M (Chemstation Integrator)  
Title : TPH-D Rear Method  
Last Update : Tue May 14 13:32:05 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 13402!1A.M

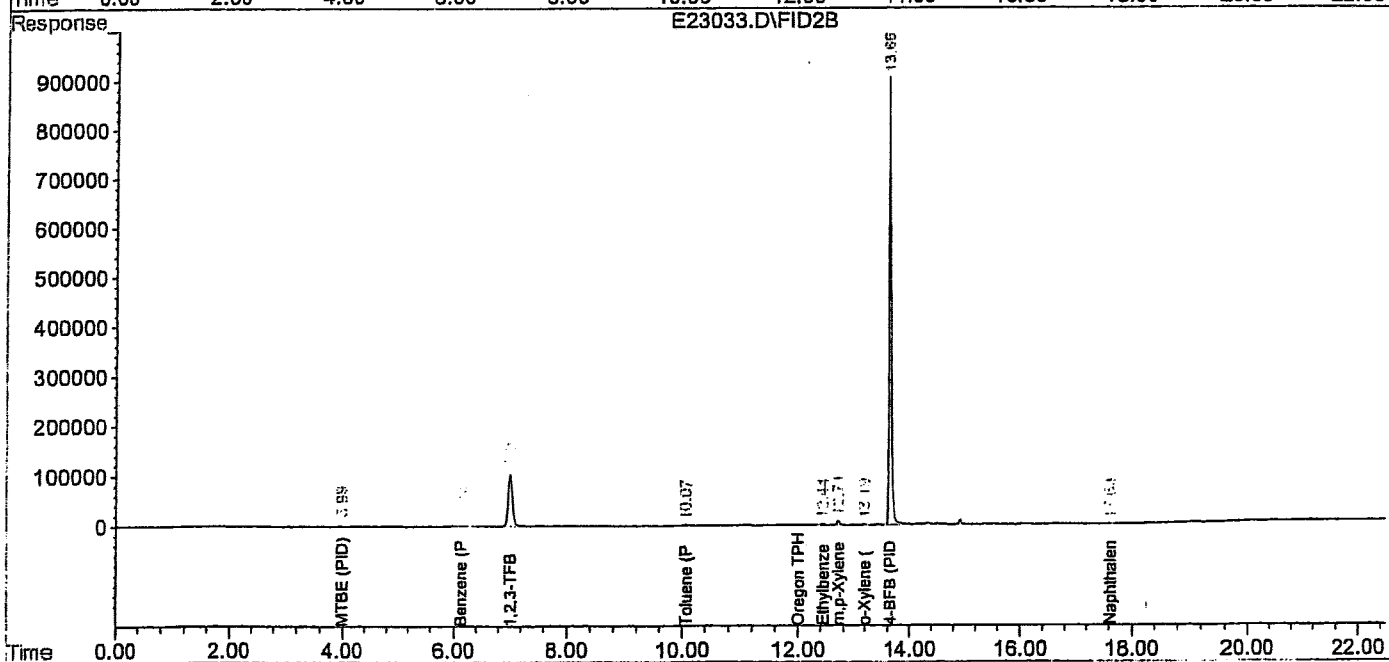
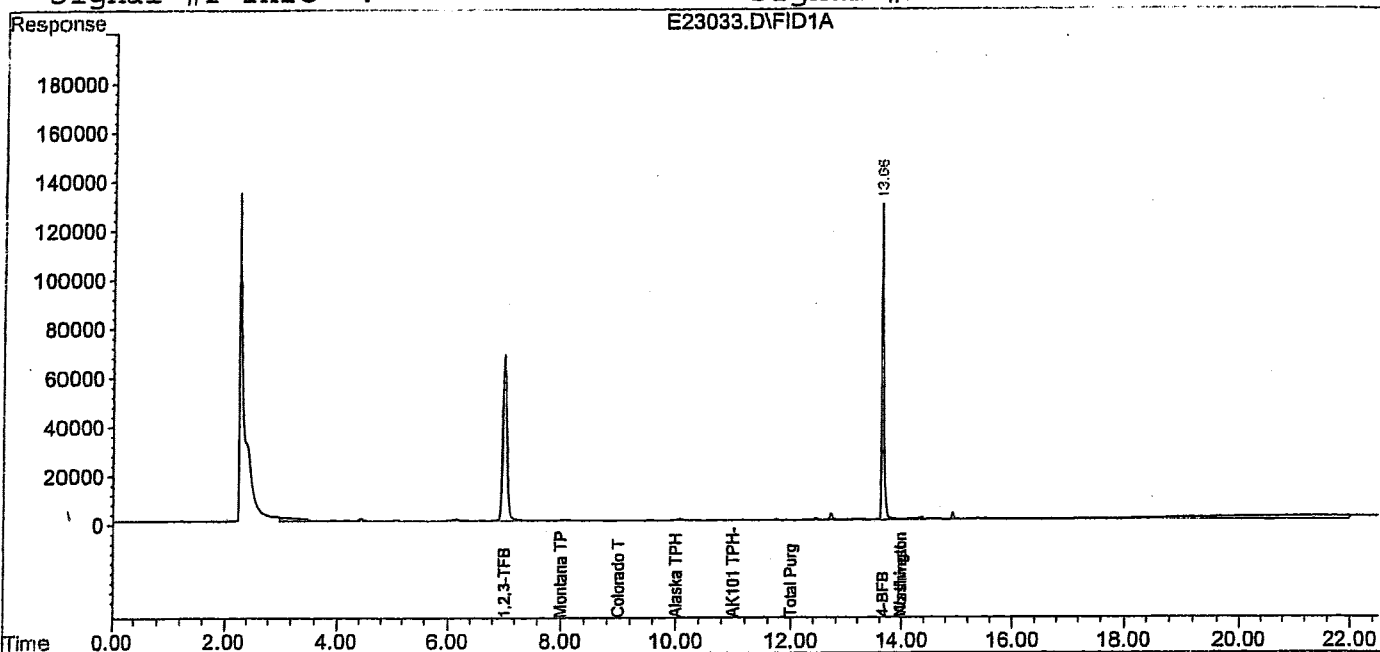
Volume Inj. :  
Signal Phase :  
Signal Info :



Signal #1 : D:\HPCHEM\2\DATA\052302\E23033.D\FID1A.CH Vial: 33  
 Signal #2 : D:\HPCHEM\2\DATA\052302\E23033.D\FID2B.CH  
 Acq On : 23 May 2002 22:32 Operator: sk  
 Sample : b2e0493-01 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 23 22:55 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 14:32:09 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

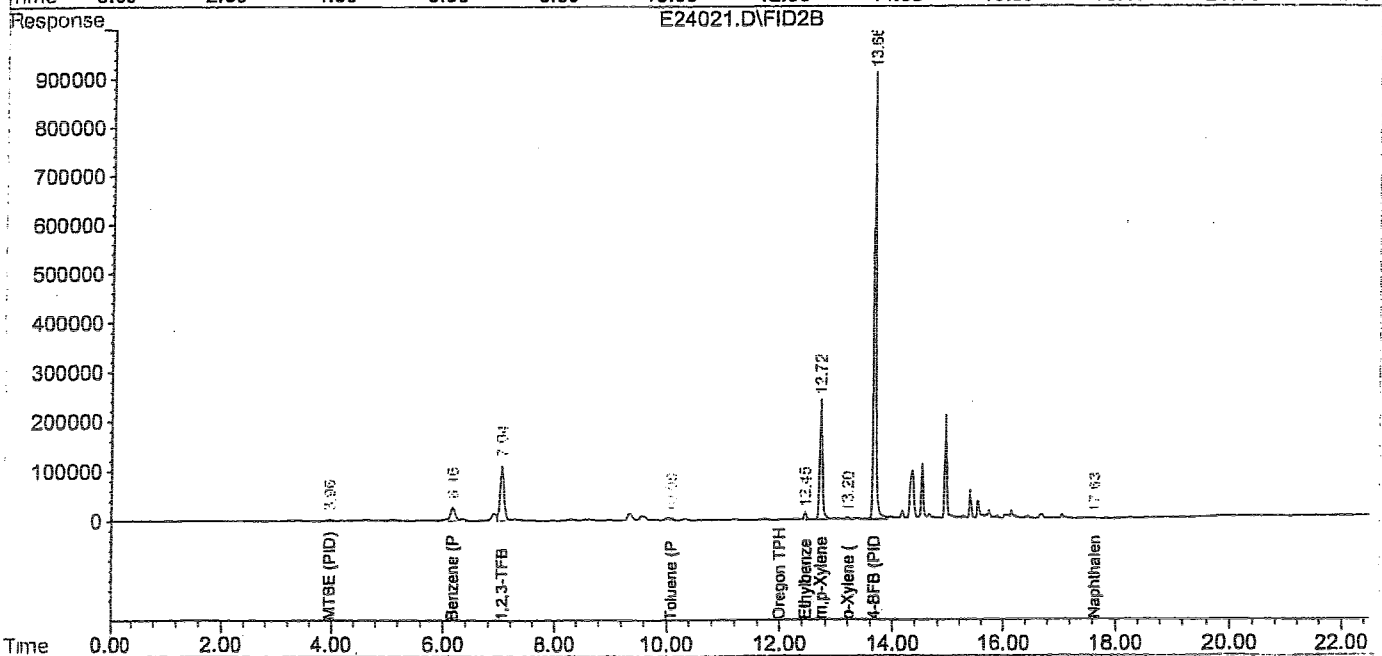
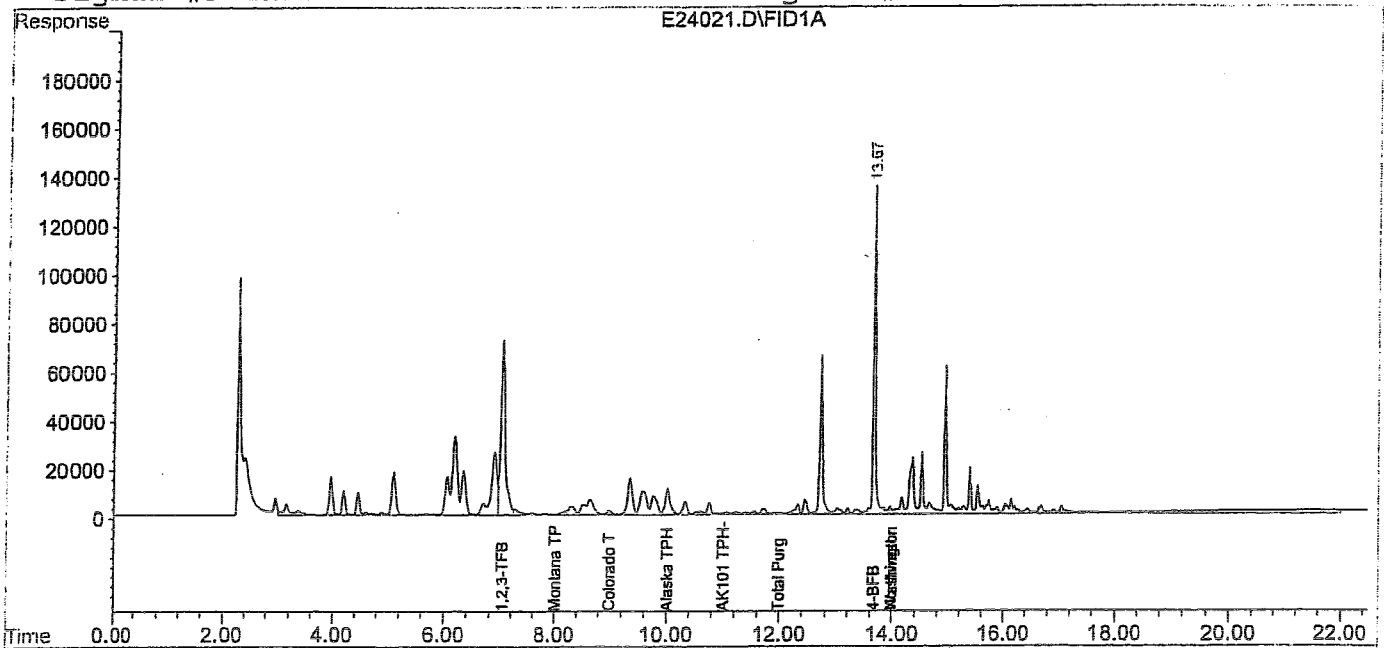
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24021.D\FID1A.CH Vial: 21  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24021.D\FID2B.CH  
 Acq On : 24 May 2002 17:14 Operator: sk  
 Sample : b2e0493-02 r1 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 17:37 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 10:56:34 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

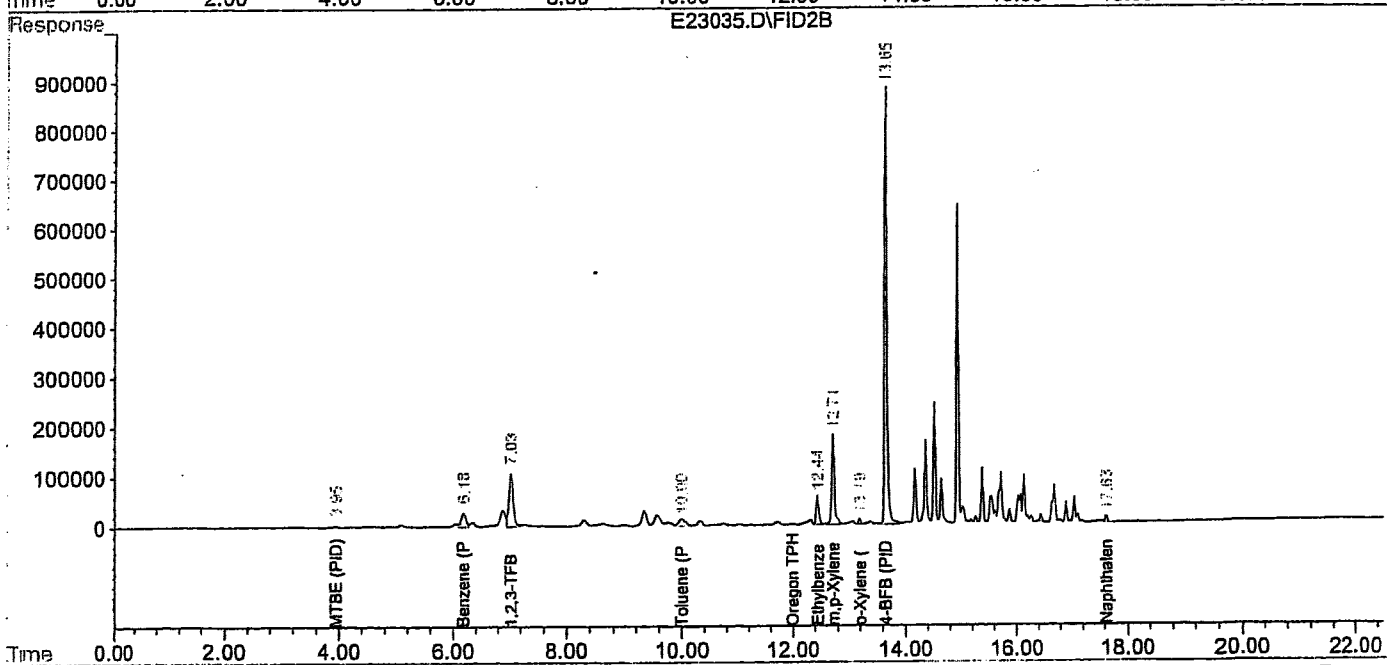
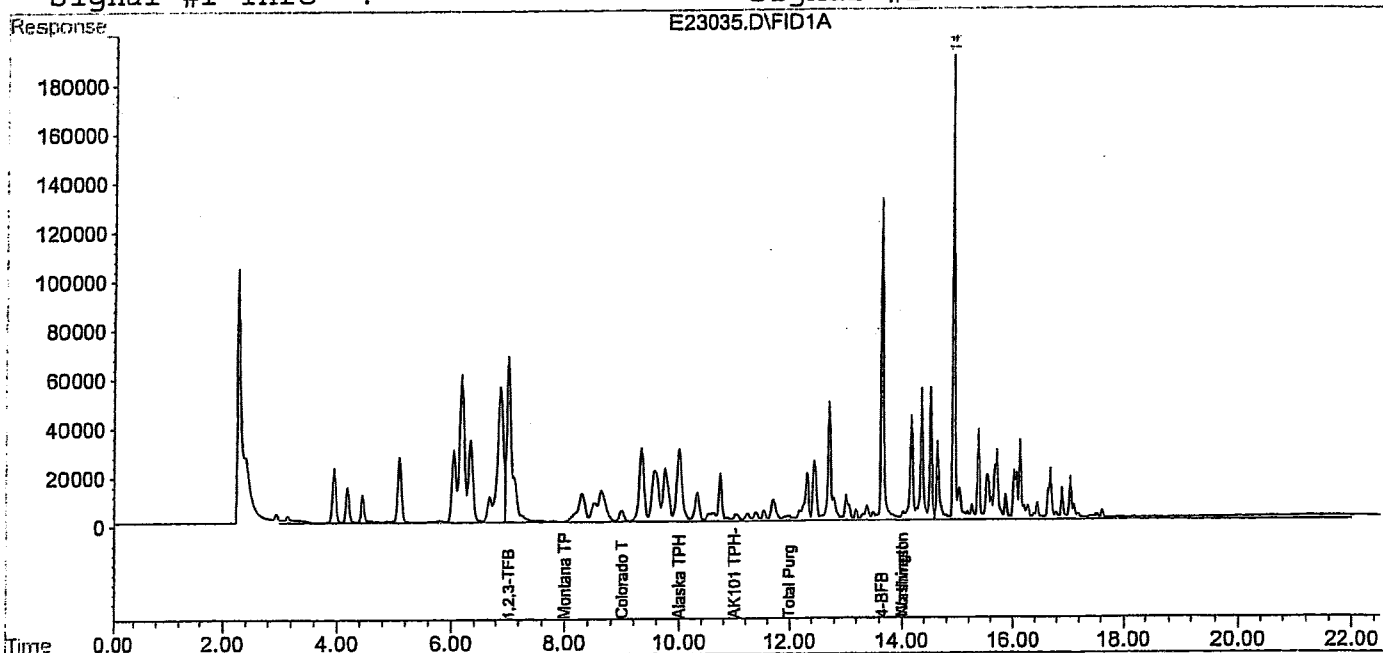
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052302\E23035.D\FID1A.CH Vial: 35  
 Signal #2 : D:\HPCHEM\2\DATA\052302\E23035.D\FID2B.CH  
 Acq On : 23 May 2002 23:30 Operator: sk  
 Sample : b2e0493-03 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 23 23:52 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 14:32:09 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

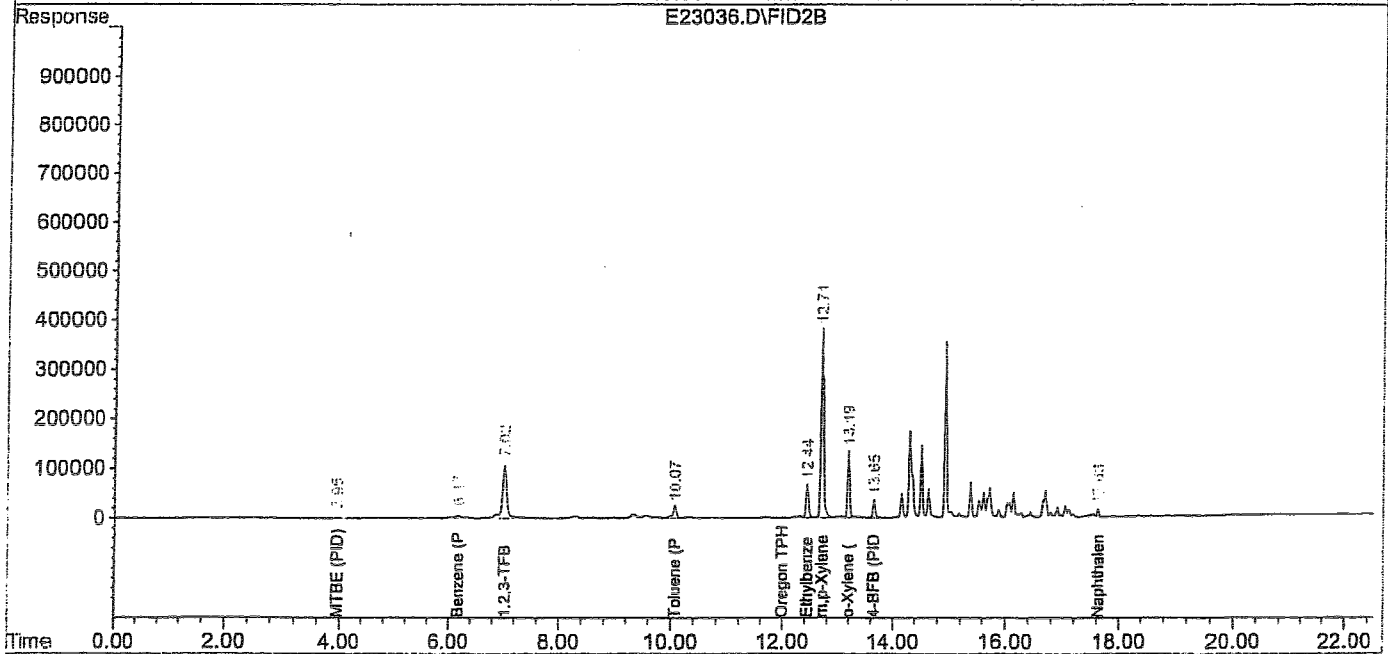
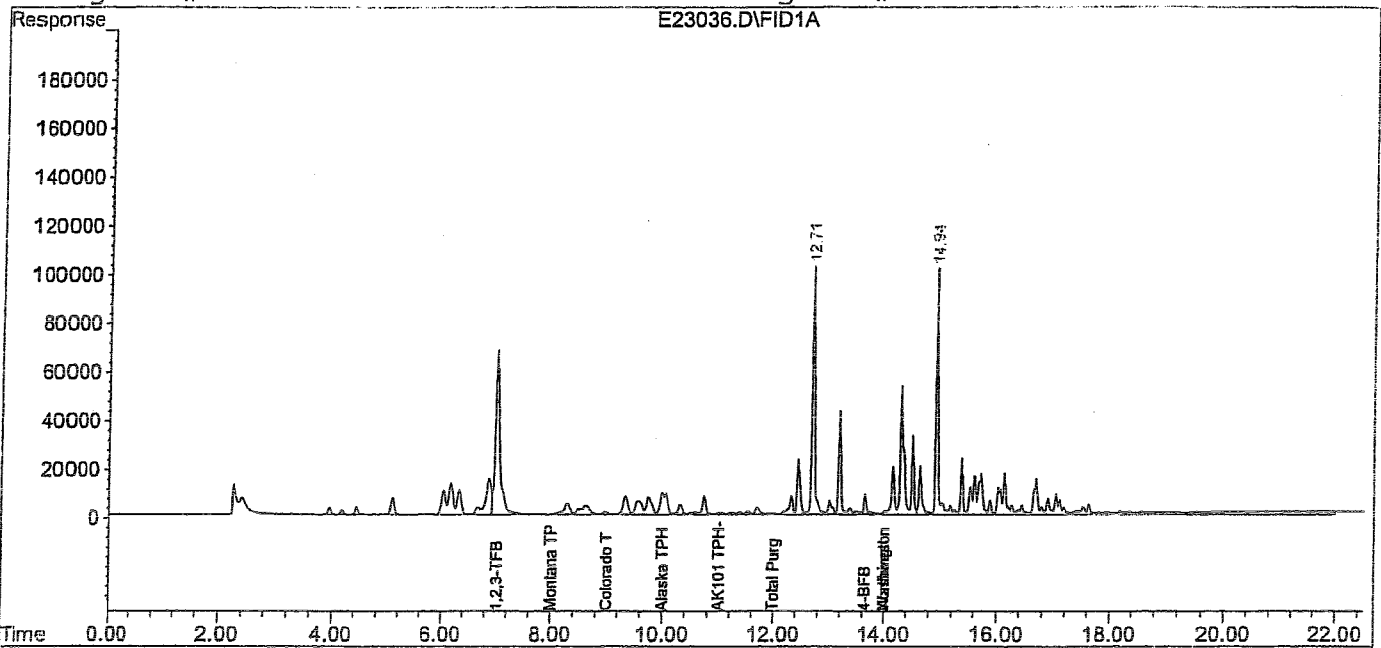
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052302\E23036.D\FID1A.CH Vial: 36  
 Signal #2 : D:\HPCHEM\2\DATA\052302\E23036.D\FID2B.CH  
 Acq On : 23 May 2002 23:58 Operator: sk  
 Sample : b2e0493-04 Inst : GC #12  
 Misc : 50X 2 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 0:21 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 14:32:09 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

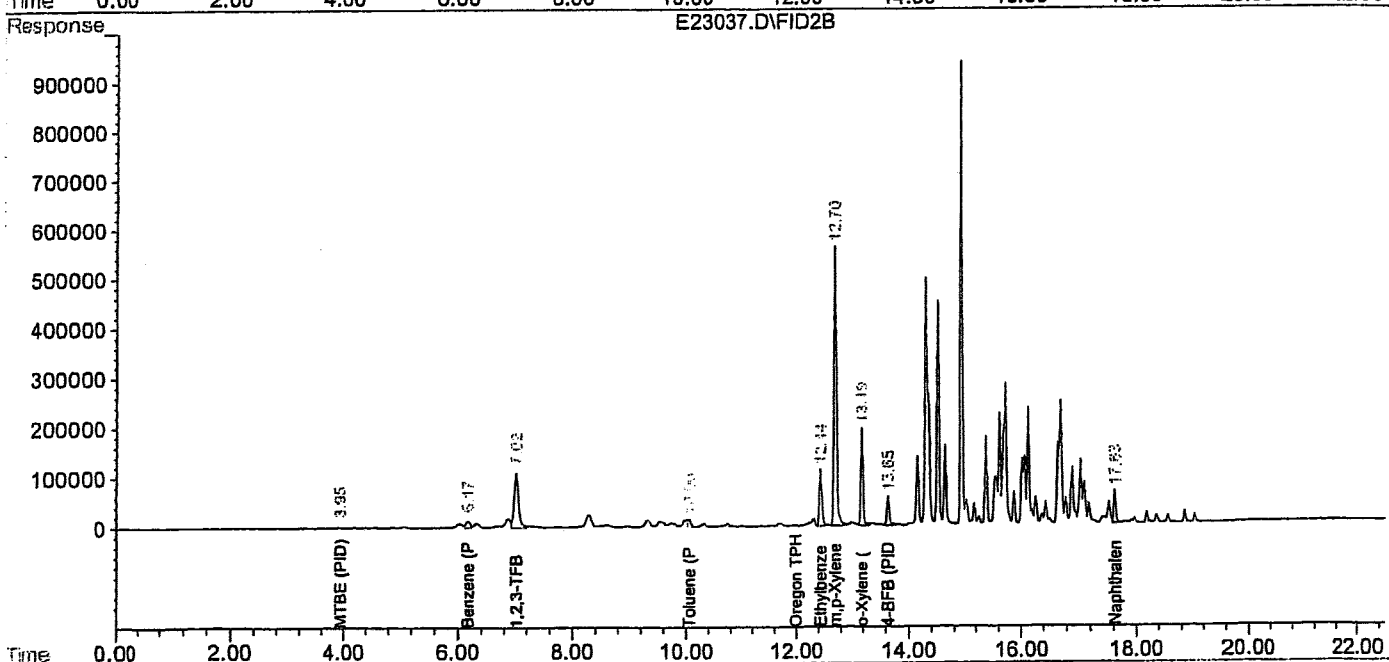
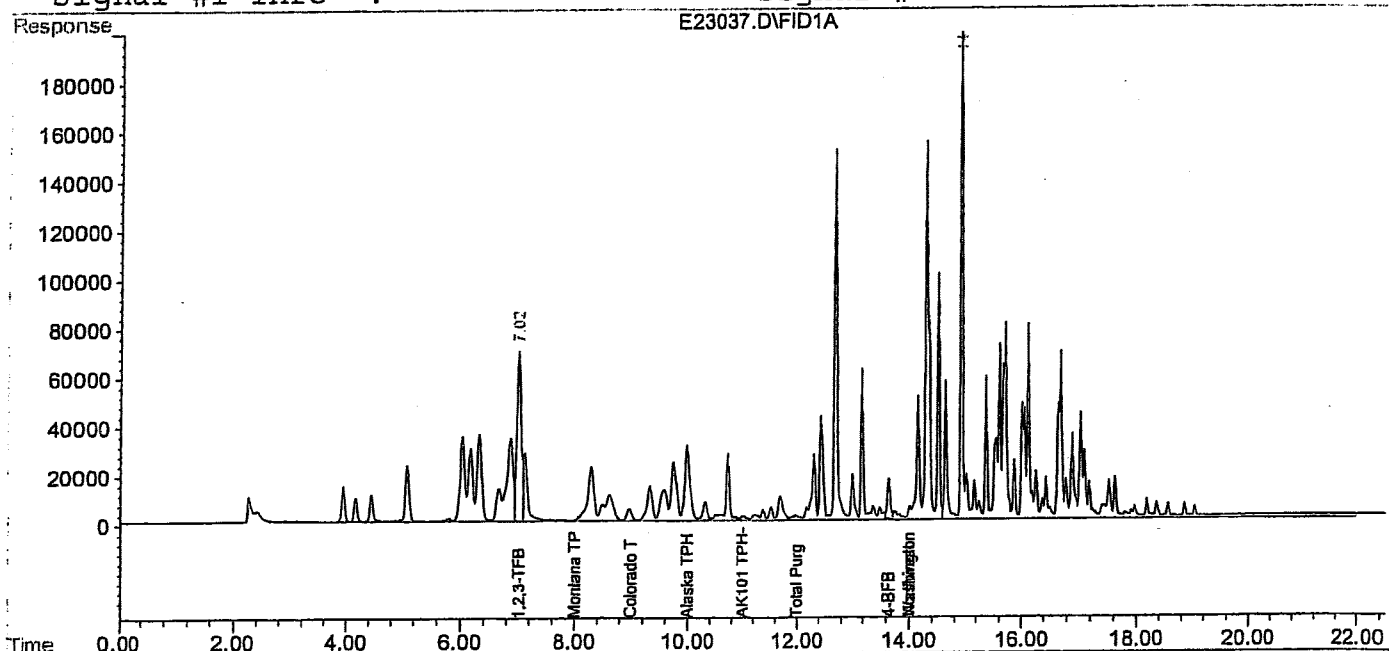
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052302\E23037.D\FID1A.CH Vial: 37  
 Signal #2 : D:\HPCHEM\2\DATA\052302\E23037.D\FID2B.CH  
 Acq On : 24 May 2002 00:27 Operator: sk  
 Sample : b2e0493-05 Inst : GC #12  
 Misc : 50X 2 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 0:49 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 14:32:09 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

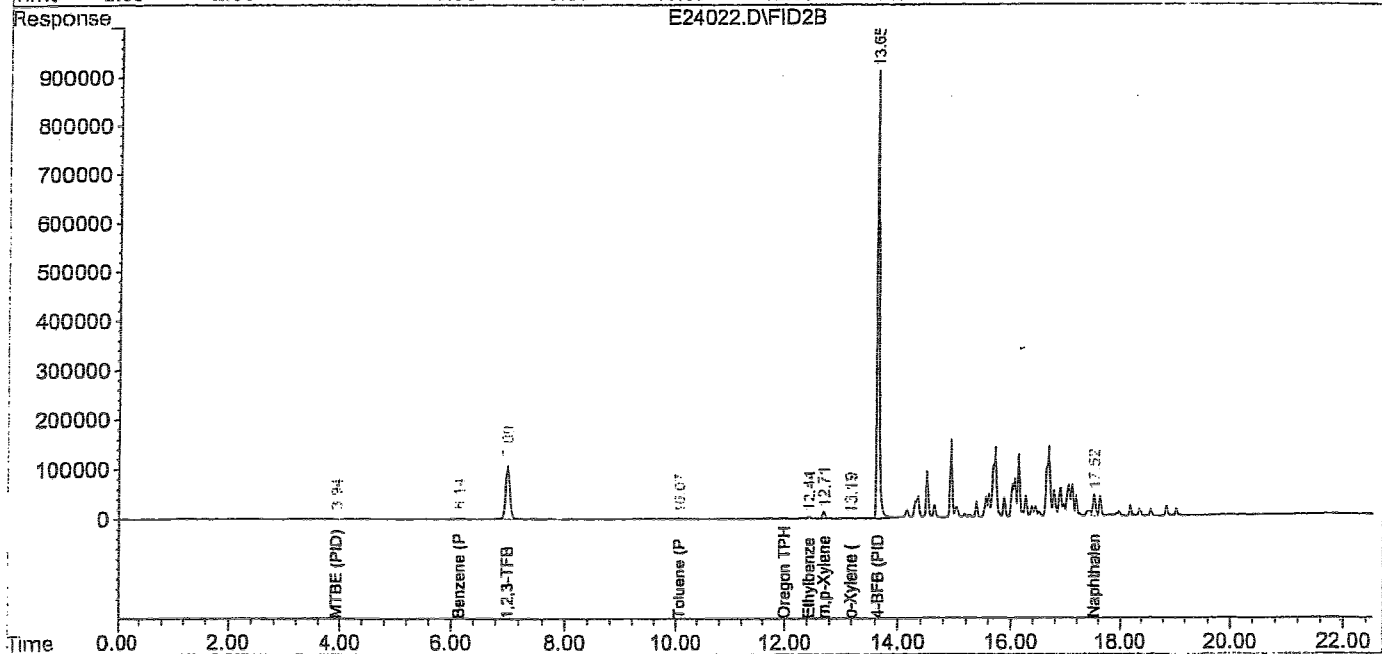
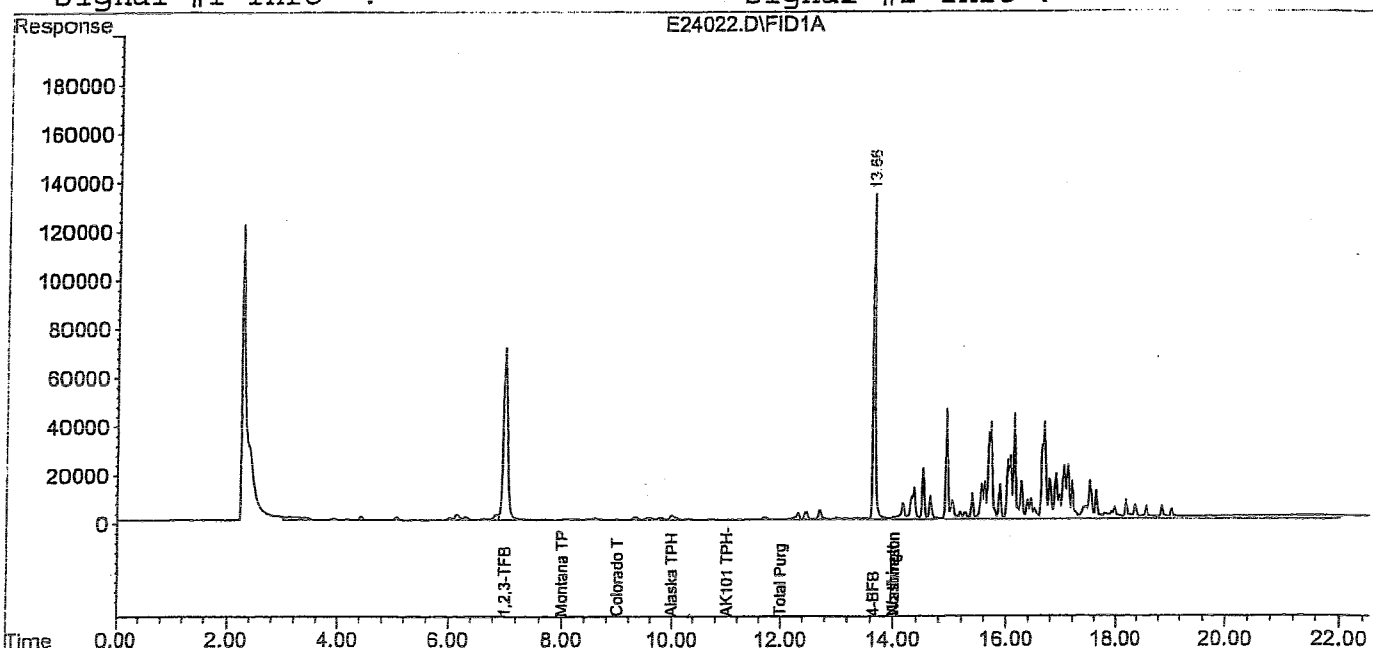
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24022.D\FID1A.CH Vial: 22  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24022.D\FID2B.CH  
 Acq On : 24 May 2002 17:43 Operator: sk  
 Sample : b2e0493-06 r1 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 18:06 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 10:56:34 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

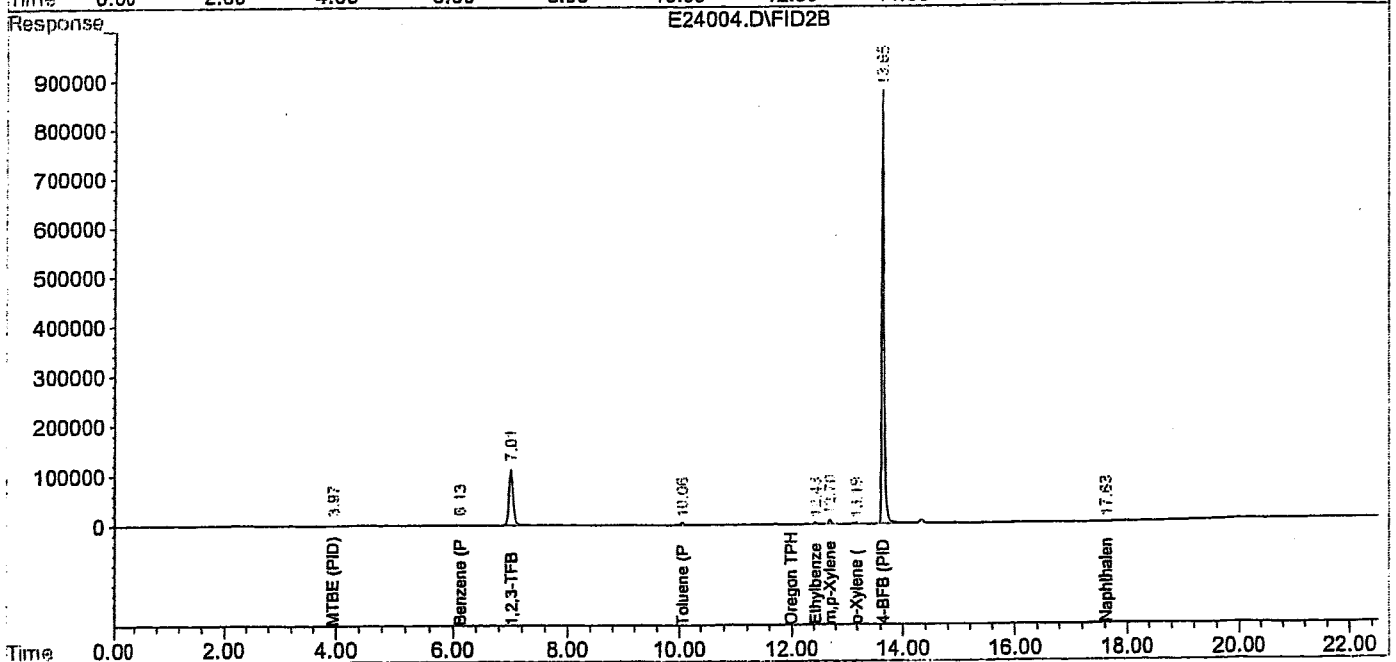
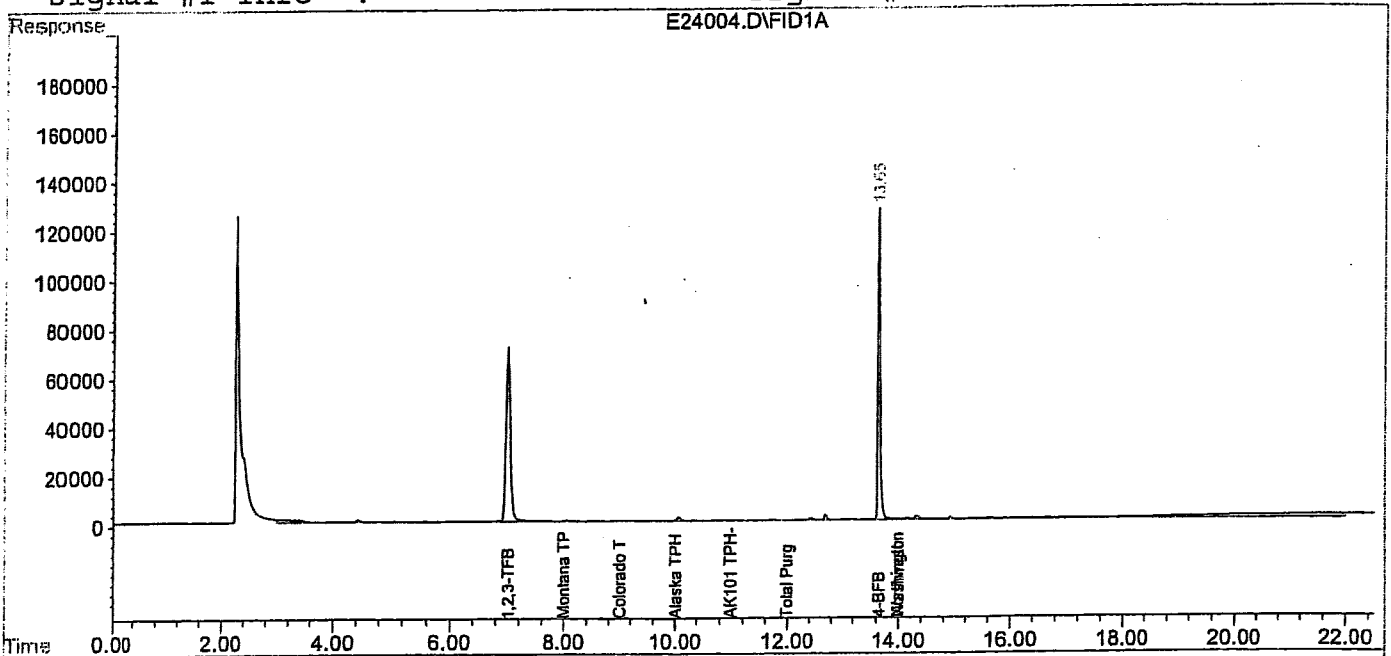
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24004.D\FID1A.CH Vial: 4  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24004.D\FID2B.CH  
 Acq On : 24 May 2002 8:18 Operator: sk  
 Sample : b2e0493-07 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 8:41 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 14:32:09 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

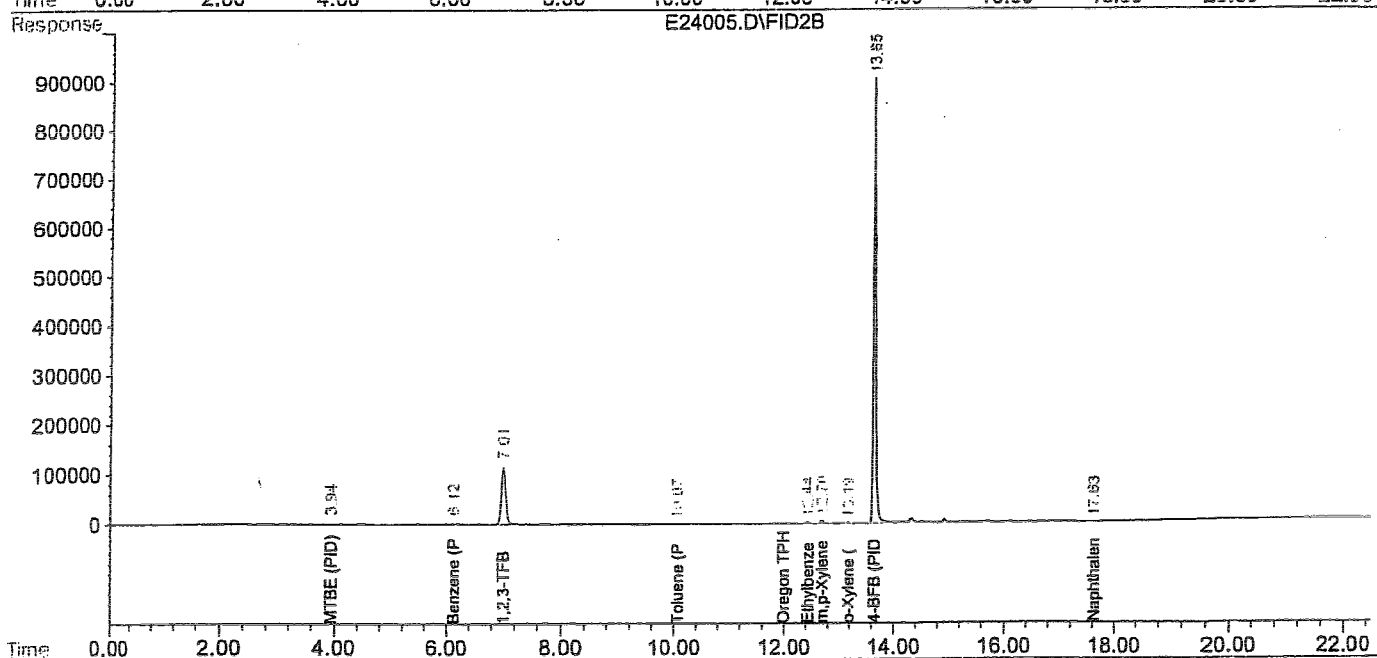
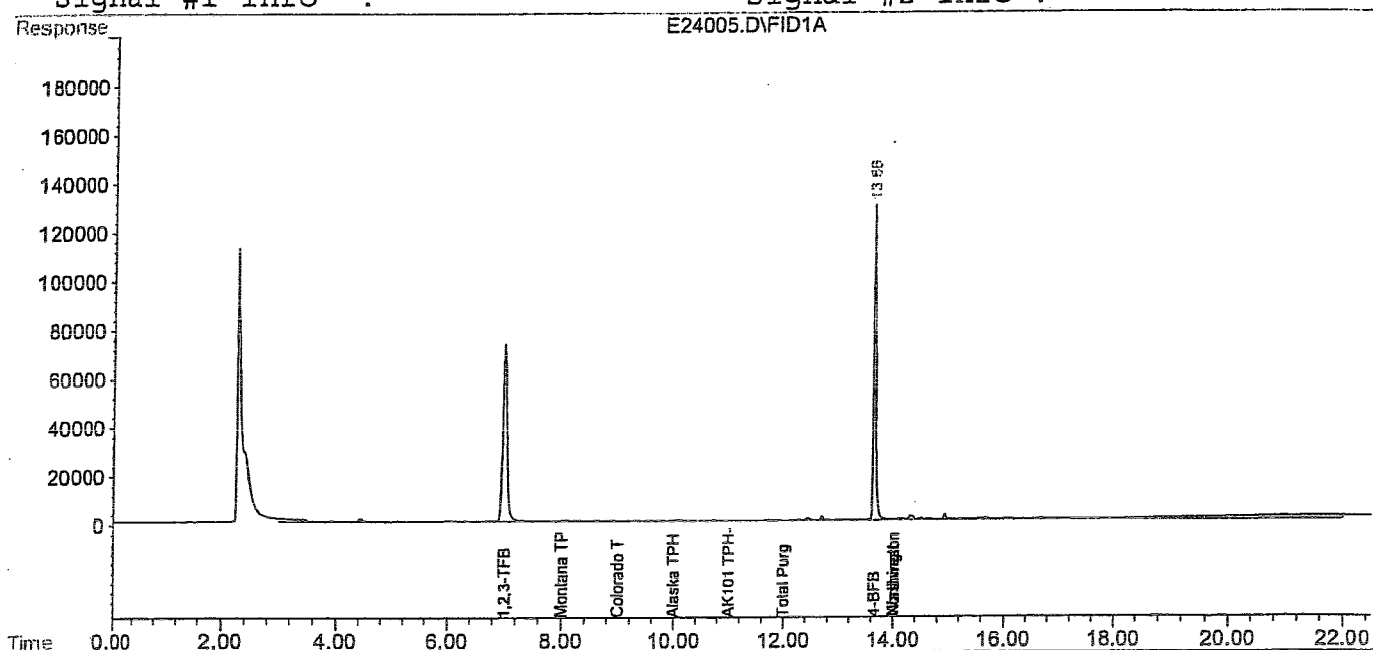
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24005.D\FID1A.CH Vial: 5  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24005.D\FID2B.CH  
 Acq On : 24 May 2002 8:46 Operator: sk  
 Sample : b2e0493-08 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 9:09 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 14:32:09 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

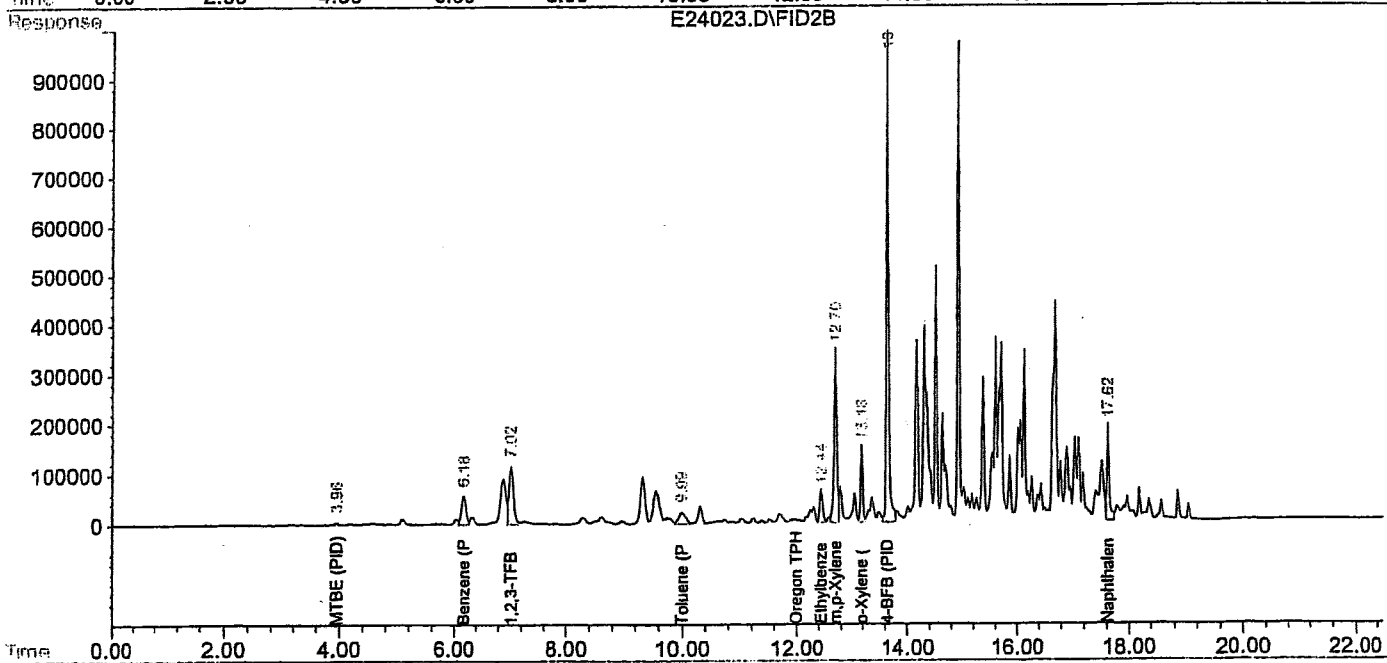
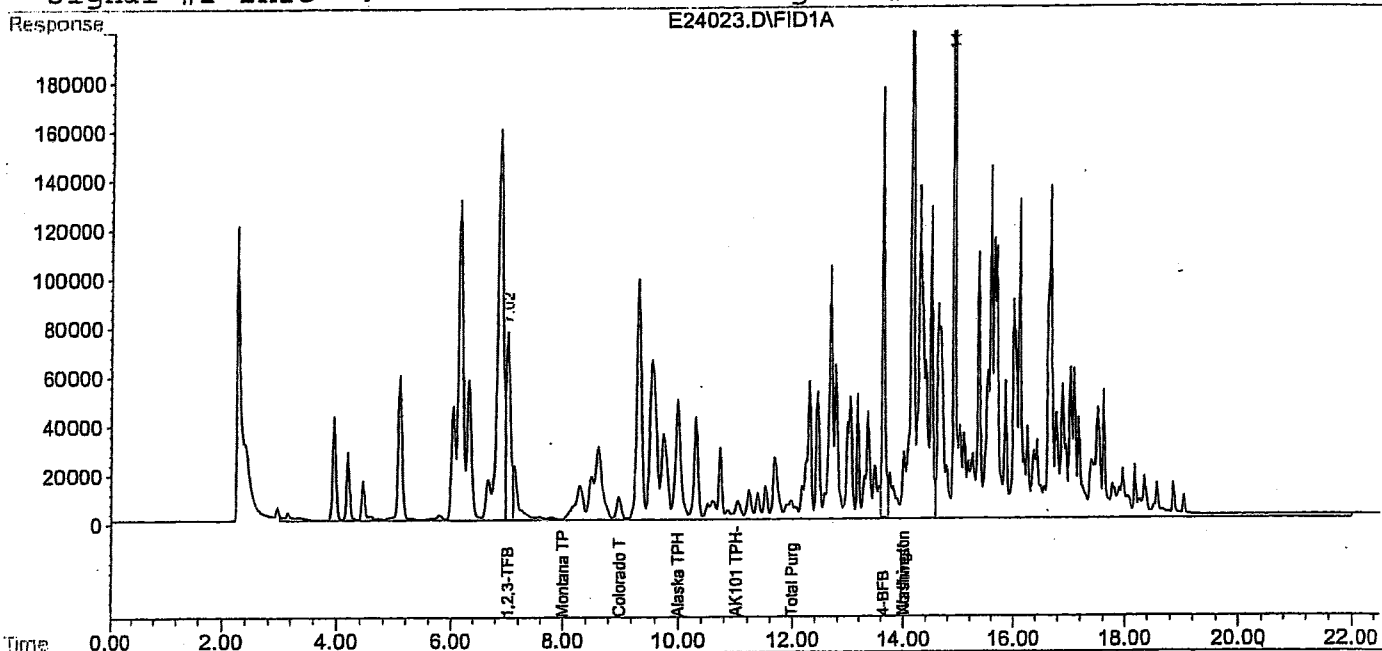
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24023.D\FID1A.CH Vial: 23  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24023.D\FID2B.CH  
 Acq On : 24 May 2002 18:12 Operator: sk  
 Sample : b2e0493-09 r1 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 18:35 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 10:56:34 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

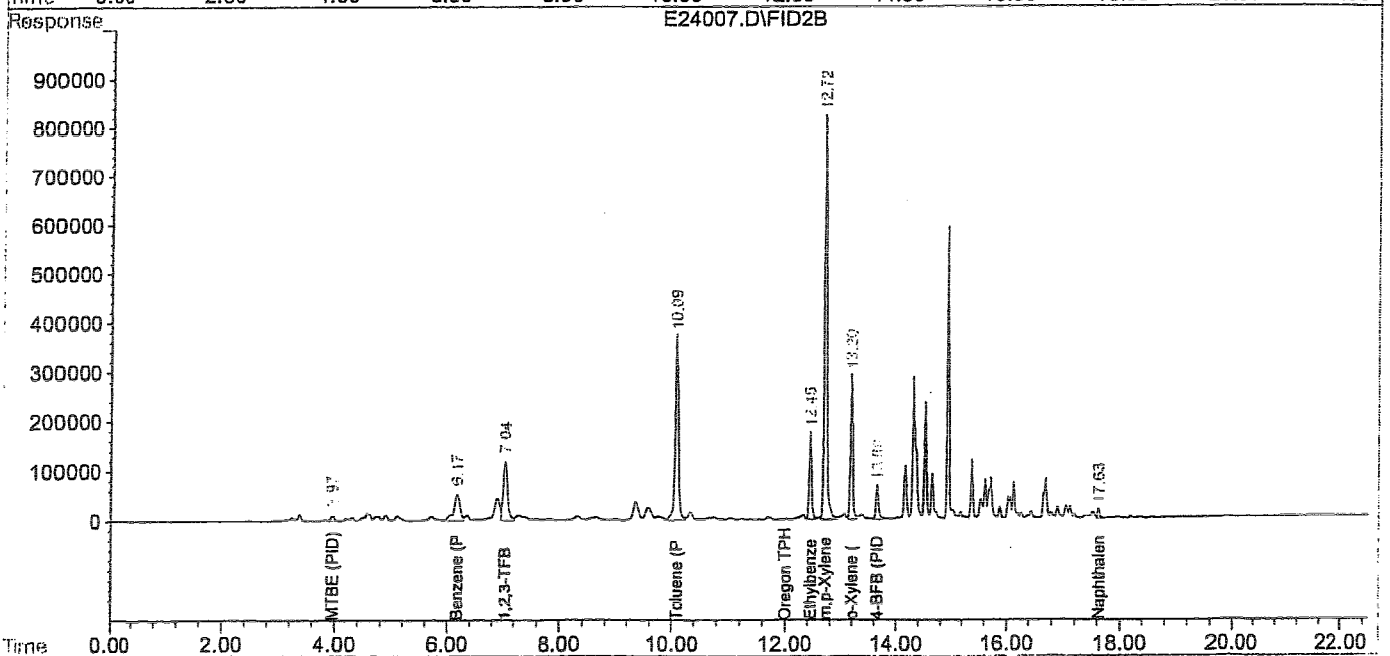
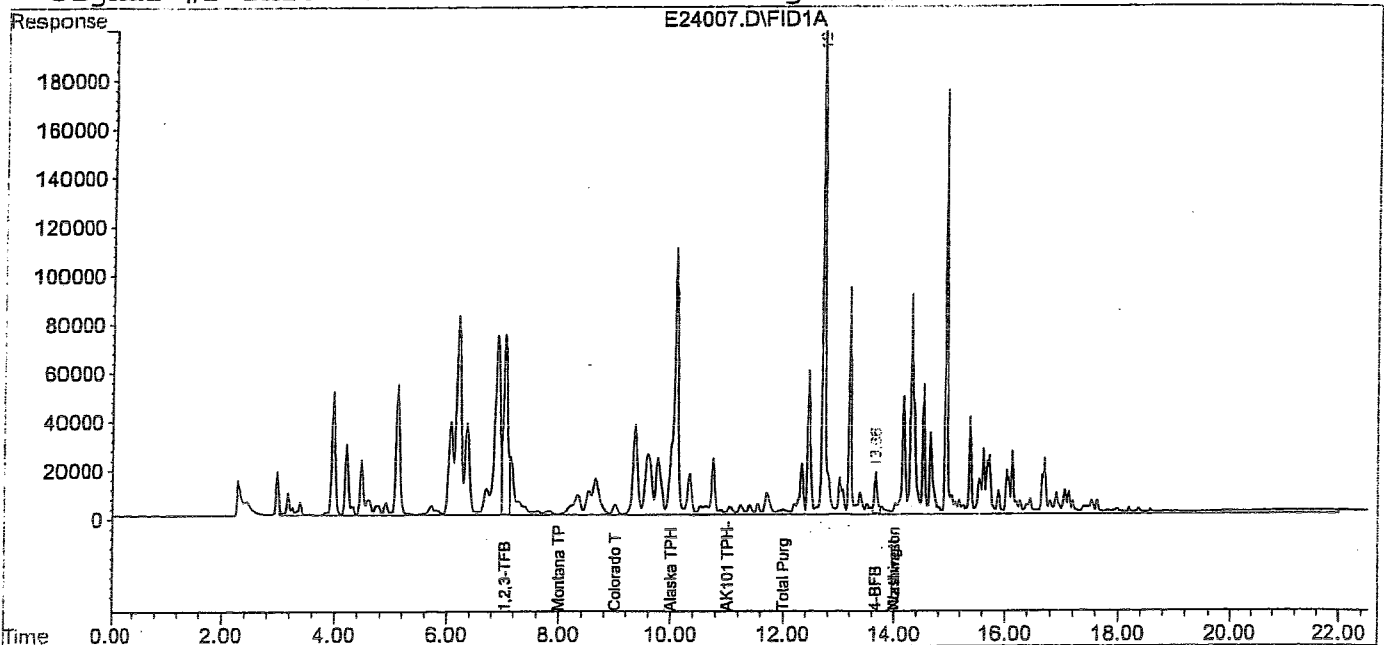
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24007.D\FID1A.CH Vial: 7  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24007.D\FID2B.CH  
 Acq On : 24 May 2002 9:44 Operator: sk  
 Sample : b2e0493-10 Inst : GC #12  
 Misc : 20X 5 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 10:56 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 10:56:34 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

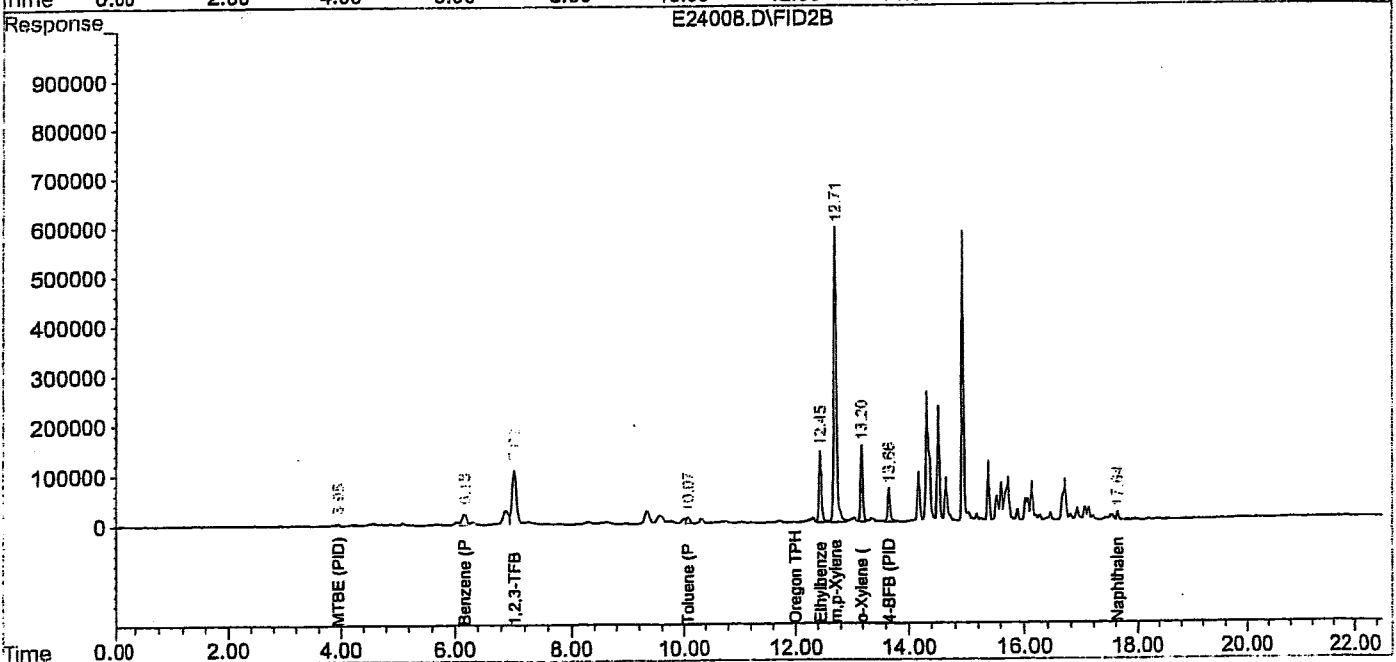
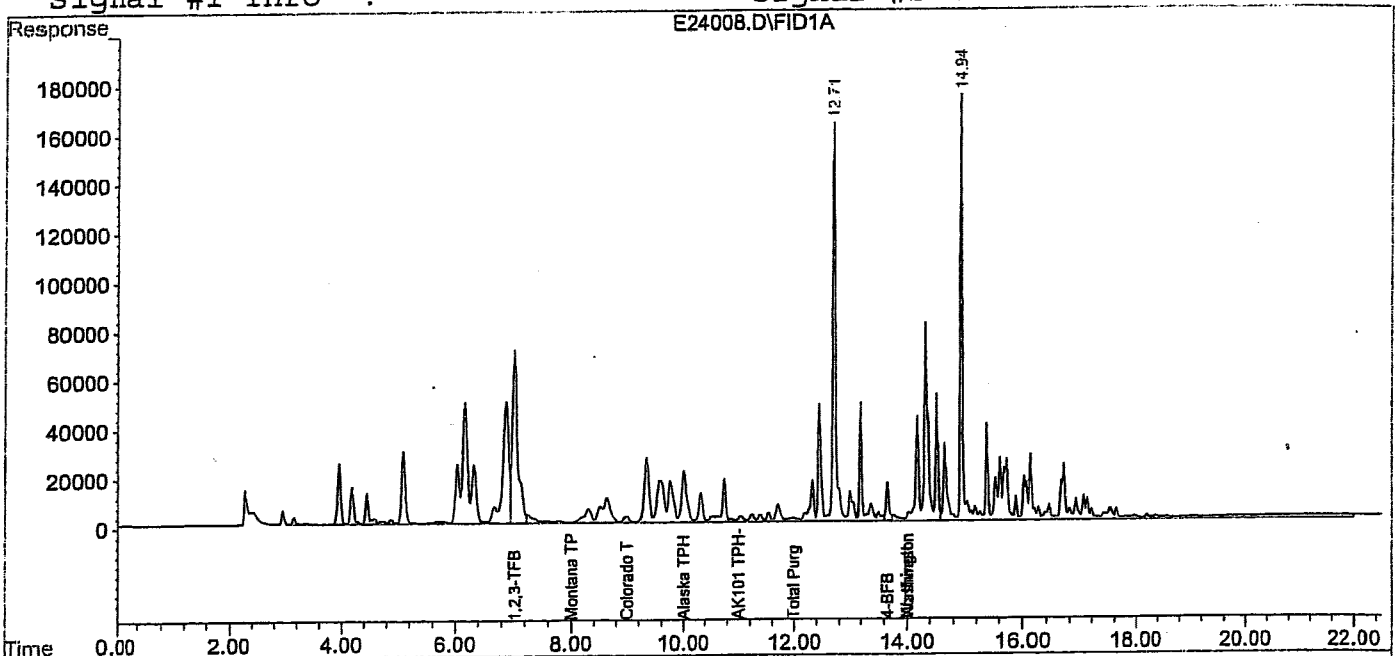
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24008.D\FID1A.CH Vial: 8  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24008.D\FID2B.CH  
 Acq On : 24 May 2002 10:13 Operator: sk  
 Sample : b2e0493-11 Inst : GC #12  
 Misc : 20X 5 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 10:35 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 14:32:09 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

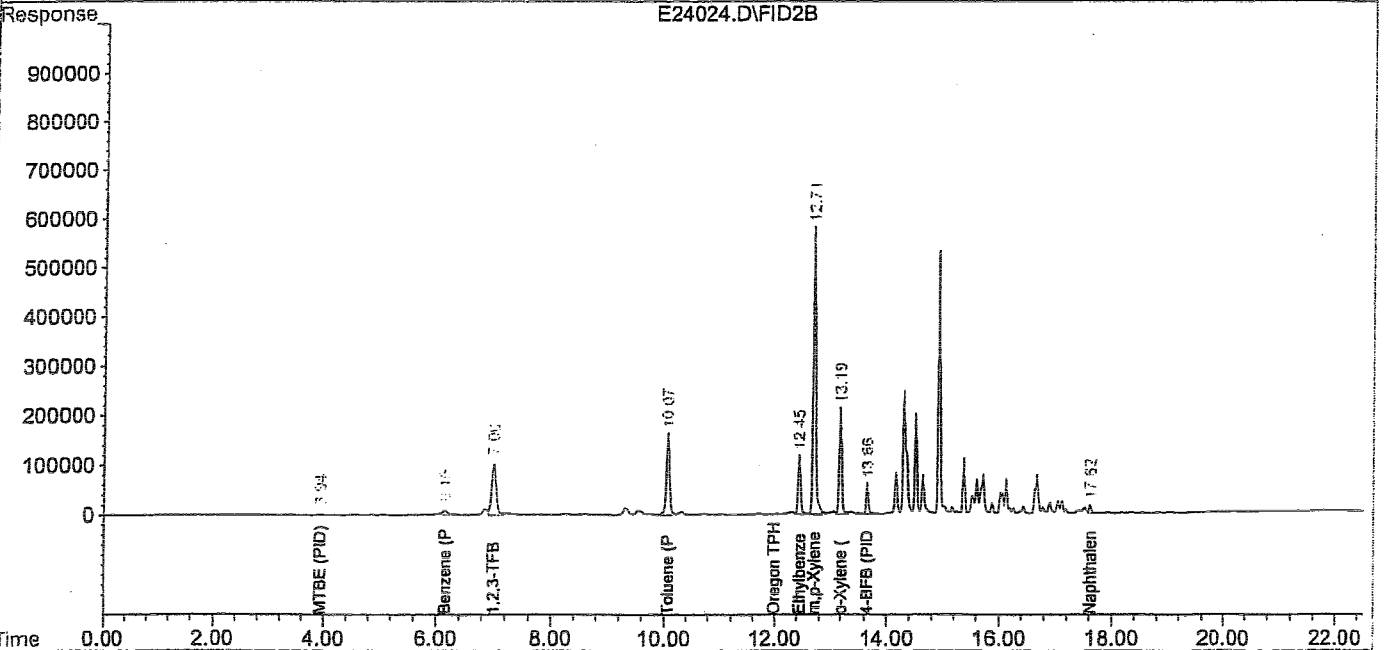
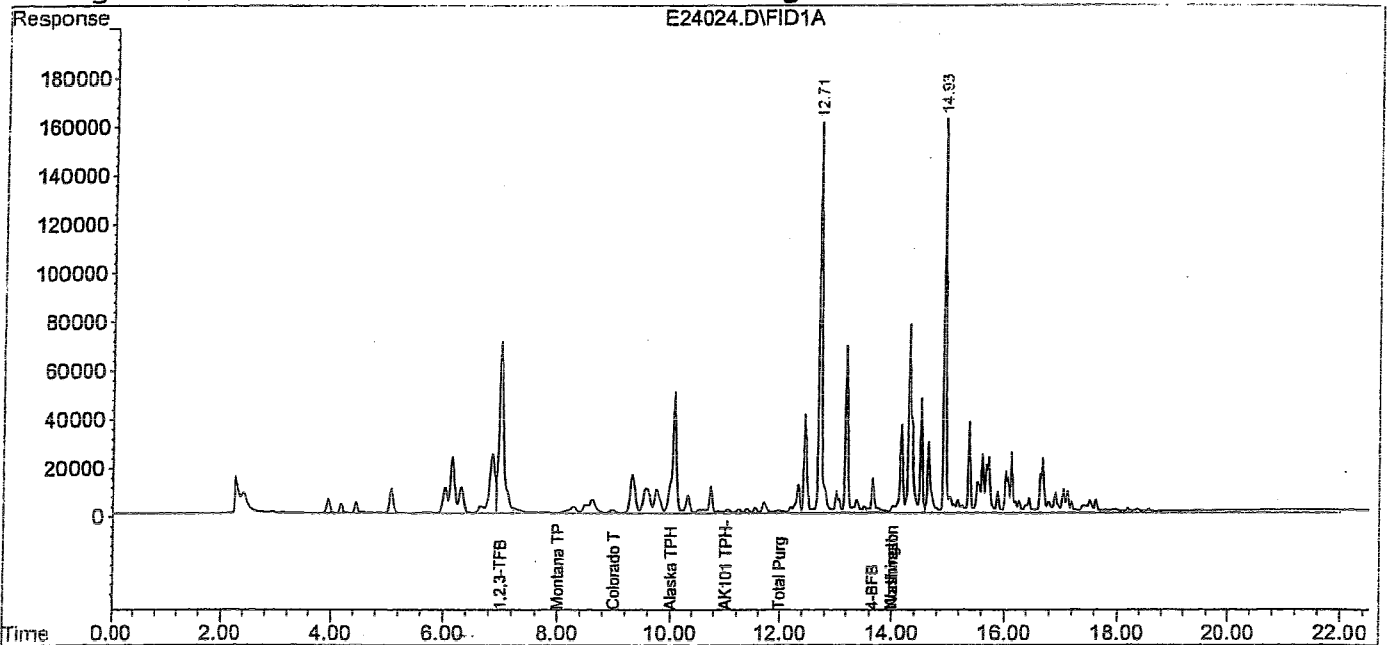
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24024.D\FID1A.CH Vial: 24  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24024.D\FID2B.CH  
 Acq On : 24 May 2002 18:41 Operator: sk  
 Sample : b2e0493-12 r1 Inst : GC #12  
 Misc : 20X 5 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 19:21 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 19:21:42 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

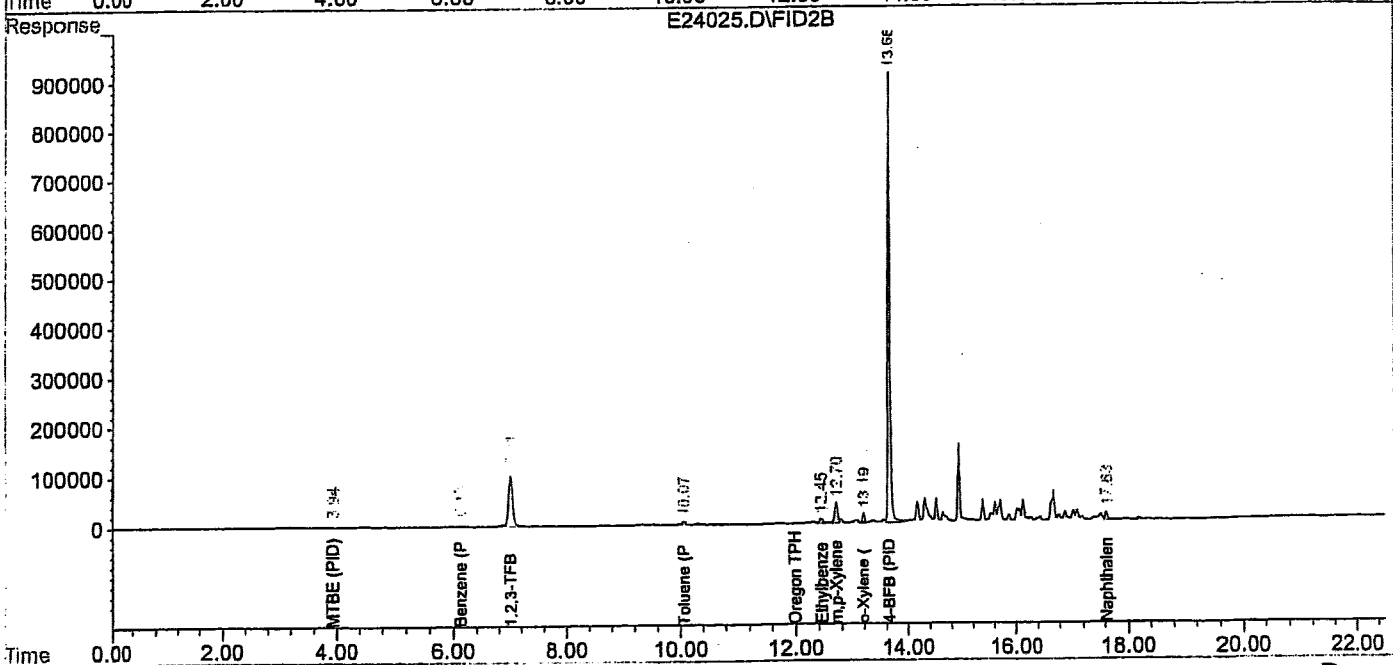
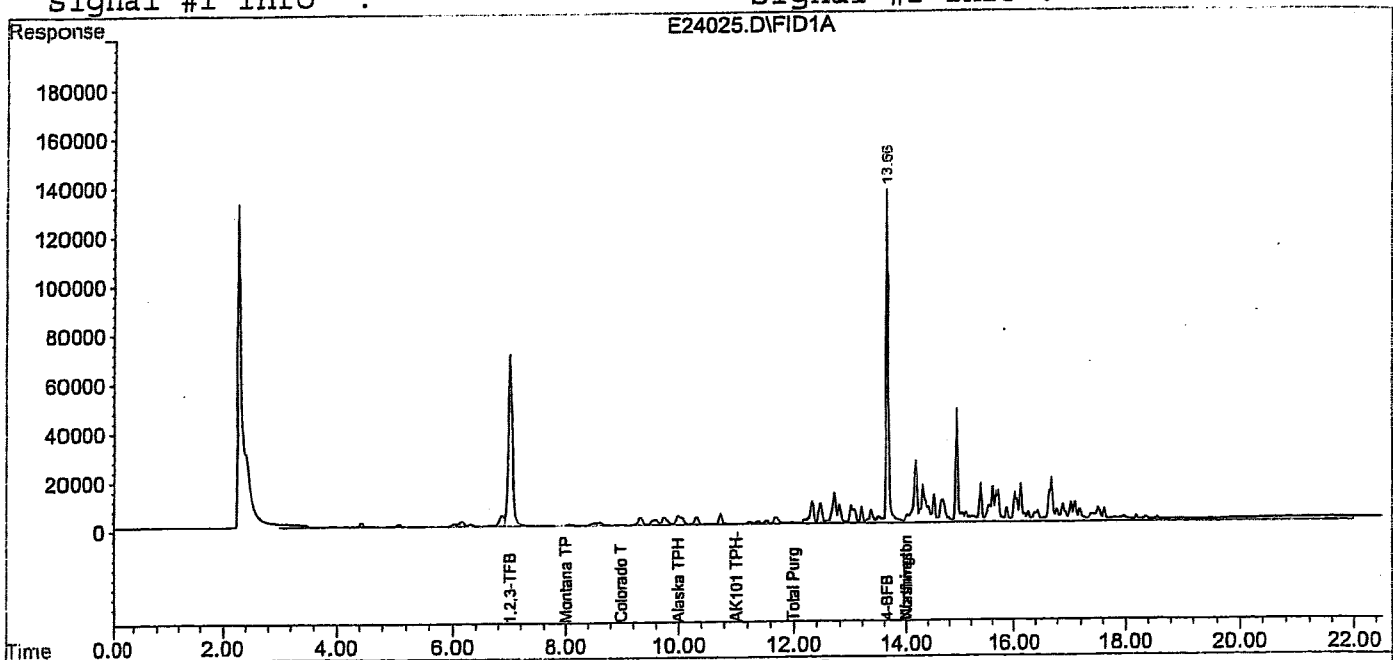
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24025.D\FID1A.CH Vial: 25  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24025.D\FID2B.CH  
 Acq On : 24 May 2002 19:09 Operator: sk  
 Sample : b2e0493-13 r1 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 19:32 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 19:21:42 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

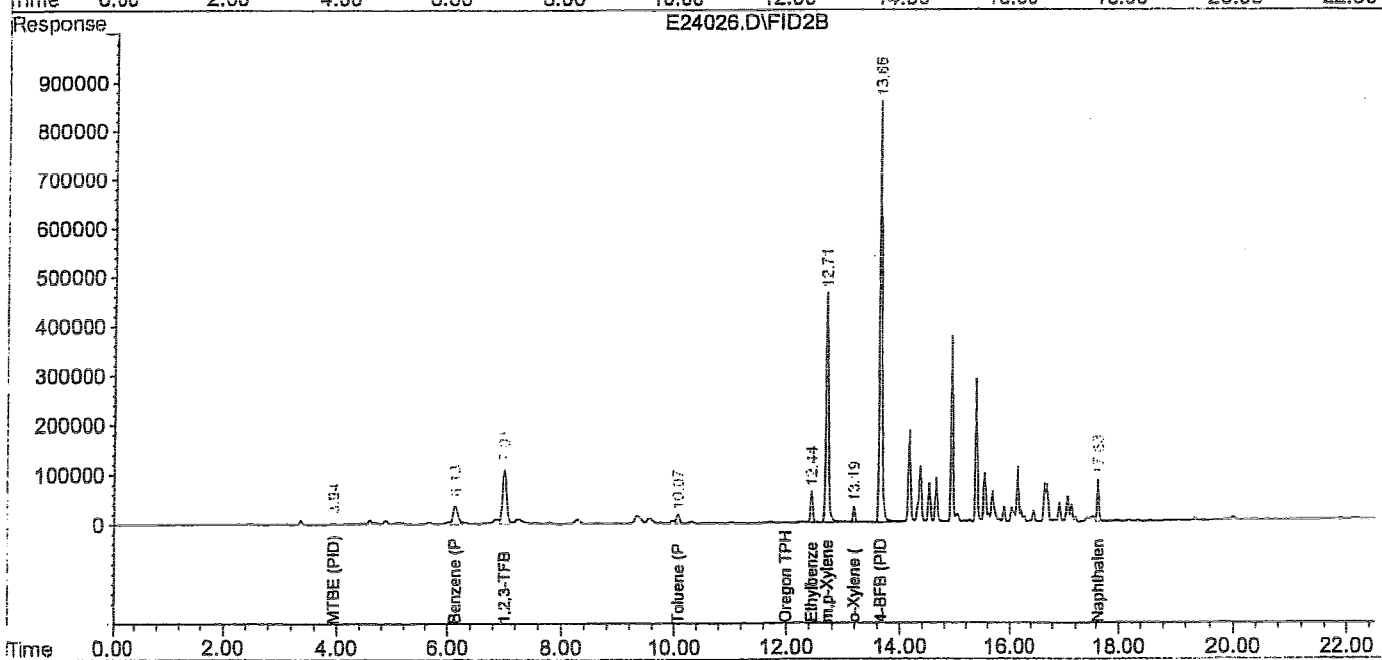
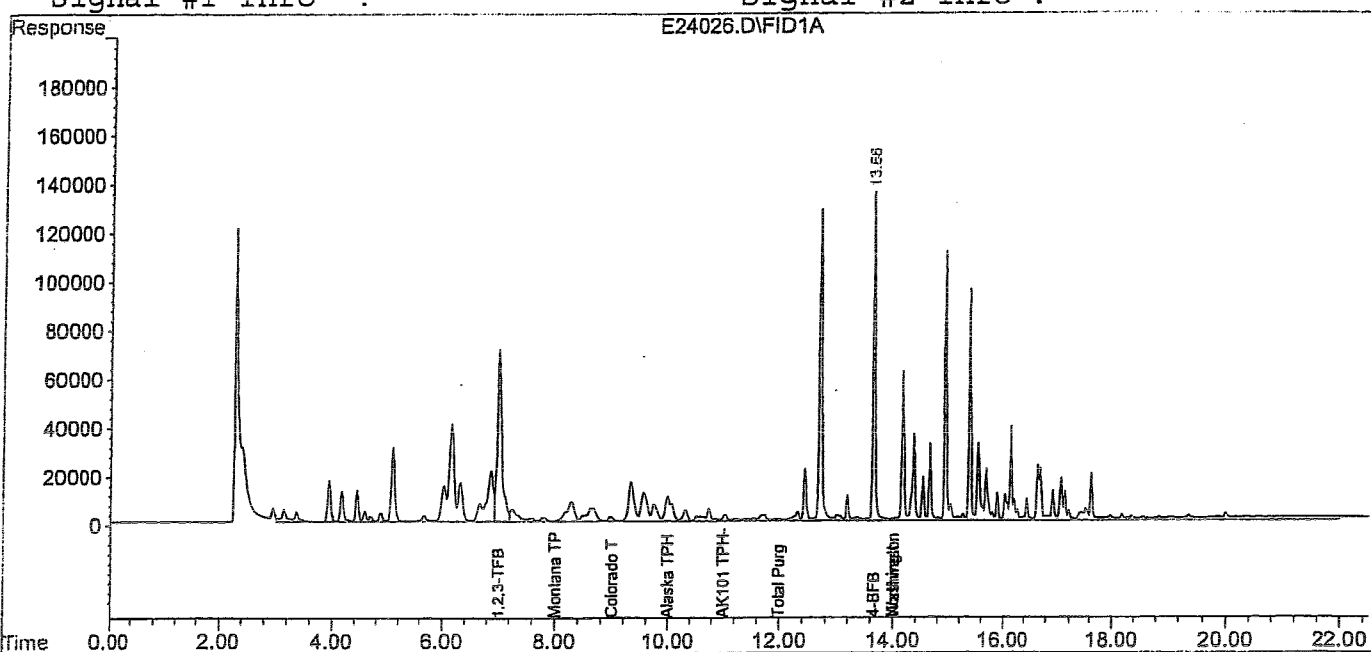
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24026.D\FID1A.CH Vial: 26  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24026.D\FID2B.CH  
 Acq On : 24 May 2002 19:38 Operator: sk  
 Sample : b2e0493-14 r1 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 20:01 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 19:21:42 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

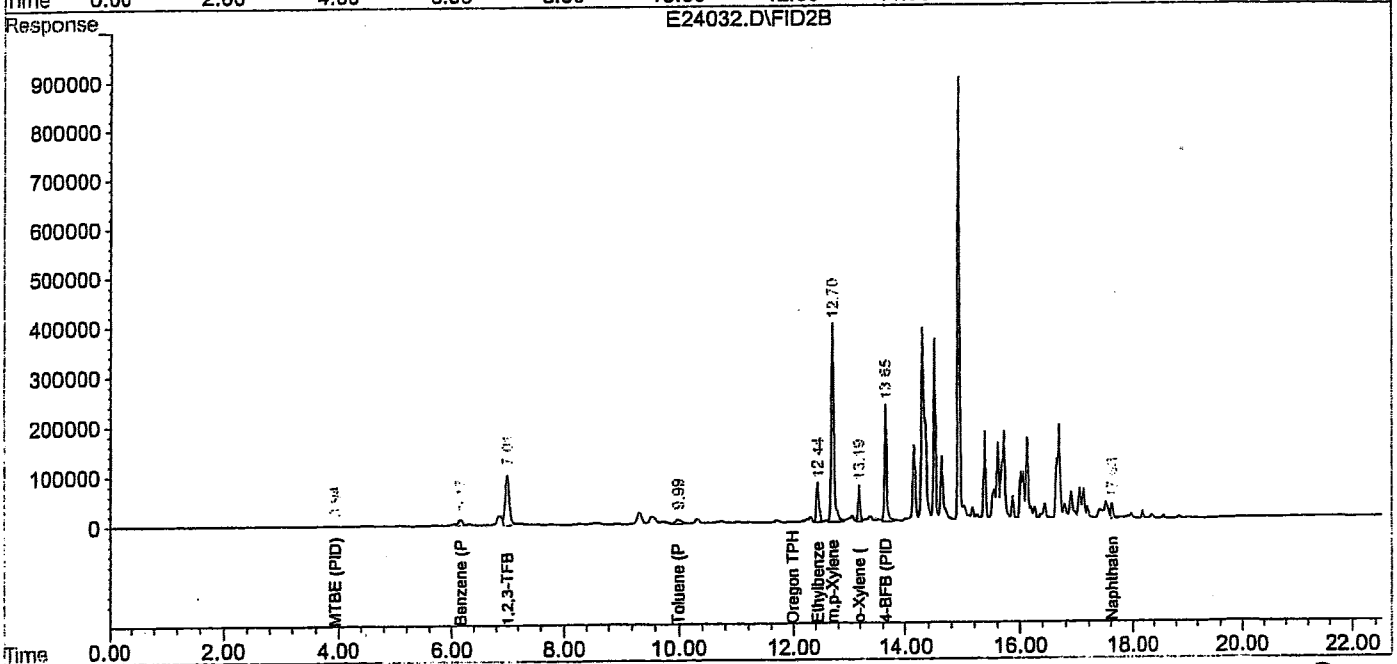
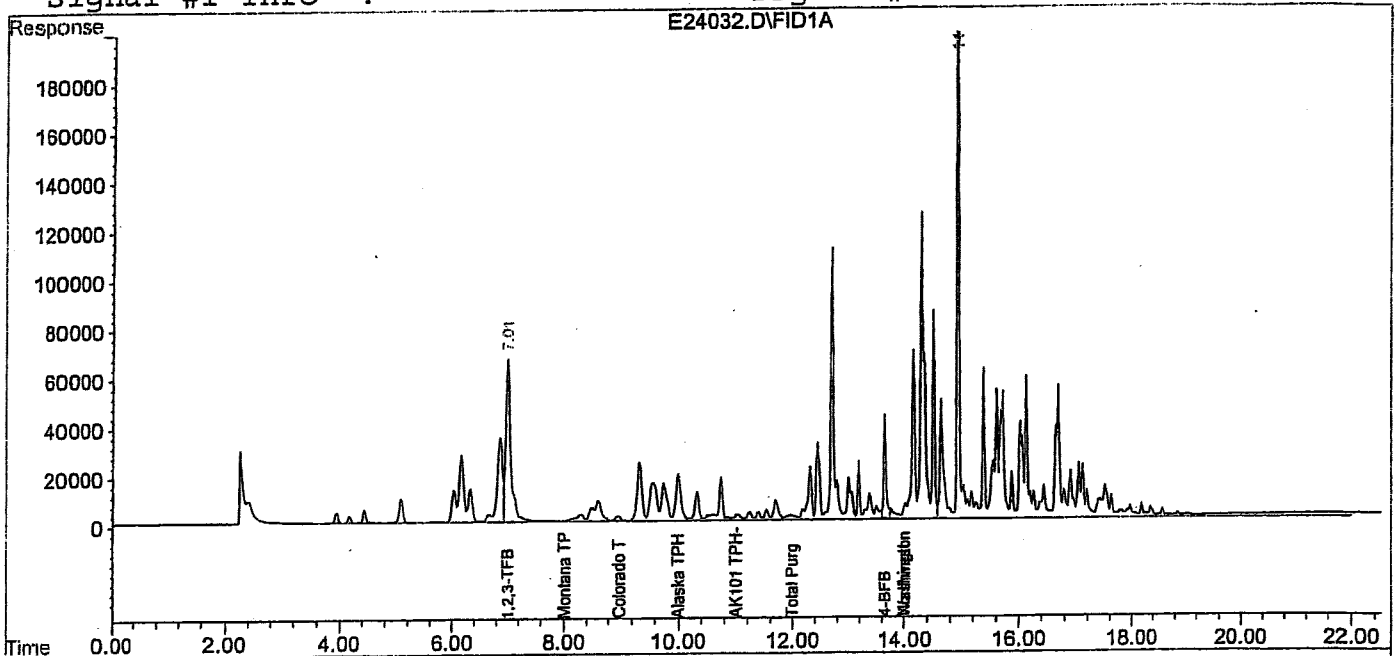
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24032.D\FID1A.CH Vial: 32  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24032.D\FID2B.CH  
 Acq On : 24 May 2002 22:31 Operator: sk  
 Sample : b2e0493-15 r1 Inst : GC #12  
 Misc : 4X 25 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 22:54 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 19:21:42 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

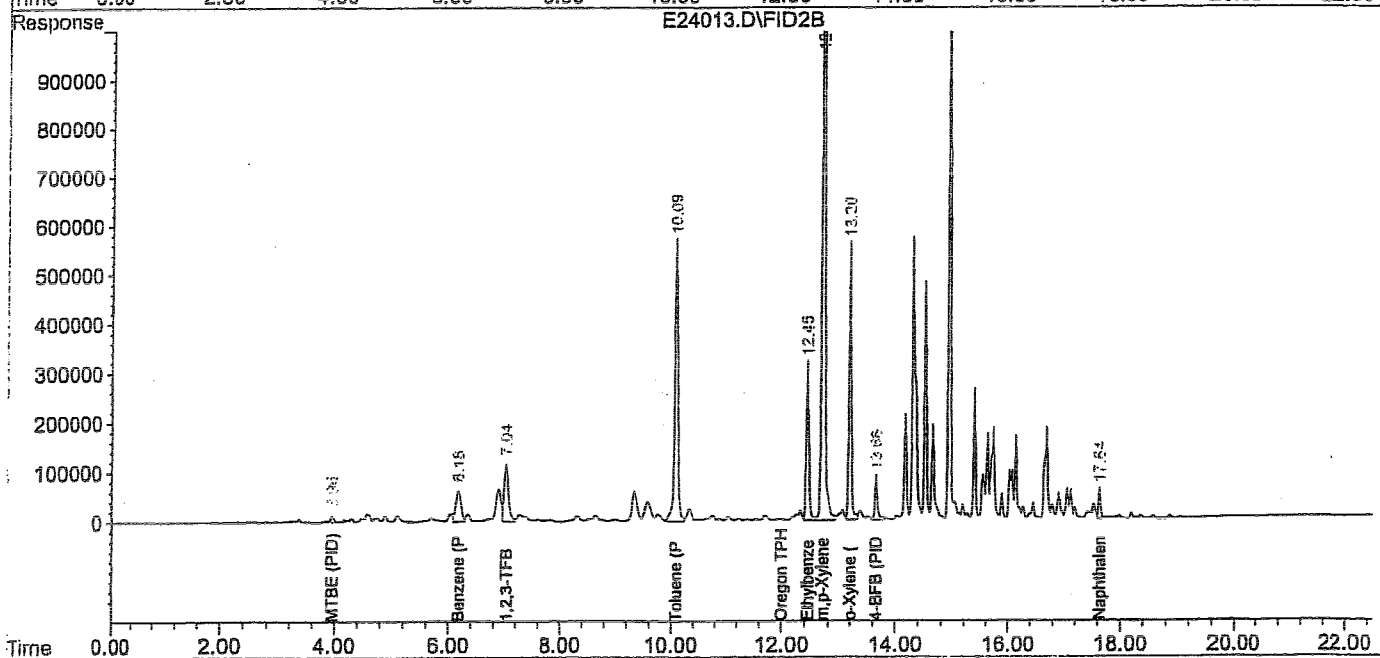
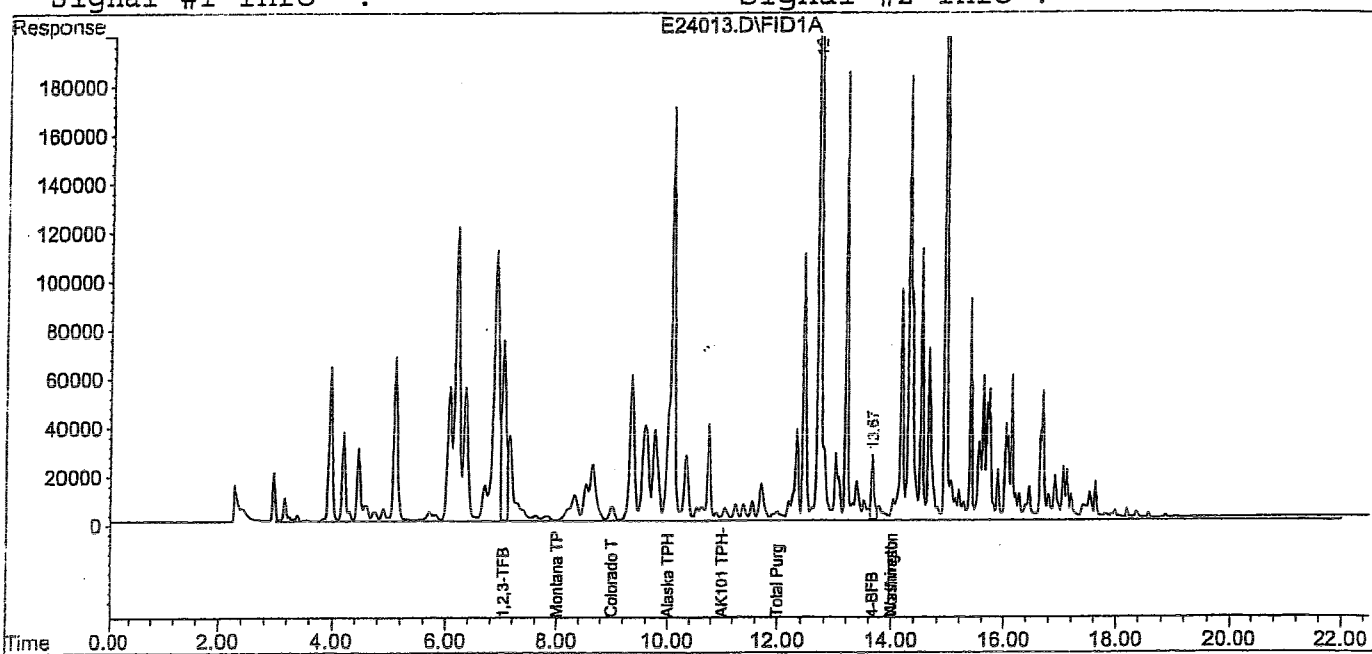
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24013.D\FID1A.CH Vial: 13  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24013.D\FID2B.CH  
 Acq On : 24 May 2002 12:37 Operator: sk  
 Sample : b2e0493-16 Inst : GC #12  
 Misc : 50X 2 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 13:00 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 10:56:34 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

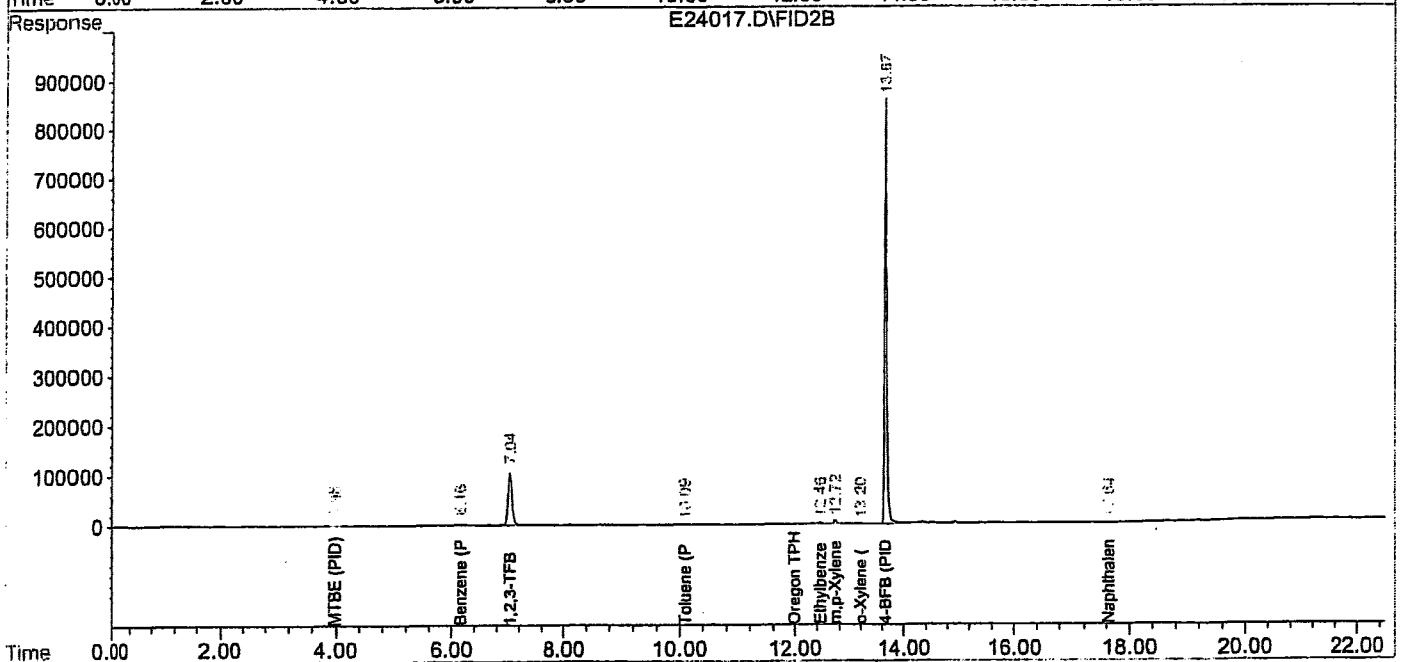
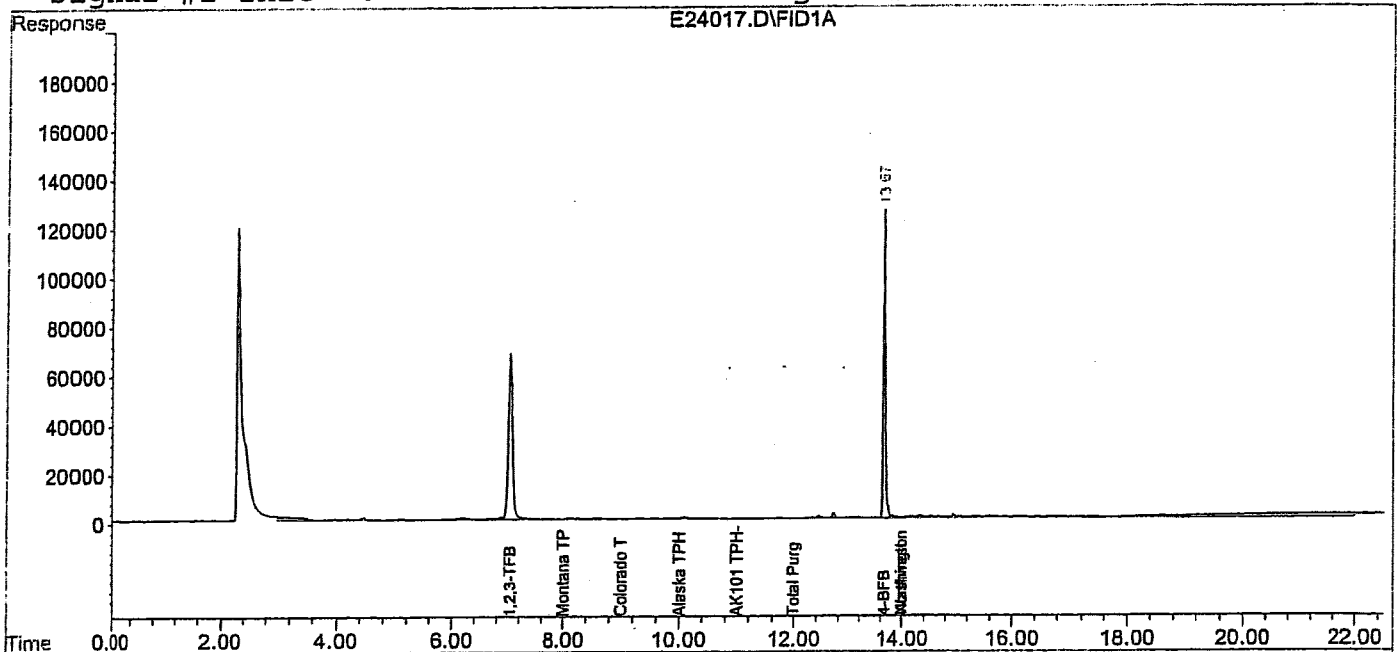
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24017.D\FID1A.CH Vial: 17  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24017.D\FID2B.CH  
 Acq On : 24 May 2002 14:34 Operator: sk  
 Sample : b2e0493-17 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 14:57 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 10:56:34 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

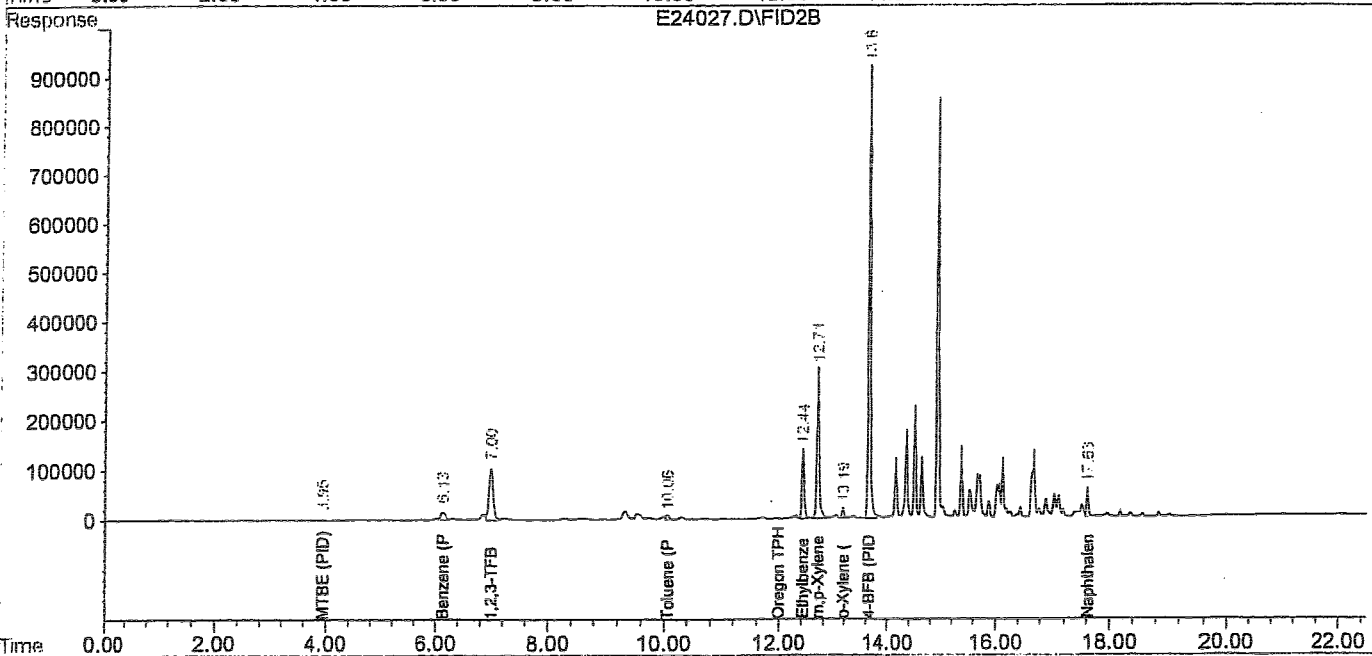
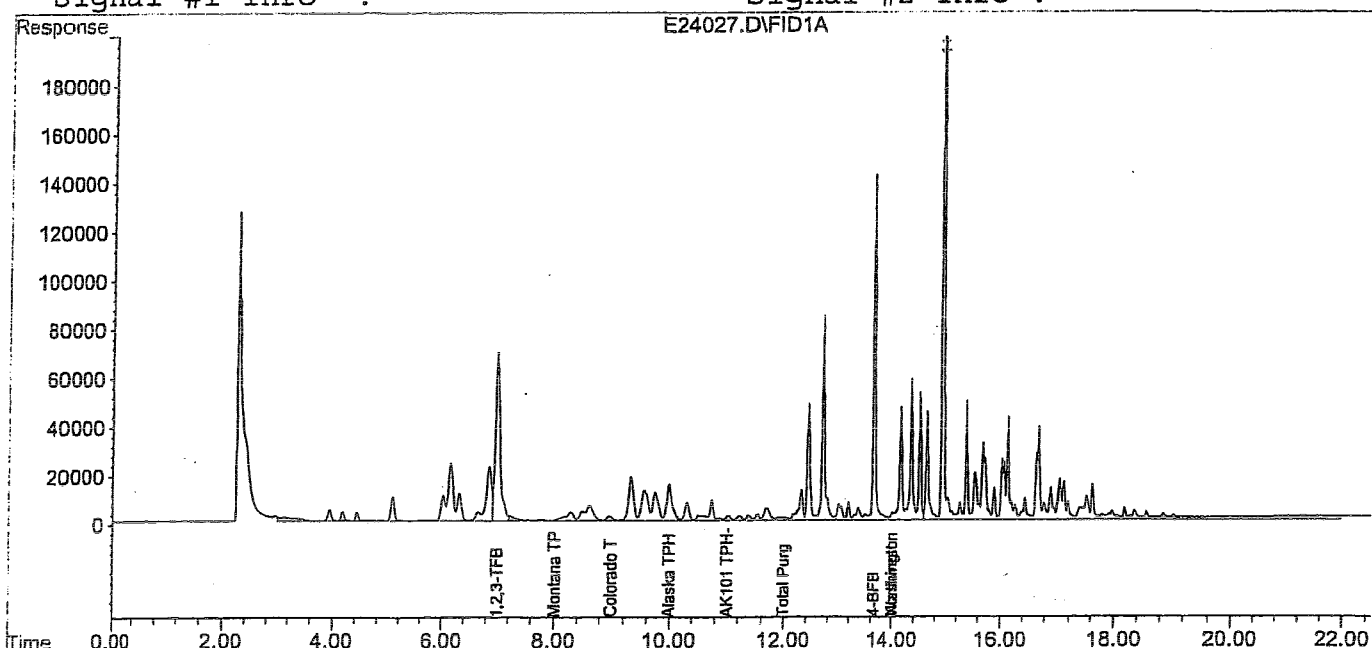
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24027.D\FID1A.CH Vial: 27  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24027.D\FID2B.CH  
 Acq On : 24 May 2002 20:07 Operator: sk  
 Sample : b2e0493-18 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 20:30 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 19:21:42 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

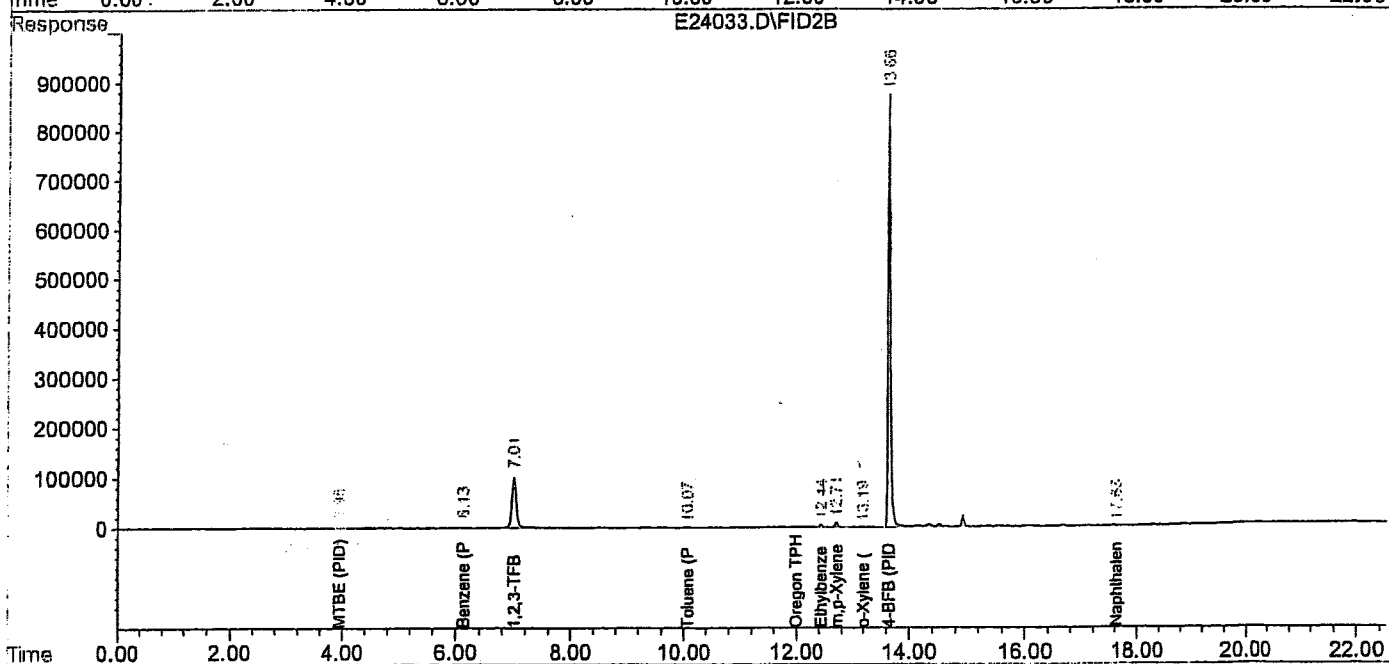
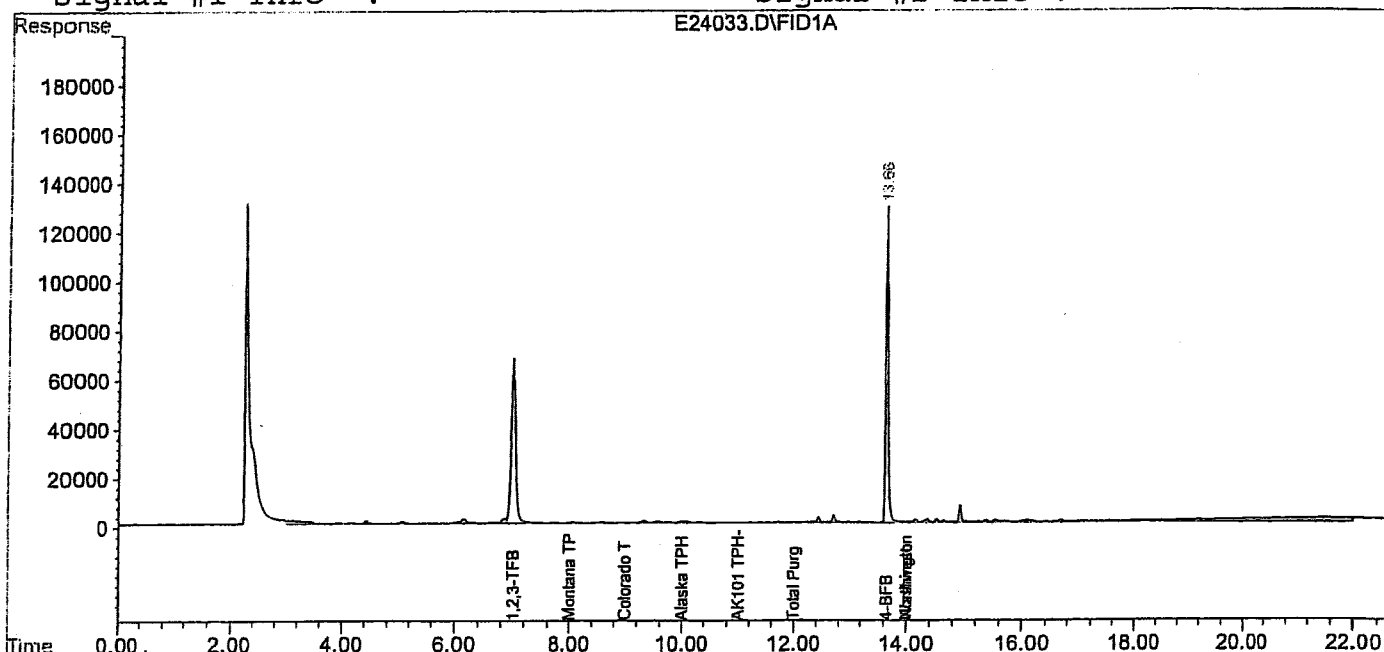
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24033.D\FID1A.CH Vial: 33  
 Signal #2 : D:\HPCHEM\2\DATA\052402\E24033.D\FID2B.CH  
 Acq On : 24 May 2002 23:00 Operator: sk  
 Sample : b2e0493-19 r1 Inst : GC #12  
 Misc : 1X 100 ul Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 24 23:23 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Fri May 24 19:21:42 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0202.M

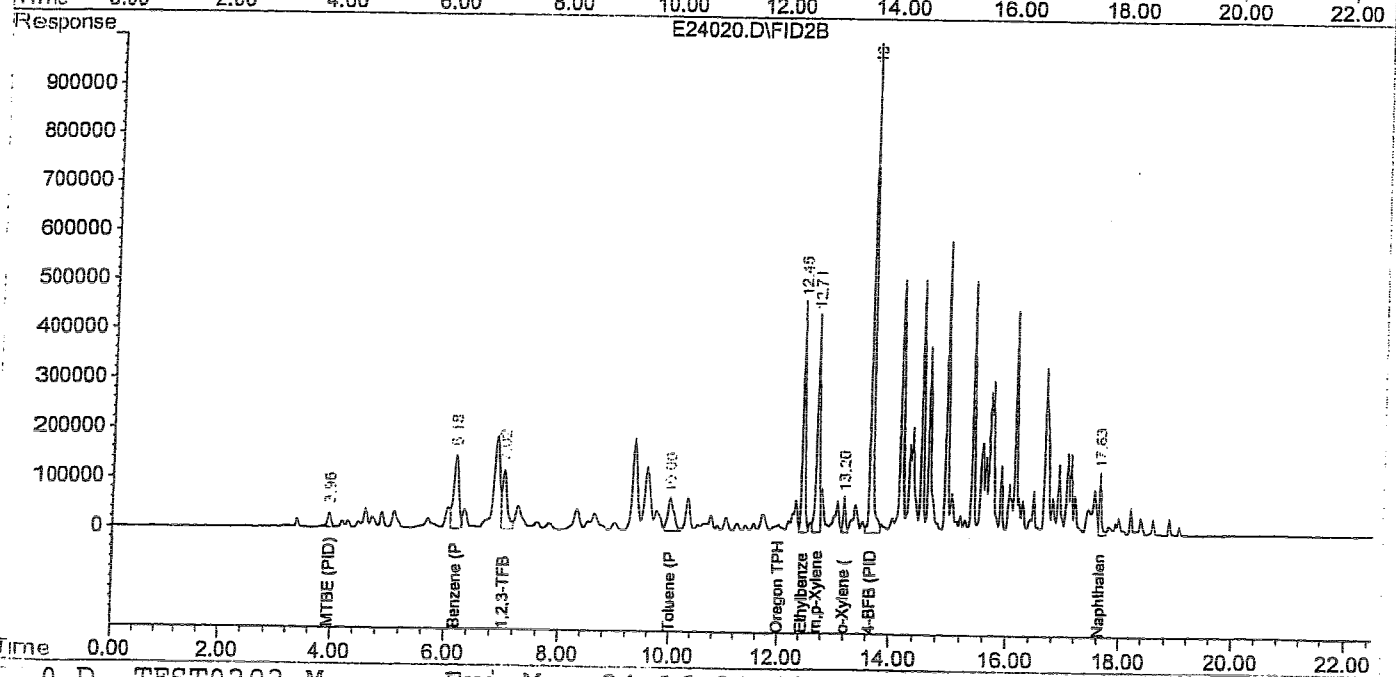
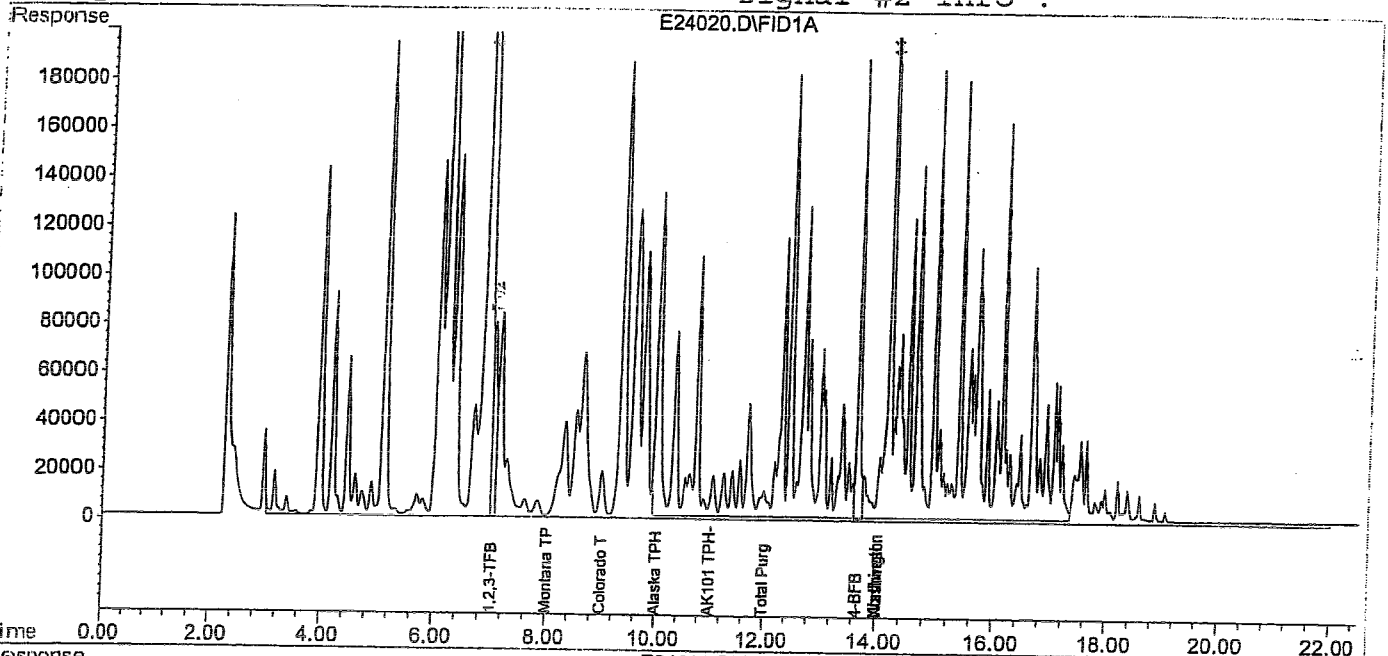
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : D:\HPCHEM\2\DATA\052402\E24020.D\FID1A.CH Vial: 20  
Signal #2 : D:\HPCHEM\2\DATA\052402\E24020.D\FID2B.CH  
Acq On : 24 May 2002 16:01 Operator: sk  
Sample : b2e0493-20 Inst : GC #12  
Misc : 1X 100 ul Multiplr: 1.00  
IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
Quant Time: May 24 16:24 2002 Quant Results File: TEST0202.RES

Quant Method : D:\HPCHEM\2\METHODS\TEST0202.M (Chemstation Integrator)  
Title : TPH-G Method  
Last Update : Fri May 24 10:56:34 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : TEST0202.M

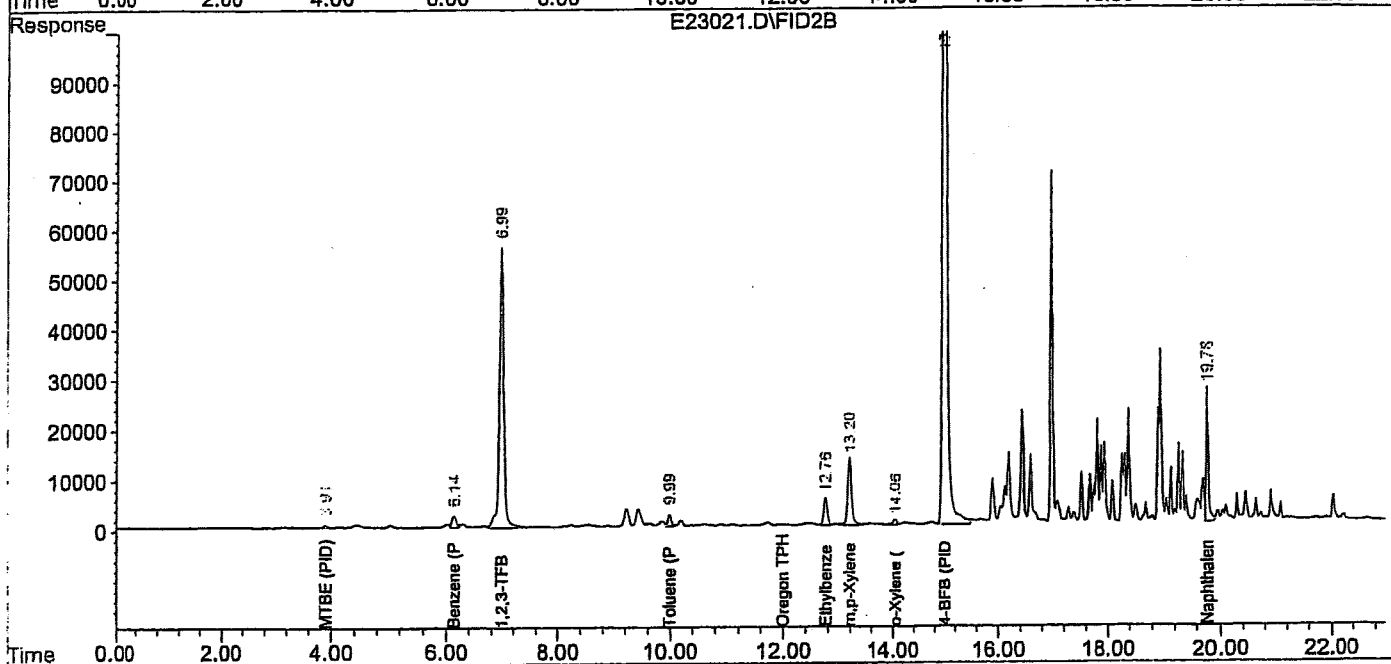
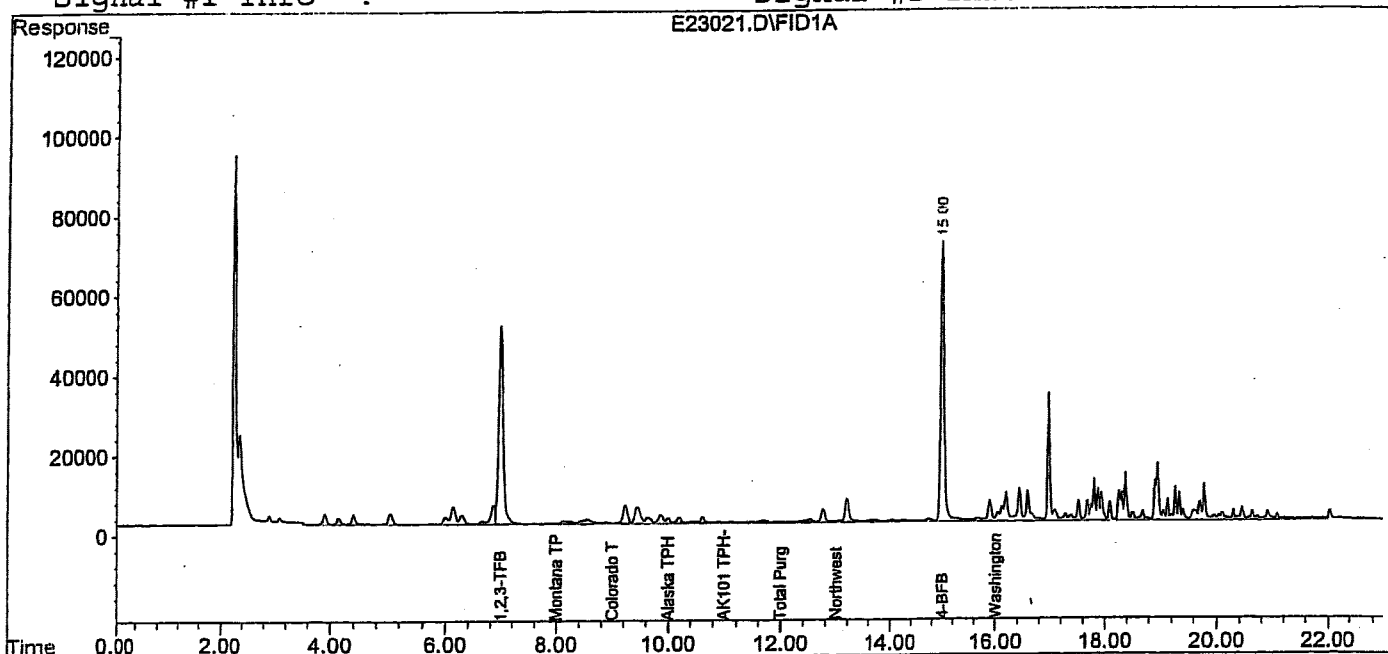
Volume Inj. :  
Signal #1 Phase : Signal #2 Phase:  
Signal #1 Info : Signal #2 Info :



Signal #1 : C:\HPCHEM\1\DATA\052302\E23021.D\FID1A.CH Vial: 21  
 Signal #2 : C:\HPCHEM\1\DATA\052302\E23021.D\FID2B.CH  
 Acq On : 23 May 2002 16:39 Operator: sk  
 Sample : b2e0493-21 Inst : GC #2  
 Misc : 1x 100 uL Multiplr: 1.00  
 IntFile Signal #1: TPH2.E IntFile Signal #2: SURR2.E  
 Quant Time: May 23 17:03 2002 Quant Results File: TEST0402.RES

Quant Method : C:\HPCHEM\1\METHODS\TEST0402.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 16:12:51 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0402.M

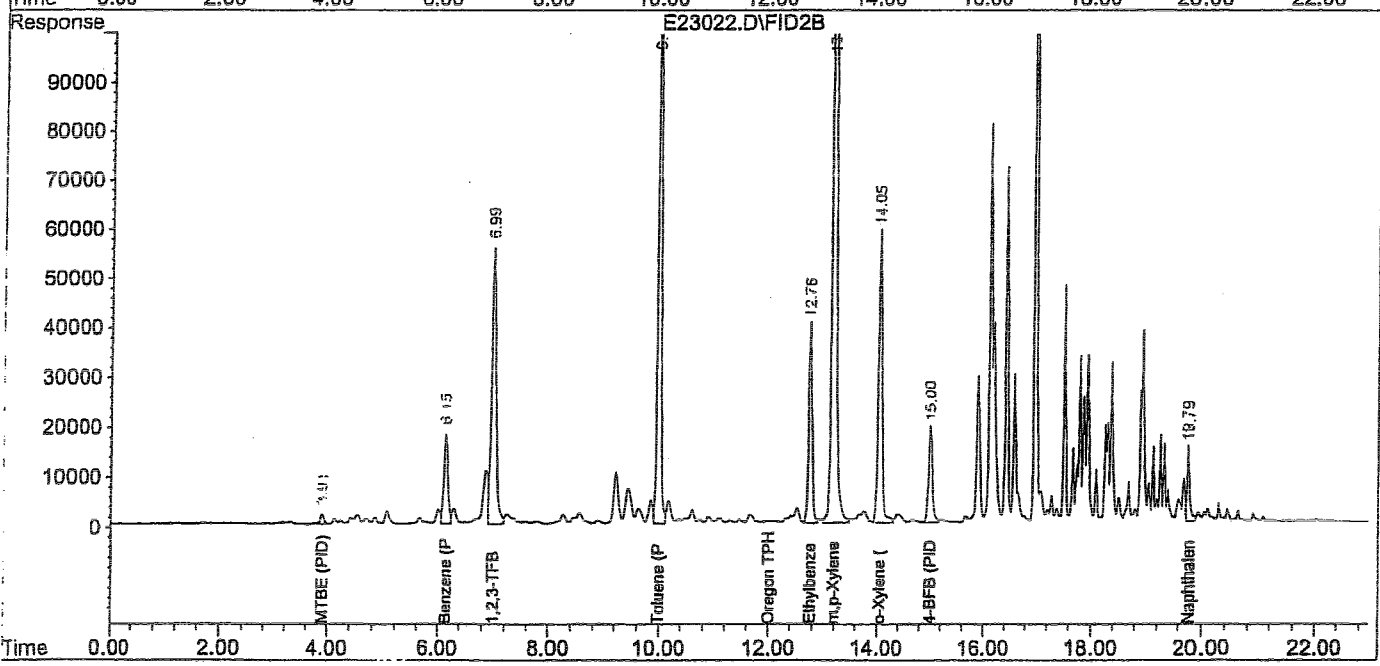
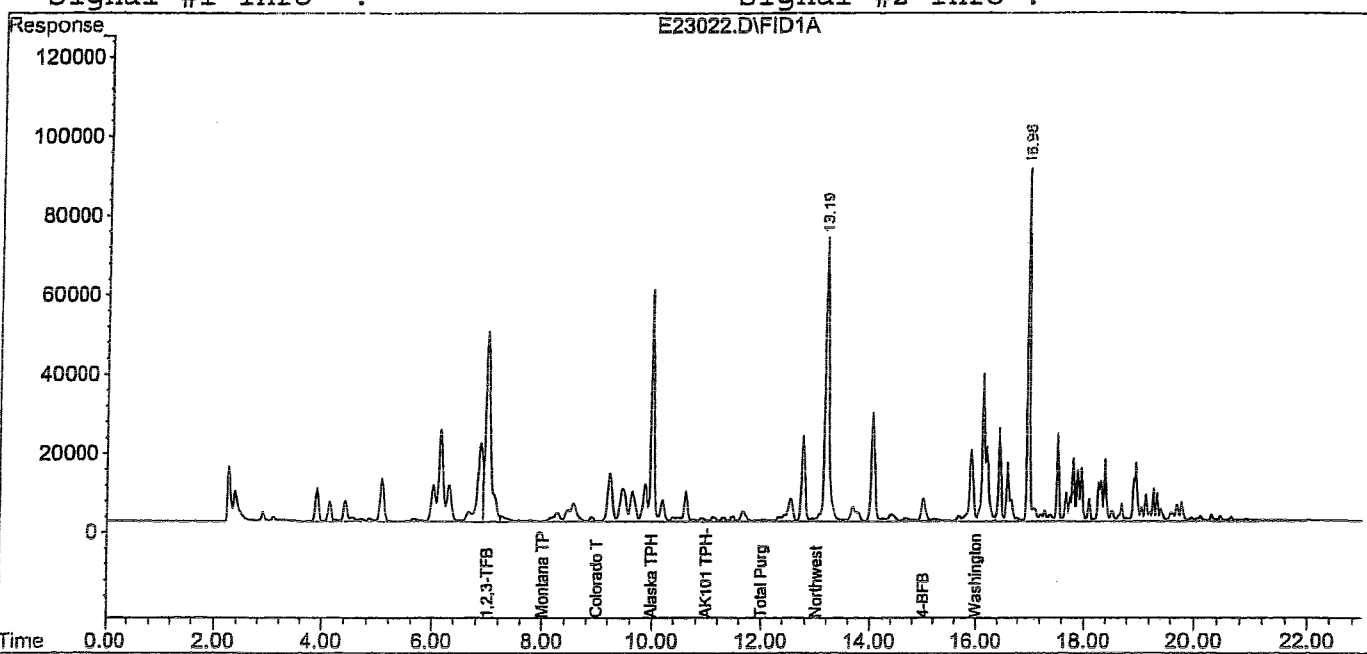
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : C:\HPCHEM\1\DATA\052302\E23022.D\FID1A.CH Vial: 22  
 Signal #2 : C:\HPCHEM\1\DATA\052302\E23022.D\FID2B.CH  
 Acq On : 23 May 2002 17:08 Operator: sk  
 Sample : b2e0493-22 Inst : GC #2  
 Misc : 20x 5 uL Multiplr: 1.00  
 IntFile Signal #1: TPH2.E IntFile Signal #2: SURR2.E  
 Quant Time: May 23 17:31 2002 Quant Results File: TEST0402.RES

Quant Method : C:\HPCHEM\1\METHODS\TEST0402.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 16:12:51 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST0402.M

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







# UNOCAL CHAIN OF CUSTODY REPORT

BZE0493

UNOCAL INFORMATION	
Facility Number:	
Site Address:	
City, State, ZIP:	
Site Release Number:	SAME
Unocal Manager:	
CERT INFO: (check one) <input type="checkbox"/> Evaluation <input checked="" type="checkbox"/> Remediation	
<input type="checkbox"/> Detection <input type="checkbox"/> Demolition <input type="checkbox"/> Closure <input type="checkbox"/> Miscellaneous	

CONSULTANT INFORMATION	
Firm:	Project# 4823-410-00
Address:	
Phone:	Fax:
Project Manager:	
Sample Collection by:	

Chain of Custody Record #:
Quality Assurance Data Level:
<input type="checkbox"/> A <input checked="" type="checkbox"/> B
A: Standard Summary
B: Standard + Chromatograms
Laboratory Turnaround Days:
<input checked="" type="checkbox"/> 10 <input type="checkbox"/> 5 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONTAINERS
1. PL-11-6	5/15/02/1630	S	2
2. PL-12-9	5/16/02/0900	S	2
3. PL-13-9	5/16/02/0920	S	2
4. PL-14-7	5/16/02/1020	S	2
5. PL-15-9	5/16/02/1230	S	2
6. PL-16-9	5/16/02/1305	S	2
7. D1-1-2	5/15/02/0850	S	1
8. D2-1-2	5/15/02/0915	S	1
9. D3-1-2	5/15/02/0940	S	1
10. D3-2-4	5/15/02/1513	S	2

<input type="radio"/> OR <input checked="" type="radio"/> WA <input type="radio"/> AK <input type="radio"/> NW Series																	
TPH-HCID	TPH-Gas	BTEX EPA 8021 Mod.	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS Semi Vols. EPA 8270	PAH's: 8270 SIM or 8310	Lead: Total or Dissolved	TCLP or RCRA Metals (8)	MTBE	EDB	EDC	Naphthalene
			X											X	X	X	X
			X											X	X	X	X

NCA SAMPLE NUMBER
BZE0493 - 11
12
13
14
15
16
17
18

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1. Ron MBL	GEI	5/16/02/1600			
2.					
3.					

Final Report Approval	
Were all requested results provided?	<input type="checkbox"/> yes <input type="checkbox"/> no Define
Were results within requested turnaround?	<input type="checkbox"/> yes <input type="checkbox"/> no "No"
Final Approval Signature:	on back



18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
 East 11115 Montgomery, Suite B, Spokane, WA 98206-4776  
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132  
 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711

(425) 420-9200 FAX 420-9210  
 (509) 924-9200 FAX 924-9290  
 (503) 906-9200 FAX 906-9210  
 (541) 383-9310 FAX 382-7588



# UNOCAL CHAIN OF CUSTODY REPORT

BZE0493

UNOCAL INFORMATION	
Facility Number:	
Site Address:	
City, State, ZIP:	SAME
Site Release Number:	
Unocal Manager:	
CERT INFO: (check one)	<input type="checkbox"/> Evaluation <input checked="" type="checkbox"/> Remediation
	<input type="checkbox"/> Detection <input type="checkbox"/> Demolition <input type="checkbox"/> Closure <input type="checkbox"/> Miscellaneous

CONSULTANT INFORMATION	
Firm:	Project# 4823-410-00
Address:	SAME
Phone:	Fax:
Project Manager:	
Sample Collection by:	

Chain of Custody Record #:
Quality Assurance Data Level:
<input type="checkbox"/> A <input checked="" type="checkbox"/> B
A: Standard Summary
B: Standard + Chromatograms
Laboratory Turnaround Days:
<input checked="" type="checkbox"/> 10 <input type="checkbox"/> 5 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONTAINERS
1. D3-3-3	5/15/02/1520	S	2
2. D3-4-8	5/16/02/1430	S	2
3. D4-1-2	5/15/02/0950	S	1
4. SP-1	5/16/02/1300	S	2
5.			
6.			
7.			
8.			
9.			
10.			

OR		WA		AK		NW Series	
TPH-HCID							
TPH-Gas							
BTEX EPA 8021 Mod.							
TPH-Gas + BTEX		X					
TPH-Diesel							
TPH-Diesel Extended							
TPH-Diesel-Ext. w/SG Cleanup							
Halogen. Volatiles EPA 8021							
Pesticides/PCBs or PCBs Only							
GC/MS Volatiles EPA 8260							
GC/MS SemiVol. EPA 8270							
PAH's: 8270 SIM or 8310							
Lead: Total or Dissolved							
TCLP or RCRA Metals (8)							
						MTBE	
						EDB	
						EDC	
						Naphthalene	

NCA SAMPLE NUMBER	
BZE0493	19
	20
	21
	22

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1.					
2.					
3.					

**Final Report Approval**

Were all requested results provided?  yes  no Define

Were results within requested turnaround?  yes  no "No"

Final Approval Signature: \_\_\_\_\_ on back

To: Scott Woerman

Date: ~~4823-410-00~~  
5/17/02  
File:

Fax Number:

~~4823-410-00~~

Attention: Unocal COC

Regarding:

Pages	Date	Description
1	5/17	Fax Transmittal
3	...	COCs

Total Pages: 4

Comments:

Please ~~analyze~~ analyze samples.  
don't do D3-1-2 and ~~D7-1-2~~ D7-1-2

Signed:



DISCLAIMER

This facsimile and any attachments are confidential and intended solely for the use of the individual or entity to whom they are addressed.



18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
 East 11115 Montgomery, Suite B, Spokane, WA 98206-4776  
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132  
 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711

(425) 420-9200 FAX 420-9210  
 (509) 924-9200 FAX 924-9290  
 (503) 906-9200 FAX 906-9210  
 (541) 383-9310 FAX 382-7588



# UNOCAL CHAIN OF CUSTODY REPORT

BZE0493

**UNOCAL INFORMATION**

Facility Number: Former Unocal Site No. 638D  
 Site Address: Bill McDonald Pkwy/Samish  
 City, State, ZIP: Bellingham WA  
 Site Release Number:  
 Unocal Manager: Tim Johnson  
 CERT INFO: (check one)  Evaluation  Remediation  
 Detection  Demolition  Closure  Miscellaneous

**CONSULTANT INFORMATION**

Firm: GEI Project# 4823-410-00  
 Address: 2924 Colby Ave  
 Everett, WA 98201  
 Phone: 425-252-4565 Fax: 425-252-4586  
 Project Manager: Lisa Bona  
 Sample Collection by: Ron Bek

Chain of Custody Record #:

Quality Assurance Data Level:  
 A  B  
 A: Standard Summary  
 B: Standard + Chromatograms  
 Laboratory Turnaround Days:  
 10  5  3  2  1

SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	MATRIX (W,S,O)	# OF CONTAINERS
1. PL-1-3	5/15/02/1130	S	1
2. PL-2-3	5/15/02/1150	S	1
3. PL-3-4	5/15/02/1200	S	1
4. PL-4-2.5	5/15/02/1220	S	1
5. PL-5-3	5/15/02/1230	S	1
6. PL-6-3.5	5/15/02/1240	S	1
7. PL-7-3	5/15/02/1300	S	2
8. PL-8-3	5/15/02/1350	S	2
9. PL-9-3	5/15/02/1320	S	2
10. PL-10-7	5/15/02/1600	S	2

OR  WA  AK  NW Series

TPH-ACID	TPH-Gas	BTEX	EPA 8021 Mod. TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen Volatiles	EPA 8021 Pesticides/PCBs or PCBs Only	GC/MS Volatiles	EPA 8260 GC/MS Semi Vols.	EPA 8270 PAH's	8270 SIM or 8310	Lead	Total or Dissolved TCLP or RCRA Metals (B)	M T B E	EPB	EDC	Naphthalene
			X												X	X	X	X
															X	X	X	X

NCA SAMPLE NUMBER

BZE0493-01
02
03
04
05
06
07
08
09
10

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1. Ron Bek	GEI	5/16/02/1600			
2.					
3.					

Final Report Approval

Were all requested results provided?  yes  no  Define

Were results within requested turnaround?  yes  no  "No"

Final Approval Signature: \_\_\_\_\_ on back

Comments: Hold analyses until GEI contacts NCA

002

NCA

GEOENGINEERS

05/17/02 10:57 FAX 3606475044

00

00

FORMER 1.1

1.1.1

FORMER 1.1.1



18939 126th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
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 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711

(425) 420-9200 FAX 420-9210  
 (509) 924-9200 FAX 924-9290  
 (503) 906-9200 FAX 906-9210  
 (541) 383-9310 FAX 382-7588



P OR

# UNOCAL CHAIN OF CUSTODY REPORT

BZE0493

**UNOCAL INFORMATION**

Facility Number: \_\_\_\_\_  
 Site Address: \_\_\_\_\_  
 City, State, ZIP: \_\_\_\_\_  
 Site Release Number: **SAME**  
 Unocal Manager: \_\_\_\_\_  
 CERT INFO: (check one)  Evaluation  Remediation  
 Detection  Demolition  Closure  Miscellaneous

**CONSUMER INFORMATION**

Firm: \_\_\_\_\_ Project# **4823-410-00**  
 Address: \_\_\_\_\_  
**SAME**  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Project Manager: \_\_\_\_\_  
 Sample Collection by: \_\_\_\_\_

Chain of Custody Record #:

Quality Assurance Data Level:  
 A  B  
 A: Standard Summary  
 B: Standard + Chromatogram  
 Laboratory Turnaround Days:  
 10  5  3  2  1

SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	MATRIX (W,S,O)	# OF CONTAINERS
1. PL-11-6	5/15/02/1630	S	2
2. PL-12-9	5/16/02/0900	S	2
3. PL-13-9	5/16/02/0920	S	2
4. PL-14-7	5/16/02/1020	S	2
5. PL-15-9	5/16/02/1230	S	2
6. PL-16-9	5/16/02/1305	S	2
7. D1-1-2	5/15/02/0850	S	1
8. D2-1-2	5/15/02/0915	S	1
9. D3-1-2	5/15/02/0940	S	1
10. D3-2-4	5/15/02/1515	S	2

OR  WA  AK  NW Series

TPH-FCID	TPH-Gas	BTEX EPA 8021 Mod.	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogens, Volatiles	EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS Semi-Vols. EPA 8270	PAHs: EPA 8270 SIM or 8310	Lead:	Total or Dissolved TCLP or RCRA Metals (6)	MTE	EDB	EDC	Naphthalene
			X												X	X	X	X
			X												X	X	X	X

NCA SAMPLE NUMBER

BZE0493-11
12
13
14
15
16
17
↓ don't test
18
↓ don't test
19

Relinquished by: **Ronald M. Bl** Firm: **G&E** Date & Time: **5/16/02/1600**  
 Received by: \_\_\_\_\_ Firm: \_\_\_\_\_ Date & Time: \_\_\_\_\_

**Final Report Approval**

Were all requested results provided?  yes  no Define  
 Were results within requested turnaround?  yes  no "No" on back  
 Final Approval Signature: \_\_\_\_\_

UNOCAL

NOV-11-2002



18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
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 (509) 924-9200 FAX 924-9290  
 (503) 906-9200 FAX 906-9210  
 (541) 383-9310 FAX 382-7588



# UNOCAL CHAIN OF CUSTODY REPORT B2E0493

**UNOCAL INFORMATION**

Facility Number: \_\_\_\_\_  
 Site Address: \_\_\_\_\_  
 City, State, ZIP: \_\_\_\_\_  
 Site Release Number: **SAME**  
 Unocal Manager: \_\_\_\_\_  
 CERT INFO: (check one)  Evaluation  Remediation  
 Detection  Demolition  Closure  Miscellaneous

**CONSULTANT INFORMATION**

Firm: \_\_\_\_\_ Project #: **4923-410-00**  
 Address: \_\_\_\_\_  
**SAME**  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Project Manager: \_\_\_\_\_  
 Sample Collection by: \_\_\_\_\_

Chain of Custody Record #:

Quality Assurance Data Level:  
 A  B  
 A: Standard Summary  
 B: Standard + Chromatograms

Laboratory Turnaround Days:  
 10  5  3  2  1

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS
1. D3-3-3	5/15/02/1520	S	2
2. D3-4-8	5/16/02/1430	S	2
3. D4-1-2	5/15/02/0950	S	1
4. SP-1	5/16/02/1300	S	2
5.			
6.			
7.			
8.			
9.			
10.			

OR  WA  AK  NW Series

TPH:HCID	TPH:Gas	BTEX EPA 8021 Mod. TPH:Gas + BTEX	TPH:Diesel	TPH:Diesel Extended	TPH:Diesel-Ext. w/SG Cleanup	Halogen Volatiles EPA 8021	Polynuclear Aro Compounds EPA 8210	GC/MS Volatiles EPA 8260	GC/MS Semi Vol. EPA 8270	PAH's EPA 8270	Lead: EPA 8210	Total or Dissolved TCLP or RCRA Metals (6)	MTBE	EDB	EDC	Naphthalene
		X											X	X	X	X
		X											X	X	X	X

NCA SAMPLE NUMBER

B2E0493	19
	20
	21
	22

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1.					
2.					
3.					

**Final Report Approval**

Were all requested results provided?  yes  no Define

Were results within requested turnaround?  yes  no "No"

Final Approval Signature: \_\_\_\_\_ on back

Comments: Holds all analyses until GET complete

05/17/02 10:58 FAX 3806475044 GEOENGINEERS + NCA



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Geo Engineers-Everett 2924 Colby Ave Everett WA/USA, 98201-4011	Project: Former Unocal #6380 Project Number: 4823-410-00 Project Manager: Lisa Bona	Reported: 06/03/02 08:57
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**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
EX-1-7	B2E0681-01	Soil	05/23/02 18:30	05/28/02 09:15
EX-2-7	B2E0681-02	Soil	05/23/02 18:40	05/28/02 09:15
SP-2	B2E0681-03	Soil	05/23/02 18:50	05/28/02 09:15

**RECEIVED**  
 JUN 07 2002  
 GEO ENGINEERS

North Creek Analytical - Bothell

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**Environmental Laboratory Network**



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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00 Reported:  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona 06/03/02 08:57

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>EX-1-7 (B2E0681-01) Soil Sampled: 05/23/02 18:30 Received: 05/28/02 09:15</b>									
Napthalene	2.71	2.00	mg/kg dry	10	2E29040	05/29/02	05/31/02	WTPH-G/8021B	
Gasoline Range Hydrocarbons	854	50.0	"	"	"	"	"	"	
Benzene	3.21	0.500	"	"	"	"	"	"	
Toluene	1.16	0.500	"	"	"	"	"	"	
Ethylbenzene	11.8	0.500	"	"	"	"	"	"	
Xylenes (total)	64.4	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	%	50-147			"	"	"	"	S-01
Surrogate: 4-BFB (PID)	127 %	54-123			"	"	"	"	S-06
<b>EX-2-7 (B2E0681-02) Soil Sampled: 05/23/02 18:40 Received: 05/28/02 09:15</b>									
Napthalene	ND	2.00	mg/kg dry	10	2E29040	05/29/02	05/31/02	WTPH-G/8021B	
Gasoline Range Hydrocarbons	853	50.0	"	"	"	"	"	"	
Benzene	2.44	0.500	"	"	"	"	"	"	
Toluene	3.15	0.500	"	"	"	"	"	"	
Ethylbenzene	12.9	0.500	"	"	"	"	"	"	
Xylenes (total)	81.6	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	%	50-147			"	"	"	"	S-01
Surrogate: 4-BFB (PID)	114 %	54-123			"	"	"	"	
<b>SP-2 (B2E0681-03) Soil Sampled: 05/23/02 18:50 Received: 05/28/02 09:15</b>									
Gasoline Range Hydrocarbons	696	50.0	mg/kg dry	10	2E29040	05/29/02	05/31/02	WTPH-G/8021B	
Benzene	2.61	0.500	"	"	"	"	"	"	
Toluene	0.764	0.500	"	"	"	"	"	"	
Ethylbenzene	9.42	0.500	"	"	"	"	"	"	
Xylenes (total)	49.7	1.00	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	%	50-147			"	"	"	"	S-01
Surrogate: 4-BFB (PID)	119 %	54-123			"	"	"	"	

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Geo Engineers-Everett 2924 Colby Ave Everett WA/USA, 98201-4011	Project: Former Unocal #6380 Project Number: 4823-410-00 Project Manager: Lisa Bona	Reported: 06/03/02 08:57
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**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C36 by WTPH-D (extended)  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>EX-1-7 (B2E0681-01) Soil</b> Sampled: 05/23/02 18:30 Received: 05/28/02 09:15									
Diesel Range Hydrocarbons	10.6	10.0	mg/kg dry	1	2E29036	05/29/02	05/31/02	WTPH-D	D-08
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	86.7 %	50-138			"	"	"	"	
Surrogate: Octacosane	97.0 %	56-139			"	"	"	"	
<b>EX-2-7 (B2E0681-02) Soil</b> Sampled: 05/23/02 18:40 Received: 05/28/02 09:15									
Diesel Range Hydrocarbons	23.4	10.0	mg/kg dry	1	2E29036	05/29/02	05/31/02	WTPH-D	D-08
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	92.4 %	50-138			"	"	"	"	
Surrogate: Octacosane	96.5 %	56-139			"	"	"	"	
<b>SP-2 (B2E0681-03) Soil</b> Sampled: 05/23/02 18:50 Received: 05/28/02 09:15									
Diesel Range Hydrocarbons	20.2	10.0	mg/kg dry	1	2E29036	05/29/02	05/31/02	WTPH-D	D-08
Heavy Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	86.7 %	50-138			"	"	"	"	
Surrogate: Octacosane	97.2 %	56-139			"	"	"	"	

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Geo Engineers-Everett 2924 Colby Ave Everett WA/USA, 98201-4011	Project: Former Unocal #6380 Project Number: 4823-410-00 Project Manager: Lisa Bona	Reported: 06/03/02 08:57
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**Physical Parameters by APHA/ASTM/EPA Methods  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>EX-1-7 (B2E0681-01) Soil Sampled: 05/23/02 18:30 Received: 05/28/02 09:15</b>									
Dry Weight	77.5	1.00	%	1	2E30001	05/30/02	05/30/02	BSOPSPL003R07	
<b>EX-2-7 (B2E0681-02) Soil Sampled: 05/23/02 18:40 Received: 05/28/02 09:15</b>									
Dry Weight	74.4	1.00	%	1	2E30001	05/30/02	05/30/02	BSOPSPL003R07	
<b>SP-2 (B2E0681-03) Soil Sampled: 05/23/02 18:50 Received: 05/28/02 09:15</b>									
Dry Weight	76.0	1.00	%	1	2E30001	05/30/02	05/30/02	BSOPSPL003R07	

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Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 06/03/02 08:57

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2E29040: Prepared 05/29/02 Using EPA 5030B (P/T)**

**Blank (2E29040-BLK1)**

Napthalene	ND	0.200	mg/kg							
Gasoline Range Hydrocarbons	ND	5.00	"							
Benzene	ND	0.0500	"							
Toluene	ND	0.0500	"							
Ethylbenzene	ND	0.0500	"							
Xylenes (total)	ND	0.100	"							
Surrogate: 4-BFB (FID)	4.13		"	4.00		103	50-147			
Surrogate: 4-BFB (PID)	3.99		"	4.00		99.8	54-123			

**LCS (2E29040-BS1)**

Gasoline Range Hydrocarbons	27.3	5.00	mg/kg	27.5		99.3	80-120			
Surrogate: 4-BFB (FID)	4.25		"	4.00		106	50-147			

**LCS (2E29040-BS2)**

Napthalene	0.429	0.200	mg/kg	0.500		85.8	70-130			
Benzene	0.482	0.0500	"	0.500		96.4	80-120			
Toluene	0.475	0.0500	"	0.500		95.0	80-120			
Ethylbenzene	0.492	0.0500	"	0.500		98.4	80-120			
Xylenes (total)	1.49	0.100	"	1.50		99.3	80-120			
Surrogate: 4-BFB (PID)	3.97		"	4.00		99.2	54-123			

**LCS Dup (2E29040-BSD1)**

Gasoline Range Hydrocarbons	27.5	5.00	mg/kg	27.5		100	80-120	0.730	40	
Surrogate: 4-BFB (FID)	4.22		"	4.00		106	50-147			

**LCS Dup (2E29040-BSD2)**

Napthalene	0.434	0.200	mg/kg	0.500		86.8	70-130	1.16	40	
Benzene	0.486	0.0500	"	0.500		97.2	80-120	0.826	40	
Toluene	0.470	0.0500	"	0.500		94.0	80-120	1.06	40	
Ethylbenzene	0.491	0.0500	"	0.500		98.2	80-120	0.203	40	
Xylenes (total)	1.50	0.100	"	1.50		100	80-120	0.669	40	
Surrogate: 4-BFB (PID)	3.89		"	4.00		97.2	54-123			

North Creek Analytical - Bothell

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported: 06/03/02 08:57

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2E29040: Prepared 05/29/02 Using EPA 5030B (P/T)**

**Matrix Spike (2E29040-MS1)**

Source: B2E0681-02

Gasoline Range Hydrocarbons	1070	50.0	mg/kg dry	37.0	853	586	53-120			Q-03
Surrogate: 4-BFB (FID)	0.00		"	5.38			50-147			S-01

**Matrix Spike (2E29040-MS2)**

Source: B2E0681-02

Napthalene	3.12	2.00	mg/kg dry	0.672	ND	182	50-150			Q-03
Benzene	4.32	0.500	"	0.672	2.44	280	64-130			Q-03
Toluene	3.93	0.500	"	0.672	3.15	116	66-130			
Ethylbenzene	15.6	0.500	"	0.672	12.9	402	72-130			Q-03
Xylenes (total)	94.1	1.00	"	2.02	81.6	619	73-130			Q-03
Surrogate: 4-BFB (PID)	7.02		"	5.38		130	54-123			S-06

**Matrix Spike Dup (2E29040-MSD1)**

Source: B2E0681-02

Gasoline Range Hydrocarbons	738	50.0	mg/kg dry	37.0	853	-311	53-120	36.7	40	Q-03
Surrogate: 4-BFB (FID)	0.00		"	5.38			50-147			S-01

**Matrix Spike Dup (2E29040-MSD2)**

Source: B2E0681-02

Napthalene	3.34	2.00	mg/kg dry	0.672	ND	214	50-150	6.81	40	Q-03
Benzene	3.83	0.500	"	0.672	2.44	207	64-130	12.0	40	Q-03
Toluene	4.27	0.500	"	0.672	3.15	167	66-130	8.29	40	Q-03
Ethylbenzene	17.1	0.500	"	0.672	12.9	625	72-130	9.17	40	Q-03
Xylenes (total)	105	1.00	"	2.02	81.6	1160	73-130	10.9	40	Q-03
Surrogate: 4-BFB (PID)	6.55		"	5.38		122	54-123			

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Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 06/03/02 08:57

**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C36 by WTPH-D (extended) - Quality Control  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2E29036: Prepared 05/29/02 Using EPA 3550B</b>										
<b>Blank (2E29036-BLK1)</b>										
Diesel Range Hydrocarbons	ND	10.0	mg/kg							
Heavy Oil Range Hydrocarbons	ND	25.0	"							
Surrogate: 2-FBP	8.64		"	10.7		80.7	50-138			
Surrogate: Octacosane	11.1		"	10.7		104	56-139			
<b>LCS (2E29036-BS1)</b>										
Diesel Range Hydrocarbons	59.5	10.0	mg/kg	66.7		89.2	72-120			
Surrogate: 2-FBP	10.7		"	10.7		100	50-138			
<b>LCS Dup (2E29036-BSD1)</b>										
Diesel Range Hydrocarbons	59.6	10.0	mg/kg	66.7		89.4	72-120	0.168	40	
Surrogate: 2-FBP	11.1		"	10.7		104	50-138			
<b>Duplicate (2E29036-DUP1) Source: B2E0681-02</b>										
Diesel Range Hydrocarbons	25.5	10.0	mg/kg dry		23.4			8.59	40	
Heavy Oil Range Hydrocarbons	ND	25.0	"		ND			5.70	40	
Surrogate: 2-FBP	13.1		"	14.3		91.6	50-138			
Surrogate: Octacosane	14.2		"	14.3		99.3	56-139			

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 541.383.9310 fax 541.382.7588

Geo Engineers-Everett 2924 Colby Ave Everett WA/USA, 98201-4011	Project: Former Unocal #6380 Project Number: 4823-410-00 Project Manager: Lisa Bona	Reported: 06/03/02 08:57
---	---	-----------------------------

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch 2E30001: Prepared 05/30/02 Using Dry Weight**

**Blank (2E30001-BLK1)**

Dry Weight	100	1.00	%							
------------	-----	------	---	--	--	--	--	--	--	--

North Creek Analytical - Bothell

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Jeff Gerdes For Scott A. Woerman, Project Manager

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Geo Engineers-Everett  
2924 Colby Ave  
Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
Project Number: 4823-410-00  
Project Manager: Lisa Bona

Reported:  
06/03/02 08:57

### Notes and Definitions

- D-08 Results in the diesel organics range are primarily due to overlap from a gasoline range product.
- Q-03 The percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte already present in the sample.
- S-01 The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interferences.
- 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

North Creek Analytical - Bothell

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Jeff Gerdes For Scott A. Woerman, Project Manager

North Creek Analytical, Inc.  
Environmental Laboratory Network

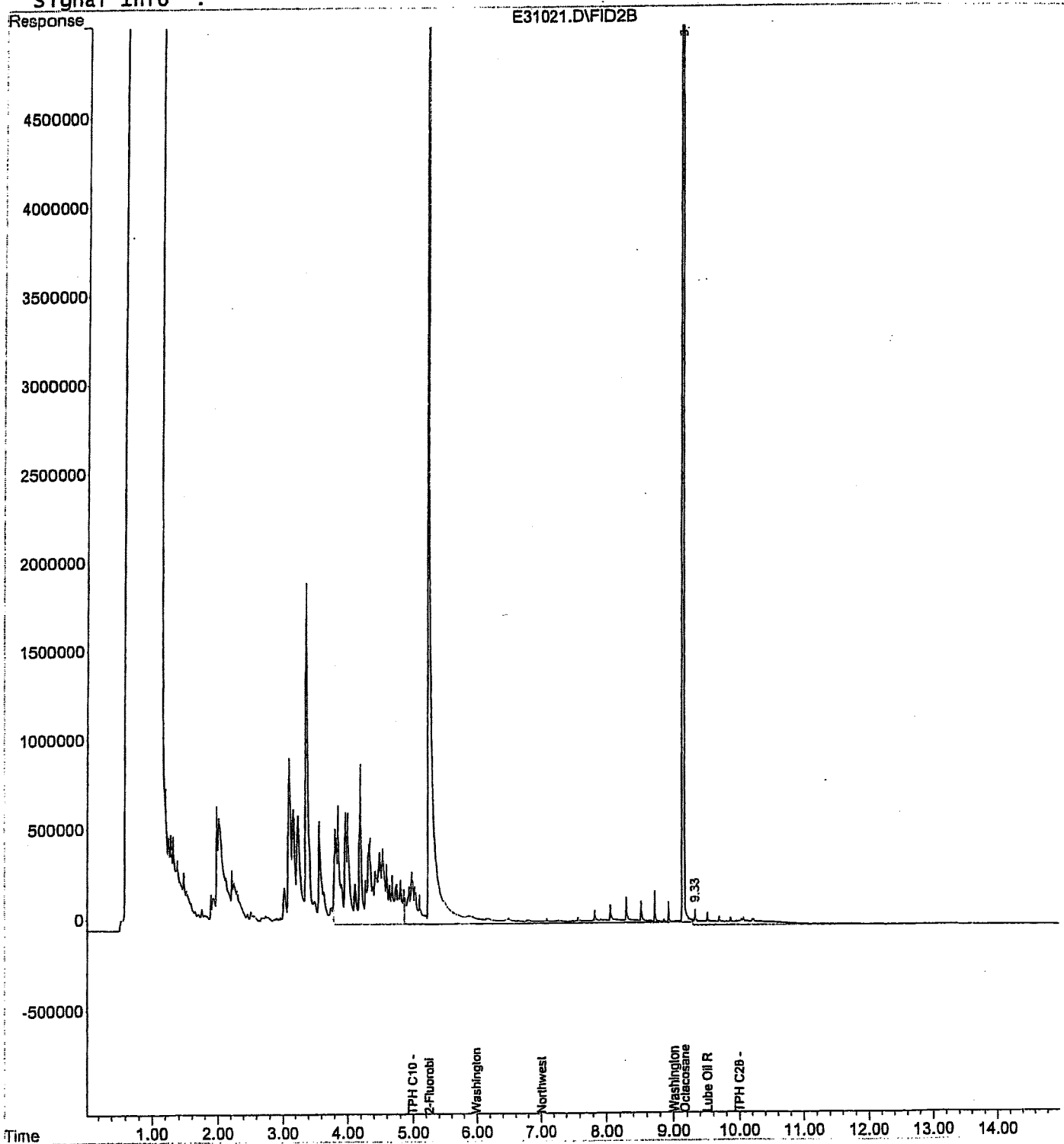
Page 9 of 9

Data File : C:\HPCHEM\1\DATA.SEC\E31021.D  
Acq On : 5-31-02 10:52:12 AM  
Sample : b2e0681-01  
Misc : 1x int-wtph s  
IntFile : SURR.E  
Quant Time: May 31 11:07 2002

Vial: 15  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\08402!9B.M (Chemstation Integrator)  
Title : TPH-D Rear  
Last Update : Thu May 16 06:27:13 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 08402!9A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



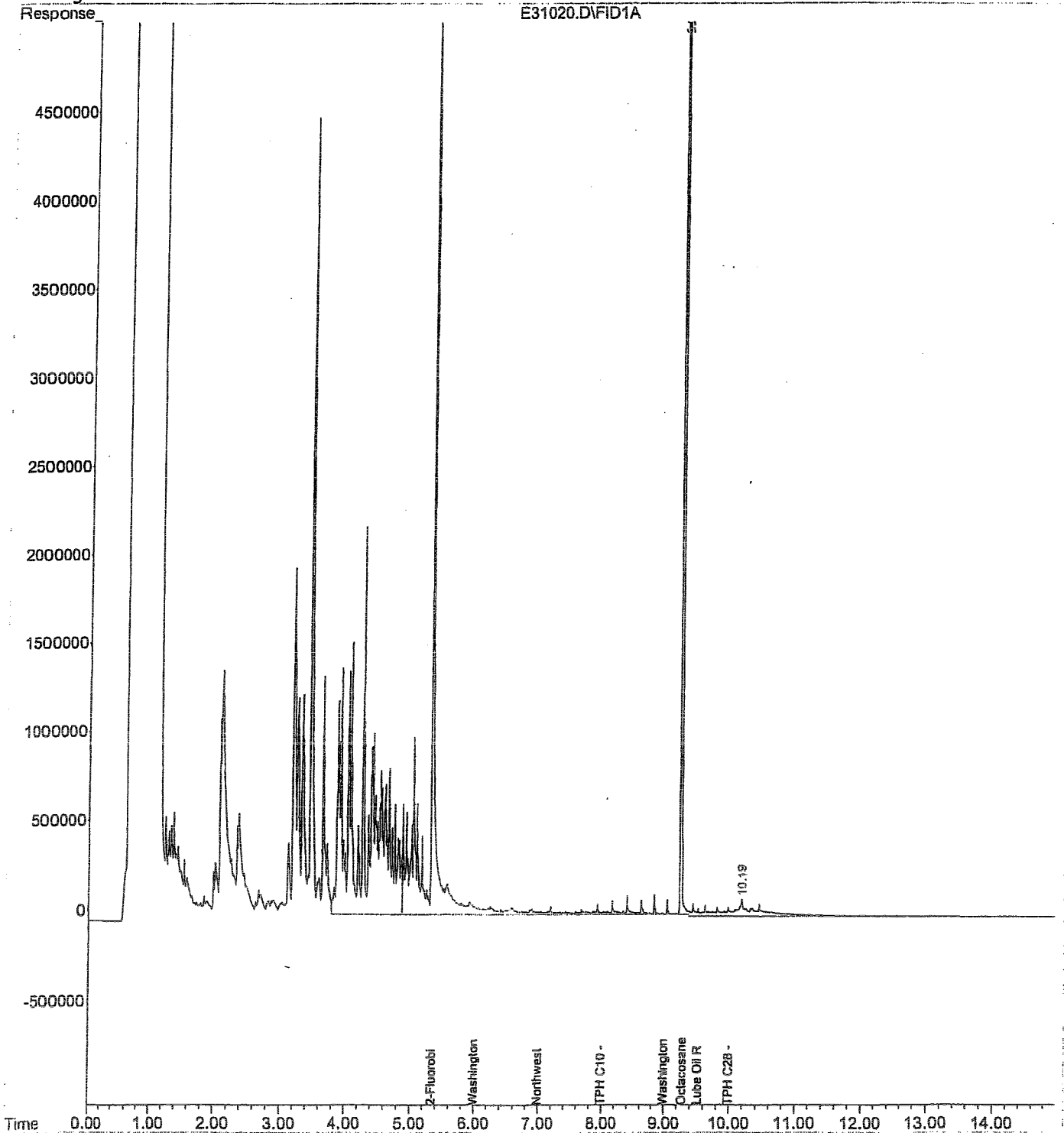
Data File : C:\HPCHEM\1\DATA\E31020.D  
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Sample : b2e0681-02  
Misc : 1x int-wtph s  
IntFile : SURR.E  
Quant Time: May 31 10:44 2002

Vial: 14  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Results File: 0840219A.RES

Quant Method : C:\HPCHEM\1\METHODS\0840219A.M (Chemstation Integrator)  
Title : TPH-D Front  
Last Update : Tue Mar 26 08:00:15 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 0840219A.M

Volume Inj. :  
Signal Phase :  
Signal Info :



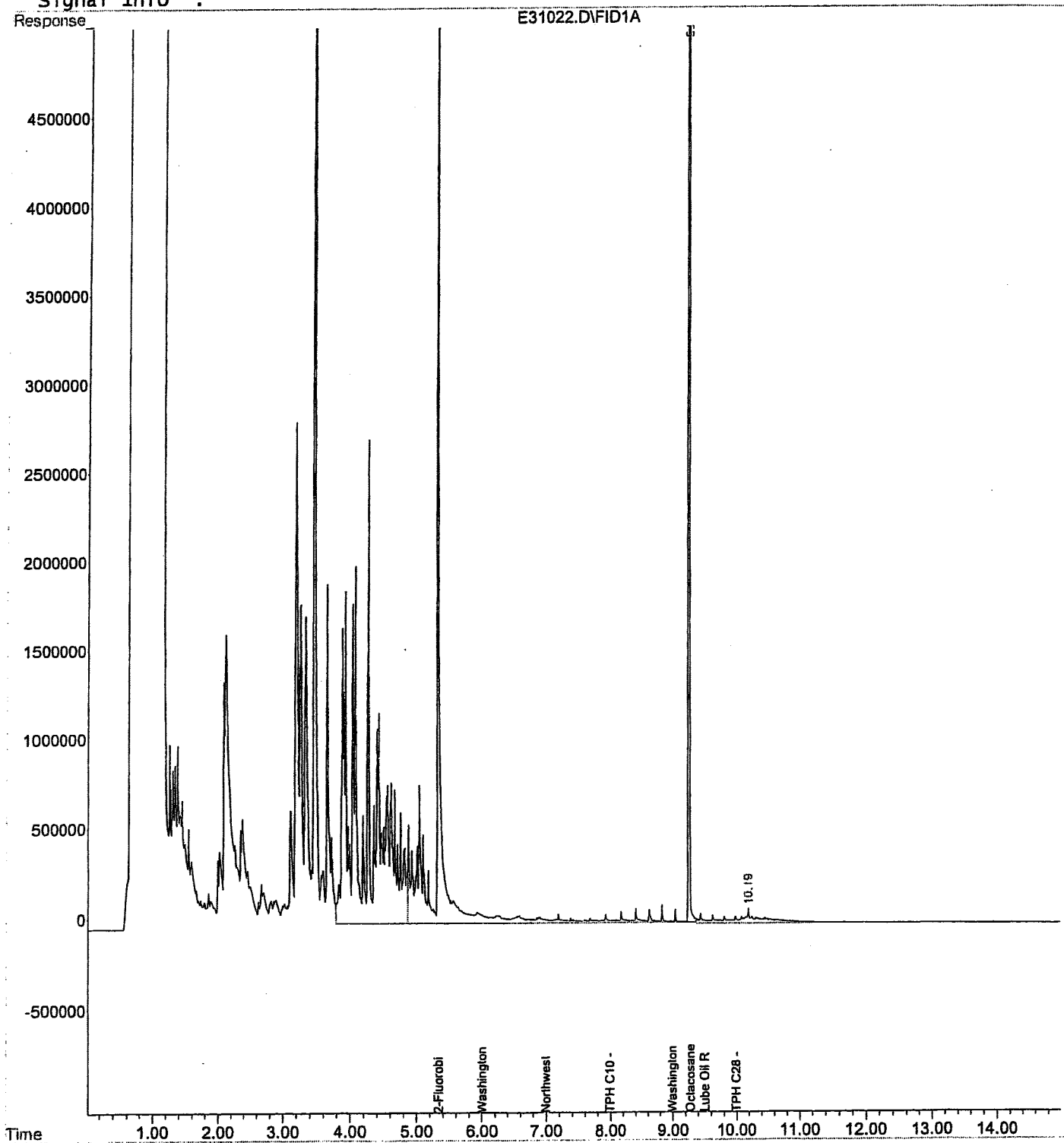
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Acq On : 5-31-02 10:52:12 AM  
Sample : b2e0681-03  
Misc : 1x int-wtph s  
IntFile : SURR.E  
Quant Time: May 31 11:31 2002

Vial: 16  
Operator: EDL  
Inst : GC #9  
Multiplr: 1.00

Quant Results File: 08402!9A.RES

Quant Method : C:\HPCHEM\1\METHODS\08402!9A.M (Chemstation Integrator)  
Title : TPH-D Front  
Last Update : Tue Mar 26 08:00:15 2002  
Response via : Multiple Level Calibration  
DataAcq Meth : 08402!9A.M

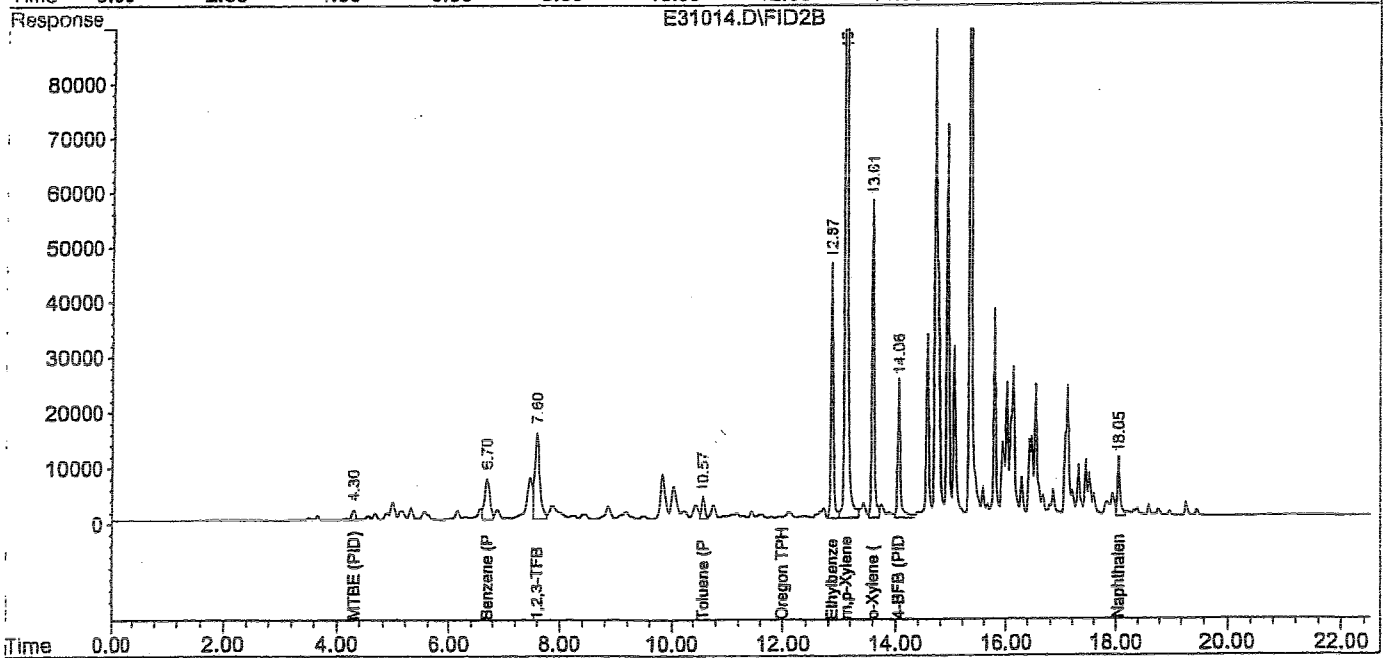
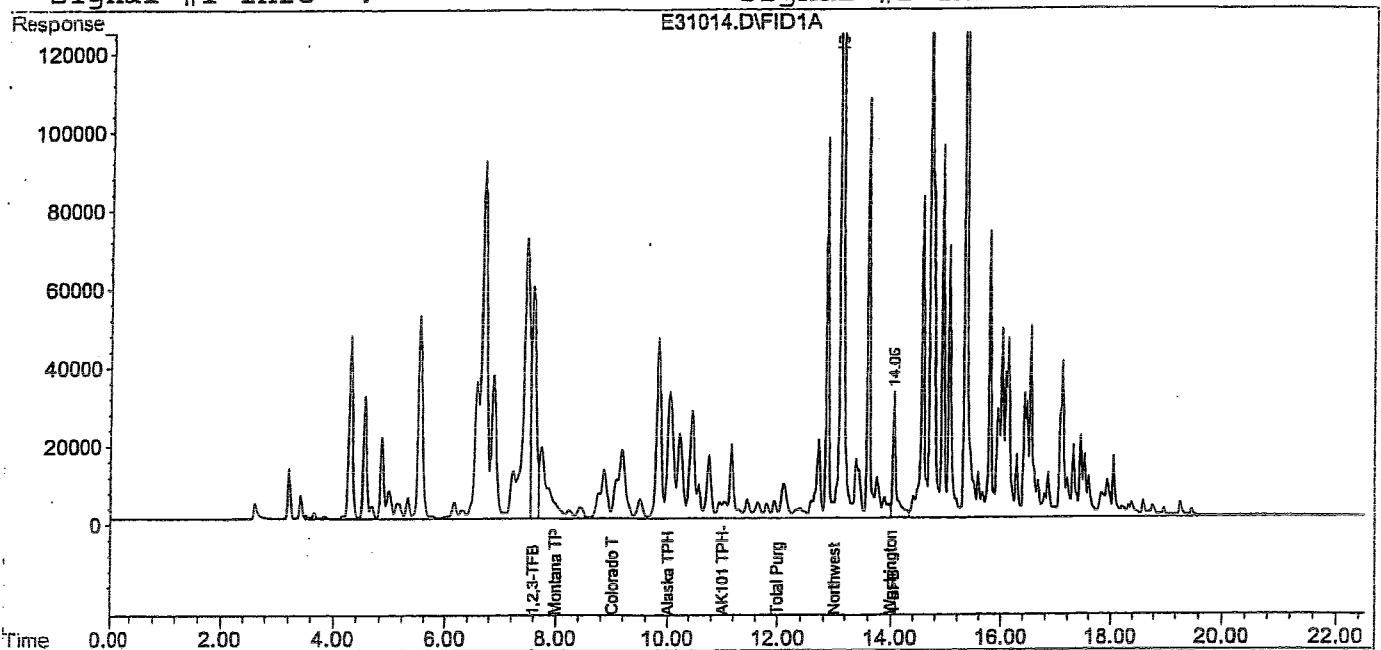
Volume Inj. :  
Signal Phase :  
Signal Info :



Signal #1 : C:\HPCHEM\2\DATA\053102\E31014.D\FID1A.CH Vial: 14  
 Signal #2 : C:\HPCHEM\2\DATA\053102\E31014.D\FID2B.CH  
 Acq On : 31 May 2002 14:23 Operator: sk  
 Sample : b2e0681-01 Inst : GC #4  
 Misc : 10X 10 uL Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 31 14:46 2002 Quant Results File: TEST052A.RES

Quant Method : C:\HPCHEM\2\METHODS\TEST052A.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 16:08:13 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST052A.M

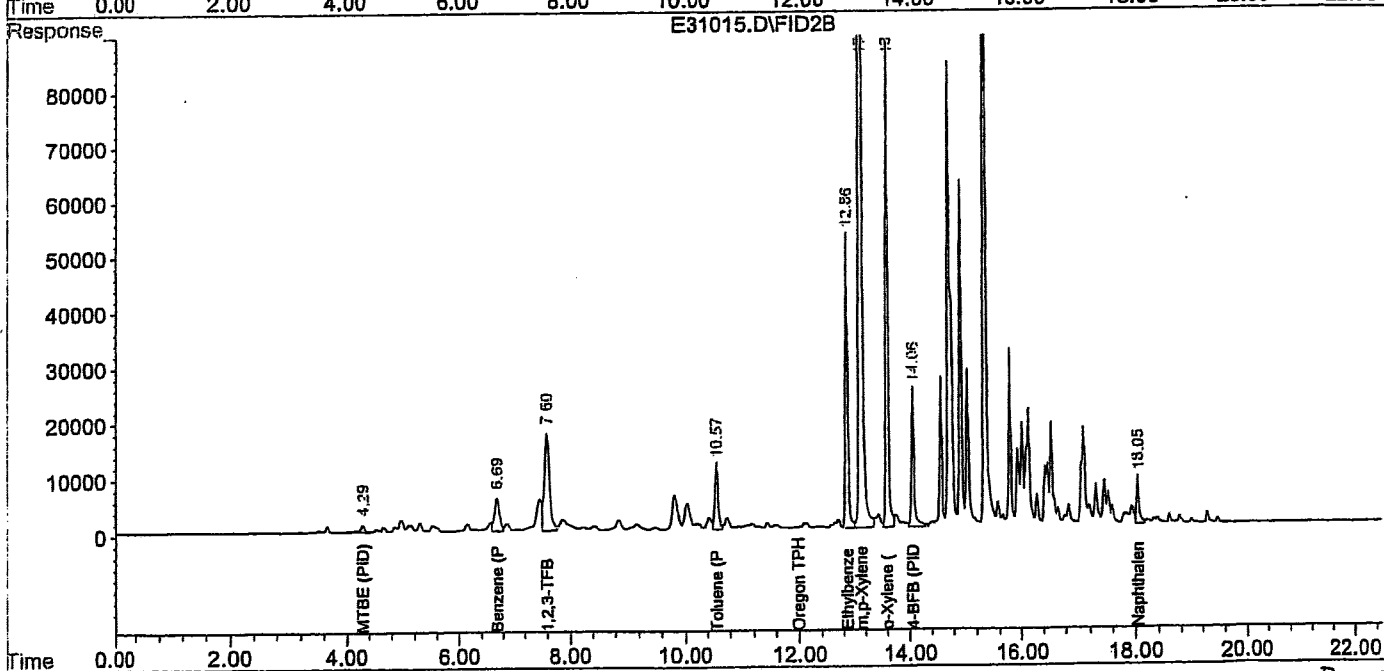
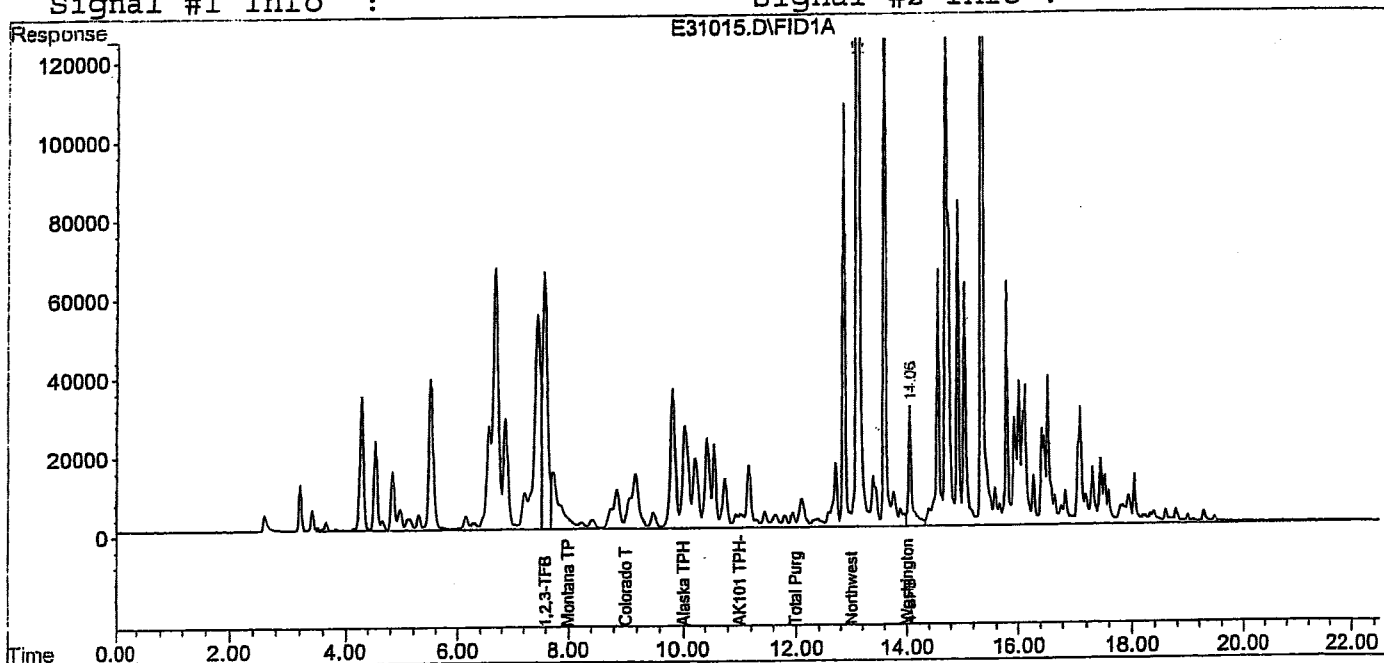
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : C:\HPCHEM\2\DATA\053102\E31015.D\FID1A.CH Vial: 15  
 Signal #2 : C:\HPCHEM\2\DATA\053102\E31015.D\FID2B.CH  
 Acq On : 31 May 2002 14:56 Operator: sk  
 Sample : b2e0681-02 Inst : GC #4  
 Misc : 10X 10 uL Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 31 15:19 2002 Quant Results File: TEST052A.RES

Quant Method : C:\HPCHEM\2\METHODS\TEST052A.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 16:08:13 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST052A.M

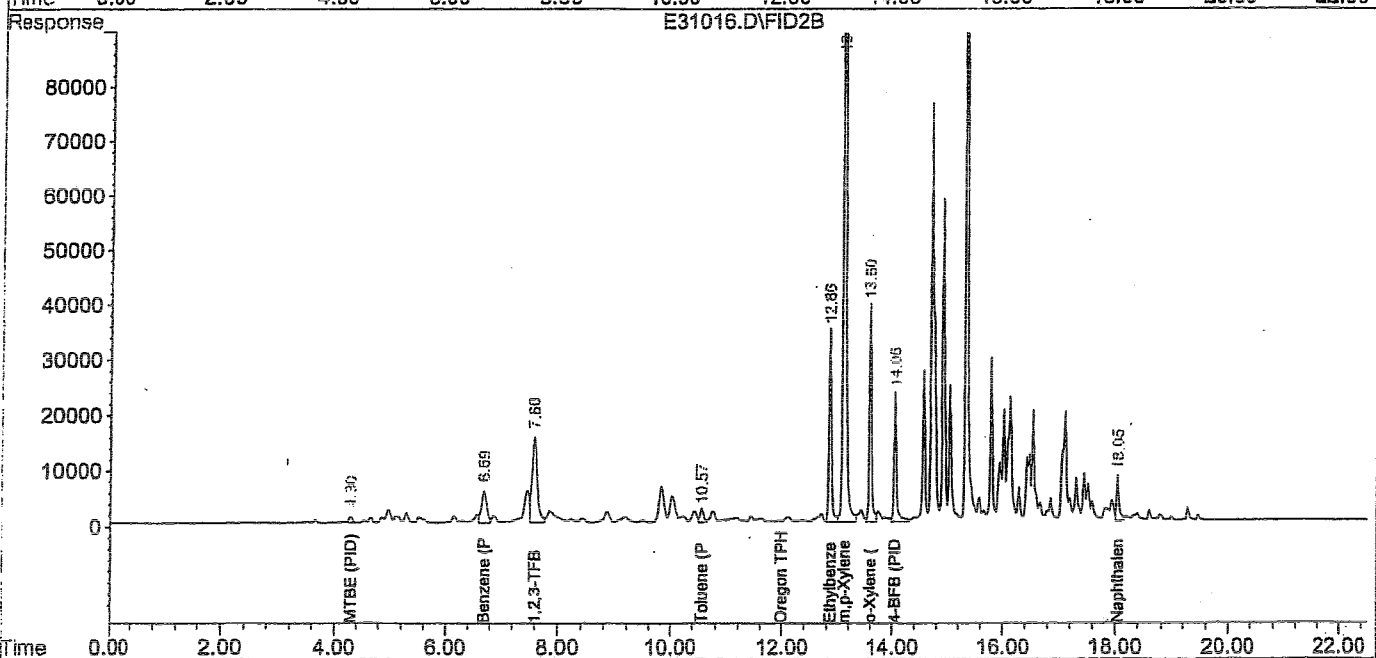
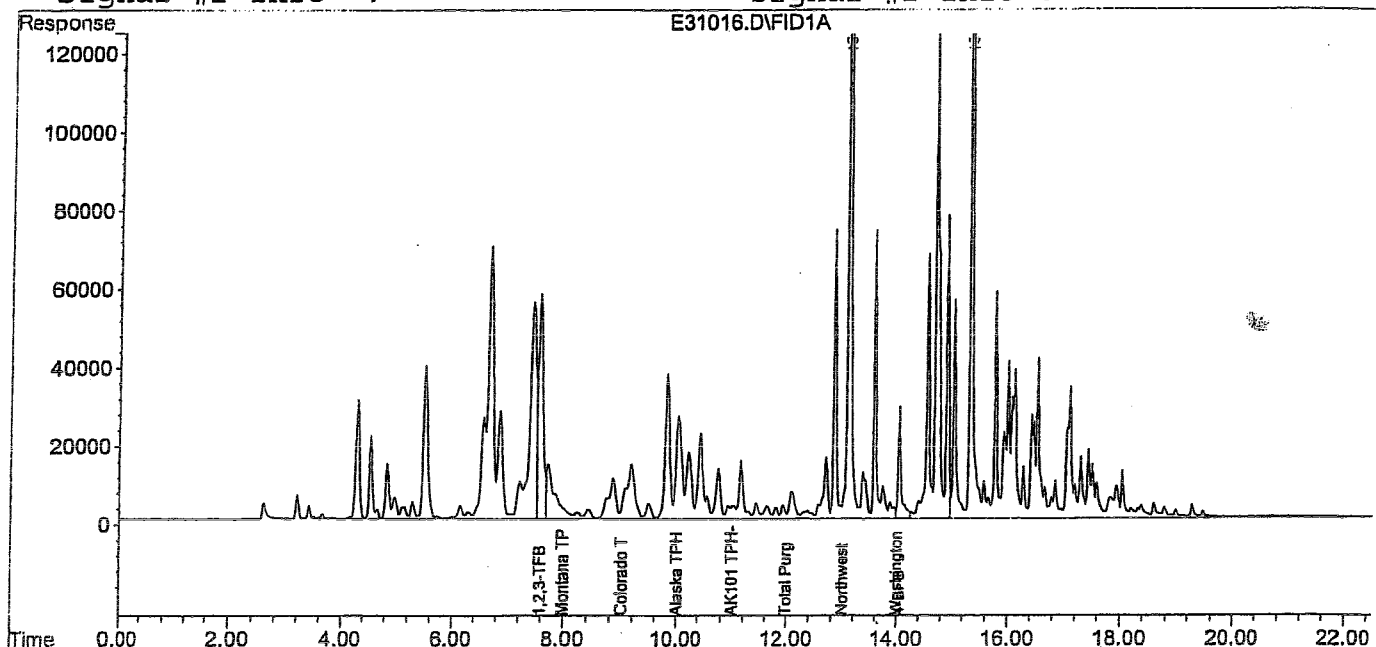
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



Signal #1 : C:\HPCHEM\2\DATA\053102\E31016.D\FID1A.CH Vial: 16  
 Signal #2 : C:\HPCHEM\2\DATA\053102\E31016.D\FID2B.CH  
 Acq On : 31 May 2002 15:29 Operator: sk  
 Sample : b2e0681-03 Inst : GC #4  
 Misc : 10X 10 uL Multiplr: 1.00  
 IntFile Signal #1: SURR.E IntFile Signal #2: SURR2.E  
 Quant Time: May 31 15:51 2002 Quant Results File: TEST052A.RES

Quant Method : C:\HPCHEM\2\METHODS\TEST052A.M (Chemstation Integrator)  
 Title : TPH-G Method  
 Last Update : Wed May 22 16:08:13 2002  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TEST052A.M

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





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 (503) 966-9700 FAX 966-9740  
 (541) 484-9310 FAX 382-7588



## UNOCAL CHAIN OF CUSTODY REPORT

Chain of Custody Record #:

**B2E0681**

Quality Assurance Data Level:

A Standard Summary  
 B Standard + Chromatograms

Laboratory Turnaround Days:

10	5	<input checked="" type="checkbox"/> 2	1
----	---	---------------------------------------	---

**UNOCAL INFORMATION**

Facility Number: Former Unocal Site No. 6380

Site Address: Bill McDonald PKWY/SAMISIT

City, State, ZIP: Bellingham WA

Site Release Number:

Unocal Manager: Tim Johnson

CERT INFO: (check one)  Evaluation  Remediation

Detection   
  Demolition   
  Closure   
  Miscellaneous

**CONSULTANT INFORMATION**

Firm: GEI Project# 4823-410-00

Address: 2924 Colby AVE  
EVERETT WA 98201

Phone: 425-252-4565 Fax: 425-252-4586

Project Manager: Lisa Bona

Sample Collection by: Ron Bek

SAMPLE IDENTIFICATION	SAMPLING DATE & TIME	MATRIX (W,S,O)	# OF CONTAINERS
1. <u>EX-1-7</u>	<u>4/23/02/1830</u>	<u>S</u>	<u>1</u>
2. <u>EX-2-7</u>	<u>4/23/02/1840</u>	<u>S</u>	<u>1</u>
3. <u>SP-2</u>	<u>5/23/02/1850</u>	<u>S</u>	<u>1</u>
4.			
5.			
6.			
7.			
8.			
9.			
10.			

OR	WA	AK	NW Series																												
				TPH-HCID	TPH-Gas	BTEX	EPA MCL/Med.	TPH-Gas - BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles	EPA SGL	Pesticides/VOCs	on PCBs Only	GC/MS Volatiles	EPA 8210	GC/MS Semivolatiles	EPA 8270	PAH's	8270 SIM of 8210	Lead	Total or Dissolved	TCLP or RCRA	Metal(s)	MTBE	EDB	EDC	Naphthalene		
						X		X		X																					

NCA SAMPLE NUMBER

	5/22/02	- 01
	5/28/02	- 02
		- 03

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1. <u>Monica Mize</u>	<u>GEI</u>	<u>5/24/02/1300</u>	<u>[Signature]</u>	<u>NCA</u>	<u>5/28/02</u>
2.					
3.					

Final Report Approval

Post-It* Fax Note	7671	Date	5/28/02	# of pages	1
To	<u>Scott Woerman</u>		From	<u>Lisa Bona</u>	
Co./Dept.			Co.		
Phone #			Phone #		
Fax #	<u>365 420-9210</u>		Fax #		

: 2524588

5-28-02: 12:13PM; GeoEng1neers



## UNOCAL CHAIN OF CUSTODY REPORT

UNOCAL INFORMATION	
Facility Number: <u>Former Unocal Site No. 6380</u>	
Site Address: <u>Bill McDonald PKWY / SAMISH</u>	
City, State, ZIP: <u>Bellingham WA</u>	
Site Release Number:	
Unocal Manager: <u>Tim Johnson</u>	
CERT INFO: (check one) <input type="checkbox"/> Evaluation <input checked="" type="checkbox"/> Remediation	
<input type="checkbox"/> Detection <input type="checkbox"/> Demolition <input type="checkbox"/> Closure <input type="checkbox"/> Miscellaneous	

CONSULTANT INFORMATION	
Firm: <u>GEI</u>	Project# <u>4823-410-00</u>
Address: <u>2924 Colby Ave EVERETT WA 98201</u>	
Phone: <u>425-252-4565</u>	Fax: <u>425-252-4586</u>
Project Manager: <u>Lisa Bona</u>	
Sample Collection by: <u>Ron Belk</u>	

Chain of Custody Record #:	
Quality Assurance Data Level:	
<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
A: Standard Summary	
B: Standard + Chromatograms	
Laboratory Turnaround Days:	
<input type="checkbox"/> 10	<input type="checkbox"/> 5
<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 1

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONTAINERS
1. <u>EX-1-7</u>	<u>5/23/02/1830</u>	<u>S</u>	<u>1</u>
2. <u>EX-2-7</u>	<u>5/23/02/1840</u>	<u>S</u>	<u>1</u>
3. <u>SP-2</u>	<u>5/23/02/1850</u>	<u>S</u>	<u>1</u>
4.			
5.			
6.			
7.			
8.			
9.			
10.			

<input type="radio"/> OR <input checked="" type="radio"/> WA <input type="radio"/> AK <input type="radio"/> NW Series																		
TPH-HCID	TPH-Gas	BTEX	EPA 8021 Mod. TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA.8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA.8260	GC/MS Semi Vols. EPA.8270	PAH's: 8270 SIM or 8310	Lead:	Total or Dissolved TCLP or RCRA Metals (8)	MTBE	EDB	EDC	<u>Naphthalene</u>	
			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>													
			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>													
			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>													

NCA SAMPLE NUMBER

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1. <u>Thomson</u>	<u>GEI</u>	<u>5/24/02/1300</u>	<u>[Signature]</u>	<u>NCA</u>	<u>5/28/02/0915</u>
2.					
3.					

Final Report Approval	
Were all requested results provided?	<input type="checkbox"/> yes <input type="checkbox"/> no    Define
Were results within requested turnaround?	<input type="checkbox"/> yes <input type="checkbox"/> no    "No"
Final Approval Signature: _____ on back	



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 541.383.9310 fax 541.382.7588

Geo Engineers-Everett 2924 Colby Ave Everett WA/USA, 98201-4011	Project: Former Unocal #6380 Project Number: 4823-410-00 Project Manager: Lisa Bona	Reported: 06/24/02 15:14
---	---	-----------------------------

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPS060702	B2F0265-01	Soil	06/07/02 08:00	06/11/02 07:45

RECEIVED  
 JUN 26 2002  
 GEO ENGINEERS

North Creek Analytical - Bothell

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported: 06/24/02 15:14

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
<b>SPS060702 (B2F0265-01) Soil Sampled: 06/07/02 08:00 Received: 06/11/02 07:45</b>									
<b>Gasoline Range Hydrocarbons</b>	<b>106</b>	<b>5.00</b>	<b>mg/kg dry</b>	<b>1</b>	<b>2F19025</b>	<b>06/19/02</b>	<b>06/20/02</b>	<b>WTPH-G/8021B</b>	
<b>Benzene</b>	<b>0.818</b>	<b>0.0500</b>	"	"	"	"	"	"	
<b>Toluene</b>	<b>0.380</b>	<b>0.0500</b>	"	"	"	"	"	"	I-06
<b>Ethylbenzene</b>	<b>0.537</b>	<b>0.0500</b>	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>1.35</b>	<b>0.100</b>	"	"	"	"	"	"	
<i>Surrogate: 4-BFB (FID)</i>	<i>111 %</i>	<i>59-125</i>				"	"	"	
<i>Surrogate: 4-BFB (PID)</i>	<i>90.9 %</i>	<i>64-125</i>				"	"	"	

North Creek Analytical - Bothell

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Jeff Gerdes, Project Manager

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 541.383.9310 fax 541.382.7588

Geo Engineers-Everett 2924 Colby Ave Everett WA/USA, 98201-4011	Project: Former Unocal #6380 Project Number: 4823-410-00 Project Manager: Lisa Bona	Reported: 06/24/02 15:14
---	---	-----------------------------

**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C36 by WTPH-D (extended)  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Not
		Limit								
<b>SPS060702 (B2F0265-01) Soil    Sampled: 06/07/02 08:00    Received: 06/11/02 07:45</b>										
Diesel Range Hydrocarbons	ND	10.0		mg/kg dry	1	2F14021	06/14/02	06/16/02	WTPH-D	
Heavy Oil Range Hydrocarbons	ND	25.0		"	"	"	"	"	"	
Surrogate: 2-FBP	68.8 %	50-138				"	"	"	"	
Surrogate: Octacosane	80.9 %	56-139				"	"	"	"	

North Creek Analytical - Bothell

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Jeff Gerdes, Project Manager

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Geo Engineers-Everett Project: Former Unocal #6380  
 2924 Colby Ave Project Number: 4823-410-00  
 Everett WA/USA, 98201-4011 Project Manager: Lisa Bona Reported:  
 06/24/02 15:14

**Physical Parameters by APHA/ASTM/EPA Methods  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>SPS060702 (B2F0265-01) Soil Sampled: 06/07/02 08:00 Received: 06/11/02 07:45</b>									
Dry Weight	77.2	1.00	%	1	2F19041	06/19/02	06/20/02	BSOPSPL003R07	

North Creek Analytical - Bothell

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Jeff Gerdes, Project Manager

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 541.383.9310 fax 541.382.7588

Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 06/24/02 15:14

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2F19025: Prepared 06/19/02 Using EPA 5030B (P/T)</b>										
<b>Blank (2F19025-BLK1)</b>										
Gasoline Range Hydrocarbons	ND	5.00	mg/kg							
Benzene	ND	0.0500	"							
Toluene	ND	0.0500	"							
Ethylbenzene	ND	0.0500	"							
Xylenes (total)	ND	0.100	"							
Surrogate: 4-BFB (FID)	3.65		"	4.00		91.2	59-125			
Surrogate: 4-BFB (PID)	4.24		"	4.00		106	64-125			
<b>LCS (2F19025-BS1)</b>										
Gasoline Range Hydrocarbons	26.9	5.00	mg/kg	27.5		97.8	80-120			
Benzene	0.399	0.0500	"	0.340		117	80-120			
Toluene	1.88	0.0500	"	2.06		91.3	80-120			
Ethylbenzene	0.499	0.0500	"	0.485		103	80-120			
Xylenes (total)	2.40	0.100	"	2.44		98.4	80-120			
Surrogate: 4-BFB (FID)	4.03		"	4.00		101	59-125			
Surrogate: 4-BFB (PID)	4.14		"	4.00		104	64-125			
<b>LCS Dup (2F19025-BSD1)</b>										
Gasoline Range Hydrocarbons	27.9	5.00	mg/kg	27.5		101	80-120	3.65	40	
Benzene	0.404	0.0500	"	0.340		119	80-120	1.25	40	
Toluene	1.92	0.0500	"	2.06		93.2	80-120	2.11	40	
Ethylbenzene	0.505	0.0500	"	0.485		104	80-120	1.20	40	
Xylenes (total)	2.43	0.100	"	2.44		99.6	80-120	1.24	40	
Surrogate: 4-BFB (FID)	4.11		"	4.00		103	59-125			
Surrogate: 4-BFB (PID)	4.17		"	4.00		104	64-125			
<b>Matrix Spike (2F19025-MS1) Source: B2F0339-01</b>										
Gasoline Range Hydrocarbons	27.5	5.00	mg/kg dry	32.1	ND	76.4	53-120			
Benzene	0.426	0.0500	"	0.397	ND	107	64-130			
Toluene	2.04	0.0500	"	2.41	ND	84.1	57-108			
Ethylbenzene	0.537	0.0500	"	0.567	ND	91.9	72-130			
Xylenes (total)	2.59	0.100	"	2.86	ND	89.5	73-130			
Surrogate: 4-BFB (FID)	4.13		"	4.67		88.4	59-125			
Surrogate: 4-BFB (PID)	4.51		"	4.67		96.6	64-125			

North Creek Analytical - Bothell

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Jeff Gerdes, Project Manager

North Creek Analytical, Inc.  
 Environmental Laboratory Network



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 541.383.9310 fax 541.382.7588

Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 06/24/02 15:14

**Gasoline Range Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B - Quality Control**  
**North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2F19025: Prepared 06/19/02 Using EPA 5030B (P/T)</b>										
<b>Matrix Spike Dup (2F19025-MSD1)</b>						<b>Source: B2F0339-01</b>				
Gasoline Range Hydrocarbons	27.5	5.00	mg/kg dry	32.1	ND	76.4	53-120	0.00	40	
Benzene	0.386	0.0500	"	0.397	ND	97.2	64-130	9.85	40	
Toluene	1.99	0.0500	"	2.41	ND	82.1	57-108	2.48	40	
Ethylbenzene	0.521	0.0500	"	0.567	ND	89.1	72-130	3.02	40	
Xylenes (total)	2.52	0.100	"	2.86	ND	87.1	73-130	2.74	40	
Surrogate: 4-BFB (FID)	4.15		"	4.67		88.9	59-125			
Surrogate: 4-BFB (PID)	4.38		"	4.67		93.8	64-125			

North Creek Analytical - Bothell

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**Environmental Laboratory Network**



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Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

Reported:  
 06/24/02 15:14

**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C36 by WTPH-D (extended) - Quality Control  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2F14021: Prepared 06/14/02 Using EPA 3550B</b>										
<b>Blank (2F14021-BLK1)</b>										
Diesel Range Hydrocarbons	ND	10.0	mg/kg							
Heavy Oil Range Hydrocarbons	ND	25.0	"							
Surrogate: 2-FBP	8.72		"	10.7		81.5	50-138			
Surrogate: Octacosane	10.1		"	10.7		94.4	56-139			
<b>LCS (2F14021-BS1)</b>										
Diesel Range Hydrocarbons	62.4	10.0	mg/kg	66.7		93.6	72-120			
Surrogate: 2-FBP	9.70		"	10.7		90.7	50-138			
<b>LCS Dup (2F14021-BSD1)</b>										
Diesel Range Hydrocarbons	60.9	10.0	mg/kg	66.7		91.3	72-120	2.43	40	
Surrogate: 2-FBP	9.09		"	10.7		85.0	50-138			
<b>Duplicate (2F14021-DUP1) Source: B2F0270-01</b>										
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry		ND				40	
Heavy Oil Range Hydrocarbons	ND	25.0	"		ND				40	
Surrogate: 2-FBP	9.71		"	12.5		77.7	50-138			
Surrogate: Octacosane	11.1		"	12.5		88.8	56-139			

North Creek Analytical - Bothell

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 541.383.9310 fax 541.382.7588

Geo Engineers-Everett 2924 Colby Ave Everett WA/USA, 98201-4011	Project: Former Unocal #6380 Project Number: 4823-410-00 Project Manager: Lisa Bona	Reported: 06/24/02 15:14
---	---	-----------------------------

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control  
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2F19041: Prepared 06/19/02 Using Dry Weight</b>										
<b>Blank (2F19041-BLK1)</b>										
Dry Weight	100	1.00	%							

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Jeff Gerdes, Project Manager

North Creek Analytical, Inc.  
 Environmental Laboratory Network

Page 8 of 9



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Geo Engineers-Everett  
 2924 Colby Ave  
 Everett WA/USA, 98201-4011

Project: Former Unocal #6380  
 Project Number: 4823-410-00  
 Project Manager: Lisa Bona

**Reported:**  
 06/24/02 15:14

**Notes and Definitions**

- I-06 The analyte concentration may be artificially elevated due to coeluting compounds or components.
- 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

North Creek Analytical - Bothell

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Jeff Gerdes, Project Manager

**North Creek Analytical, Inc.**  
**Environmental Laboratory Network**



## TOSCO CHAIN OF CUSTODY REPORT

TOSCO INFORMATION	
Facility Number: <u>C380</u>	
Site Address: <u>36<sup>TH</sup> &amp; BYRON ST.</u>	
City, State, ZIP: <u>BELLINGHAM, WA</u>	
Project/AWO Code	
Tosco Manager: <u>Tim Johnson</u>	
FACILITY TYPE: (check one) <input type="checkbox"/> BP/Ⓚ <input type="checkbox"/> Terminal/Bulk Plant	
<input type="checkbox"/> Brown Bear <input checked="" type="checkbox"/> <del>76</del> Site <input type="checkbox"/> Other	

CONSULTANT INFORMATION	
Firm: <u>GEUENBACHERS</u>	Project# <u>4823-410-00</u>
Address: <u>2924 COLBY AVE EVERETT, WA</u>	
Phone: <u>252-4565</u>	Fax: <u>252-4586</u>
Project Manager: <u>LISA BONA</u> E-mail:	
Sample Collection by: <u>Scott Overdick</u>	

Quality Assurance Data Level:  
 **A** Standard Summary  
 **B** Standard + Chromatograms

Laboratory Turnaround Days:  
 5  3  2  1  
**10 Day - Standard**

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONTAINERS
1. <u>SPS060702</u>	<u>6-7-02 0900</u>	<u>S</u>	<u>2</u>
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

<input type="radio"/> OR <input checked="" type="radio"/> WA <input type="radio"/> AK <input type="radio"/> NW Series <input type="radio"/> ID														
TPH-HCID	TPH-Gas	BTEX EPA 8021 Mod. TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel+Ext. w/SG Cleanup	Halogen Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS Semi Vols. EPA 8270	PAH's: EPA 8270 SIM or 8310	Lead: Total or Dissolved	TCLP or RCRA Metals (8)		
		X		X										

NCA SAMPLE NUMBER

BZF0205 -01

Relinquished by: <u>Scott Overdick</u>	Firm: <u>GBL</u>	Date & Time <u>6-11-02 0845</u>	Received by: <u>Karla Vane</u>	Firm: <u>NCA</u>	Date & Time <u>6/11/02 0745</u>
2.					
3.					

Comments:  
5.6 w/p

**ATTACHMENT C**  
**SOIL TIPPING SUMMARY**

Soil Master (c)

TPS Technologies, Inc.

# Customer Job Report

Gross & Tare Weight Codes: M=Manual; S=Scale; T=Trk File

Job Number Name	SiteAddress	SiteCity	State	ZipCode
A03 -- 03856 TOSCO BELLINGHAM SITE	200 36TH STREET	BELLINGHAM	WA	00000

Load #	Date & Time Out	Transporter #	Truck & Trailer Number	Gross (lb)	Tare (lb)	Net (lb)	Net Wt (tons)
1	05/20/02 00:00	3INTWST	WARD	86,180M	38,060M	48,120	24.06
2	05/20/02 00:00	3INTWST	JERRY	85,960M	38,540M	47,420	23.71
0	05/22/02 14:20	3INTWST		0	0	0	0.00
3	05/24/02 09:10	3INTWST	DEAN	102,940M	40,500M	62,440	31.22
4	05/24/02 09:11	3INTWST	JAMES	97,420M	38,020M	59,400	29.70
5	06/07/02 08:58	3INTWST	WARD	106,060M	37,900M	68,160	34.08
6	06/07/02 08:59	3INTWST		93,380M	37,820M	55,560	27.78
7	06/07/02 09:00	3INTWST	JESSE	89,980M	42,220M	47,760	23.88
8	06/07/02 09:00	3INTWST	H. JONES	90,640M	50,500M	40,140	20.07
9	06/11/02 08:17	3INTWST	JAMES	104,100M	38,580M	65,520	32.76
10	06/11/02 08:18	3INTWST		103,160M	38,100M	65,060	32.53
11	06/11/02 08:19	3INTWST	NATHAN	99,260M	42,720M	56,540	28.27
12	06/11/02 08:20	3INTWST	JERRY	86,560M	38,540M	48,020	24.01
13	06/12/02 08:23	3INTWST	KEITH	86,440M	41,660M	44,780	22.39
14	06/12/02 08:24	3INTWST	CHUCK	89,800M	40,920M	48,880	24.44

Completed Loads	Manifests Received	Completed Weight	Estimated Weight	TOTAL Net Wt:
93.30%	14	189.50%	200.00(tons)	378.90(tons)

Post-it® Fax Note	7671	Date	6/20/02	# of pages	1
To	LISA BONA	From	LENE ANDERSON		
Co./Dept.	GEN ENG.	Co.	TPS		
Phone #		Phone #	253/5848430		
Fax #	253/252-4586	Fax #			

**ATTACHMENT D**  
**REPORT LIMITATIONS AND GUIDELINES FOR USE**

## **ATTACHMENT D REPORT LIMITATIONS AND GUIDELINES FOR USE<sup>1</sup>**

This Appendix provides information to help you manage your risks with respect to the use of this report.

### **ENVIRONMENTAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS AND PROJECTS**

This report has been prepared for use by Tosco Corporation. This report may be made available to regulatory agencies. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except Tosco should rely on this environmental report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

### **THIS ENVIRONMENTAL REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS**

This report has been prepared for Tosco's former Unocal Site No. 256380 in Bellingham, Washington.. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

### **RELIANCE CONDITIONS FOR THIRD PARTIES**

If a lending agency or other parties intend to place legal reliance on the product of our services, we require that those parties indicate in writing their acknowledgement that the scope of services provided, and the general conditions under which the services were rendered including the limitation of professional liability, are understood and accepted by them. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions.

---

<sup>1</sup> Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; [www.asfe.org](http://www.asfe.org).

## **ENVIRONMENTAL REGULATIONS ARE ALWAYS EVOLVING**

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

## **UNCERTAINTY MAY REMAIN EVEN AFTER THIS REMEDIATION IS COMPLETED**

No remediation sampling can wholly eliminate uncertainty regarding the potential for contamination in connection with a property. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely-spaced sampling locations. It is always possible that contamination exists in areas that were not excavated, sampled or analyzed.

## **SUBSURFACE CONDITIONS CAN CHANGE**

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying this report to determine if it is still applicable.

## **SOIL AND GROUNDWATER END USE**

The cleanup levels referenced in this report are site- and situation-specific. The cleanup levels may not be applicable for other sites or for other on-site uses of the affected media (soil and/or groundwater). Note that hazardous substances may be present in some of the site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup levels. GeoEngineers should be contacted prior to the export of soil or groundwater from the subject site or reuse of the affected media on site to evaluate the potential for associated environmental liabilities. We cannot be responsible for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject site to another location or its reuse on site in instances that we were not aware of or could not control.

## **MOST ENVIRONMENTAL FINDINGS ARE PROFESSIONAL OPINIONS**

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

## **READ THESE PROVISIONS CLOSELY**

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

## **GEOTECHNICAL, GEOLOGIC AND GEOENVIRONMENTAL REPORTS SHOULD NOT BE INTERCHANGED**

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

TOSCO 6380  
LUST 471259



**PHILLIPS 66 COMPANY**

A Division of Phillips Petroleum Company

3977 LEARY WAY NW  
SEATTLE, WA 98107  
PHONE (206) 706-2200

**TRANSMITTAL**

**Date:** July 25, 2002

**To:** Toxics Cleanup Program - USTs  
WA Department of Ecology - NW Region  
3190 160th Avenue SE  
Bellevue, WA 98008-5452

**Subject:** Former Tosco Site #256380, 200 South 26<sup>th</sup> Street, Bellingham

*should be 36<sup>th</sup> [initials]*

Quantity	Date	Description
1	7/18/02	Product Line Removal and Underground Remediation Piping Installation Activities - GeoEngineers

**For Your:**

Review       Information       Approval       Records       Use

**Comments:**

Please find attached report documenting soil sampling and underground remedial piping installation performed during the May 2002 replacement of the UST system product piping. Please call me at 206-706-2341 if any questions regarding this report.

Tim Johnson

**RECEIVED**  
JUL 29 2002  
DEPT OF ECOLOGY

cc: Mr. Frank Diehl  
Keith Oil Co.  
PO Box 189  
Ferndale, WA 98248

*2 copies*