GW-040

Annual GW Report

DATE:
April 2008

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Lodestar Services, Incorporated PO Box 3861 Farmington, NM 87499-3861 Office (970) 946-1093

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Oil Conservation Division
Environmental Bureau

April 1, 2008

Mr. Glenn Von Gonten
New Mexico Oil Conservation Division
1220 South Francis Drive
Santa Fe, New Mexico 87505

RE: Annual Report for Giant's Bloomfield Crude Station

Dear Mr. Von Gonten:

Lodestar Services, Incorporated is pleased to submit the enclosed copy of *Annual Report, Bloomfield Crude Station, Bloomfield, New Mexico, March 2008* on behalf of Western Refining, Inc.

Please call Mr. Bill Robertson of Western Refining at (505) 632-4001 or myself at (970) 946-1093 with any questions regarding this submittal.

Respectfully Submitted,
Lodestar Services, Inc.

Ashley Ager

Ashley Ager

Cc. Mr. Bill Robertson, Western Refining
Mr. Brandon Powell, OCD Aztec

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Oil Conservation Division
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Annual Report
Bloomfield Crude Station
Bloomfield, New Mexico

March 2008

Prepared For

Western Refining

Western Refining, Inc.
111 CR 4990
Bloomfield, New Mexico

Project 30003

Lodestar Services, Incorporated
PO Box 3861 Farmington, NM 87499-3861 Office (970) 946-1093

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Introduction

The following annual report describes work completed at Giant Industries Arizona, Inc.'s (Giant's) former Crude Station in Bloomfield, New Mexico since the previous annual report submitted in March 2007. The report includes data collected through January 2008 including:

- Bioventing quarterly carbon dioxide and oxygen monitoring measurements during 2007,
- Bioventing soil sampling in October 2007,
- Groundwater sampling results from all wells on January 22, 2008,
- Headspace readings from selected injection points on October 24, 2007.

The former Bloomfield Crude Station is located on the southwest corner of Blanco Boulevard and Fifth Street in the city of Bloomfield, San Juan County, New Mexico. The site occupies approximately 5.5 acres within the N ½, NW ¼, NW ¼ of Section 22, Township 29 North, Range 11 West. A regional location map is shown in Figure 1.

A 55,000 barrel crude oil storage tank was previously located at the site within an earthen berm, which occupied approximately 100,000 square feet on the west side of the former crude station. Tank 967-D and berms were removed between late 1995 and early 1996. Approximately 12,924 cubic yards of hydrocarbon impacted soil were removed and treated at Giant's Bisti landfarm. The excavation was backfilled and graded. Currently, the site is an unoccupied, open space. A site map presented as Figure 2 shows the boundary of the former excavation. West of the former tank site is a City of Bloomfield Electrical Substation and two well sites (Jan Redding #1 and Cook #1E) owned and operated by Manana Gas. To the west of the electric substation and Manana well sites, a vacant lot exists. What appears to be a monument may indicate a previous well site that has been plugged and abandoned. Historical research of this area indicate that several oil, and possibly gas wells, may have once been operational on this lot, such as Bishop #1, Bishop #3, Hare #1 and Kittell #1 (Figure 2).

The former crude station has been the focus of a subsurface investigation where activities have included excavation and offsite land farming of hydrocarbon impacted soil, numerous soil borings and sampling, installation of seven groundwater monitoring wells, and groundwater sampling. The area of focused investigation is where the former crude oil storage tank numbered 967-D was located. A more detailed historical account can be found in a report previously submitted to the New Mexico Oil Conservation Division (NMOCD) titled *Comprehensive Report for the Bloomfield Crude Station*, dated January 2000. A chronology of site operations and investigations is found in the Golden Environmental Management report *Monitoring Well Installation, Groundwater Sampling and Bioventing Pilot Test Bloomfield Crude Station, Bloomfield, New Mexico*, dated July 2001.

Methodology

During the period covered in this report, the existing bioventing system was utilized, as well as an air sparge system. Bioventing continues as described in the *March 2004 Annual Report* and according to *Bioventing Plan, July 2002* submitted to the New Mexico Oil Conservation Division in July 2002. Soil was sampled from monitoring and injection points of the bioventing system to evaluate effectiveness. Groundwater was sampled from monitoring wells to track progress over the entire site. The air sparge system was installed in 2006 to target high concentrations of volatile organic carbons consistently present in groundwater samples from MW-2. Groundwater sampling at all monitoring wells followed accepted industry practices.

Bioventing

Bioventing is the process of supplying air to indigenous microorganisms to enhance natural mineralization of hydrocarbons to carbon dioxide and water. Following a successful bioventing pilot test on June 20, 2001 bioventing was initiated on February 17, 2003.

System installation during 2003 included hand boring three-inch holes with a hand auger, collecting soil samples at three-foot intervals and screening the samples using headspace techniques. Eight soil samples with the highest headspace readings were submitted to Pinnacle Laboratories in Albuquerque, NM for benzene, toluene, ethylbenzene, xylenes (BTEX), and total petroleum hydrocarbon (TPH) analyses by United States Environmental Protection Agency (USEPA) methods 8021 and 8015, respectively. Samples were collected in one-quart plastic bags and split for headspace and laboratory analysis. Samples for laboratory analyses were immediately placed in four-ounce glass jars, sealed, labeled, stored on ice, and shipped to the laboratory under strict chain-of-custody procedures.

Following sampling, one foot of one-inch diameter polyvinyl chloride 0.01-inch slotted well screen was set in each hole at approximately twelve feet beneath ground surface at thirty nine locations. Twenty three points are currently used for monitoring subsurface gasses and sixteen points are used to inject air. Monitoring and Injection point locations are shown on Figure 3.

Injection air is supplied by a Gast™ oil-less rotary vane compressor that supplies approximately 90 standard cubic feet per minute air. The compressor is housed in an existing office building on-site and travels through 1-1/2 inch PVC pipe to each injection point. Valves are located on each injection and monitoring point. The air is injected where field screening and laboratory analyses indicate elevated concentrations of hydrocarbons in the subsurface. Operations and maintenance are performed routinely to ensure the system is operational.

The compressor operates from 0600 hours to 1800 hours Monday through Fridays. Subsurface airflow and oxygen/carbon dioxide concentrations are monitored quarterly. Oxygen and carbon dioxide are measured using a GEM 500 ™ gas monitor. Each point is evacuated until the gas reading is stable.

Comparative soil samples were collected using a hand powered auger following approximately eight months of system operations during October 2003, and then yearly from 2004 through 2007. Soil samples were collected from a location approximately one foot away from where the initial eight soil samples were collected and at the same depth as the originals. The samples were screened in the field using headspace techniques and submitted for laboratory analysis for BTEX and TPH by USEPA methods 8021 and 8015, respectively.

Groundwater Sampling

On January 22, 2008, groundwater samples and depth-to-groundwater measurements were collected from monitoring wells MW-2 through MW-7. Each well was checked for the presence of free phase crude oil. Samples were collected from the six monitor wells. Giant abandoned monitoring well MW-1 during excavation of the tank pad. MW-7 was sampled at the request of the NMOCD, although Giant believes groundwater impact at this location is not related to their operations. This is discussed in previous reports.

Prior to sampling, depth to groundwater and total depth of each well were measured with a Keck oil/water interface probe. Presence of any free phase crude oil was also investigated using the interface probe. The interface probe was decontaminated with Alconox™ soap and rinsed with de-ionized water prior to each measurement. The volume of water in the wells was calculated, and a minimum of three casing volumes of water was purged from each well using a disposable bailer. As water was extracted, pH, electric conductivity and temperature were monitored. The wells were purged until these properties had stabilized, indicating that the purge water was representative of aquifer conditions. These data were recorded within a bound field notebook.

Once each monitoring well was purged, groundwater samples were collected by filling two 40-milliliter (mL) glass vials. The pre-cleaned and pre-preserved vials were filled and capped with no air inside to prevent degradation of the sample. Samples were labeled with the time and date of collection, as well as the origin of the sample. They were immediately sealed and packed on ice. The samples were shipped to Pinnacle Laboratories, Inc. (Pinnacle) in Albuquerque, New Mexico in a sealed cooler via UPS. Proper chain-of-custody procedures were followed with logs documenting the project name and number, sampling point, location, field ID number, date, time, sample type, number of containers, analyses required and sampler's signatures (Appendix A). Pinnacle analyzed the samples for benzene, toluene, ethylbenzene and total xylenes (BTEX) by USEPA Method 8021.

Two 500-milliliter plastic bottles were filled with groundwater for analysis of major cations and anions, total dissolved solids (TDS) and an ion balance by various EPA methods. These samples were labeled, stored on ice and submitted to Pinnacle Laboratories. The samples were labeled with the project name, sampling location, field identification number, date, time, sample type, analysis required. Strict chain-of-custody procedures were followed.

Air Sparging

On October 9, 2006, a sparge well was installed adjacent to MW-2 (Figure 2) to address sustained levels of volatile organic hydrocarbons measured in groundwater samples collected

from the well. Air sparging is the process of injecting air directly into the subsurface saturated zone, thereby volatilizing hydrocarbons and allowing them to mineralize in the unsaturated zone. The addition of oxygen to impacted groundwater and soils also enhances biodegradation, as it acts as a nutrient for bacteria.

Headspace analyses of soil samples collected in previous years from near MW-2 indicate affected soil existed between 9 and 12 feet beneath the ground surface (bgs). Depth to groundwater in MW-2 is approximately 13 feet bgs. Using this information as a guide for design of the air sparge system, the injection well was drilled to 25' total depth and completed with schedule 40, two-inch diameter polyvinyl-chloride (PVC) pipe. It included 1 foot of 0.01-inch machine slotted flush-threaded PVC well screen. The screen was set ten feet beneath the water table. A clean 10-20 grade silica sand gravel pack was placed from the bottom of the boring to two feet above the screen. Ten feet of three-eights inch natural bentonite chips were set above the gravel pack for a tight seal within the water table. A cement slurry, containing five percent powdered bentonite, was set above the seal to the surface.

Air is injected with a Gast™ oil-less rotary vane compressor that supplies approximately 17 standard cubic feet per minute air. The compressor is located in the same office building as the bioventing compressor. Air is pumped through 1-1/2 inch PVC pipe directly to the sparge well. The compressor operates from 0600 hours to 1800 hours seven days a week. Operations and maintenance are performed routinely to ensure the system is effective and working correctly.

Results

Bioventing

The results from headspace field screening using a PhotoVac photoionization detector (PID) during monitoring and injection point installation in October 2002 were as follows:

Table 1. Biovent Headspace Results

Location	DEPTH (feet)	PID (ppm)	Location	DEPTH (feet)	PID (ppm)	Location	DEPTH (feet)	PID (ppm)
IP-1	6	57.5	IP-21	6	3.5	MP-12	6	6.2
IP-1	9	57.5	IP-21	9	0.2	MP-12	9	8.9
IP-1	12	594	IP-21	12	4.8	MP-12	12	700
IP-10	6	756	IP-22		no PIDs	MP-13	6	6
IP-10	9	724	IP-23	6	0.3	MP-13	9	4.9
IP-10	12	212	ip-23	9.5	1.3	MP-13	13	650
IP-11	6	262	IP-3	9	240	MP-14	6	1.5
IP-11	9	543	IP-3	12	738	MP-14	9	6.9
IP-11	12.5	59.2	IP-4	6	102	MP-14	12	1.8
IP-12	6	2.9	IP-4	9	415	MP-15	6	0.4
IP-12	9	5.1	IP-4	12	618	MP-16	6	4.2
IP-12	13	616	IP-5	6	1.8	mp-16	9	no PIDs
IP-13	6	5.6	IP-5	9	768	mp-16	10.5	no PIDs
IP-13	9	2	IP-5	13	20.3	MP-2	6	69
IP-13	12	7.5	IP-6	6	187	MP-2	9	697
IP-14	6	0	IP-6	9	1005	MP-2	12	793
IP-14	9	0	IP-6	13	200	MP-3	6	777
IP-14	13.5	25.7	IP-7	3	2.2	MP-3	9	146
IP-15		no PIDs	IP-7	6	19	MP-3	12	23.8
IP-16	6	1.6	IP-7	9	655	MP-4	6	410
IP-16	9	728	IP-7	12	676	MP-4	9	122
IP-16	13	675	IP-8	3	29.2	MP-4	12	632
IP-17		no PIDs	IP-8	6	106	MP-5	6	37.6
IP-18	3	24.2	IP-8	9	439	MP-5	9	757
IP-18	6	106	IP-8	13	76	MP-5	12	865
IP-18	9	439	IP-9	3	102	MP-6	3	2.6
IP-18	12	10.3	IP-9	6	503	MP-6	6	2.1
IP-18	13	76	IP-9	9	74	MP-6	12	616
IP-19		no PIDs	IP-9	12	627	MP-7	3	224
IP-2	6	13.5	MP-1	6	2.3	MP-7	6	872
IP-2	9	786	MP-1	9	602	MP-7	9	708
IP-2	12.5	562	MP-1	13	203	MP-7	11	70.7
IP-20	3	1.5	MP-10	6	49.1	MP-8	6	30.3
IP-20	6	1.2	MP-10	9	733	MP-8	9	772
IP-20	9	1	MP-10	12	738	MP-8	12	602
IP-20	12	0.7	MP-11	6	0	MP-12	6	6.2
IP-21	3	0.4	MP-11	9	0	MP-12	9	8.9
MP-9		no PIDs	MP-11	12	732	MP-12	12	700

Headspace readings were recorded where there was physical evidence of impacted soil. The results of laboratory analyses from eight of the highest headspace reading locations are shown in Table 2. Also included in Table 2 are the results of sampling from the same locations collected during subsequent years at the same depth approximately one, to three feet from the original samples. Laboratory analytical reports and chain-of-custody documentation are included in Appendix A.

Table 2. Biovent Laboratory Results

Location (Oct 02)	Depth (feet)	PID (ppm)	Lab TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Standard			**100**	**10**				**50**
MP-11	12	732	1290	2.9	nd	5.8	36	44.7
IP-16	9	728	5690	0.85	0.78	7.7	58	67.33
MP-8	9	772	nd	nd	nd	nd	nd	0
IP-12	12	616	2470	nd	nd	2.1	16	18.1
IP-7	12	676	4720	2.9	nd	7.6	51	61.5
MP-3	6	777	750	2	0.3	3.2	23	28.5
MP-7	6	872	2830	2	3.3	8.6	56	69.9
IP-10	6	756	1470	0.42	0.14	0.11	1.1	1.77

Location (Oct 03)	Depth (feet)	PID (ppm)	Lab TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Standard			**100**	**10**				**50**
MP-11	12	191	157	nd	nd	nd	nd	0
IP-16	9	110	2600	nd	nd	nd	nd	0
MP-8	9	149	nd	nd	nd	nd	nd	0
IP-12	12	190	720	nd	nd	nd	nd	0
IP-7	12	287	1299	nd	nd	nd	0.29	0.29
MP-3	6	314	400	nd	nd	nd	nd	0
MP-7	6	3964	4700	3.5	nd	10	89	102.5
IP-10	6	311	21	nd	nd	nd	nd	0

Location (Oct 04)	Depth (feet)	PID (ppm)	Lab TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Standard			**100**	**10**				**50**
MP-11	12	0.0	nd	nd	nd	nd	nd	0
IP-16	9	0.0	540	nd	nd	nd	nd	0
MP-8	9	149	nd	nd	0.027	nd	nd	0.027
IP-12	12	253	nd	nd	nd	nd	nd	0
IP-7	12	123	139	nd	nd	nd	nd	0
MP-3	6	0.0	nd	nd	nd	nd	nd	0

MP-7	6	994	2330	3.5	nd	2.7	35	41.2
IP-10	6	262	nd	nd	nd	nd	0.083	0.083

Location (Oct 05)	Depth (feet)	PID (ppm)	Lab TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Standard			**100**	**10**				**50**
MP-11	12	7.49	nd	nd	nd	nd	nd	0
IP-16	9	0.0	52	nd	nd	nd	nd	0
MP-8	9	56.2	nd	nd	nd	nd	nd	0
IP-12	12	120	770	nd	nd	nd	nd	0
IP-7	12	6.2	55	nd	nd	nd	nd	0
MP-3	6	0.0	39	nd	nd	nd	nd	0
MP-7	6	443	2040	< 0.13	< 0.13	6.0	32	38.2
IP-10	6	30.3	nd	nd	nd	nd	nd	0

Location (Oct 06)	Depth (feet)	PID (ppm)	Lab TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Standard			**100**	**10**				**50**
MP-11	12	3.2	124	nd	nd	nd	nd	0
IP-16	9	5.0	210	nd	nd	nd	nd	0
MP-8	9	4.6	28	nd	nd	nd	nd	0
IP-12	12	3.3	520	nd	nd	nd	nd	0
IP-7	12	7.4	770	nd	nd	nd	nd	0
MP-3	6	4.7	nd	nd	nd	nd	nd	0
MP-7	6	4.9	22	nd	nd	nd	nd	0
IP-10	6	13.8	nd	nd	nd	nd	nd	0

Location (Oct 07)	Depth (feet)	PID (ppm)	Lab TPH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
NMOCD Standard			**100**	**10**				**50**
IP-11*	12	0.1	nd	nd	nd	nd	nd	0
IP-16	9	0.2	1500	nd	nd	nd	nd	0
MP-8	9	0.6	70	nd	nd	nd	nd	0
IP-12	12	0.3	84	nd	nd	nd	nd	0
IP-7	12	0.5	1460	nd	nd	nd	nd	0
MP-3	6	0.4	45	nd	nd	nd	nd	0
MP-7	6	0.5	1250	nd	nd	nd	nd	0
IP-10	6	0.5	nd	nd	nd	nd	nd	0

nd: not detected
*IP-11 was sampled instead of MP-11 during 2007 and should not be compared to previous sampling results.

TPH levels in the monitoring wells have generally decreased during bioventing operations, as shown in Table 3 and in Figure 4. In 2002, all soil samples were well over NMOCD standards for TPH. Since then, TPH levels in soil samples at all locations have fallen significantly (Table 3). Three samples (IP-16, IP-7 and MP-7) were over NMOCD standards in 2007, while TPH was not detected in two samples (IP-11 and IP-10). IP-11 was sampled rather than MP-11, and TPH values in that sample cannot be compared to those collected previously. There is an overall rise in TPH levels detected in soil samples during 2007 as compared to 2006. TPH levels in all but two samples increased since 2006. Levels in IP-12 decreased, and TPH from soil collected near IP-10 remained undetected.

Table 3. Comparison of Laboratory Results in Soil Samples

		2002 - 2007		2006 - 2007	
Hole	Depth (feet)	% Change Lab TPH (mg/kg)	% Change Total BTEX (mg/kg)	% Change Lab TPH (mg/kg)	% Change Total BTEX (mg/kg)
IP-11*	12				
IP-16	9	-73.6%	-100%	614.2%	nc
MP-8	9	100%	nc	150%	nc
IP-12	12	-96.6%	-100%	-83.8%	nc
IP-7	12	-69.1%	-100%	89.6%	nc
MP-3	6	-94%	-100%	100%	nc
MP-7	6	-55.8%	-100%	5581.8%	nc
IP-10	6	-100%	-100%	nc	nc
Ave.		-61.4%	-100%	1270.3%	nc

nc: no change; wells with no change in values were not used in average change calculations.
**IP-11 was sampled instead of MP-11 during 2007 and should not be compared to previous sampling results.

As shown in Table 3 and graphically presented in Figure 5, laboratory results indicate a consistent decrease of the BTEX constituents since bioventing operations began. All locations have been under NMOCD standards for BTEX concentrations since 2004. In 2007, BTEX was not detected in any of the samples.

The results of carbon dioxide and oxygen measurements during bioventing are shown in the following table. The pump that injects air into the subsurface failed and was being repaired during the scheduled fourth quarter 2005 monitoring event. No readings were obtained for that time. In 2007, monitoring was conducted at all injection and monitoring points since the system configuration has changed over the years to target areas of highest hydrocarbon concentrations.

Table 4. Results of Air Monitoring

Monitoring Point	Oxygen Percentage at Monitoring Points						Carbon Dioxide Percentage at Monitoring Points					
	Pretest	2003 ave.	2004 ave.	2005 ave.	2006 ave.	2007 ave.	Pretest	2003 ave.	2004 ave.	2005 ave.	2006 ave.	2007 ave.
IP1						17.1						2.8

Monitoring Point	Oxygen Percentage at Monitoring Points						Carbon Dioxide Percentage at Monitoring Points					
IP2						20.5						0
IP3						20.2						0
IP4						20.5						0
IP5						19.2						1.1
IP6						15.1						5.4
IP7						18						2.5
IP8	20.20	3.25	4.80	0.03	0.0	20.47	0.8	13.43	10.58	3.50	14.4	0
IP9						18.1						0.2
IP10	17.20	3.15	12.38	4.8	7.15	14.53	1.8	6.52	10.95	4.87	14.13	6.5
IP11	20.90	9.51	8.63	13.5	19.6	20.43	0	1.03	11.90	4.47	1.3	0
IP12						18.4						1.4
IP13	20.90	8.62	18.95	18.3	17.88	19.53	0.2	1.74	1.38	2.07	2.18	0.45
IP14	19.90	5.77	4.50	3.4	15.58	18.53	1	6.84	10.05	13.73	4.75	2.03
IP15	20.90	0.07	19.93	20.3	19.95	20.28	0.8	1.21	0.33	0.47	0.55	0.1
IP16						20.5						0
IP17	20.90	0.44	19.20	19.0	19.38	17.58	1	1.10	1.25	2.13	1.03	0.23
IP18						17.6						2.9
IP19	20.90	9.27	16.20	18.1	19.4	19.1	0.4	1.24	3.50	2.37	0.93	1.38
IP20	20.50	5.88	7.18	13.5	17.8	18.98	0.6	6.36	8.40	5.80	1.78	0.95
IP21	20.90	8.33	18.10	19.7	18.65	19.95	1.4	1.20	2.20	4.10	0.85	0.15
IP22	20.90	0.14	17.50	18.3	19.2	20	0.4	0.94	1.85	2.33	1.13	0.43
IP23	20.90	0.69	19.33	18.7	19.35	20.2	0.6	0.66	0.77	2.03	0.90	0.2
MP1						17.9						2.1
MP2						20.4						0.2
MP3						17						0.5
MP4	19.00	1.94	6.15	2.0	0.0	20.47	1.2	12.05	14.45	6.33	14.9	0
MP5						30.5						0
MP6						15.7						4.6
MP7	18.60	6.56	7.85	14.2	18.5	20.47	1.4	5.60	8.25	4.2	0.7	0.03
MP8						18.1						2.2
MP9	20.50	13.13	18.88	19.3	18.85	19.63	1	1.89	0.98	1.5	1.28	0.33
MP10						16.8						3.2
MP11						17.2						3.3
MP12						19.7						0.3
MP13						17.3						2.1
MP14	19.20	14.20	8.30	14.1	15.90	19.05	1	3.34	7.98	5.33	3.5	1.08
MP15	20.90	18.40	14.88	14.2	18.40	19.15	0.6	1.82	3.68	3.43	1.5	1.45
MP16	20.90	20.11	18.95	19.5	19.28	19.3	0.06	0.97	1.40	1.43	1.2	1.18
Average	20.23	13.86	13.43	13.90	15.83	19.1	0.79	3.77	5.55	3.53	3.72	1.3

2003 includes data from 2/03,3/03,10/03 and 1/04.
2004 includes quarterly data from 4/04,7/04,10/04 and 1/05.
2005 includes data from 4/05, 7/05 and 10/05.
2006 includes data from 4/06, 7/06, 10/06 and 1/07.
2007 includes data from 4/07, 7/07, 10/07 and 1/08.

Measurements at individual monitoring points are shown on the Bioventing Data tables in Appendix C. Air monitoring points were, for the most part, installed away from the injection points that were installed in the areas of highest hydrocarbon concentrations. Because these points were away from hydrocarbons and hence biologic activity, initial oxygen concentrations were typically higher and carbon dioxide concentrations typically lower than readings in areas of higher hydrocarbon concentrations. The average oxygen concentration at all monitoring points decreased slightly in 2004, but returned to 2003 levels during 2005 and continued to increase in 2006 and 2007. Average concentration of carbon dioxide increased in 2004 and returned to just

under 2003 levels during 2005. The carbon dioxide concentrations increased slightly in 2006 and are comparable to 2003 levels, while there was a significant decrease in concentrations in 2007.

Groundwater Sampling

Depth-to-water measurements taken during January 2008 are shown in Table 5. During January 2008, water depth ranged from 19.69 feet beneath the top of the well casing (BTOC) in MW-7 to 11.81 feet BTOC in MW-2. Product was found in MW-2 during January 2004 through August 2004 and absent from September 2004 to date. Free phase crude oil has never been found in any of the other wells. Groundwater elevations were calculated, and an inferred groundwater elevation contour map is presented as Figure 6. Based on the contours, groundwater movement appears to be to the southwest and the hydraulic gradient is 0.016 feet per feet.

Table 5. Groundwater Elevation Data

Well Number	Casing Elevation (ft)	Date	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Groundwater Elevation (ft)
MW-2	5485.33	01/22/08	11.81	np	np	5473.52
MW-3	5488.61	01/22/08	12.08	np	np	5476.53
MW-4	5486.18	01/22/08	13.29	np	np	5472.89
MW-5	5481.61	01/22/08	13.31	np	np	5468.30
MW-6	5486.18	01/22/08	15.03	np	np	5471.15
MW-7	5491.86	01/22/08	19.69	np	np	5472.17

Notes:
Measuring points are marked by a notch in top of well casing
na: not applicable
np: indicates there was no free phase product present
Groundwater Elevation = (Surveyed Well Casing Elevation) - (Depth to Water)
Water level elevation is given in feet above mean sea level
* MW-1 was abandoned by Giant in 2000

Laboratory analytical results for BTEX in groundwater samples are presented in Table 6. Complete reports from Pinnacle Laboratories are included in Appendix A. During January 2008, BTEX was not detected in the groundwater from MW-3, MW-4 and MW-5. The concentrations of BTEX constituents in MW-2 remained under New Mexico Water Quality Control Commission (NMWQCC) standards. MW-6 showed a slight increase in BTEX concentrations since last year, but all constituents are beneath NMWQCC standards. MW-7 continues to be over NMWQCC standards with 750 µg/L of benzene and 3100 µg/L of total xylenes.

Table 6. Groundwater Analytical Results

NMWQCC Standards		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
		10	**750**	**750**	**620**
MW-2	Sep-94	**640**	600	82	**690**
	Apr-95	**220**	280	53	430
	Sep-99	NSP	NSP	NSP	NSP

NMWQCC Standards		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
		10	750	750	620
	Dec-99	NSP	NSP	NSP	NSP
	May-01	NSP	NSP	NSP	NSP
	May-02	NSP	NSP	NSP	NSP
	Jan-03	**1700**	ND	650	**3200**
	Jan-04	**1100**	ND	340	**1800**
	Jan-05	**430**	ND	360	**1000**
	Jan-06	**250**	ND	410	**790**
	Sept-06	**230**	50	290	**640**
	Jan-07	8.7	9.7	16	55
	Apr-07	7.8	6.0	61	110
	Jul-07	4.2	20	30	68
	Oct-07	0.87	18	120	180
	Jan-08	4.4	45	24	100
MW-3	Sep-94	ND	ND	ND	ND
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	0.8	ND	ND	ND
	Jan-08	ND	ND	ND	ND
MW-4	Sep-94	2.1	ND	ND	1.2
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	ND	ND	ND	ND
	Jan-08	ND	ND	ND	ND
MW-5	Sep-94	NS	NS	NS	NS
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	1.1
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND

NMWQCC Standards		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
		10	750	750	620
	Jan-07	ND	ND	ND	ND
	Jan-08	ND	ND	ND	ND
MW-6	May-01	**12**	15	13	83
	May-02	ND	ND	0.53	1.4
	Oct -02	ND	ND	ND	3.2
	Jan-03	6.0	20	87	350
	Jul-03	ND	2.7	3.2	16
	Sept-03	0.8	3.7	4.0	24
	Jan-04	0.9	1.6	2.9	16
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	14	32
	Jan-07	ND	ND	3.6	9.1
	Jan-08	0.9	11	130	930*
MW-7	May-01	**2,400**	ND	380	**2,800**
	June-02	**2,000**	ND	140	**1,100**
	Oct-02	**1100**	ND	79	490
	Jan-03	**3200**	ND	400	**3100**
	Jan-04	**3300**	ND	460	**3300**
	Jan-05	**1600**	ND	220	**1500**
	Jan-06	**1400**	ND	280	**1500**
	Jan-07	**1200**	ND	450	**2500**
	Jan-08	**750**	ND	520	**3100**

*Reported from a 5X dilution run on 01/28/08.

The results of general chemistry analyses for January 2008 are shown in Table 7. Results indicate high conductivity in all of the samples, ranging from 1320 microhms per centimeter (µmhos/cm) to 6750 µmhos/cm. Total dissolved solids (TDS) are also high, with levels between 810 milligram per liter (mg/L) in MW-7 and 4780 mg/L in MW-5. All of the samples, except MW-7, have concentrations greater than the NMWQCC domestic water supply standard for TDS of 1000 mg/L. These results indicate a poor quality for potable use. The samples from wells MW-2, MW-3, MW-4 and MW-5 exceed the NMWQCC domestic water standard for sulfate at 2460 mg/L, 1690 mg/L, 1790 mg/L, 1310 mg/L and 3140 mg/L, respectively. The standard for sulfate is 600 mg/L. The elevated levels of these parameters are indicators of the typically poor quality of shallow groundwater at the site. The complete laboratory analytical reports are included in Appendix A. Historical general chemistry of groundwater sampled at the Bloomfield Crude Station is included in Appendix D.

Table 7. Groundwater General Chemistry Results

Analyte	Units	Date	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	NMWQCC Standard
Lab pH	s.u.	1/22/08	7.5	7.5	7.6	7.1	7.5	7.3	6-9
Conductivity	µmhos/cm	1/22/08	5100	4330	4500	6750	2850	1320	
TDS	mg/L	1/22/08	**4350**	**3600**	**3710**	**4780**	**1920**	810	1000
Alkalinity as CaCO3	mg/L	1/22/08	543	627	458	933	1140	748	No Std.
Bicarbonate as CaCO3	mg/L	1/22/08	543	626	457	932	1140	747	No Std.
Carbonate as CO3	mg/L	1/22/08	ND	1.32	ND	ND	1.25	ND	No Std.
Hydroxide	mg/L	1/22/08	ND	ND	ND	ND	ND	ND	No Std.
Chloride	mg/L	1/22/08	42.3	34.8	5	109	105	18.1	250
Sulfate	mg/L	1/22/08	**2460**	**1690**	**1790**	**1310**	312	50.9	600
Calcium	mg/L	1/22/08	463	419	394	585	195	139	No Std.
Magnesium	mg/L	1/22/08	49.5	39.8	41.2	51.5	25.6	15.4	No Std.
Potassium	mg/L	1/22/08	2.93	2.36	3.55	5.11	2.83	1.20	No Std.
Sodium	mg/L	1/22/08	739	594	637	834	442	120	No Std.
Iron	mg/L	1/22/08	10.7	1.91	2.72	1.32	24.5	14.4	No Std.
Manganese	mg/L	1/22/08	6.76	0.394	5.41	10.7	2.62	1.60	No Std.
Nitrate/Nitrite	mg/L	1/22/08	ND	ND	ND	ND	ND	ND	10

Notes:
s.u. = standard units
µmhos/cm - microhms per centimeter
mg/L = milligrams per liter
NMWQCC = New Mexico Water Quality Control Commission Standard
No Std. = No Standard

Monitoring of MW-2

MW-2 was free of product during 2007. Product has not been found in MW-2 since August, 2004. A comprehensive summary of product monitoring and recovery is presented in Table 8. High levels of BTEX were persistently present in groundwater samples from MW-2 between 2004 and early 2006 (Table 5). As a result, an air sparge system was installed during 2006 to remove volatiles within the affected soil and groundwater. Samples from MW-2 taken before and after installation of the sparge well suggest significant progress (Table 5). Values of all BTEX constituents decreased between September 2006 and January 2008. BTEX concentrations from groundwater samples in MW-2 have been below NMWQCC standards for four consecutive quarters.

Table 8. Product Recovery Data MW-2

Date	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed (gal) (includes purge water)
May 4, 1995	NA	NA	NA	9
Sept 30, 1999	15.00	17.48	2.47	2.75
Nov 16, 1999	14.65	17.00	2.35	2.0
Dec 14, 1999	14.66	16.76	2.10	5.0
May 11, 2001	14.69	16.77	1.96	2.5
May 21, 2001	15.10	15.65	0.55	0
May 23, 2001	15.13	15.69	0.56	0
July 3, 2001	15.48	16.32	0.84	0
July 9, 2001	15.54	16.43	0.89	1.1
May 13, 2002	14.70	15.51	0.81	1.4
May 22, 2002	14.64	15.29	0.65	1.2
May 30, 2002	14.70	15.14	0.44	1.1
June 5, 2002	14.76	15.00	0.24	1.1
June 13, 2002	14.75	14.91	0.15	0.6
June 19, 2002	14.70	14.78	0.08	0.6
June 26, 2002	14.68	14.73	0.05	0.3
July 5, 2002	14.63	14.69	0.05	0.2
July 12, 2002	14.56	14.61	0.05	0.2
July 18, 2002	14.53	14.59	0.06	0.2
July 25, 2002	14.51	14.56	0.05	0.2
July 31, 2002	14.43	14.47	0.04	0.1
August 16, 2002	14.25	14.32	0.06	0.2
September 6, 2002	14.18	14.30	0.12	0.1
September 19, 2002	14.22	14.38	0.16	0.2
October 21, 2002	-	13.87	0.00	0
January 30, 2003	-	12.53	0.00	0
March 26, 2003	-	13.75	0.00	0
May 16, 2003	-	14.30	0.00	0
July 27, 2003	14.06	14.08	0.02	2.0
August 18, 2003	-	14.07	0.00	0
September 15, 2003	-	14.08	0.00	0
January 20, 2004	14.2	14.24	0.04	2.5
April 29, 2004	15.04	15.1	0.06	2
May 27, 2004	15.38	15.51	0.13	2
June 24, 2004	15.6	15.65	0.05	2
July 26, 2004	15.50	15.54	0.04	1
August 25, 2004	15.12	15.13	0.01	1
September 30, 2004	-	14.72	0	1
October 19, 2004	-	14.58	0	-
November 16, 2004	-	14.4	0	0.5
December 14, 2004	-	14.38	0	-
January 13, 2005	-	14.52	0	-
April 27, 2005	-		0	-
July 28, 2005	-	15.12	0	-
October 25, 2005	-	13.82	0	-
January 26, 2006	-	14.67	0	-

Date	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed (gal) (includes purge water)
September 25, 2006	-	13.85	0	-
January 25, 2007	-	12.63	0	-
January 22, 2008	-	11.81	0	-
Total Gallons of Product and Purge Water Removed Since 1995				44.05

Conclusions

Bioventing

Based on the overall decrease in concentrations of TPH and BTEX following almost five years of operations, bioventing is effectively reducing the concentrations of hydrocarbons in the subsurface. Prior to bioventing in 2002 seven of eight soil samples were over NMOCD standards for TPH, none for benzene and four were over for total BTEX. In 2007, three of eight samples were over NMOCD standards for TPH, and BTEX was not detected in any of the eight samples.

During 2008, four of the monitoring and injection points showed increased concentrations of TPH. IP-16, IP-7 and MP-7 showed significant increases, and IP-16 and IP-7 have shown rising concentrations of TPH for two consecutive years (2006-2008). IP-16 increased from 210 to 1500 mg/kg. MP-8 increased from 28 mg/kg in 2006 to 70 mg/kg in 2008. IP-7 increased from 770 to 1460 mg/kg over one year. MP-7 increased from 22 to 1250 mg/kg. Samples in 2006 and 2007 were collected to at a foot or less away from monitoring and injection points. In contrast, samples from previous years were collected approximately 2 to 3 feet away of the injection or monitoring points, suggesting an area previously not sampled and higher in TPH concentrations than the original was sampled more recently.

The concentrations of oxygen and carbon dioxide recorded through January 2008 indicate decreasing biologic activity at the site until 2006. Oxygen concentrations from 2002 through 2004 decreased, representing enhanced biologic activity at the site during startup of bioventing operations. Oxygen concentrations began to rise in 2005, indicating less oxygen was consumed as less hydrocarbon mass was available. The increase in subsurface oxygen concentrations during 2006 and 2007 indicates decreasing biologic activity at the site as less oxygen is consumed with a reduced volume of hydrocarbons available as a food source.

A similar trend is apparent in carbon dioxide concentrations. The peak carbon dioxide concentrations occurred in 2004, when biologic activity was at its highest. Levels have since decreased to 2007 levels as less hydrocarbon mass is available. There was a slight increase in carbon dioxide levels in 2006, which may be attributable to increased activity on site after the installation of the sparge well next to MW-2.

Air Sparging

Air sparging operations have proven to be successful in reducing BTEX concentrations in groundwater at MW-2. After only three months of continuous sparging, benzene concentrations dropped from 230 to 8.7 µg/L and xylenes dropped from 640 to 55 µg/L during 2006. Following 15 months of air sparging operations, benzene and total xylene concentrations are consistently beneath NMWQCC standards, and have been documented to be under standards for four consecutive months.

Groundwater Sampling

The reduction in the concentrations of BTEX in the groundwater from monitoring wells and the continued absence of product in MW-2 is evidence that all of the product has been removed from the site. The groundwater from MW-7 contains concentrations of benzene, and xylenes that are above NMWQCC standards, but are not related to Giant's activities at the site due to the well's proximity to former oil and gas wells and it's offsite cross-gradient location. Even so, current activities at the site may be contributing to the decline in BTEX concentrations in the well.

Except for MW-7, the NMWQCC domestic use standards for total dissolved solids in groundwater are exceeded at all monitoring wells including up-gradient well MW-3, indicating that the groundwater is not suitable for domestic use. That the groundwater from MW-7 is significantly lower in TDS, indicates the source of the groundwater at MW-7 may not be the same source of the water beneath the Crude Station.

The potentiometric surface elevation did not show an overall increase or decrease since last year. The general direction and flow gradient also remain static. Groundwater flow is to the southwest at 0.016 ft/ft.

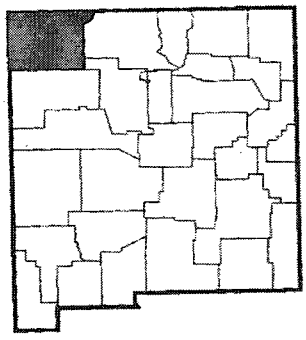
Recommendations

After compiling the most recent analytical results and comparing these with historical results, the following remedial action and monitoring plan is recommended:

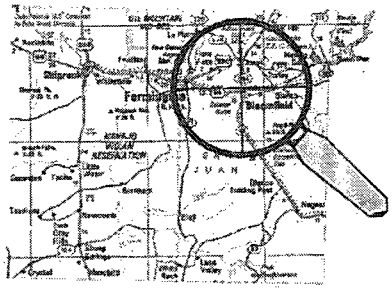
- Continue bioventing at the site to reduce the hydrocarbon concentrations in soil to below NMWQCC standards. Increase airflows where necessary to enhance degradation, especially near IP-16, IP-7 and MP-7.
- Collect soil samples during October 2008 to monitor progress of remediation.
- Also during October 2008, turn off the bioventing system for one week and measure the concentrations of hydrocarbons in the soil gas at all monitoring and injection points.
- Since BTEX concentrations in groundwater from MW-2 have been beneath NMWQCC standards for four consecutive quarters, discontinue sparging and sample for BTEX monthly. If the concentrations rebound, restart sparging.
- If the groundwater from MW-2 remains beneath standards at MW-2 once sparging is discontinued, initiate quarterly sampling for closure at MW-2 through MW-6.
- Prepare an annual report in March 2009.

Figure 1: Site Location Map

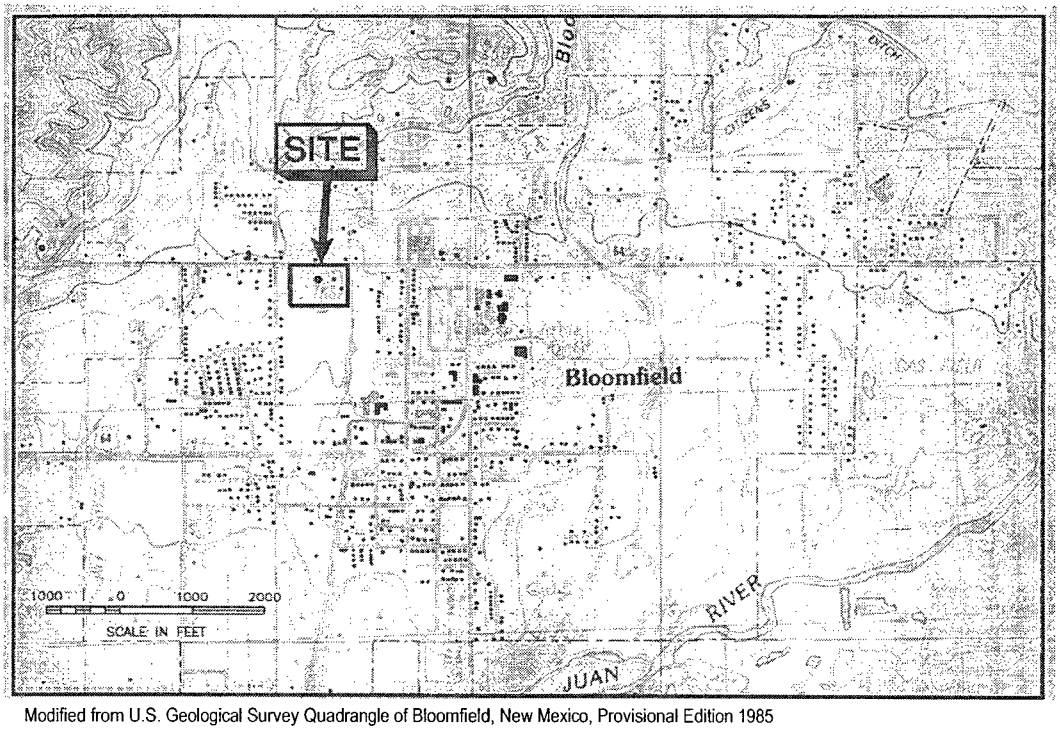
NEW MEXICO



SAN JUAN COUNTY



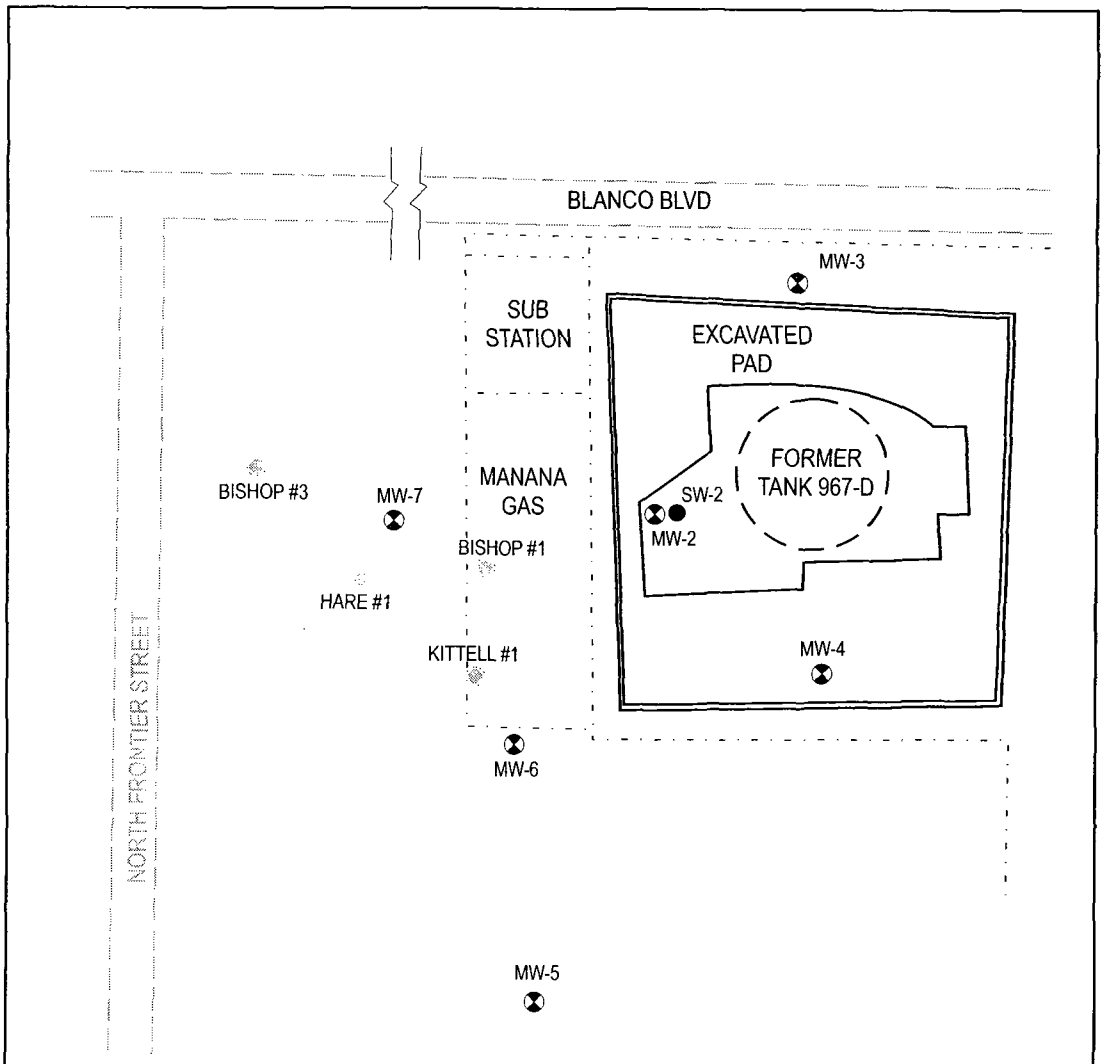
AREA IN DETAIL



Modified from U.S. Geological Survey Quadrangle of Bloomfield, New Mexico, Provisional Edition 1985

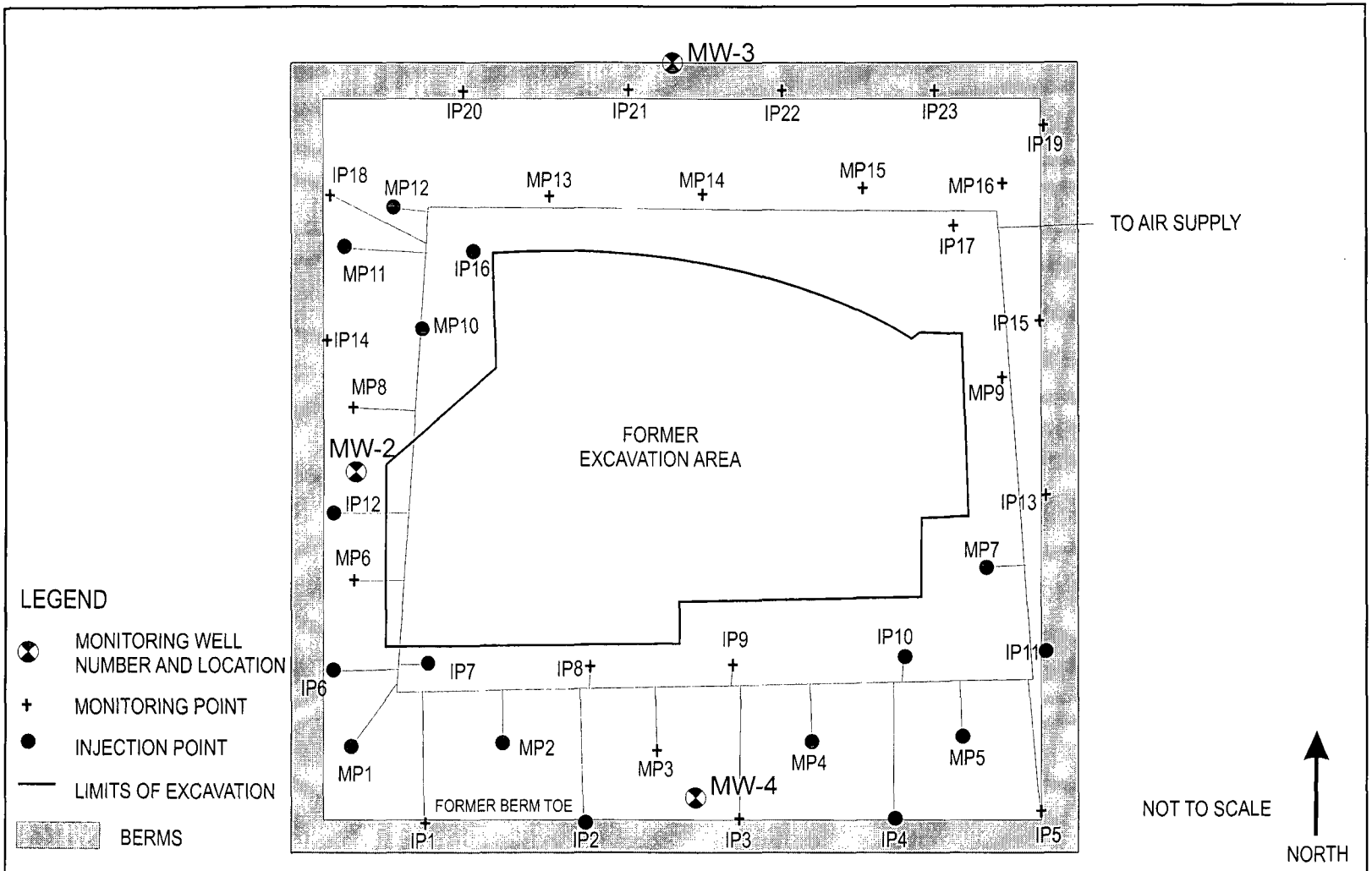
Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Giant Industries Arizona, Inc. Bloomfield Crude Station Site Location Map	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 03/24/08	Figure 1

Figure 2: Site Map



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Giant Industries Arizona, Inc. Bloomfield Crude Station Site Map	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 03/24/08	Figure 2

Figure 3: Bioventing Layout Map



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Giant Industries Arizona, Inc. Bloomfield Crude Station Bioventing Configuration	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 03/25/08	Figure 3

Figure 4: Laboratory TPH Concentrations in Soil Samples over Time

Figure 4
Bloomfield Crude Station
Laboratory TPH Results at Monitoring and Injection Points

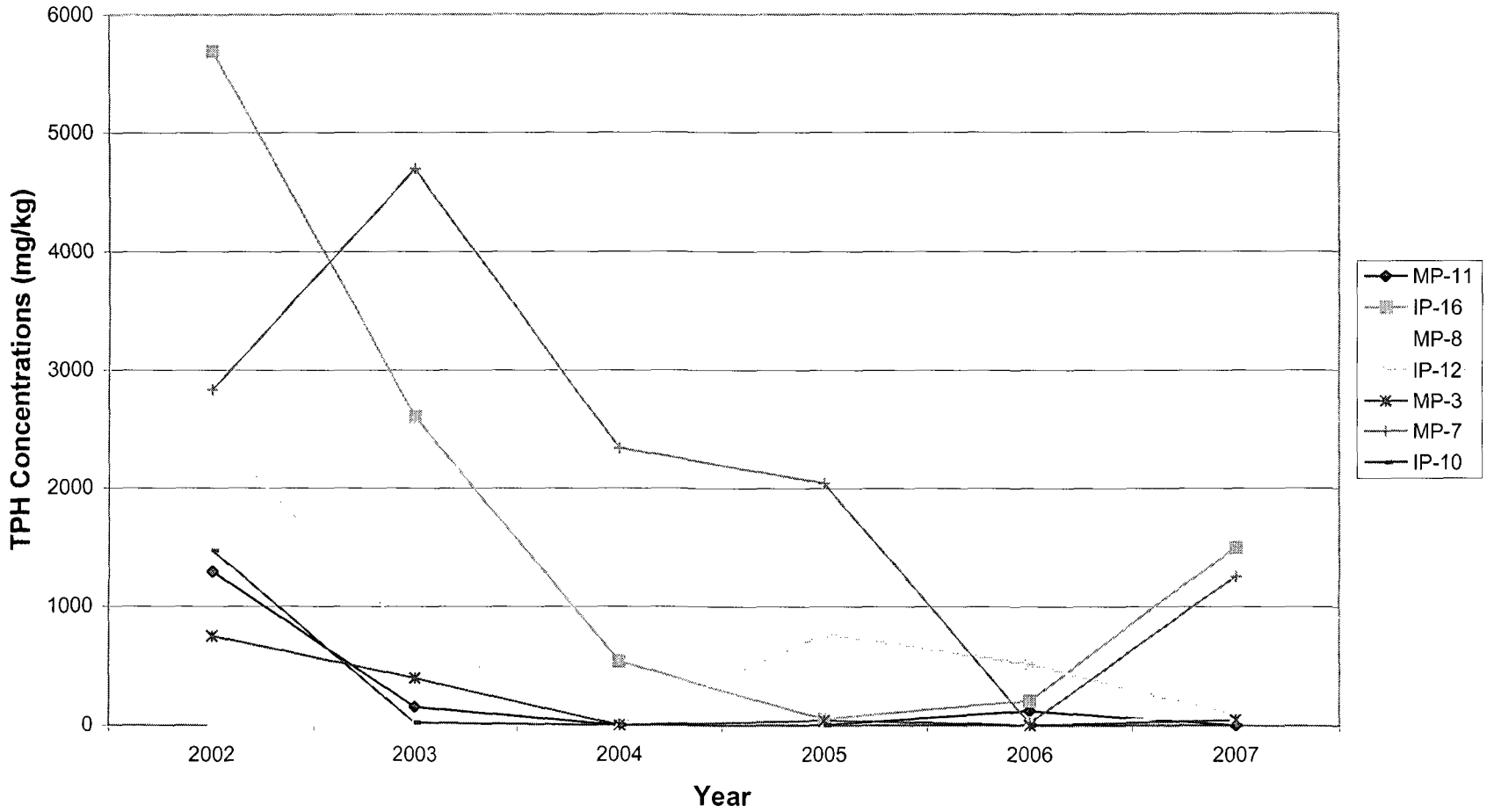


Figure 5: Laboratory Total BTEX Concentrations in Soil Samples over Time

Figure 5
Bloomfield Crude Station
Laboratory Total BTEX Results at Monitoring and Injection Points

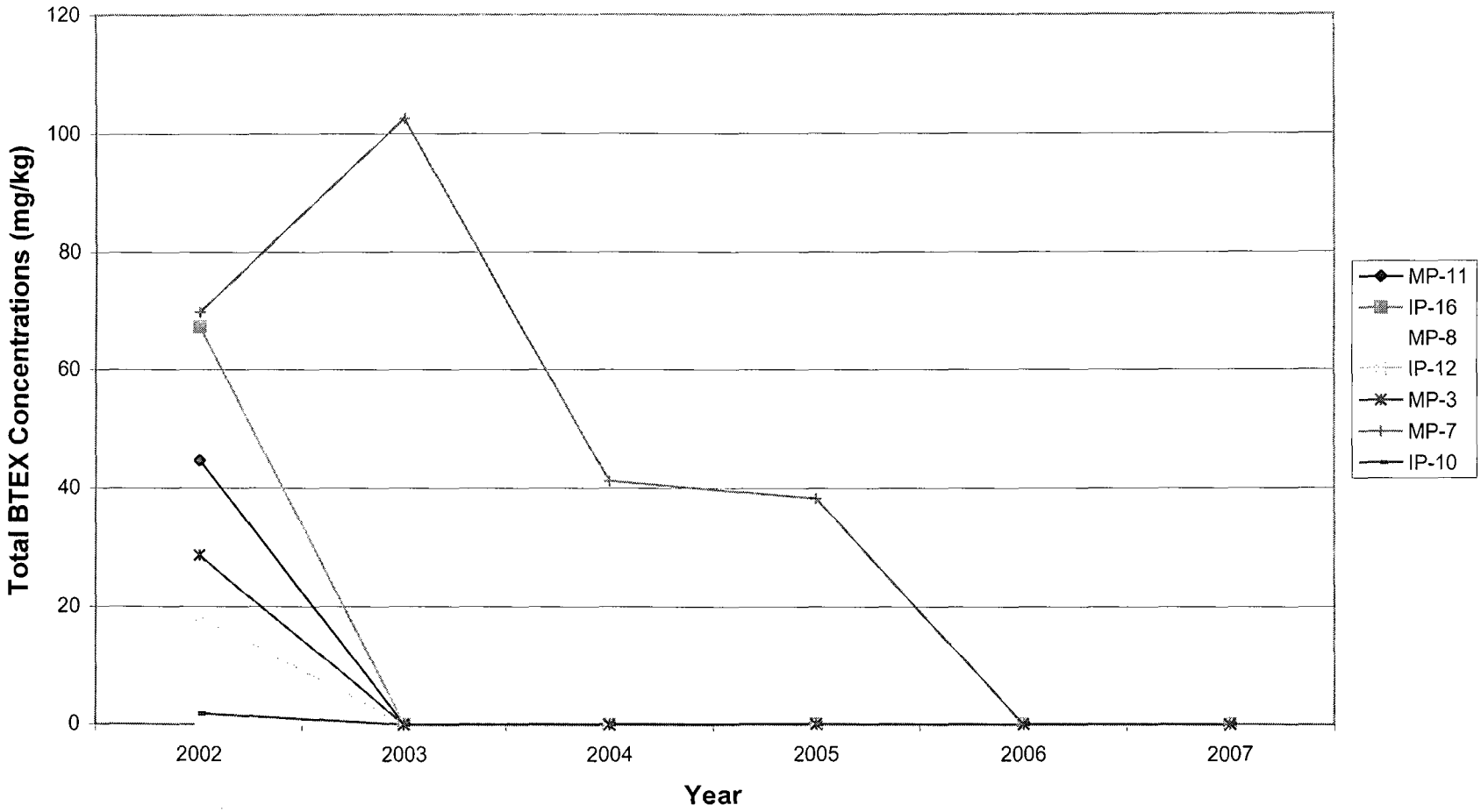
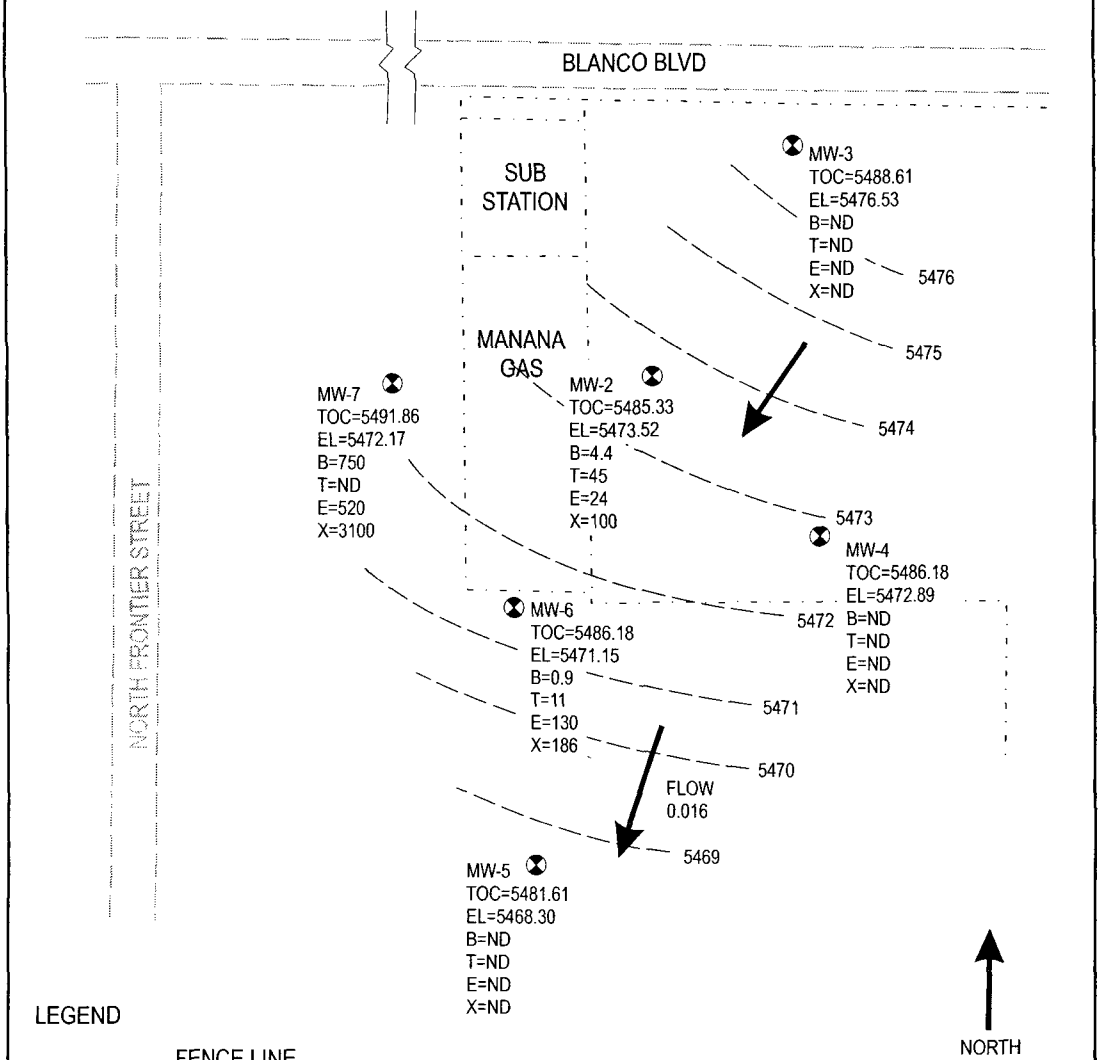


Figure 6: Groundwater Elevation Contour Map January 2008



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Giant Industries Arizona, Inc. Bloomfield Crude Station Ground Water Gradient Map 01/22/08	DRWN BY: AA CHKD BY: MN APPVD BY: MN DATE: 03/24/08	Figure 6

PINNACLE LABS
Environmental Testing

Pinnacle Lab ID number **704172**
May 22, 2007

LODESTAR
26 CR 3500
FLORA VISTA, NM 87415

Project Name (NONE)
Project Number BLOOMFIELD CRUDE STN.

Attention: MARTIN NEE/BILL ROBERTSON

On 04/24/2007 Pinnacle Laboratories Inc., (ADHS License No. AZ0643), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505) 344-3777.

H. Mitchell Rubenstein, Ph.D.
General Manager, Pinnacle Laboratories, Inc.

MR: jt

Enclosure

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www.pinnaclelabs.org www.pinnaclelabsonline.com

PINNACLE LABS
Environmental Testing

CLIENT	: LODESTAR	PINNACLE ID	: 704172
PROJECT #	: BLOOMFIELD CRUDE STN.	DATE RECEIVED	: 04/24/2007
PROJECT NAME	: (NONE)	REPORT DATE	: 05/22/2007

PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
704172 - 01	MW-2	AQUEOUS	04/20/2007

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B
CLIENT : LODESTAR
PROJECT # : BLOOMFIELD CRUDE STN.
PROJECT NAME : (NONE)

PINNACLE I.D. : 704172
ANALYST : DRK

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	MW-2	AQUEOUS	04/20/2007	NA	05/03/2007	1

PARAMETER	DET. LIMIT	UNITS	MW-2
BENZENE	**0.5**	**UG/L**	**7.8**
TOLUENE	***0.5***	***UG/L***	***6.0***
ETHYLBENZENE	**0.5**	**UG/L**	**61**
TOTAL XYLENES	**2.0**	**UG/L**	**110**

SURROGATE:
BROMOFLUOROBENZENE (%) 100
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021B	PINNACLE I.D.	: 704172
BLANK I. D.	: 050307B	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 05/03/2007
PROJECT #	: BLOOMFIELD CRUDE STN.	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: (NONE)	ANALYST	: DRK

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<2.0
SURROGATE:		
BROMOFLUOROBENZENE (%)		99
SURROGATE LIMITS:	(80 - 120)	

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST	: EPA 8021B	PINNACLE I.D.	: 704172
BATCH ID	: 050307B	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 05/03/2007
PROJECT #	: BLOOMFIELD CRUDE STN.	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: (NONE)	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	18.9	95	18.4	92	3	(80 - 120)	20
TOLUENE	<0.5	20.0	17.8	89	17.4	87	2	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.2	101	19.8	99	2	(80 - 120)	20
TOTAL XYLENES	<2.0	60.0	55.7	93	55.3	92	1	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\%\ \text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
MS/MSD

TEST	: EPA 8021B	PINNACLE I.D.	: 704172
SAMPLE ID	: 704171-05	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 05/03/2007
PROJECT #	: BLOOMFIELD CRUDE STN.	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: (NONE)	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	18.5	92	18.4	92	0	(80 - 120)	20
TOLUENE	<0.5	20.0	17.4	87	17.3	87	0	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	19.9	100	19.4	97	3	(80 - 120)	20
TOTAL XYLENES	<2.0	60.0	55.9	93	54.0	90	3	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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CHAIN OF CUSTODY

DATE: 042007 PAGE: 1 OF 1 4/24

PLI Accession #: 704172

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: Martin Nee

COMPANY: Lodestar Services
ADDRESS: PO Box 4465
Durango, CO 81302
PHONE: 505 334-2791
FAX:

BILL TO: Bill Robertson
COMPANY: Giant Industries Az, Inc
ADDRESS: 111 CR 4990
Bloomfield, NM 87413

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) MTBE	8021 (BTEX) ☐MTBE ☐TMB ☐PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐/DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics ☐PBMS	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides/PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry:		Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method1311)	Metals:		NUMBER OF CONTAINERS
MW-2	042007	0908	WG	01					✓																					3

WEEKEND ANALYSES MAY RESULT IN AN ADDITIONAL SURCHARGE - PLEASE INQUIRE.

PROJECT INFORMATION	
PROJ. NO.:	Bloomfield Crude Stn
PROJ. NAME:	
P.O. NO.:	
SHIPPED VIA:	UPS

SAMPLE RECEIPT	
NO CONTAINERS:	3
CUSTODY SEALS:	Y (N) NA
RECEIVED INTACT:	Y/N
BLUE ICE/ICE:	2.7°

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐24hr* ☐48hr* ☐72hr* ☐ 1 WEEK (NORMAL) ☐
*NOT AVAILABLE ON ALL ANALYSES

CERTIFICATION REQUIRED ☐ NM ☐ SDWA ☐ AZ ☐ OTHER

METHANOL PRESERVATION ☐ METALS ☐ TOTAL ☐ DISSOLVED

COMMENTS:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.
Signature: Ashley L Ager Time: 1130	Signature: Time:
Printed Name: Ashley L. Ager Date: 042007	Printed Name: Date:
Company: Lodestar Services	Company:
See Reverse side (Force Majeure)	
RECEIVED BY: 1.	**RECEIVED BY: (LAB) 2.**
Signature: Time:	Signature: Time: 1223
Printed Name: Date:	Printed Name: Date: 4/24/07
Company:	Pinnacle Laboratories Inc.

PINNACLE LABS
Environmental Testing

Pinnacle Lab ID number **707160**
August 03, 2007

LODESTAR
26 CR 3500
FLORA VISTA, NM 87415

Project Name BLOOMFIELD CRUDE STN.
Project Number (NONE)

Attention: MARIN NEE/BILL ROBERTSON

On 07/25/2007 Pinnacle Laboratories Inc., (ADHS License No. AZ0643), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505) 344-3777.

H. Mitchell Rubenstein, Ph.D.
General Manager, Pinnacle Laboratories, Inc.

MR: jt

Enclosure

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PINNACLE LABS
Environmental Testing

CLIENT	: LODESTAR	PINNACLE ID	: 707160
PROJECT #	: (NONE)	DATE RECEIVED	: 07/25/2007
PROJECT NAME	: BLOOMFIELD CRUDE STN.	REPORT DATE	: 08/03/2007

PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
707160 - 01	MW-2	AQUEOUS	07/24/2007

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B
CLIENT : LODESTAR
PROJECT # : (NONE)
PROJECT NAME : BLOOMFIELD CRUDE STN.

PINNACLE I.D. : 707160
ANALYST : ARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	MW-2	AQUEOUS	07/24/07	NA	07/27/07	1

PARAMETER	DET. LIMIT	UNITS	MW-2
BENZENE	0.5	UG/L	**4.2**
TOLUENE	0.5	UG/L	**20**
ETHYLBENZENE	0.5	UG/L	**30**
TOTAL XYLENES	2.0	UG/L	**68**

SURROGATE:
BROMOFLUOROBENZENE (%) 111
SURROGATE LIMITS (80 - 120)

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021B	PINNACLE I.D.	: 707160
BLANK I. D.	: 072707B	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 07/27/07
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STN.	ANALYST	: ARM

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<2.0
SURROGATE:		
BROMOFLUOROBENZENE (%)		101
SURROGATE LIMITS:	(80 - 120)	

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST	: EPA 8021B	PINNACLE I.D.	: 707160
BATCH ID	: 072707B	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 07/27/07
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STN.	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	21.6	108	20.8	104	4	(80 - 120)	20
TOLUENE	<0.5	20.0	18.9	95	17.9	90	5	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.6	103	19.1	96	8	(80 - 120)	20
TOTAL XYLENES	<2.0	60.0	58.5	98	55.6	93	5	(80 - 120)	20

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
MS/MSD

TEST	: EPA 8021B	PINNACLE I.D.	: 707160
SAMPLE ID	: 707158-02	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 07/27/07
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STN.	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	21.6	108	21.5	108	0	(80 - 120)	20
TOLUENE	<0.5	20.0	18.8	94	18.5	93	2	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.2	101	19.9	100	1	(80 - 120)	20
TOTAL XYLENES	<2.0	60.0	57.9	97	56.6	94	2	(80 - 120)	20

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: 07-24-07 PAGE: 1 OF 1

PLI Accession #: 707160

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: Martin Nee

COMPANY: Lodestar Services
ADDRESS: 26 CR 3500
Flora Vista, NM 87415
PHONE: 505-334-2791
FAX:

BILL TO: Bill Robertson
COMPANY: Giant Industries Az, Inc
ADDRESS: 111 CR 4990
Bloomfield, NM 87413

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) MTBE	8021 (BTEX) ☐MTBE ☐TMB ☐PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐/DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics ☐PBMS	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides/PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry:		Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method1311)	Metals:		NUMBER OF CONTAINERS
MW-2	07-24-07	0906	WG	01					✓																						3

ANALYSIS REQUEST

WEEKEND ANALYSES MAY RESULT IN AN ADDITIONAL SURCHARGE - PLEASE INQUIRE.

PROJECT INFORMATION	
PROJ. NO.:	
PROJ. NAME:	Bloomfield Crude Stn
P.O. NO.:	
SHIPPED VIA:	UPS

SAMPLE RECEIPT	
NO CONTAINERS	3
CUSTODY SEALS	Y/N/NA
RECEIVED INTACT	Y
BLUE ICE/ICE	Y

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐24hr* ☐48hr* ☐72hr* ☐ 1 WEEK (NORMAL) ☒
*NOT AVAILABLE ON ALL ANALYSES

CERTIFICATION REQUIRED ☐ NM ☐ SDWA ☐ AZ ☐ OTHER

METHANOL PRESERVATION ☐ METALS ☐ TOTAL ☐ DISSOLVED

COMMENTS: cooler

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.
Signature: Ashley L Ager Time: 1253	Signature: Time: 1630
Printed Name: Ashley L Ager Date: 072407	Printed Name: Martin Nee Date: 072407
Company: Lodestar Services	Company: Lodestar Services
See Reverse Side (Force Majeure)	
RECEIVED BY: 1.	**RECEIVED BY: (LAB) 2.**
Signature: Time: 1253	Signature: Time: 1024
Printed Name: Martin Nee Date: 072407	Printed Name: Marlene Tenio Date: 7/25/07
Company: Lodestar Services	Pinnacle Laboratories Inc.

PINNACLE LABS
Environmental Testing

Pinnacle Lab ID number **710257**
November 29, 2007

LODESTAR
26 CR 3500
FLORA VISTA, NM 87415

Project Name BCS
Project Number 30002

Attention: MARTIN NEE/BILL ROBERTSON

On 10/25/2007 Pinnacle Laboratories Inc., (ADHS License No. AZ0643), received a request to analyze **aqueous/non-aq** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505) 344-3777.

H. Mitchell Rubenstein, Ph.D.
General Manager, Pinnacle Laboratories, Inc.

MR: jt

Enclosure

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PINNACLE LABS
Environmental Testing

CLIENT	: LODESTAR	PINNACLE ID	: 710257
PROJECT #	: 30002	DATE RECEIVED	: 10/25/2007
PROJECT NAME	: BCS	REPORT DATE	: 11/29/2007

PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
710257 - 01	MW-2	AQUEOUS	10/24/2007
710257 - 02	IP-11-12'	NON-AQ	10/24/2007
710257 - 03	IP-16-9'	NON-AQ	10/24/2007
710257 - 04	MP-8-9'	NON-AQ	10/24/2007
710257 - 05	IP-12-12'	NON-AQ	10/24/2007
710257 - 06	IP-7-12'	NON-AQ	10/24/2007
710257 - 07	MP-3-6'	NON-AQ	10/24/2007
710257 - 08	IP-10-6'	NON-AQ	10/24/2007
710257 - 09	MP-7-6'	NON-AQ	10/24/2007
710257 - 10	TRIP BLANK	AQUEOUS	10/10/2007

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B / 8015B GRO
CLIENT : LODESTAR
PROJECT # : 30002
PROJECT NAME : BCS

PINNACLE I.D. : 710257
ANALYST : ARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
02	IP-11-12'	NON-AQ	10/24/07	11/01/07	11/01/07	1
03	IP-16-9'	NON-AQ	10/24/07	11/01/07	11/01/07	1
04	MP-8-9'	NON-AQ	10/24/07	11/01/07	11/01/07	1

PARAMETER	DET. LIMIT	UNITS	IP-11-12'	IP-16-9'	MP-8-9'
FUEL HYDROCARBONS	10	MG/KG	< 10	< 10	< 10
HYDROCARBON RANGE			C6-C10	C6-C10	C6-C10
HYDROCARBONS QUANTITATED USING			GASOLINE	GASOLINE	GASOLINE
BENZENE	0.025	MG/KG	< 0.025	< 0.025	< 0.025
TOLUENE	0.025	MG/KG	< 0.025	< 0.025	< 0.025
ETHYLBENZENE	0.025	MG/KG	< 0.025	< 0.025	< 0.025
TOTAL XYLENES	0.10	MG/KG	< 0.10	< 0.10	< 0.10
SURROGATE:					
BROMOFLUOROBENZENE (%)			84	85	89
SURROGATE LIMITS	(65 - 120)				

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B / 8015B GRO
CLIENT : LODESTAR
PROJECT # : 30002
PROJECT NAME : BCS

PINNACLE I.D. : 710257
ANALYST : ARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
05	IP-12-12'	NON-AQ	10/24/07	11/01/07	11/01/07	1
06	IP-7-12'	NON-AQ	10/24/07	11/01/07	11/01/07	1
07	MP-3-6'	NON-AQ	10/24/07	11/01/07	11/01/07	1

PARAMETER	DET. LIMIT	UNITS	IP-12-12'	IP-7-12'	MP-3-6'
FUEL HYDROCARBONS	10	MG/KG	< 10	< 10	<.10
HYDROCARBON RANGE			C6-C10	C6-C10	C6-C10
HYDROCARBONS QUANTITATED USING			GASOLINE	GASOLINE	GASOLINE
BENZENE	0.025	MG/KG	< 0.025	< 0.025	< 0.025
TOLUENE	0.025	MG/KG	< 0.025	< 0.025	< 0.025
ETHYLBENZENE	0.025	MG/KG	< 0.025	< 0.025	< 0.025
TOTAL XYLENES	0.10	MG/KG	< 0.10	< 0.10	< 0.10
SURROGATE:					
BROMOFLUOROBENZENE (%)			82	81	83
SURROGATE LIMITS	(65 - 120)				

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B / 8015B GRO
CLIENT : LODESTAR
PROJECT # : 30002
PROJECT NAME : BCS

PINNACLE I.D. : 710257
ANALYST : ARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
08	IP-10-6'	NON-AQ	10/24/07	11/01/07	11/01/07	1
09	MP-7-6'	NON-AQ	10/24/07	11/01/07	11/01/07	1

PARAMETER	DET. LIMIT	UNITS	IP-10-6'	MP-7-6'
FUEL HYDROCARBONS	10	MG/KG	< 10	< 10
HYDROCARBON RANGE			C6-C10	C6-C10
HYDROCARBONS QUANTITATED USING			GASOLINE	GASOLINE
BENZENE	0.025	MG/KG	< 0.025	< 0.025
TOLUENE	0.025	MG/KG	< 0.025	< 0.025
ETHYLBENZENE	0.025	MG/KG	< 0.025	< 0.025
TOTAL XYLENES	0.10	MG/KG	< 0.10	< 0.10
SURROGATE:				
BROMOFLUOROBENZENE (%)			87	85
SURROGATE LIMITS	(65 - 120)			

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B / 8015B GRO
CLIENT : LODESTAR
PROJECT # : 30002
PROJECT NAME : BCS

PINNACLE I.D. : 710257
ANALYST : ARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	MW-2	AQUEOUS	10/24/07	NA	11/05/07	1
10	TRIP BLANK	AQUEOUS	10/10/07	NA	11/05/2007-**H1**	1

PARAMETER	DET. LIMIT	UNITS	MW-2	TRIP BLANK
FUEL HYDROCARBONS	**100**	**UG/L**	**3700**	< 100
HYDROCARBON RANGE			C6-C10	C6-C10
HYDROCARBONS QUANTITATED USING			GASOLINE	GASOLINE
BENZENE	**0.5**	**UG/L**	**0.87**	< 0.5
TOLUENE	**0.5**	**UG/L**	**18**	< 0.5
ETHYLBENZENE	**0.5**	**UG/L**	**120**	< 0.5
TOTAL XYLENES	**2.0**	**UG/L**	**180**	< 2.0
SURROGATE:				
BROMOFLUOROBENZENE (%)			104	101
SURROGATE LIMITS	(80 - 120)			

CHEMIST NOTES:
H1 = Trip Blank was run past the 14 day hold time.

PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS
METHOD BLANK

TEST	: EPA 8021B / 8015B GRO	PINNACLE I.D.	: 710257
BLANK I.D.	: 110507BW	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 11/05/07
PROJECT #	: 30002	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BCS	ANALYST	: ARM

PARAMETER	UNITS	
FUEL HYDROCARBONS	UG/L	<100
HYDROCARBON RANGE		C6-C10
HYDROCARBONS QUANTITATED USING		GASOLINE
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<2.0
SURROGATE:		
BROMOFLUOROBENZENE (%)		103
SURROGATE LIMITS (80 - 120)		

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS
EXTRACTION BLANK

TEST	: EPA 8021B / 8015B GRO	PINNACLE I.D.	: 710257
BLANK I.D.	: 110107BS	DATE EXTRACTED	: 11/01/07
CLIENT	: LODESTAR	DATE ANALYZED	: 11/01/07
PROJECT #	: 30002	SAMPLE MATRIX	: NON-AQ
PROJECT NAME	: BCS	ANALYST	: ARM

PARAMETER	UNITS	
FUEL HYDROCARBONS	MG/KG	<10
HYDROCARBON RANGE		C6-C10
HYDROCARBONS QUANTITATED USING		GASOLINE
BENZENE	MG/KG	<0.025
TOLUENE	MG/KG	<0.025
ETHYLBENZENE	MG/KG	<0.025
TOTAL XYLENES	MG/KG	<0.10
SURROGATE:		
BROMOFLUOROBENZENE (%)		95
SURROGATE LIMITS (80 - 120)		

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST	: EPA 8015B GRO	PINNACLE I.D.	: 710257
BATCH ID	: 110107BS	DATE EXTRACTED	: 11/01/07
CLIENT	: LODESTAR	DATE ANALYZED	: 11/01/07
PROJECT #	: 30002	SAMPLE MATRIX	: NON-AQ
PROJECT NAME	: BCS	UNITS	: MG/KG

PARAMETER	BLANK RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
FUEL HYDROCARBONS	<10	50.0	50.5	101	50.5	101	0	(70 - 130)	20
HYDROCARBON RANGE		C6-C10							

HYDROCARBONS QUANTITATED USING GASOLINE

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST	: EPA 8015B GRO	PINNACLE I.D.	: 710257
BATCH ID	: 110507BW	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 11/05/07
PROJECT #	: 30002	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BCS	UNITS	: UG/L

PARAMETER	BLANK RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
FUEL HYDROCARBONS	<100	1000	1040	104	983	98	6	(70 - 130)	20
HYDROCARBON RANGE		C6-C10							

HYDROCARBONS QUANTITATED USING GASOLINE

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
MS/MSD

TEST	: EPA 8015B GRO	PINNACLE I.D.	: 710257
SAMPLE ID	: 710257-02	DATE EXTRACTED	: 11/01/07
CLIENT	: LODESTAR	DATE ANALYZED	: 11/01/07
PROJECT #	: 30002	SAMPLE MATRIX	: NON-AQ
PROJECT NAME	: BCS	UNITS	: MG/KG

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
FUEL HYDROCARBONS	<10	50.0	44.0	88	44.2	88	0	(70 - 130)	20
HYDROCARBON RANGE		C6-C10							

HYDROCARBONS QUANTITATED USING GASOLINE

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
MS/MSD

TEST	: EPA 8015B GRO	PINNACLE I.D.	: 710257
SAMPLE ID	: 710257-02	DATE EXTRACTED	: 11/05/07
CLIENT	: LODESTAR	DATE ANALYZED	: 11/05/07
PROJECT #	: 30002	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BCS	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
FUEL HYDROCARBONS	**3720**	1000	3200	**M1**	3150	**M1**	2	(70 - 130)	20
HYDROCARBON RANGE		C6-C10							

HYDROCARBONS QUANTITATED USING GASOLINE

CHEMIST NOTES:
M1 = Matrix spike compound does not meet criteria due to confirmed matrix effects.

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST	: EPA 8021B	PINNACLE I.D.	: 710257
BATCH ID	: 110107BS	DATE EXTRACTED	: 11/01/07
CLIENT	: LODESTAR	DATE ANALYZED	: 11/01/07
PROJECT #	: 30002	SAMPLE MATRIX	: NON-AQ
PROJECT NAME	: BCS	UNITS	: MG/KG

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.025	1.00	0.877	88	0.845	84	4	(68 - 120)	20
TOLUENE	<0.025	1.00	0.933	93	0.896	90	4	(64 - 120)	20
ETHYLBENZENE	<0.025	1.00	0.950	95	0.907	91	5	(49 - 127)	20
TOTAL XYLENES	<0.10	3.00	2.88	96	2.75	92	5	(58 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST	: EPA 8021B	PINNACLE I.D.	: 710257
BATCH ID	: 110507BW	DATE EXRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 11/05/07
PROJECT #	: 30002	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BCS	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	17.4	87	17.7	88	2	(80 - 120)	20
TOLUENE	<0.5	20.0	18.4	92	18.8	94	2	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	19.0	95	19.1	95	0	(80 - 120)	20
TOTAL XYLENES	<2.0	60.0	57.6	96	58.1	97	1	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\%\ \text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
MS/MSD

TEST	: EPA 8021B	PINNACLE I.D.	: 710257
SAMPLE ID	: 710257-02	DATE EXTRACTED	: 11/01/07
CLIENT	: LODESTAR	DATE ANALYZED	: 11/01/07
PROJECT #	: 30002	SAMPLE MATRIX	: NON-AQ
PROJECT NAME	: BCS	UNITS	: MG/KG

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.025	1.00	0.762	76	0.790	79	4	(68 - 120)	20
TOLUENE	<0.025	1.00	0.822	82	0.849	85	3	(64 - 120)	20
ETHYLBENZENE	<0.025	1.00	0.834	83	0.866	87	4	(49 - 127)	20
TOTAL XYLENES	<0.10	3.00	2.52	84	2.61	87	3	(58 - 120)	20

CHEMIST NOTES:
N/A

$$\%\ \text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
MS/MSD

TEST	: EPA 8021B	PINNACLE I.D.	: 710257
SAMPLE ID	: 710276-04	DATE EXRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 11/05/07
PROJECT #	: 30002	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BCS	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	17.8	89	17.5	88	1	(80 - 120)	20
TOLUENE	<0.5	20.0	18.7	94	18.5	92	2	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	19.4	97	18.9	95	2	(80 - 120)	20
TOTAL XYLENES	<2.0	60.0	58.7	98	57.4	96	2	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\%\ \text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8015 MODIFIED (DIRECT INJECT)
CLIENT : LODESTAR
PROJECT # : 30002
PROJECT NAME : BCS

PINNACLE I.D. : 710257
ANALYST : STH

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
02	IP-11-12'	NON-AQ	10/24/2007	11/01/2007	11/07/2007	1
03	IP-16-9'	NON-AQ	10/24/2007	11/01/2007	11/07/2007	1
04	MP-8-9'	NON-AQ	10/24/2007	11/01/2007	11/07/2007	1

PARAMETER	DET. LIMIT	UNITS	IP-11-12'	IP-16-9'	MP-8-9'
FUEL HYDROCARBONS, C10-C22	10	MG/KG	< 10	**500**	< 10
FUEL HYDROCARBONS, C22-C36	10	MG/KG	< 10	**1000**	**70**
SURROGATE:					
O-TERPHENYL (%)			106	106	105
SURROGATE LIMITS	(70-130)				

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8015 MODIFIED (DIRECT INJECT)
CLIENT : LODESTAR
PROJECT # : 30002
PROJECT NAME : BCS

PINNACLE I.D. : 710257
ANALYST : STH

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
05	IP-12-12'	NON-AQ	10/24/2007	11/01/2007	11/07/2007	1
06	IP-7-12'	NON-AQ	10/24/2007	11/01/2007	11/07/2007	1
07	MP-3-6'	NON-AQ	10/24/2007	11/01/2007	11/07/2007	1

PARAMETER	DET. LIMIT	UNITS	IP-12-12'	IP-7-12'	MP-3-6'
FUEL HYDROCARBONS, C10-C22	10	MG/KG	< 10	**640**	< 10
FUEL HYDROCARBONS, C22-C36	10	MG/KG	**84**	**820**	**45**
SURROGATE:					
O-TERPHENYL (%)			91	127	96
SURROGATE LIMITS	(70-130)				

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8015 MODIFIED (DIRECT INJECT)
CLIENT : LODESTAR
PROJECT # : 30002
PROJECT NAME : BCS

PINNACLE I.D. : 710257
ANALYST : STH

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
08	IP-10-6'	NON-AQ	10/24/2007	11/01/2007	11/07/2007	1
09	MP-7-6'	NON-AQ	10/24/2007	11/01/2007	11/07/2007	

PARAMETER	DET. LIMIT	UNITS	IP-10-6'	MP-7-6'
FUEL HYDROCARBONS, C10-C22	10	MG/KG	< 10	**520**
FUEL HYDROCARBONS, C22-C36	10	MG/KG	< 10	**730**
SURROGATE:				
O-TERPHENYL (%)			84	104
SURROGATE LIMITS	(70-130)			

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS
EXTRACTION BLANK

TEST	: EPA 8015 MODIFIED (DIRECT INJECT)	PINNACLE I.D.	: 710257
BLANK I.D.	: 110107FS	DATE EXTRACTED	: 11/01/2007
CLIENT	: LODESTAR	DATE ANALYZED	: 11/07/2007
PROJECT #	: 30002	SAMPLE MATRIX	: NON-AQ
PROJECT NAME	: BCS	ANALYST	: STH

PARAMETER	UNITS	
FUEL HYDROCARBONS, C10-C22	MG/KG	< 10
FUEL HYDROCARBONS, C22-C36	MG/KG	< 10

SURROGATE:		
O-TERPHENYL (%)		109
SURROGATE LIMITS	(70-130)	

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY RESULTS
EXTRACTION BLANK

TEST	: EPA 8015 MODIFIED (DIRECT INJECT)	PINNACLE I.D.	: 710257
BLANK I.D.	: 110107FS	DATE EXTRACTED	: 11/01/2007
CLIENT	: LODESTAR	DATE ANALYZED	: 11/08/2007
PROJECT #	: 30002	SAMPLE MATRIX	: NON-AQ
PROJECT NAME	: BCS	ANALYST	: STH

PARAMETER	UNITS	
FUEL HYDROCARBONS, C10-C22	MG/KG	< 10
FUEL HYDROCARBONS, C22-C36	MG/KG	< 10

SURROGATE:		
O-TERPHENYL (%)		126
SURROGATE LIMITS	(70-130)	

CHEMIST NOTES:
N/A

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST	: EPA 8015 MODIFIED (DIRECT INJECT)	PINNACLE I.D.	: 710257
BATCH ID	: 110107FS	DATE EXTRACTED	: 11/01/2007
CLIENT	: LODESTAR	DATE ANALYZED	: 11/07/2007
PROJECT #	: 30002	SAMPLE MATRIX	: NON-AQ
PROJECT NAME	: BCS	UNITS	: MG/KG

PARAMETER	BLANK RESULT	CONC SPIKE	SPIKED BLANK	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
FUEL HYDROCARBONS	<10	200	205	102	194	97	5	(75-125)	20
HYDROCARBON RANGE		C10-C32							

HYDROCARBONS QUANTITATED USING DIESEL FUEL

CHEMIST NOTES:
N/A

$$\%\ \text{Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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PINNACLE LABS
Environmental Testing

GAS CHROMATOGRAPHY QUALITY CONTROL
MS/MSD

TEST	: EPA 8015 MODIFIED (DIRECT INJECT)	PINNACLE I.D.	: 710257
SAMPLE ID	: 710257-08	DATE EXTRACTED	: 11/01/2007
CLIENT	: LODESTAR	DATE ANALYZED	: 11/08/2007
PROJECT #	: 30002	SAMPLE MATRIX	: NON-AQ
PROJECT NAME	: BCS	UNITS	: MG/KG

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
FUEL HYDROCARBONS	<10	200	217	109	191	95	13	(70-130)	20
HYDROCARBON RANGE		C10-C32							

HYDROCARBONS QUANTITATED USING DIESEL FUEL

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

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Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: 10/24/07 PAGE: 1 OF 1

PLI Accession #: 110257

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: Martin Nee
COMPANY: Ladestar
ADDRESS: 16 CR 3500
Flora Vista NM 87415
PHONE: 505 320 9675
FAX:
BILL TO: Bill Robertson
COMPANY: Giant
ADDRESS: 111 CR 4990
Bloomfield NM 87413

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) ~~MTBE~~	8021 (BTEX) ☐MTBE ☐TMB ☐PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐/DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics ☐PBMS	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides/PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry:		Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method1311)	Metals:		NUMBER OF CONTAINERS
MW-2	102407	1210	WG	01		X		X																						2
IP-11-12'	102407	1012	Soil	02		X		X																						1
IP-16-9'	102407	1036	Soil	03		X		X																						1
MP-8-9'	102407	1059	Soil	04		X		X																						1
IP-12-12'	102407	1120	Soil	05		X		X																						1
IP-7-12'	102407	1147	Soil	06		X		X																						1
MP-3-6'	102407	1256	Soil	07		X		X																						1
IP-10-6'	102407	1307	Soil	08		X		X																						1
MP-7-6'	102407	1313	Soil	09		X		X																						1
Trip Blank	10/10/07	1400	AQ	10				X																						2

WEEKEND ANALYSES MAY RESULT IN AN ADDITIONAL SURCHARGE - PLEASE INQUIRE.

PROJECT INFORMATION	
PROJ. NO.:	30002
PROJ. NAME:	BGS
P.O. NO.:	
SHIPPED VIA:	UPS

SAMPLE RECEIPT	
NO CONTAINERS	12
CUSTODY SEALS	Y/N/NA
RECEIVED INTACT	Y/N
BLUE ICE/ICE	Y/N

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐24hr* ☐48hr* ☐72hr* ☐ 1 WEEK (NORMAL) ☒
*NOT AVAILABLE ON ALL ANALYSES

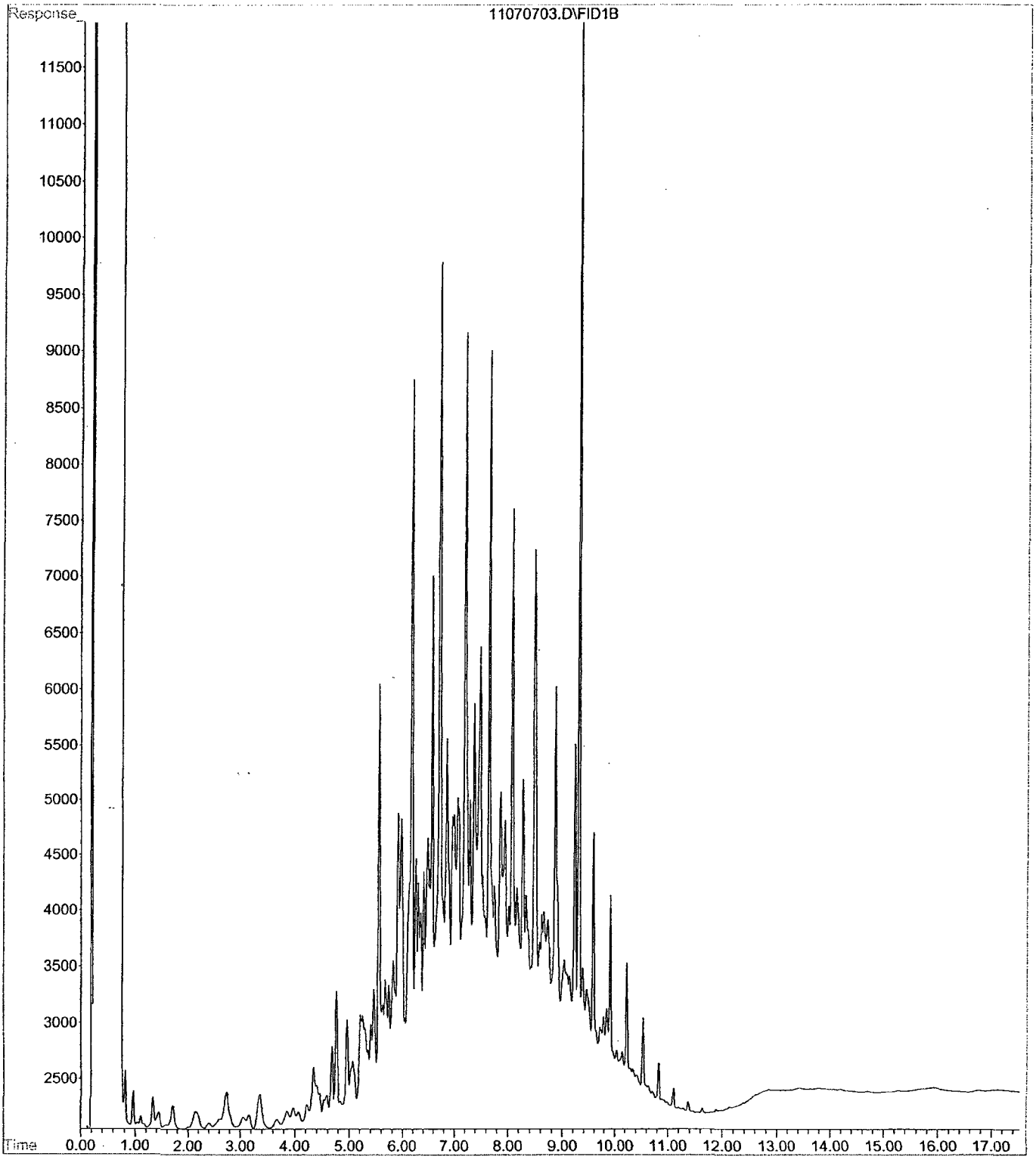
CERTIFICATION REQUIRED ☐ NM ☐ SDWA ☐ AZ ☐ OTHER

METHANOL PRESERVATION ☐ | METALS ☐ TOTAL ☐ DISSOLVED

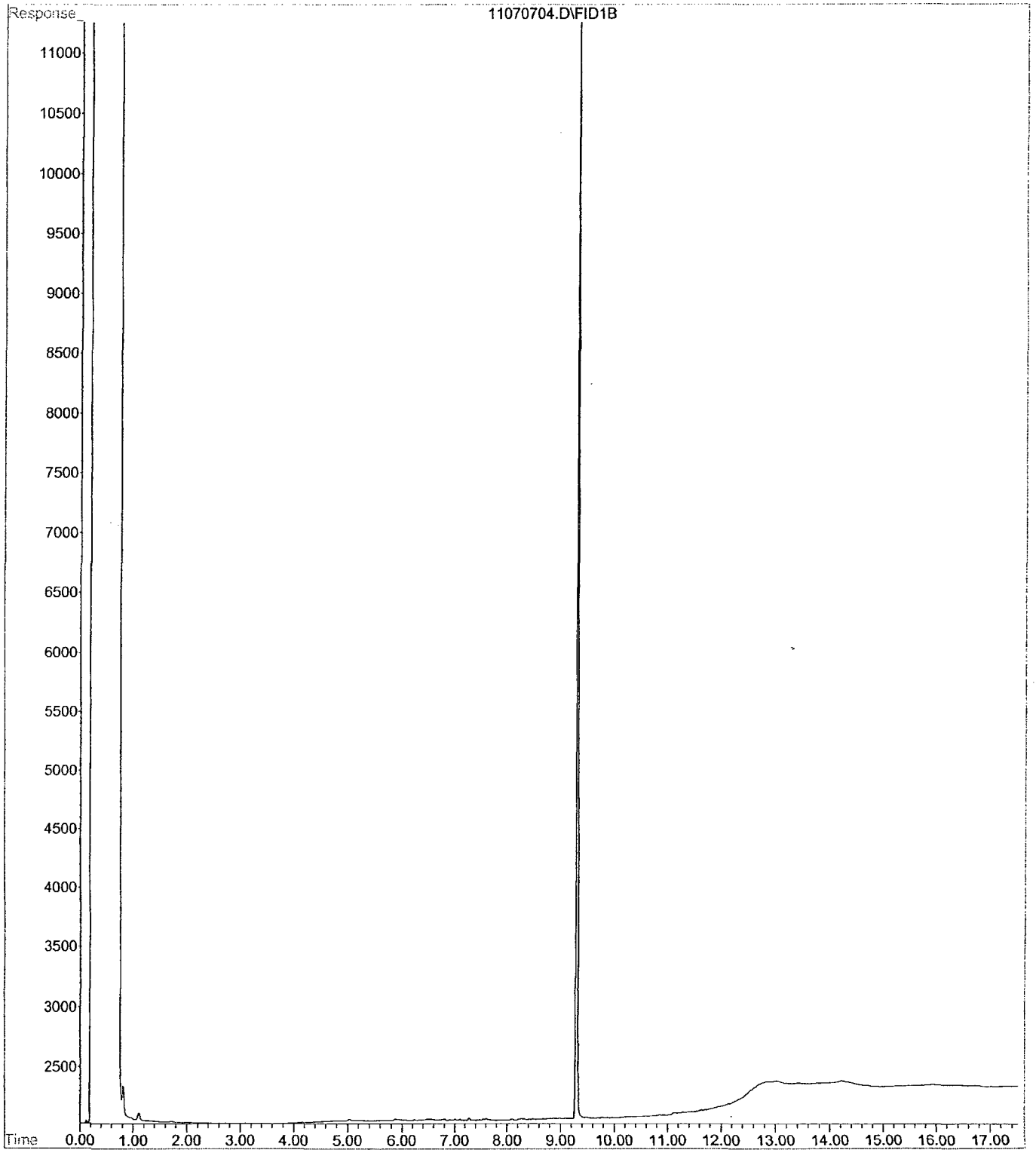
COMMENTS: No MTBE
Rec'd TB out of hold time K 10/25/07

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.
Signature: Time: 1600	Signature: Time:
Printed Name: M Nee Date: 102407	Printed Name: Date:
Company: Ladestar	Company:
See Reverse side (Force Majeure)	
RECEIVED BY: 1.	**RECEIVED BY: (LAB) 2**
Signature: Time:	Signature: Time: 1159
Printed Name: Date:	Printed Name: Date: 10/25/07
Company:	Pinnacle Laboratories Inc.

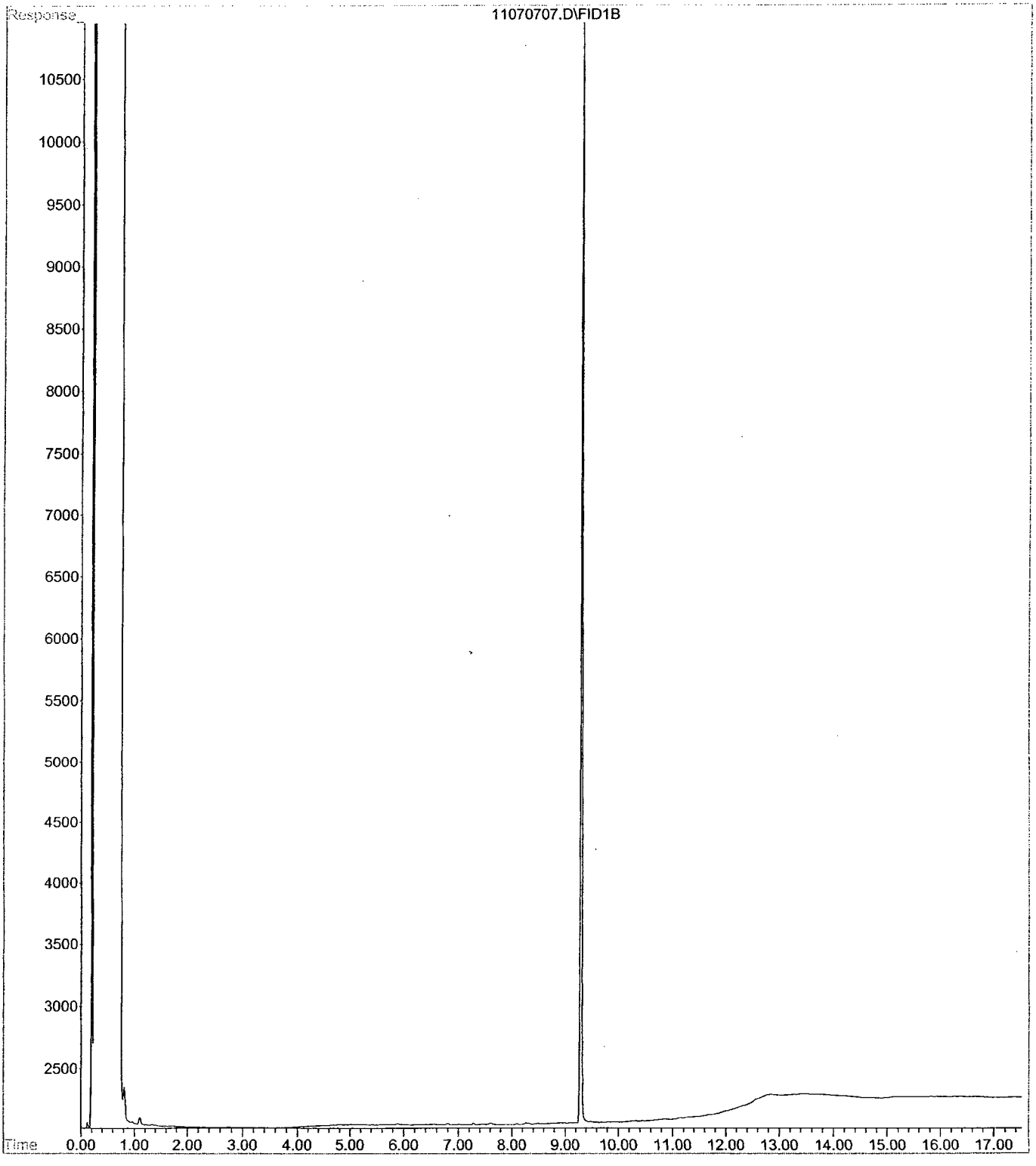
File : C:\HPCHEM\2\DATA\110707F\11070703.D
Operator : STH
Acquired : 7 Nov 2007 9:34 am using AcqMethod DRO70719.M
Instrument : FID-1
Sample Name: DRO CCV 200 UG/ML
Misc Info : GC5-73-01
Vial Number: 3



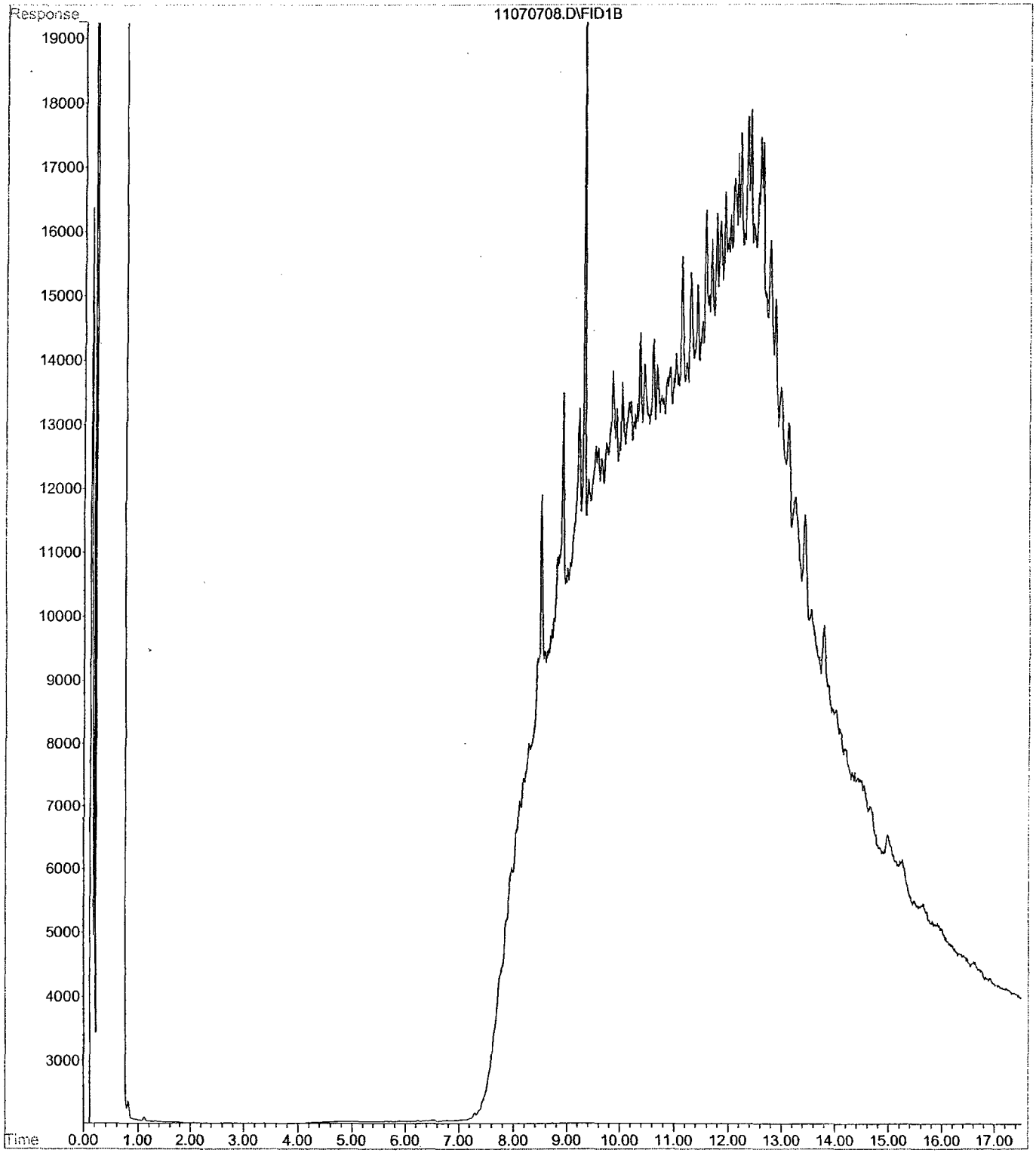
File : C:\HPCHEM\2\DATA\110707F\11070704.D
Operator : STH
Acquired : 7 Nov 2007 10:02 am using AcqMethod DRO70719.M
Instrument : FID-1
Sample Name: DRO SOIL BLANK 1101
Misc Info : 10/10ML STHon11/01/07@1155
Vial Number: 5



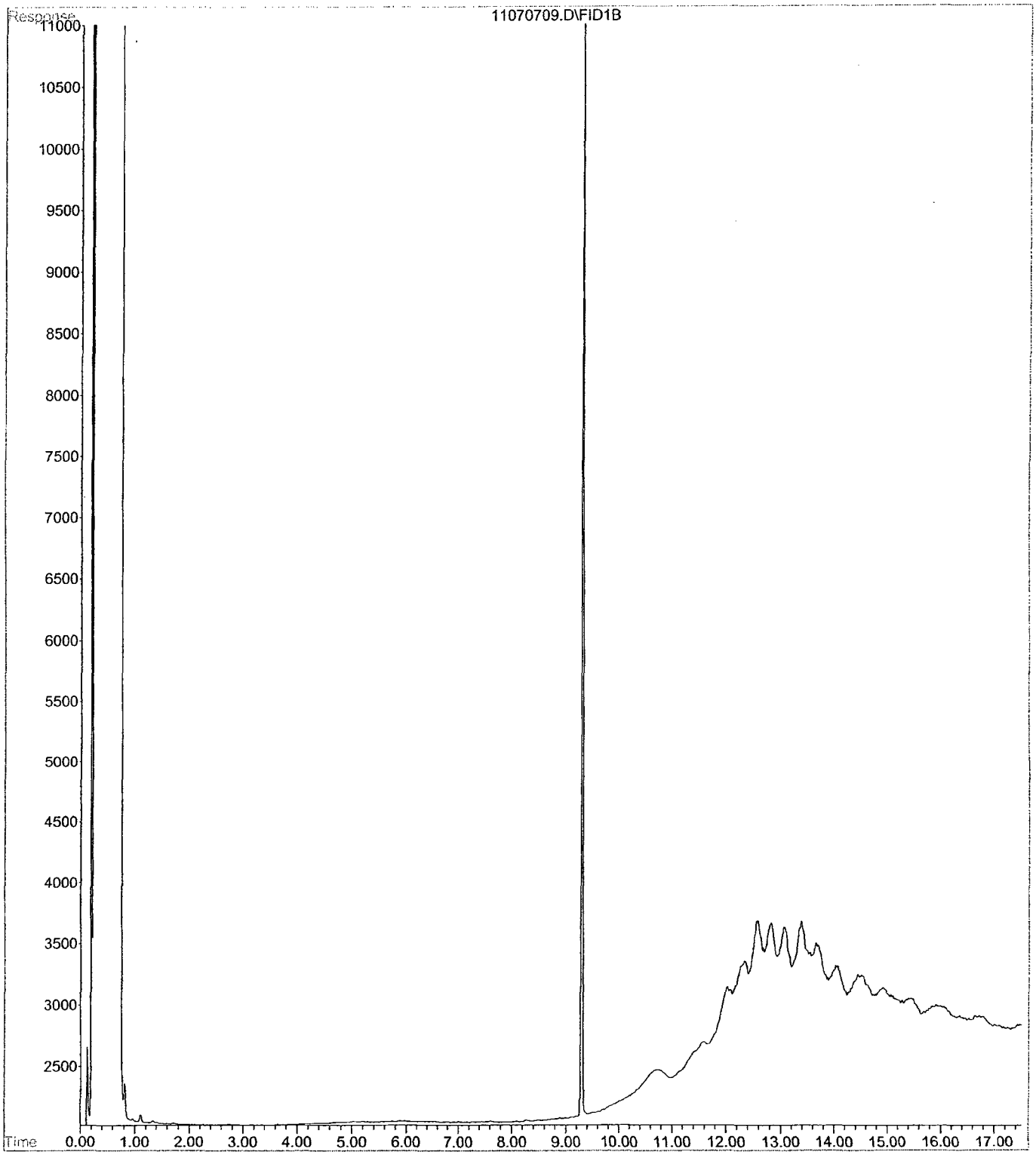
File : C:\HPCHEM\2\DATA\110707F\11070707.D
Operator : STH
Acquired : 7 Nov 2007 11:24 am using AcqMethod DRO70719.M
Instrument : FID-1
Sample Name: 710257-02 [1X] SOIL
Misc Info : 10/10ML STHon11/01/07@1155
Vial Number: 8



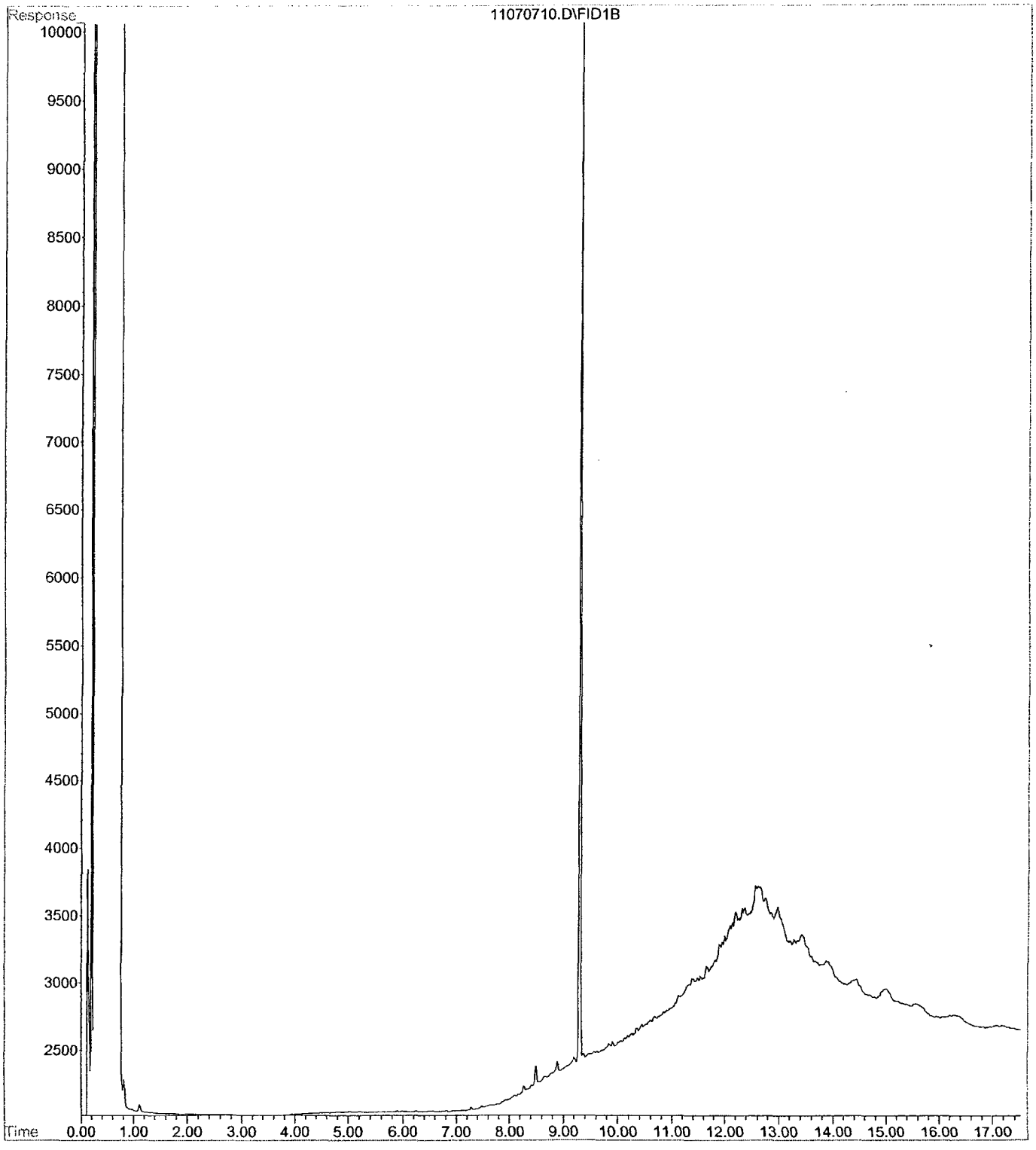
File : C:\HPCHEM\2\DATA\110707F\11070708.D
Operator : STH
Acquired : 7 Nov 2007 11:52 am using AcqMethod DRO70719.M
Instrument : FID-1
Sample Name: 710257-03 [1X] SOIL
Misc Info : 10/10ML STHon11/01/07@1155
Vial Number: 9



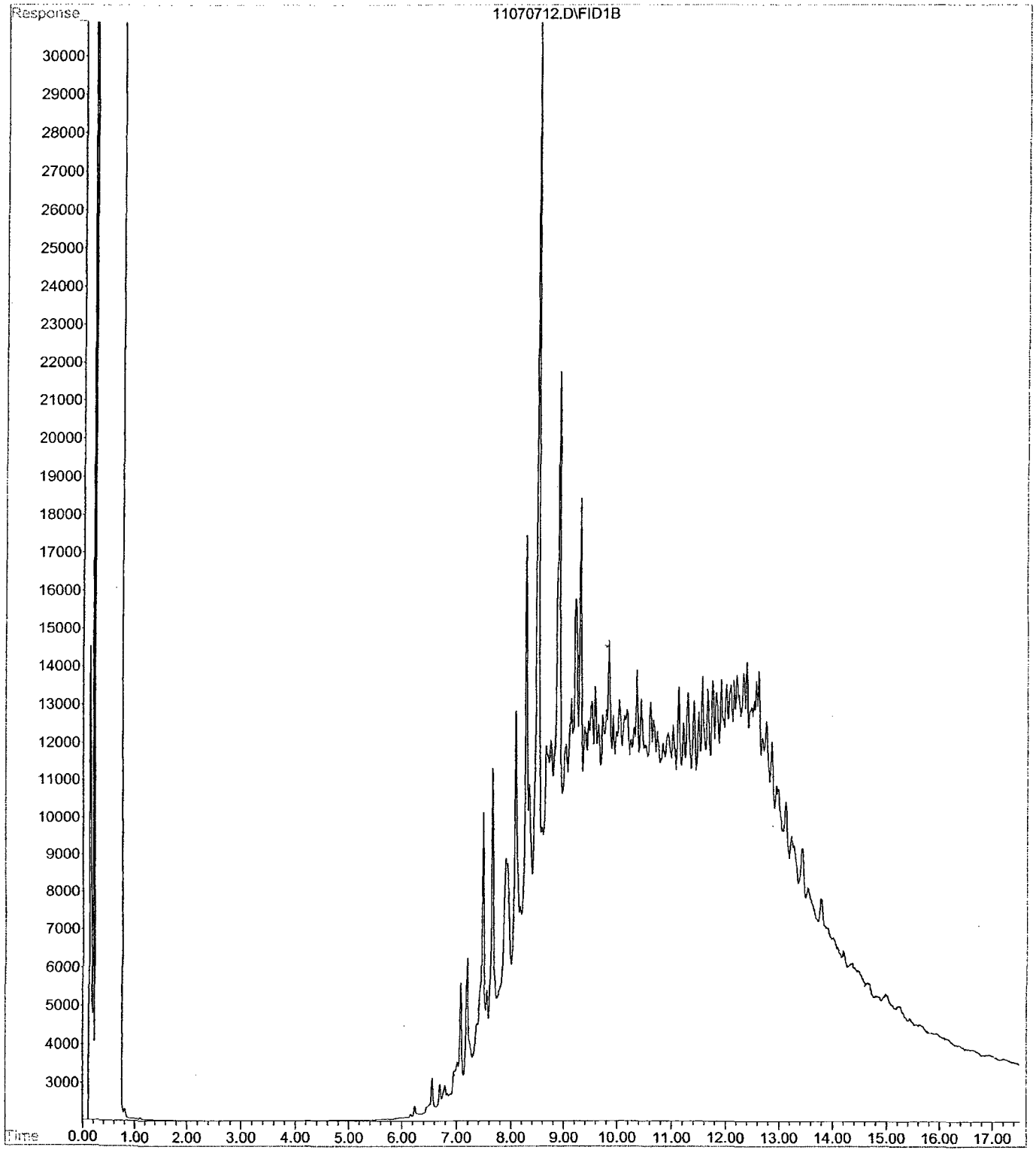
File : C:\HPCHEM\2\DATA\110707F\11070709.D
Operator : STH
Acquired : 7 Nov 2007 12:20 pm using AcqMethod DRO70719.M
Instrument : FID-1
Sample Name: 710257-04 [1X] SOIL
Misc Info : 10/10ML STHon11/01/07@1155
Vial Number: 10



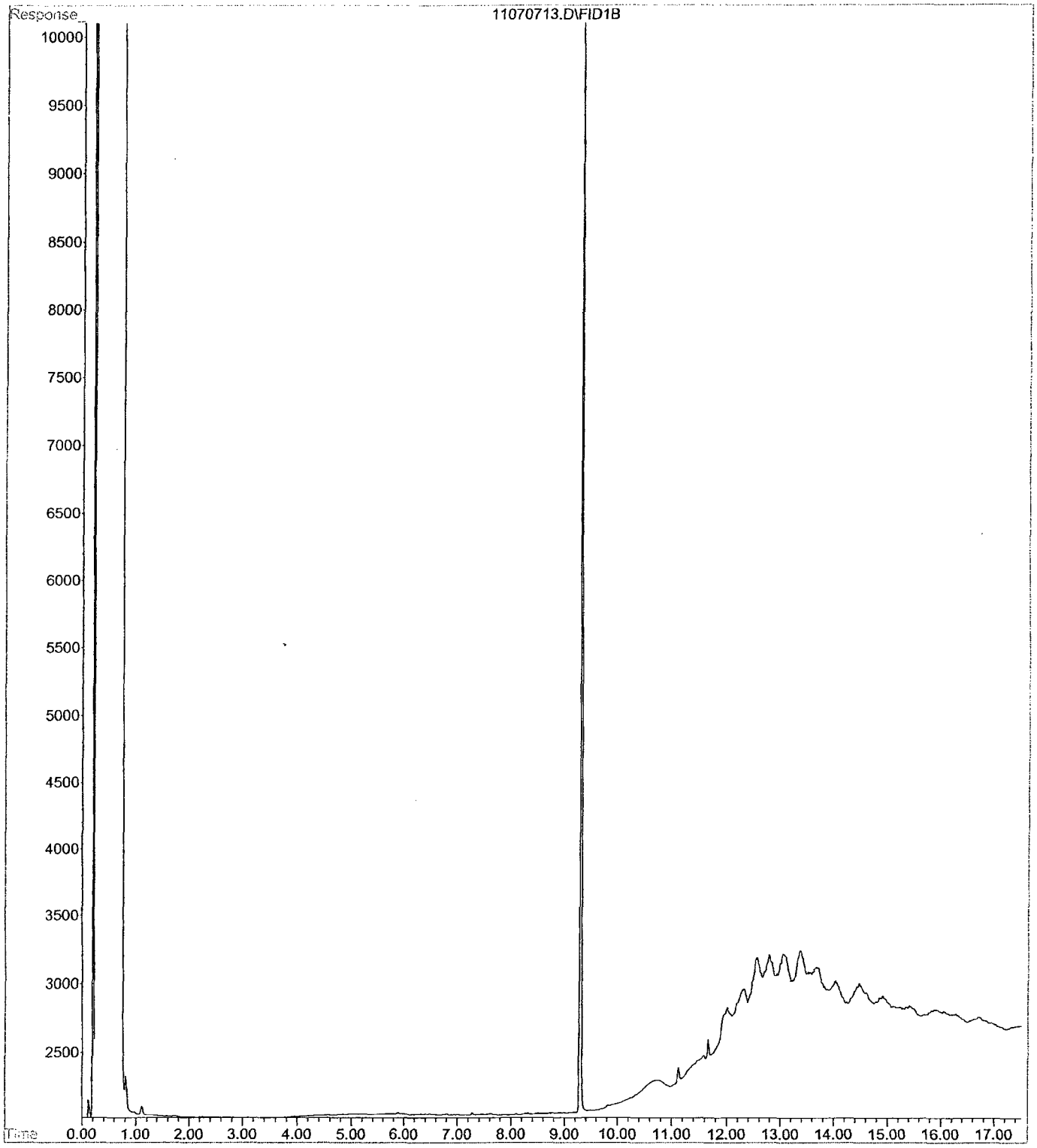
File : C:\HPCHEM\2\DATA\110707F\11070710.D
Operator : STH
Acquired : 7 Nov 2007 12:47 pm using AcqMethod DRO70719.M
Instrument : FID-1
Sample Name: 710257-05 [1X] SOIL
Misc Info : 10/10ML STHon11/01/07@1155
Vial Number: 11



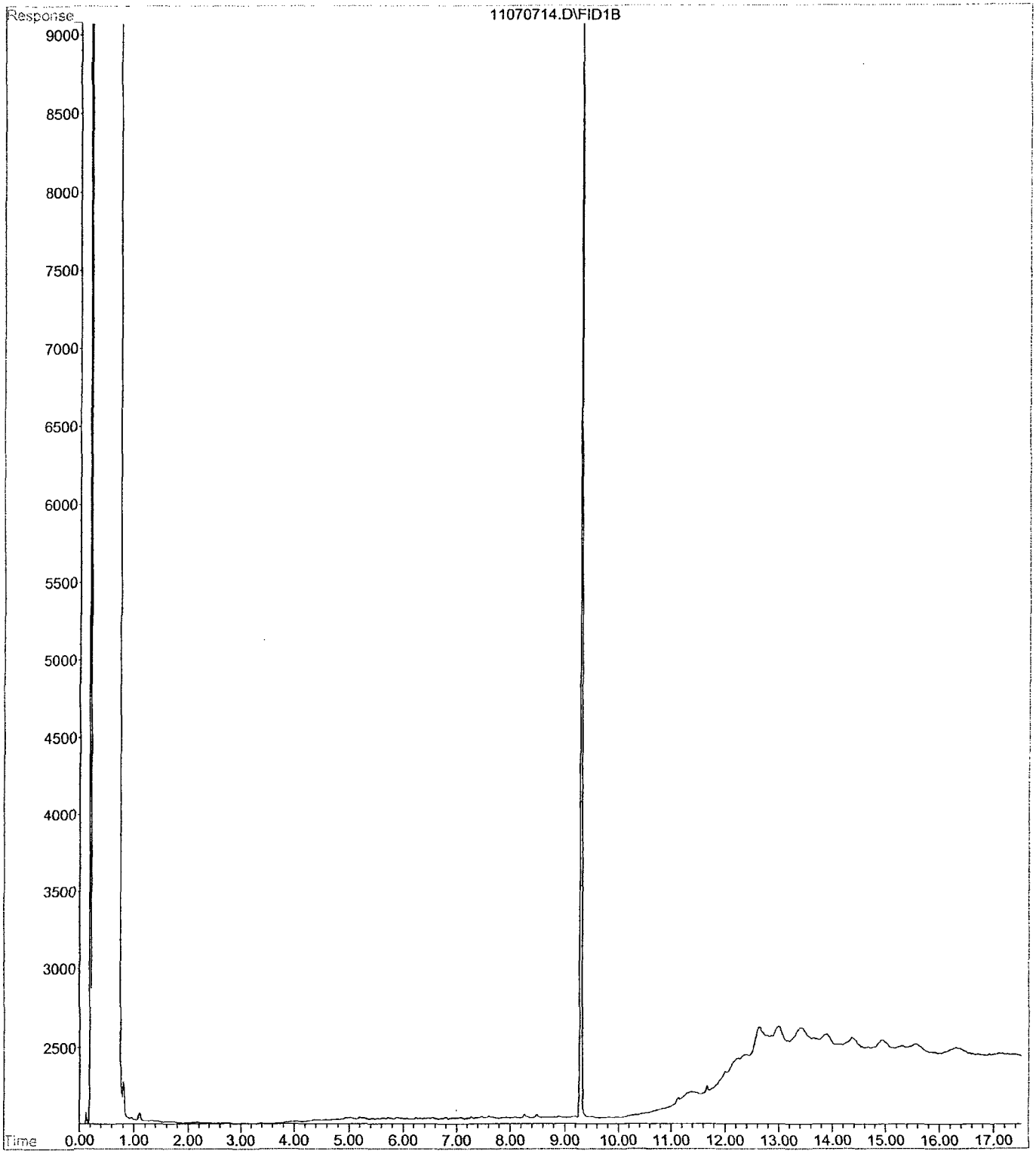
File : C:\HPCHEM\2\DATA\110707F\11070712.D
Operator : STH
Acquired : 7 Nov 2007 1:42 pm using AcqMethod DRO70719.M
Instrument : FID-1
Sample Name: 710257-06 [1X] SOIL
Misc Info : 10/10ML STHon11/01/07@1155
Vial Number: 12



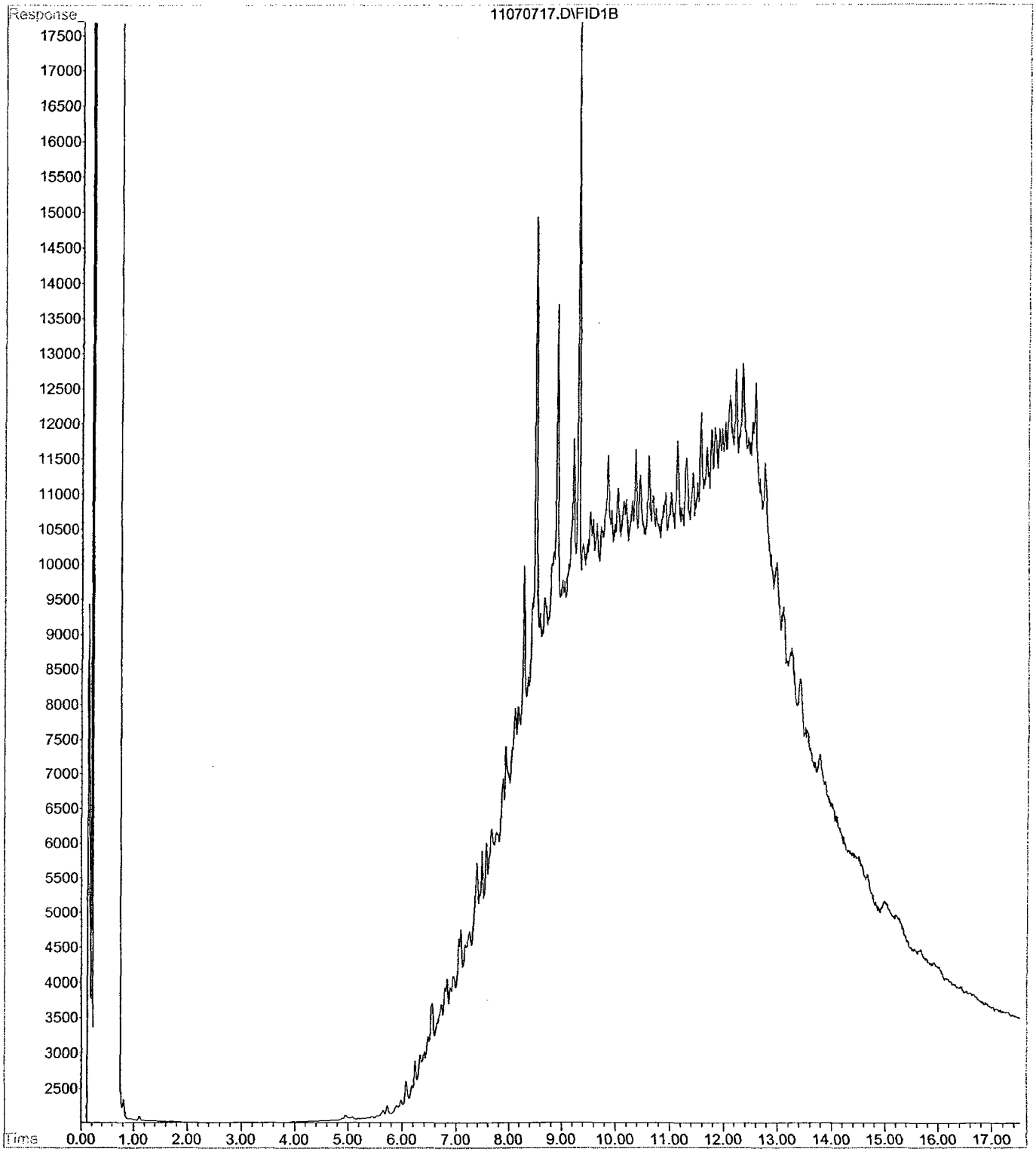
File : C:\HPCHEM\2\DATA\110707F\11070713.D
Operator : STH
Acquired : 7 Nov 2007 2:10 pm using AcqMethod DRO70719.M
Instrument : FID-1
Sample Name: 710257-07 [1X] SOIL
Misc Info : 10/10ML STHon11/01/07@1155
Vial Number: 13



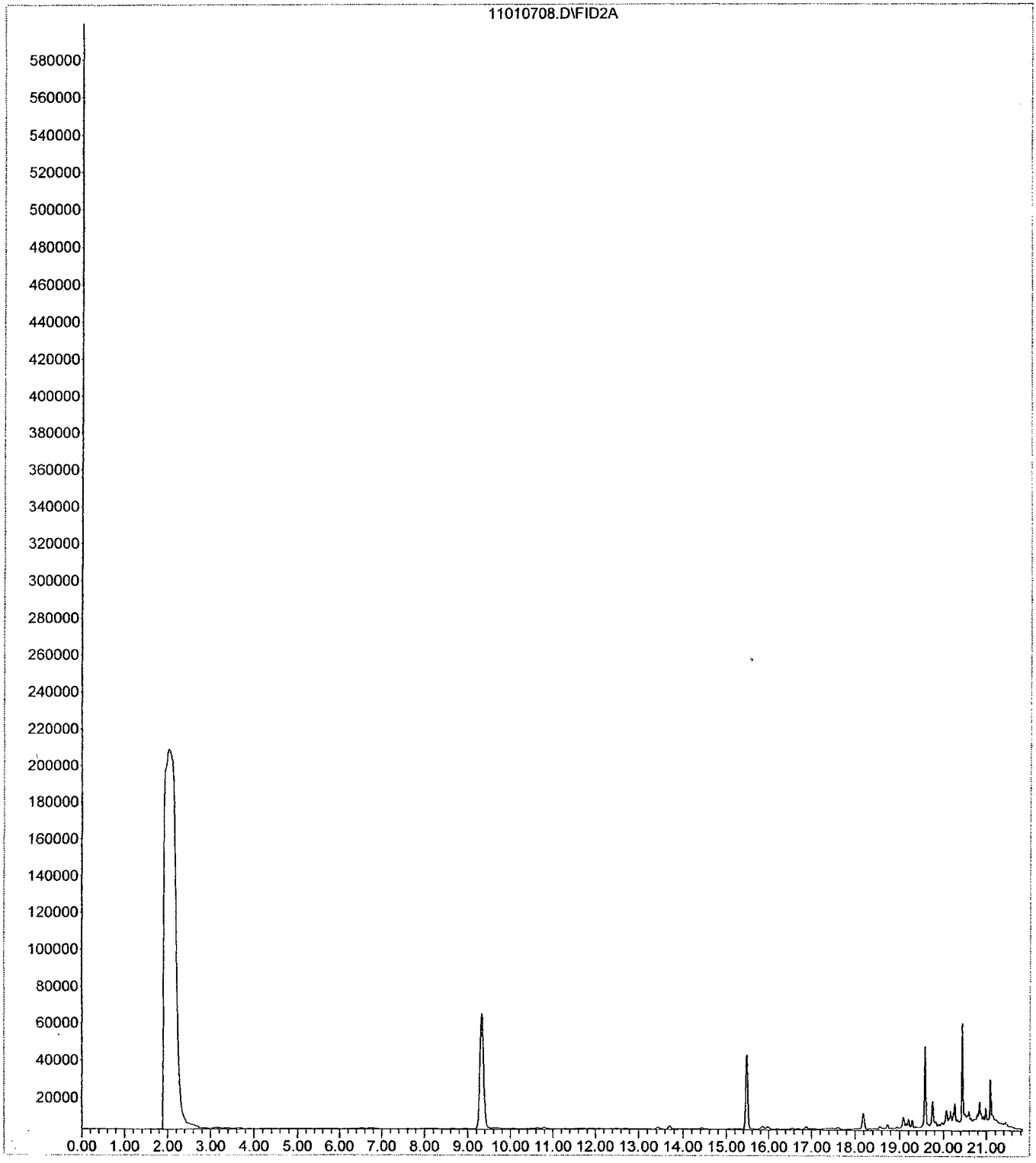
File : C:\HPCHEM\2\DATA\110707F\11070714.D
Operator : STH
Acquired : 7 Nov 2007 2:37 pm using AcqMethod DRO70719.M
Instrument : FID-1
Sample Name: 710257-08 [1X] SOIL
Misc Info : 10/10ML STHon11/01/07@1155
Vial Number: 14



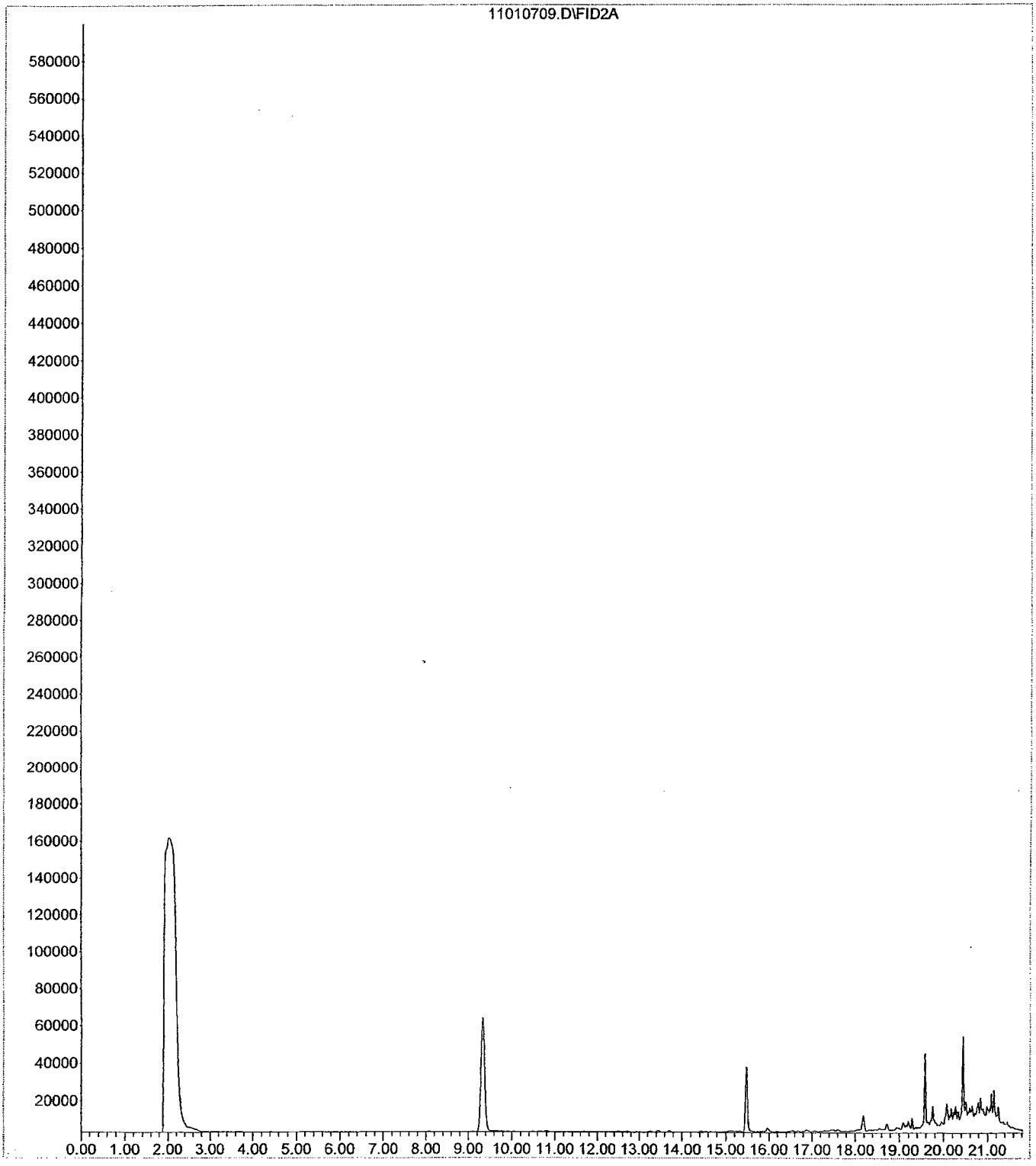
File : C:\HPCHEM\2\DATA\110707F\11070717.D
Operator : STH
Acquired : 7 Nov 2007 4:00 pm using AcqMethod DRO70719.M
Instrument : FID-1
Sample Name: 710257-09 [1X] SOIL
Misc Info : 10/10ML STHon11/01/07@1155
Vial Number: 17



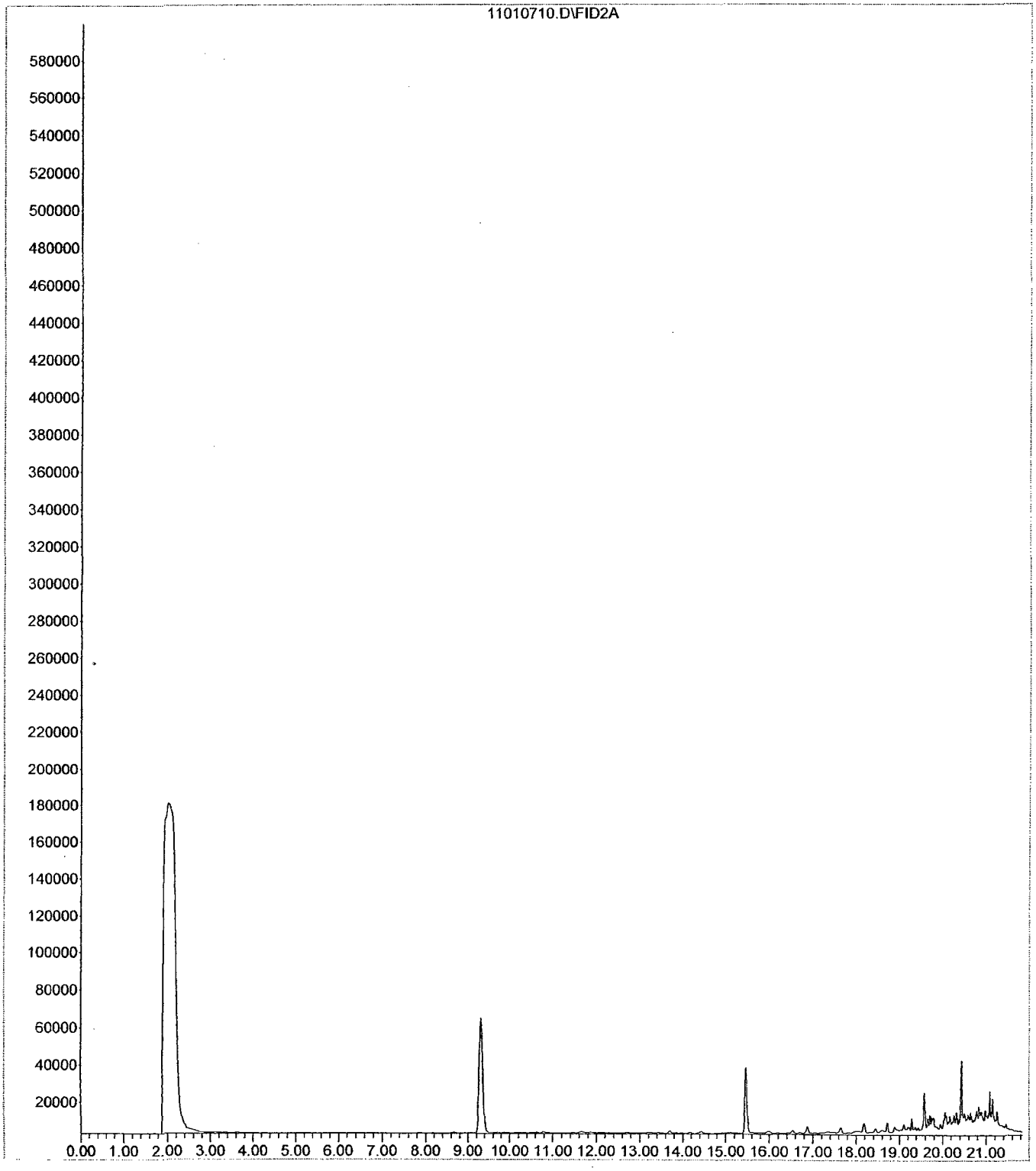
File : C:\HPCHEM\1\DATA\110107B\11010708.D
Operator : ARM
Acquired : 1 Nov 2007 3:08 pm using AcqMethod BG100207.M
Instrument : GC-2 PID/
Sample Name: 110107.B1 RBLK EXT SOIL
Misc Info : 0.10ML/5ML + MS5-80-14 EXT SOIL
Vial Number: 8



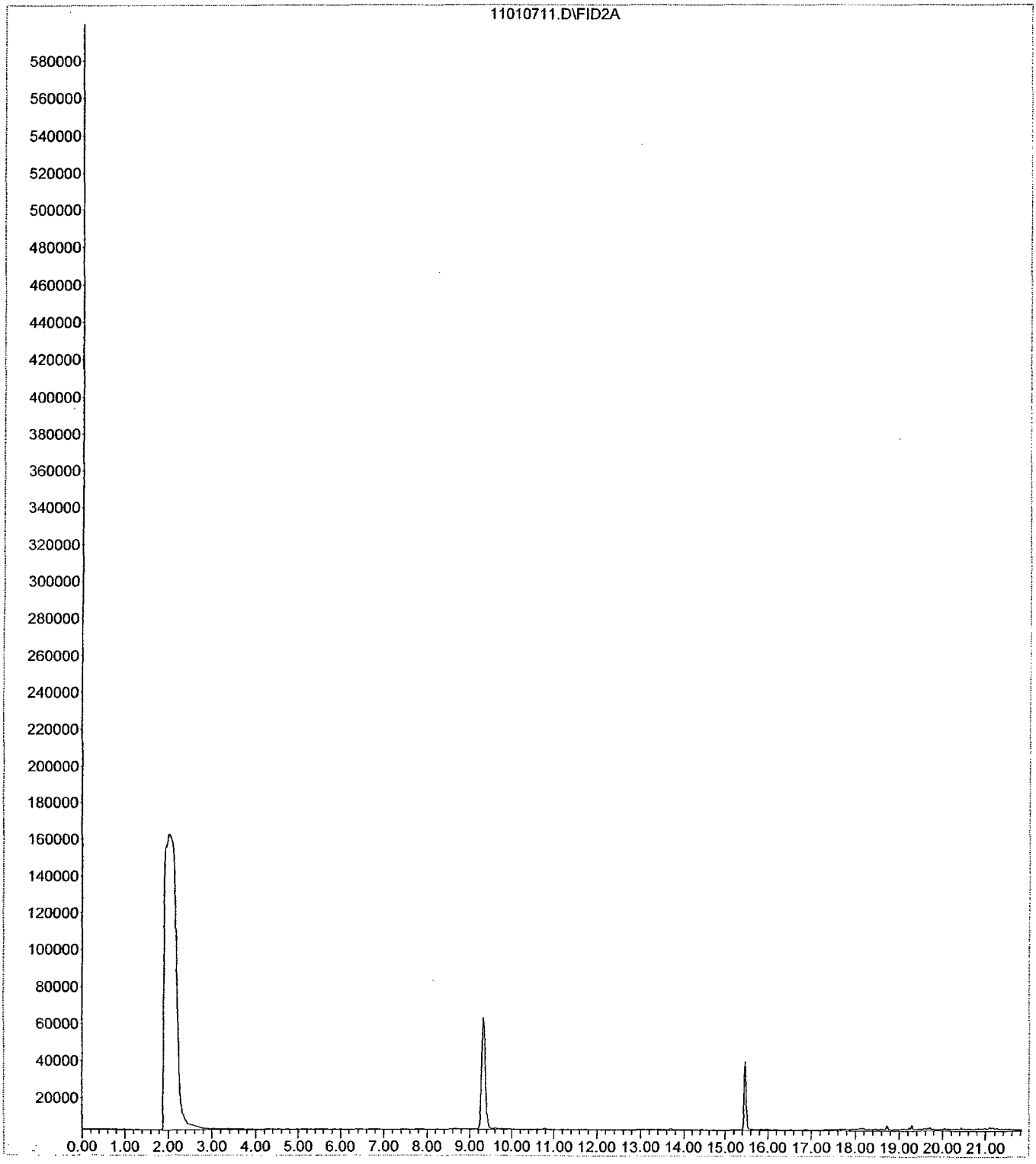
File : C:\HPCHEM\1\DATA\110107B\11010709.D
Operator : ARM
Acquired : 1 Nov 2007 3:51 pm using AcqMethod BG100207.M
Instrument : GC-2 PID/
Sample Name: 710257.02 [1X] 1012 EXT SOIL
Misc Info : 0.10ML/5ML + MS5-80-14 EXT SOIL
Vial Number: 9



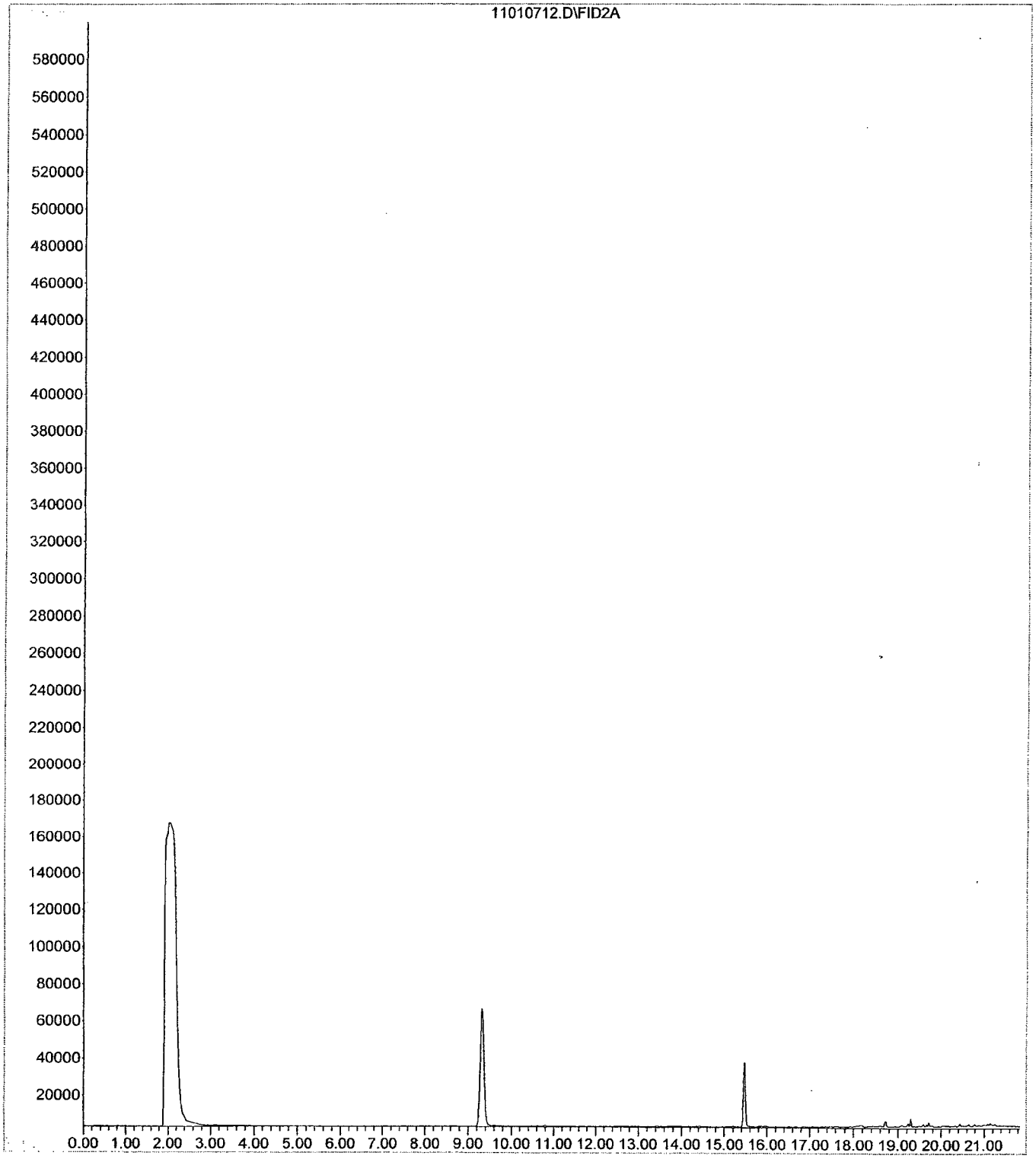
File : C:\HPCHEM\1\DATA\110107B\11010710.D
Operator : ARM
Acquired : 1 Nov 2007 4:22 pm using AcqMethod BG100207.M
Instrument : GC-2 PID/
Sample Name: 710257.03 [1X] 1036 EXT SOIL
Misc Info : 0.10ML/5ML + MS5-80-14 EXT SOIL
Vial Number: 10



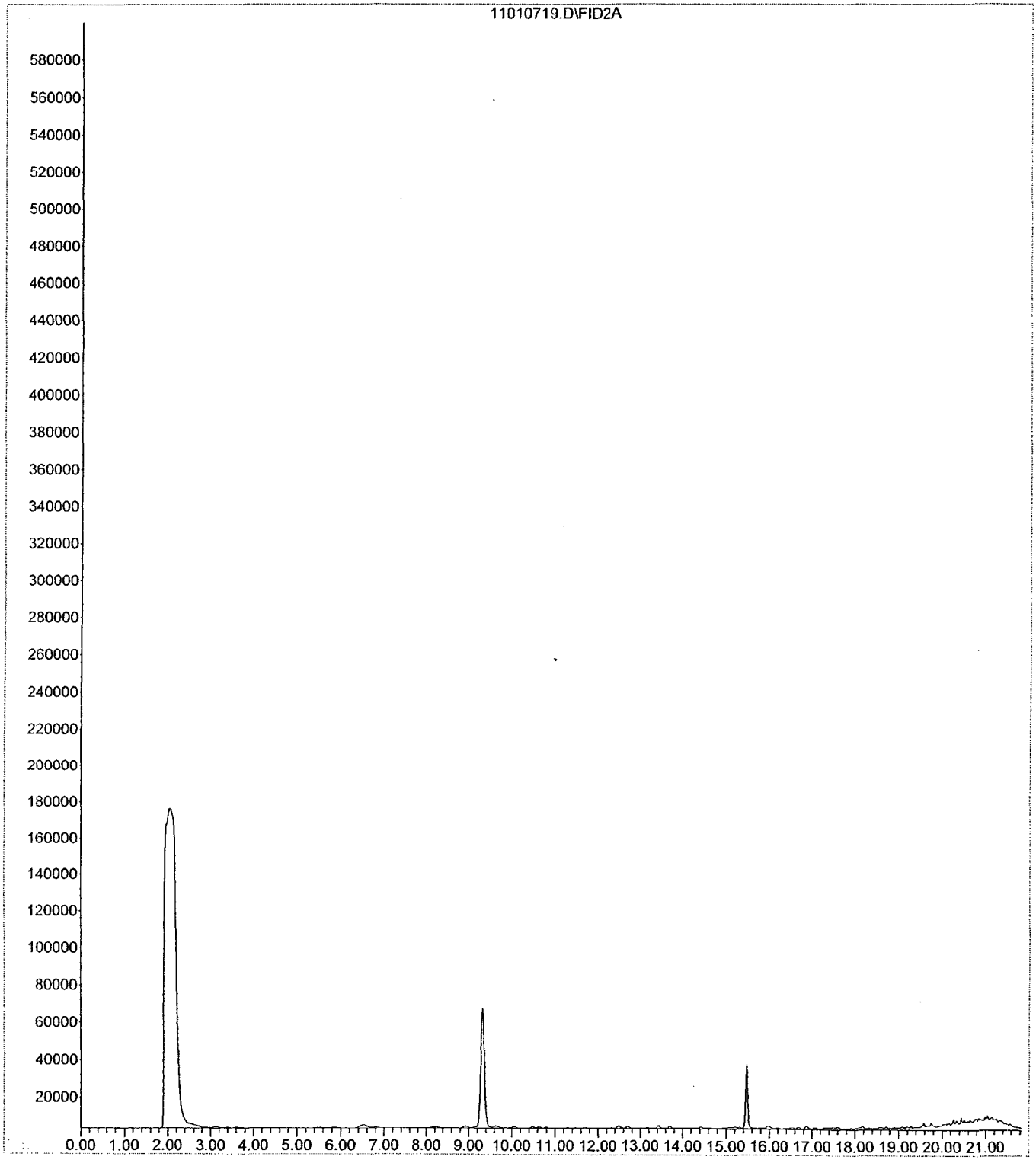
File : C:\HPCHEM\1\DATA\110107B\11010711.D
Operator : ARM
Acquired : 1 Nov 2007 4:53 pm using AcqMethod BG100207.M
Instrument : GC-2 PID/
Sample Name: 710257.04 [1X] 1059 EXT SOIL
Misc Info : 0.10ML/5ML + MS5-80-14 EXT SOIL
Vial Number: 11



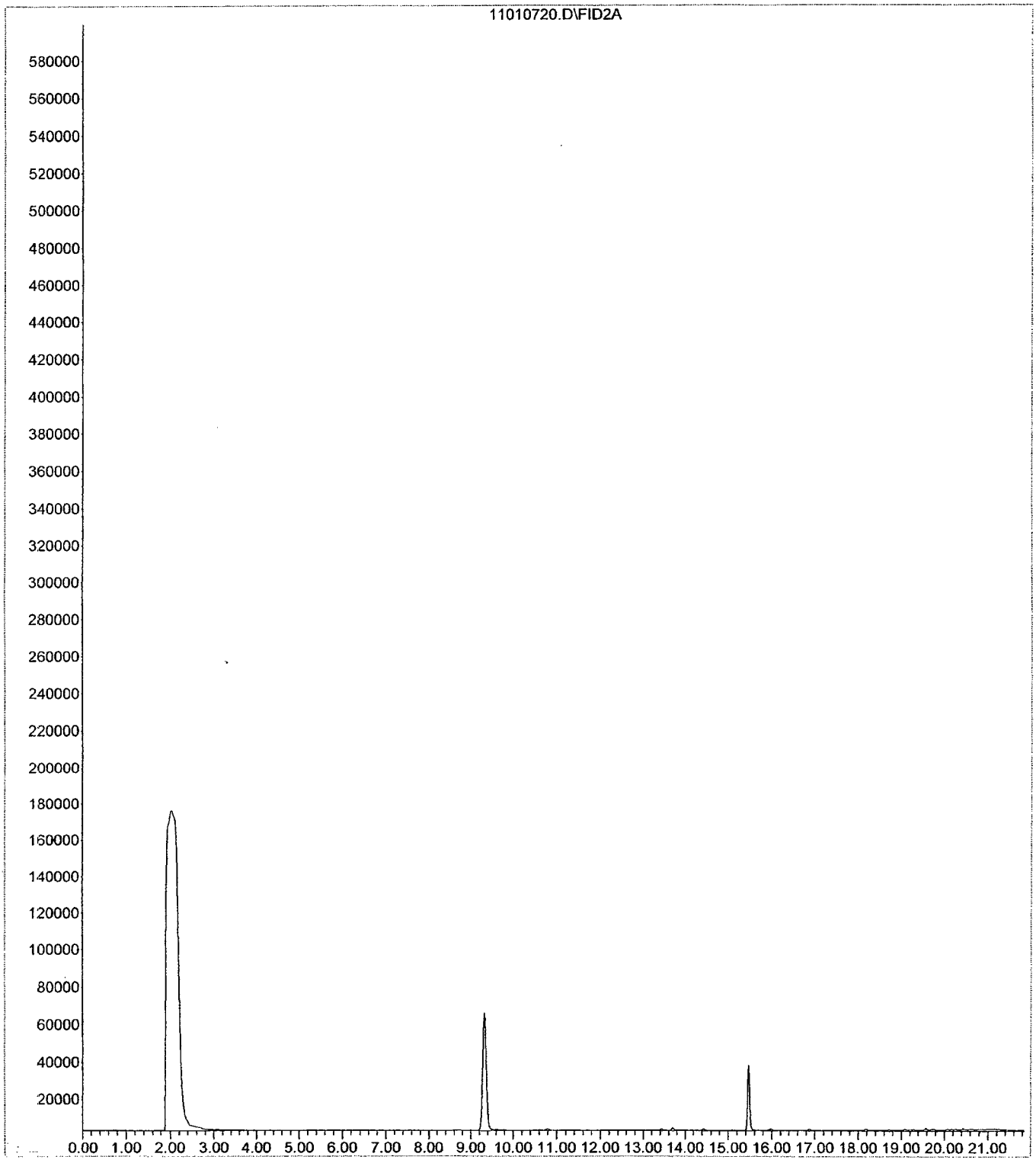
File : C:\HPCHEM\1\DATA\110107B\11010712.D
Operator : ARM
Acquired : 1 Nov 2007 5:24 pm using AcqMethod BG100207.M
Instrument : GC-2 PID/
Sample Name: 710257.05 [1X] 1120 EXT SOIL
Misc Info : 0.10ML/5ML + MS5-80-14 EXT SOIL
Vial Number: 12



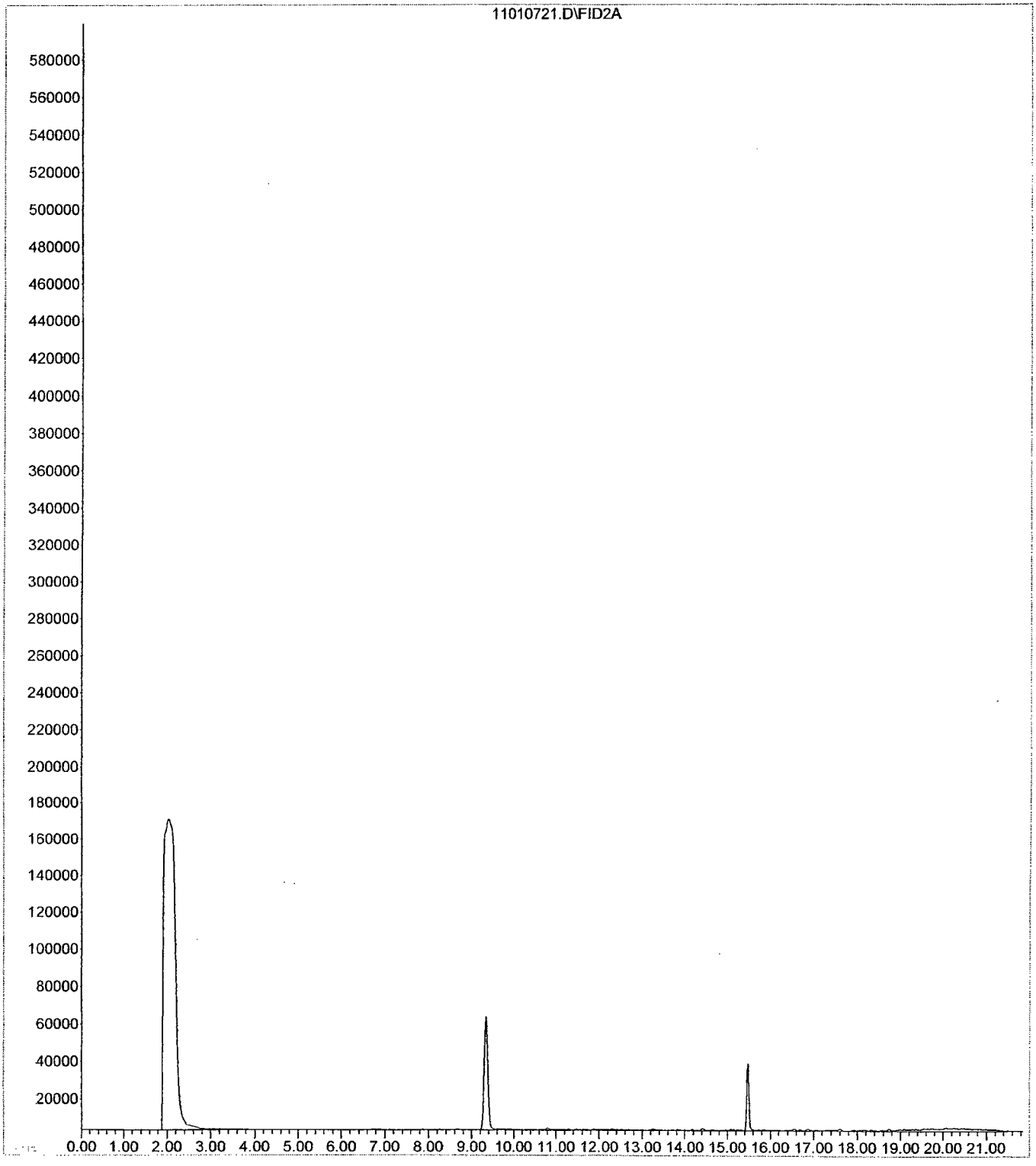
File : C:\HPCHEM\1\DATA\110107B\11010719.D
Operator : ARM
Acquired : 1 Nov 2007 9:02 pm using AcqMethod BG100207.M
Instrument : GC-2 PID/
Sample Name: 710257.06 [1X] 1147 EXT SOIL
Misc Info : 0.10ML/5ML + MS5-80-14 EXT SOIL
Vial Number: 3



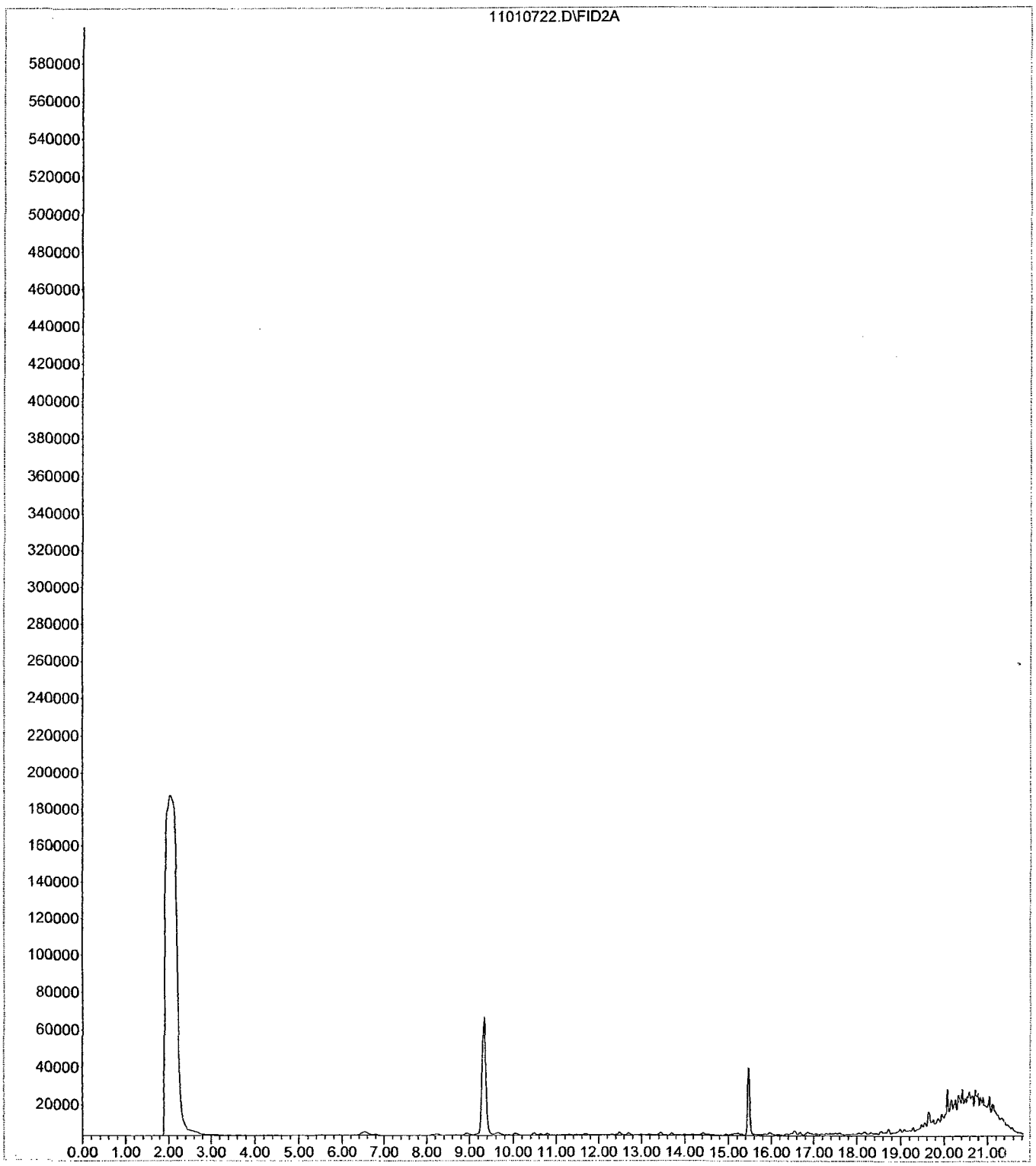
File : C:\HPCHEM\1\DATA\110107B\11010720.D
Operator : ARM
Acquired : 1 Nov 2007 9:34 pm using AcqMethod BG100207.M
Instrument : GC-2 PID/
Sample Name: 710257.07 [1X] 1256 EXT SOIL
Misc Info : 0.10ML/5ML + MS5-80-14 EXT SOIL
Vial Number: 4



File : C:\HPCHEM\1\DATA\110107B\11010721.D
Operator : ARM
Acquired : 1 Nov 2007 10:05 pm using AcqMethod BG100207.M
Instrument : GC-2 PID/
Sample Name: 710257.08 [1X] 1307 EXT SOIL
Misc Info : 0.10ML/5ML + MS5-80-14 EXT SOIL
Vial Number: 5



File : C:\HPCHEM\1\DATA\110107B\11010722.D
Operator : ARM
Acquired : 1 Nov 2007 10:36 pm using AcqMethod BG100207.M
Instrument : GC-2 PID/
Sample Name: 710257.09 [1X] 1313 EXT SOIL
Misc Info : 0.10ML/5ML + MS5-80-14 EXT SOIL
Vial Number: 6



Pinnacle Lab ID number **801168**
February 29, 2008

LODESTAR
26 CR 3500
FLORA VISTA, NM 87415

Project Name BLOOMFIELD CRUDE STATION
Project Number (NONE)

Attention: MARTIN NEE/BILL ROBERTSON

On 01/24/2008 Pinnacle Laboratories Inc., (ADHS License No. AZ0643), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

EPA Methods 8021 and 150.1 analyses were performed by Pinnacle Laboratories, Inc. (PLI).

All remaining analyses were performed by Flowers Chemical Laboratories, Inc. (FCL), Altamonte Springs, FL.

If you have any questions or comments, please do not hesitate to contact us at (505) 344-3777.

H. Mitchell Rubenstein, Ph.D.
General Manager, Pinnacle Laboratories, Inc.

MR: jt

Enclosure

CLIENT	: LODESTAR	PINNACLE ID	: 801168
PROJECT #	: (NONE)	DATE RECEIVED	: 01/24/2008
PROJECT NAME	: BLOOMFIELD CRUDE STATION	REPORT DATE	: 02/29/2008

PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
801168 - 01	MW-4	AQUEOUS	01/22/2008
801168 - 02	MW-2	AQUEOUS	01/22/2008
801168 - 03	MW-3	AQUEOUS	01/22/2008
801168 - 04	MW-7	AQUEOUS	01/22/2008
801168 - 05	MW-5	AQUEOUS	01/22/2008
801168 - 06	MW-6	AQUEOUS	01/22/2008
801168 - 07	TRIP BLANK	AQUEOUS	01/22/2008

GENERAL CHEMISTRY RESULTS

CLIENT	: LODESTAR	PINNACLE I.D.	: 801168
PROJECT #	: (NONE)	DATE RECEIVED	: 01/24/08
PROJECT NAME	: BLOOMFIELD CRUDE STATION	ANALYST	: ARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE ANALYZED
01	MW-4	AQUEOUS	01/22/08	01/24/08
02	MW-2	AQUEOUS	01/22/08	01/24/08
03	MW-3	AQUEOUS	01/22/08	01/24/08

PARAMETER	MW-4	MW-2	MW-3
PH (150.1)	7.6	7.5	7.5
TEMPERATURE (°C)	18.8	19.0	19.0

CHEMIST NOTES:
N/A

GENERAL CHEMISTRY RESULTS

CLIENT	: LODESTAR	PINNACLE I.D.	: 801168
PROJECT #	: (NONE)	DATE RECEIVED	: 01/24/08
PROJECT NAME	: BLOOMFIELD CRUDE STATION	ANALYST	: ARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE ANALYZED
04	MW-7	AQUEOUS	01/22/08	01/24/08
05	MW-5	AQUEOUS	01/22/08	01/24/08
06	MW-6	AQUEOUS	01/22/08	01/24/08

PARAMETER	MW-7	MW-5	MW-6
PH (150.1)	7.3	7.1	7.5
TEMPERATURE (°C)	18.5	19.1	19.4

CHEMIST NOTES:
N/A

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT	: LODESTAR	PINNACLE I.D.	: 801168
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STATION	DATE ANALYZED	: 01/24/08

PARAMETER	PINNACLE I.D.	SAMPLE RESULT	DUP. RESULT	% RPD
PH (150.1)	801168-02	7.51	7.50	0
TEMPERATURE (°C)		19.0	18.9	

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B
CLIENT : LODESTAR
PROJECT # : (NONE)
PROJECT NAME : BLOOMFIELD CRUDE STATION

PINNACLE I.D. : 801168
ANALYST : ARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	MW-4	AQUEOUS	01/22/08	NA	01/28/08	1
02	MW-2	AQUEOUS	01/22/08	NA	01/28/08	1
03	MW-3	AQUEOUS	01/22/08	NA	01/28/08	1

PARAMETER	DET. LIMIT	UNITS	MW-4	MW-2	MW-3
BENZENE	**0.5**	**UG/L**	< 0.5	**4.4**	< 0.5
TOLUENE	**0.5**	**UG/L**	< 0.5	**45**	< 0.5
ETHYLBENZENE	**0.5**	**UG/L**	< 0.5	**24**	< 0.5
TOTAL XYLENES	**2.0**	**UG/L**	< 2.0	**100**	< 2.0

SURROGATE:				
BROMOFLUOROBENZENE (%)		104	92	109
SURROGATE LIMITS	(80 - 120)			

CHEMIST NOTES:
N/A

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B
CLIENT : LODESTAR
PROJECT # : (NONE)
PROJECT NAME : BLOOMFIELD CRUDE STATION

PINNACLE I.D. : 801168
ANALYST : ARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	MW-7	AQUEOUS	01/22/08	NA	01/28/08	20
05	MW-5	AQUEOUS	01/22/08	NA	01/28/08	1
06	MW-6	AQUEOUS	01/22/08	NA	01/28/08	1

PARAMETER	DET. LIMIT	UNITS	MW-7	MW-5	MW-6
BENZENE	**0.5**	**UG/L**	**750**	< 0.5	**0.9**
TOLUENE	**0.5**	**UG/L**	< 10	< 0.5	**11**
ETHYLBENZENE	**0.5**	**UG/L**	**520**	< 0.5	**130**
TOTAL XYLENES	**2.0**	**UG/L**	**3100**	< 2.0	**930 D5**

SURROGATE:					
BROMOFLUOROBENZENE (%)			101	103	105
SURROGATE LIMITS	(80 - 120)				

CHEMIST NOTES:
D5 = Reported from a 5X dilution run on 01/28/08.

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021B
CLIENT : LODESTAR
PROJECT # : (NONE)
PROJECT NAME : BLOOMFIELD CRUDE STATION

PINNACLE I.D. : 801168
ANALYST : ARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
07	TRIP BLANK	AQUEOUS	01/22/08	NA	01/28/08	1

PARAMETER	DET. LIMIT	UNITS	TRIP BLANK
BENZENE	0.5	UG/L	< 0.5
TOLUENE	0.5	UG/L	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5
TOTAL XYLENES	2.0	UG/L	< 2.0

SURROGATE:
BROMOFLUOROBENZENE (%) 104
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A

GAS CHROMATOGRAPHY RESULTS
METHOD BLANK

TEST	: EPA 8021B	PINNACLE I.D.	: 801168
BLANK I. D.	: 012808B	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 01/28/08
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STATION	ANALYST	: ARM

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<2.0
SURROGATE:		
BROMOFLUOROBENZENE (%)		98
SURROGATE LIMITS:	(80 - 120)	

CHEMIST NOTES:
N/A

GAS CHROMATOGRAPHY QUALITY CONTROL
LCS/LCSD

TEST	: EPA 8021B	PINNACLE I.D.	: 801168
BATCH ID	: 012808B	DATE EXTRACTED	: NA
CLIENT	: LODESTAR	DATE ANALYZED	: 01/28/08
PROJECT #	: (NONE)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: BLOOMFIELD CRUDE STATION	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	19.0	95	19.3	97	2	(80 - 120)	20
TOLUENE	<0.5	20.0	20.0	100	20.4	102	2	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.2	101	20.5	102	1	(80 - 120)	20
TOTAL XYLENES	<2.0	60.0	61.5	102	62.9	105	2	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

FLOWERS CHEMICAL LABORATORIES INC.
P.O. Box 150597, Altamonte Springs FL 32715-0597 Phone 407-339-5984 Fax 407-260-6110 www.flowerslabs.com
8253 South U.S. Highway 1, Port St. Lucie FL 34952-2860 Phone 772-343-8006 Fax 772-343-8089
P.O. Box 1200, Madison FL 32341 Phone 850-973-6878 Fax 850-973-6878

Pinnacle Laboratories
2709 D Pan American Freeway NE
Albuquerque,NM 87107

PO #: 801168
Client Project #: LODE
Date Sampled: Jan 22, 2008
Feb 26, 2008; Invoice: 58191

Report Summary

Date Received: Jan 25, 2008

FCL Project Manager: June S. Flowers

Laboratory #	Sample Description	Analysis	Chemist	Location	SampleMatrix
58191GW1	MW-4/801168-01	EPA120.1	LCC	Main Lab	Ground Water
		EPA375.2	PCW	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2320B	CCP	Main Lab	
		SM2340B	EVB	Main Lab	
		SM2540C	RMV	Main Lab	
		SM4500CIE	VLB	Main Lab	
58191GW2	MW-2/801168-02	EPA120.1	LCC	Main Lab	Ground Water
		EPA375.2	PCW	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2320B	CCP	Main Lab	
		SM2340B	EVB	Main Lab	
		SM2540C	RMV	Main Lab	
		SM4500CIE	VLB	Main Lab	
58191GW3	MW-3/801168-03	EPA120.1	LCC	Main Lab	Ground Water
		EPA375.2	PCW	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2320B	CCP	Main Lab	
		SM2340B	EVB	Main Lab	
		SM2540C	RMV	Main Lab	
		SM4500CIE	VLB	Main Lab	
58191GW4	MW-7/801168-04	EPA120.1	LCC	Main Lab	Ground Water
		EPA375.2	PCW	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2320B	CCP	Main Lab	
		SM2340B	EVB	Main Lab	
		SM2540C	RMV	Main Lab	
		SM4500CIE	VLB	Main Lab	
58191GW5	MW-5/801168-05	EPA120.1	LCC	Main Lab	Ground Water
		EPA375.2	PCW	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2320B	CCP	Main Lab	
		SM2340B	EVB	Main Lab	
		SM2540C	RMV	Main Lab	
		SM4500CIE	VLB	Main Lab	
58191GW6	MW-6/801168-06	EPA120.1	LCC	Main Lab	Ground Water
		EPA375.2	PCW	Main Lab	
		EPA6010	EVB	Main Lab	
		SM2320B	CCP	Main Lab	
		SM2340B	EVB	Main Lab	
		SM2540C	RMV	Main Lab	
		SM4500CIE	VLB	Main Lab	

FLOWERS CHEMICAL LABORATORIES INC.

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P.O. Box 1200, Madison FL 32341 Phone 850-973-8878 Fax 850-973-6878

Pinnacle Laboratories
2709 D Pan American Freeway NE
Albuquerque,NM 87107

PO #: 801168
Client Project #: LODE
Date Sampled: Jan 22, 2008
Feb 26, 2008; Invoice: 58191

Certificate of Results

Sample integrity was certified prior to analysis. Test results meet all requirements of the NELAC Standards except as noted in the Quality Control Report. Uncertainties for these data are available on request. This report may not be reproduced in part; results relate only to items tested.

ACCREDITED IN ACCORDANCE WITH

Jefferson S. Flowers, Ph.D.
President/Technical Director

FLOWERS CHEMICAL LABORATORIES INC.
P.O. Box 150597, Altamonte Springs FL 32715-0597 Phone 407 - 339 - 5984 Fax 407 - 260 - 6110 www.flowerslabs.com
8253 South U.S. Highway 1, Port St. Lucie FL 34952-2860 Phone 772 - 343 - 8006 Fax 772 - 343 - 8089
P.O. Box 1200, Madison FL 32341 Phone 850-973-6878 Fax 850-973-6878

Pinnacle Laboratories
2709 D Pan American Freeway NE
Albuquerque,NM 87107

PO #: 801168
Client Project #: LODE
Date Sampled: Jan 22, 2008
Feb 26, 2008; Invoice: 58191

Analysis Report

Lab #: 58191GW1 Sampled: 01/22/08 10:40 AMDesc: MW-4/801168-01

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Specific_Conductance	4500	umhos/cm	1.00	1.00	2.00	10097361	EPA120.1	10-34-4	01/25/08
TDS	3710	mg/L	1.00	2.50	5.00	10097379	SM2540C	10-33-3	01/25/08
Calcium	394	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-70-2	01/28/08
Iron	2.72	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-89-6	01/28/08
Magnesium	41.2	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-95-4	01/28/08
Manganese	5.41	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-96-5	01/28/08
Potassium	3.55	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-09-7	01/28/08
Sodium	637	mg/L	1.00	0.500	1.00	10097483	EPA6010	7440-23-5	01/28/08
Total Hardness (as CaCO3)	1040	mg/L	1.00	0.100	0.200	10097484	SM2340B	40-11-9	01/28/08
Bicarbonate Alkalinity	457	mg/L	1.00	0.100	0.200	10097763	SM2320B	E1640226	01/31/08
Carbonate CaCO3	0.100 U	mg/L	1.00	0.100	0.200	10097763	SM2320B		01/31/08
Hydroxide CaCO3	0.100 U	mg/L	1.00	0.100	0.200	10097763	SM2320B		01/31/08
Total Alkalinity CaCO3	458	mg/L	1.00	0.100	0.200	10097763	SM2320B	T-005	01/31/08
Chloride	5.00 U	mg/L	1.00	5.00	10.0	10098007	SM4500CIE	16887-00-6	02/02/08
Sulfate	1790	mg/L	100	500	1000	10098350	EPA375.2	14808-79-8	02/11/08

Lab #: 58191GW2 Sampled: 01/22/08 11:45 AMDesc: MW-2/801168-02

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Specific_Conductance	5100	umhos/cm	1.00	1.00	2.00	10097361	EPA120.1	10-34-4	01/25/08
TDS	4350	mg/L	1.00	2.50	5.00	10097379	SM2540C	10-33-3	01/25/08
Calcium	463	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-70-2	01/28/08
Iron	10.7	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-89-6	01/28/08
Magnesium	49.5	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-95-4	01/28/08
Manganese	6.76	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-96-5	01/28/08
Potassium	2.93	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-09-7	01/28/08
Sodium	739	mg/L	1.00	0.500	1.00	10097483	EPA6010	7440-23-5	01/28/08
Total Hardness (as CaCO3)	1220	mg/L	1.00	0.100	0.200	10097484	SM2340B	40-11-9	01/28/08

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2709 D Pan American Freeway NE
Albuquerque,NM 87107

PO #: 801168
Client Project #: LODE
Date Sampled: Jan 22, 2008
Feb 26, 2008; Invoice: 58191

Lab #: 58191GW2 Sampled: 01/22/08 11:45 AMDesc: MW-2/801168-02

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Bicarbonate Alkalinity	534	mg/L	1.00	0.100	0.200	10097763	SM2320B	E1640226	01/31/08
Carbonate CaCO3	0.100 U	mg/L	1.00	0.100	0.200	10097763	SM2320B		01/31/08
Hydroxide CaCO3	0.100 U	mg/L	1.00	0.100	0.200	10097763	SM2320B		01/31/08
Total Alkalinity CaCO3	534	mg/L	1.00	0.100	0.200	10097763	SM2320B	T-005	01/31/08
Chloride	42.3	mg/L	1.00	5.00	10.0	10098007	SM4500CIE	16887-00-6	02/02/08
Sulfate	2460	mg/L	100	500	1000	10098350	EPA375.2	14808-79-8	02/11/08

Lab #: 58191GW3 Sampled: 01/22/08 12:45 PMDesc: MW-3/801168-03

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Specific_Conductance	4330	umhos/cm	1.00	1.00	2.00	10097361	EPA120.1	10-34-4	01/25/08
TDS	3600	mg/L	1.00	2.50	5.00	10097379	SM2540C	10-33-3	01/25/08
Calcium	419	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-70-2	01/28/08
Iron	1.91	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-89-6	01/28/08
Magnesium	39.8	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-95-4	01/28/08
Manganese	0.394	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-96-5	01/28/08
Potassium	2.36	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-09-7	01/28/08
Sodium	594	mg/L	1.00	0.500	1.00	10097483	EPA6010	7440-23-5	01/28/08
Total Hardness (as CaCO3)	1090	mg/L	1.00	0.100	0.200	10097484	SM2340B	40-11-9	01/28/08
Bicarbonate Alkalinity	626	mg/L	1.00	0.100	0.200	10097763	SM2320B	E1640226	01/31/08
Carbonate CaCO3	1.32	mg/L	1.00	0.100	0.200	10097763	SM2320B		01/31/08
Hydroxide CaCO3	0.100 U	mg/L	1.00	0.100	0.200	10097763	SM2320B		01/31/08
Total Alkalinity CaCO3	627	mg/L	1.00	0.100	0.200	10097763	SM2320B	T-005	01/31/08
Chloride	34.8	mg/L	1.00	5.00	10.0	10098007	SM4500CIE	16887-00-6	02/02/08
Sulfate	1690	mg/L	100	500	1000	10098350	EPA375.2	14808-79-8	02/11/08

Lab #: 58191GW4 Sampled: 01/22/08 01:57 PMDesc: MW-7/801168-04

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Specific_Conductance	1320	umhos/cm	1.00	1.00	2.00	10097361	EPA120.1	10-34-4	01/25/08
TDS	810	mg/L	1.00	2.50	5.00	10097379	SM2540C	10-33-3	01/25/08

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PO #: 801168
Client Project #: LODE
Date Sampled: Jan 22, 2008
Feb 26, 2008; Invoice: 58191

Lab #: 58191GW4 Sampled: 01/22/08 01:57 PMDesc: MW-7/801168-04

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Calcium	139	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-70-2	01/28/08
Iron	14.4	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-89-6	01/28/08
Magnesium	15.4	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-95-4	01/28/08
Manganese	1.60	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-96-5	01/28/08
Potassium	1.20	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-09-7	01/28/08
Sodium	120	mg/L	1.00	0.500	1.00	10097483	EPA6010	7440-23-5	01/28/08
Total Hardness (as CaCO3)	369	mg/L	1.00	0.100	0.200	10097484	SM2340B	40-11-9	01/28/08
Bicarbonate Alkalinity	747	mg/L	1.00	0.100	0.200	10097763	SM2320B	E1640226	01/31/08
Carbonate CaCO3	0.100 U	mg/L	1.00	0.100	0.200	10097763	SM2320B		01/31/08
Hydroxide CaCO3	0.100 U	mg/L	1.00	0.100	0.200	10097763	SM2320B		01/31/08
Total Alkalinity CaCO3	748	mg/L	1.00	0.100	0.200	10097763	SM2320B	T-005	01/31/08
Chloride	18.1	mg/L	1.00	5.00	10.0	10098007	SM4500CIE	16887-00-6	02/02/08
Sulfate	50.9 I	mg/L	10.0	50.0	100	10098348	EPA375.2	14808-79-8	02/11/08

Lab #: 58191GW5 Sampled: 01/22/08 02:45 PMDesc: MW-5/801168-05

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Specific_Conductance	6750	umhos/cm	1.00	1.00	2.00	10097361	EPA120.1	10-34-4	01/25/08
TDS	4780	mg/L	1.00	2.50	5.00	10097379	SM2540C	10-33-3	01/25/08
Calcium	585	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-70-2	01/28/08
Iron	1.32	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-89-6	01/28/08
Magnesium	51.5	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-95-4	01/28/08
Manganese	10.7	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-96-5	01/28/08
Potassium	5.11	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-09-7	01/28/08
Sodium	834	mg/L	1.00	0.500	1.00	10097483	EPA6010	7440-23-5	01/28/08
Total Hardness (as CaCO3)	1510	mg/L	1.00	0.100	0.200	10097484	SM2340B	40-11-9	01/28/08
Bicarbonate Alkalinity	932	mg/L	1.00	0.100	0.200	10097763	SM2320B	E1640226	01/31/08
Carbonate CaCO3	0.100 U	mg/L	1.00	0.100	0.200	10097763	SM2320B		01/31/08
Hydroxide CaCO3	0.100 U	mg/L	1.00	0.100	0.200	10097763	SM2320B		01/31/08
Total Alkalinity CaCO3	933	mg/L	1.00	0.100	0.200	10097763	SM2320B	T-005	01/31/08

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Lab #: 58191GW5 Sampled: 01/22/08 02:45 FMDesc: MW-5/801168-05

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	109	mg/L	1.00	5.00	10.0	10098216	SM4500CIE	16887-00-6	02/08/08
Sulfate	1310	mg/L	100	500	1000	10098350	EPA375.2	14808-79-8	02/11/08

Lab #: 58191GW6 Sampled: 01/22/08 03:42 FMDesc: MW-6/801168-06

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Specific_Conductance	2840	umhos/cm	1.00	1.00	2.00	10097361	EPA120.1	10-34-4	01/25/08
TDS	1920	mg/L	1.00	2.50	5.00	10097379	SM2540C	10-33-3	01/25/08
Calcium	195	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-70-2	01/28/08
Iron	24.5	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-89-6	01/28/08
Magnesium	25.6	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-95-4	01/28/08
Manganese	2.62	mg/L	1.00	0.0100	0.0200	10097483	EPA6010	7439-96-5	01/28/08
Potassium	2.83	mg/L	1.00	0.100	0.200	10097483	EPA6010	7440-09-7	01/28/08
Sodium	442	mg/L	1.00	0.500	1.00	10097483	EPA6010	7440-23-5	01/28/08
Total Hardness (as CaCO3)	533	mg/L	1.00	0.100	0.200	10097484	SM2340B	40-11-9	01/28/08
Bicarbonate Alkalinity	1140	mg/L	5.00	0.500	1.00	10097763	SM2320B	E1640226	01/31/08
Carbonate CaCO3	1.25	mg/L	5.00	0.500	1.00	10097763	SM2320B		01/31/08
Hydroxide CaCO3	0.500 U	mg/L	5.00	0.500	1.00	10097763	SM2320B		01/31/08
Total Alkalinity CaCO3	1140	mg/L	5.00	0.500	1.00	10097763	SM2320B	T-005	01/31/08
Chloride	105	mg/L	1.00	5.00	10.0	10098007	SM4500CIE	16887-00-6	02/02/08
Sulfate	312	mg/L	10.0	50.0	100	10098348	EPA375.2	14808-79-8	02/11/08

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Quality Report

Quality Control Batch: 10097379	Analyst: RMV				
Blank	**Result**	**Units**			
TDS	2.50U	mg/L			
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
TDS	1390	mg/L	1500	92.67	91.15-105.70

Quality Control Batch: 10097483	Analyst: EVB				
Blank	**Result**	**Units**			
Calcium	0.100U	mg/L			
Iron	0.0100U	mg/L			
Magnesium	0.0100U	mg/L			
Manganese	0.0100U	mg/L			
Potassium	0.100U	mg/L			
Sodium	0.500U	mg/L			
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Calcium	1.11	mg/L	1.00	110.86	83.92-117.64
Iron	1.02	mg/L	1.00	101.62	81.21-113.54
Magnesium	1.05	mg/L	1.00	105.45	87.31-118.85
Manganese	1.06	mg/L	1.00	106.31	86.75-114.65
Potassium	9.05	mg/L	10.0	90.48	79.90-114.82
Sodium	0.954	mg/L	1.00	95.41	78.62-112.15
Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
Calcium	27.3	mg/L	5.00	101.02	38.12-158.26	22.3
Iron	5.41	mg/L	5.00	107.59	57.02-147.60	0.0285

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Quality Control Batch: 10097483 **Analyst: EVB**

Matrix Spike	Result	Units	Spike	%REC	%REC Lim	Sample
Magnesium	12.5	mg/L	5.00	101.56	56.63-150.61	7.39
Manganese	5.50	mg/L	5.00	109.79	72.41-139.25	0.00667
Potassium	15.5	mg/L	5.00	95.04	43.39-154.88	10.7
Sodium	21.8	mg/L	5.00	97.52	37.63-161.64	17.0

Matrix Spike Duplicate	Result	Units	Spike	%REC	%REC Lim	Sample	RPD	RPD Lim
Calcium	27.0	mg/L	5.00	95.38	38.12-158.26	22.3	1.04	13.18
Iron	5.31	mg/L	5.00	105.60	57.02-147.60	0.0285	1.85	19.53
Magnesium	12.3	mg/L	5.00	98.34	56.63-150.61	7.39	1.30	14.99
Manganese	5.39	mg/L	5.00	107.61	72.41-139.25	0.00667	2.00	19.28
Potassium	15.2	mg/L	5.00	90.14	43.39-154.88	10.7	1.60	23.53
Sodium	21.8	mg/L	5.00	96.54	37.63-161.64	17.0	0.23	19.20

Quality Control Batch: 10097484 **Analyst: EVB**

Blank	Result	Units
Total Hardness (as CaCO3)	0.100U	mg/L

Laboratory Control Sample	Result	Units	Spike	%REC	%REC Lim
Total Hardness (as CaCO3)	6.71	mg/L	6.62	101.42	81.91-115.19

Quality Control Batch: 10097763 **Analyst: CCP**

Blank	Result	Units
Total Alkalinity CaCO3	0.100U	mg/L

Laboratory Control Sample	Result	Units	Spike	%REC	%REC Lim
Total Alkalinity CaCO3	106	mg/L	100	106.25	81.90-118.30

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Quality Control Batch: 10098007 **Analyst: VLB**

Blank	Result	Units
Chloride	5.00U	mg/L

Laboratory Control Sample	Result	Units	Spike	%REC	%REC Lim
Chloride	18.8	mg/L	20.0	94.00	80.00-120.00

Matrix Spike	Result	Units	Spike	%REC	%REC Lim	Sample
Chloride	58.9	mg/L	50.0	104.41	80.00-120.00	6.69

Matrix Spike Duplicate	Result	Units	Spike	%REC	%REC Lim	Sample	RPD	RPD Lim
Chloride	58.3	mg/L	50.0	103.31	80.00-120.00	6.69	0.94	20.00

Quality Control Batch: 10098350 **Analyst: RCW**

Blank	Result	Units
Sulfate	5.00U	mg/L

Matrix Spike	Result	Units	Spike	%REC	%REC Lim	Sample
Sulfate	159	mg/L	50.0	58.00	45.70-149.77	130

Matrix Spike Duplicate	Result	Units	Spike	%REC	%REC Lim	Sample	RPD	RPD Lim
Sulfate	145	mg/L	50.0	30.00	45.70-149.77	130	9.21	7.80

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Narrative Report

Sample Handling
Sample handling and holding time criteria were met for all samples. Samples collected by submitter. No unusual events occurred during analysis. Results are reported on a wet weight basis for aqueous matrices and on a dry weight basis for sludge and soil matrices unless otherwise noted. Sample results reported as dissolved were field filtered.

Quality Control
Enclosed analyses met method or FCL criteria, unless otherwise denoted on the sample results. Applied data qualifiers are defined below.

Attachments
Chain of Custody

Qualifier	Meaning
U	Compound was analyzed for but not detected.
J	One or more QC samples associated with this data value exceeded QC limits.
J1	Surrogate recovery limits have been exceeded.
J2	No known quality control criteria exist for the component.
J3	Reported value failed to meet established quality control criteria for either precision or accuracy.
J4	Sample matrix interfered with the ability to make an accurate determination on the spiked sample.
Q	Sample held beyond the accepted holding time.
L	Off-scale high; reported concentration exceeds the highest standard.
V	Analyte was detected in both the sample and the associated method blank.
ZTNTC	Too numerous to count. Numeric value represents filtration volume.
A	Absent
P	Present
T	Value reported is less than the statistical method detection limit. Reported for informational purposes only.
M	Value reported is greater than the statistical method detection limit, but less than the reported MDL.
G	The greatest of the dilutions performed did not yield sufficient oxygen depletion for valid data.
S	The least of the dilutions performed did not yield sufficient oxygen residual for valid data.
O	Result is greater than (over) the specified value.
I	Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
B	Results based upon colony plate count outside ideal range.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.

Pinnacle Laboratories, Inc.

Interlab Chain of Custody

Date: 1-24-08 Page: 1 of 1

Network Project Manager: Jacinta Tenorio

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(505) 344-3777 Fax (505) 344-4413

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Metals (8) RCRA	TCLP RCRA (8) Metals	Metals-13 PP List	Metals-TAL (23 Metals)	Dissolved Fe, Mn, Pb (6010)	Ca, Mg, K, Na, Fe, Mn	TOC	Gen Chemistry: Hardness, SO4, Cl, TDS	EC, Alk, + Bicarb/Carb /OH	Volatile Organics GC/MS (8260)	BOD	COD	Pesticides/PCB (608/8081/8082)	Herbicides (615/8151)	PNA (8310)/8270 SIMS	8260 (TCLP 1311) ZHE		Base/Neutral Acid Compounds GC/MS (625/8270)	Uranium (ICP-MS)	Radium 226+228	Gross Alpha/Beta	TO-14	NUMBER OF CONTAINERS
MW-4/801168-01	1-22-08	1040	GW	58191		GW1				X		X	X														
MW-2/801168-02		1145				2				X		X	X														
MW-3/801168-03		1245				3				X		X	X														
MW-7/801168-04		1357				4				X		X	X														
MW-5/801168-05		1445				5				X		X	X														
MW-6/801168-06		1542				6				X		X	X														

PROJECT INFORMATION	SAMPLE RECEIPT	SAMPLES SENT TO:	RELINQUISED BY: 1.	RELINQUISED BY: 2.
PROJECT #: 801168	Total Number of Containers	PENSACOLA - STL-FL	Signature:	Time: 1700	Signature:	Time:
PROJ. NAME: LODE	Chain of Custody Seals	ESL - OR		
QC LEVEL: (STD) IV	Received Intact?	ATEL - AZ	Printed Name: David Gallegos	Date: 1-24-08	Printed Name:	Date:
QC REQUIRED: (MS) MSD BLANK	Received Good Cond?/Cold	ATEL - MARION		
TAT: (STANDARD) RUSH!!	LAB NUMBER:	ATEL - MELMORE	Pinnacle Laboratories, Inc.	Company
		FCL ✓	RECEIVED BY: 1.	RECEIVED BY: 2.
DUE DATE: 2-8-08	COMMENTS:	EHL	Signature:	Time:	Signature:	Time: 1041
RUSH SURCHARGE: –		GEL		
CLIENT DISCOUNT: –	24-hr	WCAS	Printed Name:	Date:	Printed Name:	Date: 1/25/08
SPECIAL CERTIFICATION REQUIRED: YES (NO)		WOHL	Company	Company

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: 1/23/08 PAGE: 1 OF 1

PLI Accession #: 801168

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: Martin Nee

COMPANY: Lodestar

ADDRESS: 26 CR 3500
Flora Vista NM 87415

PHONE: 505-334-2791 505-320-9675

FAX:

BILL TO: Bill Robertson

COMPANY: Giant

ADDRESS: 111 CR 4990
Bloomfield NM 87413

SAMPLE ID	DATE	TIME	MATRIX	LAB I.D.
MW-4	012208	1040	GW	01
mw-2	012208	1145	GW	02
mw-3	012208	1245	GW	03
mw-7	012208	1357	GW	04
mw-5	012208	1445	GW	05
mw-6	012208	1542	GW	06
Trip blank	012208	0730	WQ	07

ANALYSIS REQUEST

	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX) ~~8015 (Gasoline)~~ MTBE	8021 (BTEX) ☐MTBE ☐TMB ☐PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	8021 (CUST)	504.1 EDB ☐/DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics ☐PBMS	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides/PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry: pH, SO4 Cl Alk, Gr, TDS, EC, cations	Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method1311)	Metals: Ca, Mg, K, Na, Fe, Mn Hardness	NUMBER OF CONTAINERS
MW-4				X														X	X				X	X	5
mw-2				X														X	X				X	X	5
mw-3				X														X	X				X	X	5
mw-7				X														X	X				X	X	5
mw-5				X														X	X				X	X	5
mw-6				X														X	X				X	X	5
Trip blank				X																			X		1

WEEKEND ANALYSES MAY RESULT IN AN ADDITIONAL SURCHARGE - PLEASE INQUIRE.

PROJECT INFORMATION

PROJ. NO.:

PROJ. NAME: Bloomfield Crude Station

P.O. NO.:

SHIPPED VIA: UPS

SAMPLE RECEIPT

NO CONTAINERS	32
CUSTODY SEALS	Y (N) NA
RECEIVED INTACT	Yes
BLUE ICE (ICE)	4.8°

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐24hr* ☐48hr* ☐72hr* ☐1 WEEK (NORMAL) ☒
*NOT AVAILABLE ON ALL ANALYSES

CERTIFICATION REQUIRED ☐ NM ☐ SDWA ☐ AZ ☐ OTHER

METHANOL PRESERVATION ☐ METALS ☐ TOTAL ☐ DISSOLVED

COMMENTS: 8021 BTEX ONLY

RELINQUISHED BY: 1.

Signature: Troy Urban Time: 1345

Printed Name: Troy Urban Date: 1/23/08

Company: Lodestar Services

See Reverse side (Force Majeure)

RECEIVED BY: 1.

Signature: Time:

Printed Name: Date:

Company:

RELINQUISHED BY: 2.

Signature: Time:

Printed Name: Date:

Company:

RECEIVED BY: (LAB) 2.

Signature: Time: 1200

Printed Name: Date: 1/24/08

Pinnacle Laboratories Inc.

Cation-Anion Balance Worksheet

Accession Number: 801168-01

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	458		
Chloride	0	0.02821	0.00000
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	1790	0.02082	37.26780
Carbonate	0	0.03333	0.00000
Bi-Carbonate	457	0.01639	7.49023
	Total Anions =		**44.75803**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	394	0.04990	19.66060
Potassium	3.55	0.02558	0.09081
Magnesium	41.2	0.08229	3.39035
Sodium	637	0.04350	27.70950
Copper		0.03147	0.00000
Iron	2.72	0.05372	0.14612
Manganese	5.41	0.03640	0.19692
Zinc		0.03059	0.00000
	Total Cations =		**51.1942994**

Anion/Cation Balance (% difference) =	6.7%	
Total Anions+Cations =	3149 mg/l	(calculated)
Total Dissolved Solids =	3710 mg/l	(measured)
TDS/ion sum ratio =	1.18	
Electrical Cond =	4500 umh/cm	(measured)
TDS/EC ratio =	0.824	

Cation-Anion Balance Worksheet

Accession Number: 801168-02

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	534		
Chloride	42.3	0.02821	1.19328
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	2460	0.02082	51.21720
Carbonate	0	0.03333	0.00000
Bi-Carbonate	534	0.01639	8.75226
	Total Anions =		**61.162743**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	463	0.04990	23.10370
Potassium	2.93	0.02558	0.07495
Magnesium	49.5	0.08229	4.07336
Sodium	739	0.04350	32.14650
Copper		0.03147	0.00000
Iron	10.7	0.05372	0.57480
Manganese	6.76	0.03640	0.24606
Zinc		0.03059	0.00000
	Total Cations =		**60.2193724**

Anion/Cation Balance (% difference) =	0.8%	
Total Anions+Cations =	4095 mg/l	(calculated)
Total Dissolved Solids =	4350 mg/l	(measured)
TDS/ion sum ratio =	1.06	
Electrical Cond =	5100 umh/cm	(measured)
TDS/EC ratio =	0.853	

Cation-Anion Balance Worksheet

Accession Number: 801168-03

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	627		
Chloride	34.8	0.02821	0.98171
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	1690	0.02082	35.18580
Carbonate	1.32	0.03333	0.04400
Bi-Carbonate	626	0.01639	10.26014
	Total Anions =		**46.4716436**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	419	0.04990	20.90810
Potassium	2.36	0.02558	0.06037
Magnesium	39.8	0.08229	3.27514
Sodium	594	0.04350	25.83900
Copper		0.03147	0.00000
Iron	1.91	0.05372	0.10261
Manganese	0.394	0.03640	0.01434
Zinc		0.03059	0.00000
	Total Cations =		**50.1995576**

Anion/Cation Balance (% difference) =	3.9%		
Total Anions+Cations =	3158	mg/l	(calculated)
Total Dissolved Solids =	3600	mg/l	(measured)
TDS/ion sum ratio =	1.14		
Electrical Cond =	4330	umh/cm	(measured)
TDS/EC ratio =	0.831		

Cation-Anion Balance Worksheet

Accession Number: 801168-04

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	748		
Chloride	18.1	0.02821	0.51060
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	50.9	0.02082	1.05974
Carbonate	0	0.03333	0.00000
Bi-Carbonate	747	0.01639	12.24333
	Total Anions =		**13.813669**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	139	0.04990	6.93610
Potassium	1.2	0.02558	0.03070
Magnesium	15.4	0.08229	1.26727
Sodium	120	0.04350	5.22000
Copper		0.03147	0.00000
Iron	14.4	0.05372	0.77357
Manganese	1.6	0.03640	0.05824
Zinc		0.03059	0.00000
	Total Cations =		**14.28587**

Anion/Cation Balance (% difference) =	1.7%		
Total Anions+Cations =	809	mg/l	(calculated)
Total Dissolved Solids =	810	mg/l	(measured)
TDS/ion sum ratio =	1.00		
Electrical Cond =	1320	umh/cm	(measured)
TDS/EC ratio =	0.614		

Cation-Anion Balance Worksheet

Accession Number: 801168-05

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	933		
Chloride	109	0.02821	3.07489
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	1310	0.02082	27.27420
Carbonate	0	0.03333	0.00000
Bi-Carbonate	932	0.01639	15.27548
	Total Anions =		**45.62457**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	585	0.04990	29.19150
Potassium	5.11	0.02558	0.13071
Magnesium	51.5	0.08229	4.23794
Sodium	834	0.04350	36.27900
Copper		0.03147	0.00000
Iron	1.32	0.05372	0.07091
Manganese	10.7	0.03640	0.38948
Zinc		0.03059	0.00000
	Total Cations =		**70.2995392**

Anion/Cation Balance (% difference) = 21.3%

Total Anions+Cations =	3466 mg/l	(calculated)
Total Dissolved Solids =	4780 mg/l	(measured)
TDS/ion sum ratio =	1.38	
Electrical Cond =	6750 umh/cm	(measured)
TDS/EC ratio =	0.708	

Cation-Anion Balance Worksheet

Accession Number: 801168-06

Anions	Result (mg/l)	Factor	Total (me/l)
Alkalinity	1140		
Chloride	105	0.02821	2.96205
Fluoride		0.05264	0.00000
Nitrate as N		0.01613	0.00000
Sulfate	312	0.02082	6.49584
Carbonate	1.25	0.03333	0.04166
Bi-Carbonate	1140	0.01639	18.68460
Total Anions =			**28.1841525**

Cations	Result (mg/l)	Factor	Total (me/l)
Calcium	195	0.04990	9.73050
Potassium	2.83	0.02558	0.07239
Magnesium	25.6	0.08229	2.10662
Sodium	442	0.04350	19.22700
Copper		0.03147	0.00000
Iron	24.5	0.05372	1.31614
Manganese	2.62	0.03640	0.09537
Zinc		0.03059	0.00000
Total Cations =			**32.5480234**

Anion/Cation Balance (% difference) =	7.2%	
Total Anions+Cations =	1794 mg/l	(calculated)
Total Dissolved Solids =	1920 mg/l	(measured)
TDS/ion sum ratio =	1.07	
Electrical Cond =	2840 umh/cm	(measured)
TDS/EC ratio =	0.676	

Appendix B

Sparge Well Installation Logs

Lodestar Services, Incorporated
PO Box 3861 Farmington, NM 87499-3861 Office (970)-946-1093

RECORD OF SUBSURFACE EXPLORATION

LodeStar Services
P.O. Box 4465
Durango, CO 81302
303-917-6288

Borehole #: 1
Well #:
Page: 1 of 2
Project Number:
Project Name: Air Sparge Well Installation
Project Location: Bloomfield Crude Station

Borehole Location:
GWL Depth: 14.9
Drilled By: Envirotech
Well Logged By: Ashley Ager
Date Started: 10/9/2006
Date Completed: 10/9/2006

Drilling Method: Hollow Stem Auger
Air Monitoring Method: PID

Depth (feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description	Air Monitoring	Drilling Conditions
0		0-7'	cuttings	Brown, poorly sorted, coarse sand w/gravel. Damp (b/c of recent rain)	0	Fast
5						
		7-9'	cuttings	Dark brown, poorly sorted coarse sand, dry, no gravel	0	Fast
10		9-22'	cuttings	Brownish gray, silty clay, damp	365	Fast
15				15' = wet, saturated silt		
20						

Comments:

Geologist Signature: *Ashley L. Ager*

RECORD OF SUBSURFACE EXPLORATION

LodeStar Services
P.O. Box 4465
Durango, CO 81302
303-917-6288

Borehole #: 1
Well #:
Page: 2 of 2
Project Number:
Project Name: Air Sparge Well Installation
Project Location: Bloomfield Crude Station

Borehole Location:
GWL Depth: 14.9
Drilled By: Envirotech
Well Logged By: Ashley Ager
Date Started: 10/9/2006
Date Completed: 10/9/2006

Drilling Method: Hollow Stem Auger
Air Monitoring Method: PID

Depth (feet)	Sample Number	Sample Interval	Sample Type & Recovery (inches)	Sample Description	Air Monitoring	Drilling Conditions
20 25 30 35 40		22-25'	cuttings	Dark gray silty clay, saturated	422	Fast

Comments:

Geologist Signature: *Ashley L. Ager*

MONITORING WELL INSTALLATION RECORD

Borehole # 1
Well #
Page 1 of 1

Lodestar Services, Inc
PO Box 3861
Farmington, New Mexico 87499
(505) 334-2791

Project Name: Air Sparge Well Installation
Project Number: Cost Code:
Project Location: Bloomfield Crude Station

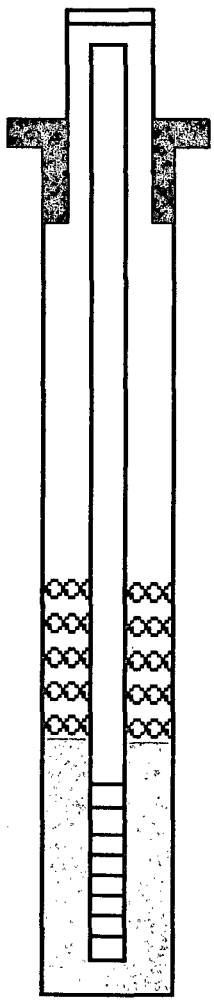
Elevation:
Well Location:
GWL Depth: 14.9
Installed By: Envirotech

On-Site Geologist: Ashley Ager
Personnel On-Site:
Contractors On-Site: Kelly Padilla and assistant
Client Personnel On-Site:

Date/Time Started: 10/09/06, 13:00
Date/Time Completed: 10/09/06, 15:30

Depths in Reference to Ground Surface

Item	Material	Depth (feet)
Top of Protective Casing	Steel	NA
Bottom of Protective Casing		NA
Top of Permanent Borehole Casing	Sch. 40 PVC	2.5
Bottom of Permanent Borehole Casing		-25
Top of Concrete		NA
Bottom of Concrete		NA
Top of Grout		0
Bottom of Grout		-12
Top of Well Riser	Sch. 40 PVC	2.5
Bottom of Well Riser		-23.9
Top of Well Screen	Sch. 40 PVC	-23.9
Bottom of Well Screen		-24.9
Top of Peltonite Seal	Bentonite Pods	-12
Bottom of Peltonite Seal		-22
Top of Gravel Pack	Sand	-22
Bottom of Gravel Pack		-25
Top of Natural Cave-In		NA
Bottom of Natural Cave-In		NA
Top of Groundwater		-14.9
Total Depth of Borehole		-25



Top of Protective Casing NA
Top of Riser 2.5
Ground Surface 0
Top of Seal -12
Top of Gravel Pack -22
Top of Screen -23.9
Bottom of Screen -24.9
Bottom of Borehole -25

Comments: 50 lb bags of sand used: 2.5 ea. , 3 gal bucket of bentonite used: 1ea., 50 lb bag of grout used: 3 ea.

Geologist Signature Ashley L. Ager

Appendix C

Bioventing Data Tables

Lodestar Services, Incorporated
PO Box 3861 Farmington, NM 87499-3861 Office (970)-946-1093

Bioventing Data Table: Carbon Dioxide Concentrations at Monitoring Points (percent)

	2/10/03	2/17/03 1332 hours	2/17/03 1601 hours	2/18/03	2/19/03	2/21/03	2/24/03	2/25/03	3/5/03	3/19/03	10/21/03	1/20/04	Average Concentration During Operations	Percentage of Pretest Reading
IP10	1.8	5.8	5.4	7.6	6	5.6	7.8	7.8	5.4	8.8	11.5	0	6.52	362%
IP11	0	0	0	0	0	0	0	0	0	0	10	1.3	1.03	
IP13	0.2	0.2	2	1.8	1.4	2	1.8	1.8	2.9	2.6	0.4	2.2	1.74	868%
IP14	1	2.8	9.2	2.8	7.4	9.4	4.2	6.6	7.2	5.4	9.6	10.6	6.84	684%
IP15	0.8	0.2	2.4	1.2	0	0	0	0.8	0.6	0.8	1.8	5.5	1.21	151%
IP17	1	0.6	1	1	1.2	0.8	1	0.8	0.8	1.2	2.2	1.5	1.10	110%
IP19	0.4	1.4	1.8	1.2	1.6	1	1.8	1.6	1.6	0.2	0.8	0.6	1.24	309%
IP20	0.6	3.2	3.2	3.6	3.8	4.2	4.8	4.6	5.8	8	15.2	13.6	6.36	1061%
IP21	1.4	0.6	1	0.8	1	0.6	0.8	1	1.2	2	0.9	3.3	1.20	86%
IP22	0.4	1	1	1.2	0.8	0.2	0.8	1	1.2	1.6	0	1.5	0.94	234%
IP23	0.6	0.4	0.8	0.6	0.6	0.4	0.6	0.6	0.6	1	0.5	1.2	0.66	111%
IP8	0.8	10.8	14.2	13	14.4	13.4	6.2	14	14.6	15.8	17.1	14.2	13.43	1678%
MP14	1	3.6	3.6	3	3.4	3.4	2.2	2.8	3.2	4	1.1	6.4	3.34	334%
MP15	0.6	2	1.2	2.4	1.8	1.4	1.6	2	2.2	2.2	1.5	1.7	1.82	303%
MP16	0.06	0.8	1.4	1	1.2	0.8	1.2	1.2	1	1.4	0.4	0.3	0.97	1621%
MP4	1.2	10.4	11.4	10.4	11	11	10	10.6	10.2	12	20	15.5	12.05	1004%
MP7	1.4	4.4	7	7.8	8.2	5.6	5.4	4.4	7.2	8.4	3.2	0	5.60	400%
MP9	1	1.2	1.8	1.6	2	1.2	1.2	1.4	1.6	2	4	2.8	1.89	189%
Ave.	0.79	2.74	3.80	3.39	3.66	3.39	2.86	3.50	3.74	4.30	5.57	4.57	3.77	559%

System was started on 2/17/03 0900 hrs

Bioventing Data Table: Carbon Dioxide Concentrations at Monitoring Points (percent)

	4/29/04	7/28/04	10/19/04	1/12/05	Average Concentration During 2004	Percentage of Pretest Reading	Percentage of 2003 Reading
IP10	7.6	15.9	12.9	7.4	10.95	608%	168%
IP11	1.3	15.0	23.3	8.0	11.90		1158%
IP13	1.4	0.3	2.5	1.3	1.38	688%	79%
IP14	12.5	4.3	7.0	16.4	10.05	1005%	147%
IP15	0.0	1.2	0.1	0.0	0.33	41%	27%
IP17	1.3	0.7	1.2	1.8	1.25	125%	114%
IP19	na	na	na	3.5	3.50	875%	283%
IP20	12.6	2.6	10.9	7.5	8.40	1400%	132%
IP21	2.8	1.9	2.7	1.4	2.20	157%	183%
IP22	1.8	1.9	2.0	1.7	1.85	463%	198%
IP23	0.6	1.2	0.5	na	0.77	128%	116%
IP8	9.5	0.2	17.1	15.5	10.58	1322%	79%
MP14	7.3	2.4	13.5	8.7	7.98	798%	239%
MP15	2.1	3.8	3.0	5.8	3.68	613%	202%
MP16	0.9	2.5	0.4	1.8	1.40	2333%	144%
MP4	12.8	2.6	26.9	15.5	14.45	1204%	120%
MP7	7.2	0.7	16.9	8.2	8.25	589%	147%
MP9	0.2	2.1	1.4	0.2	0.98	98%	52%
Ave.	**4.55**	**3.29**	**7.91**	**5.82**	5.55	732%	199%

Bioventing Data Table: Carbon Dioxide Concentrations at Monitoring Points (percent)

	4/27/05	7/28/05	10/25/05	Average Concentration During 2005	Percentage of Pretest Reading	Percentage of 2004 Reading
IP10	2.0	6.9	5.7	4.87	271%	41%
IP11	12.1	0.3	1.0	4.47		38%
IP13	3.0	0.2	3.0	2.07	1035%	150%
IP14	8.9	14.2	18.1	13.73	1373%	137%
IP15	0.6	0.0	0.8	0.47	59%	142%
IP17	1.7	0.4	4.3	2.13	213%	170%
IP19	2.8	1.7	2.6	2.37	593%	68%
IP20	5.5	5.0	6.9	5.80	967%	69%
IP21	1.5	0.7	1.9	4.10	293%	186%
IP22	2.8	0.1	4.1	2.33	583%	126%
IP23	2.1	0.1	3.9	2.03	338%	264%
IP8	10.3	0.1	0.1	3.50	438%	33%
MP14	7.8	2.9	5.3	5.33	533%	67%
MP15	4.9	0.7	4.7	3.43	572%	93%
MP16	0.8	0.5	3.0	1.43	2383%	102%
MP4	17.5	0.0	1.5	6.33	528%	44%
MP7	2.4	0.0	10.2	4.2	300%	51%
MP9	2.1	0.4	2.0	1.5	150%	153%
Ave.	**4.3**	**1.9**	**4.4**	3.53	609%	107%

Note: Due to pump failure, no readings are available for the fourth quarter of 2005.

Bioventing Data Table: Carbon Dioxide Concentrations at Monitoring Points (percent)

	4/20/06	7/25/06	10/25/06	1/31/07	Average Concentration During 2006	Percentage of Pretest Reading	Percentage of 2005 Reading
IP1		6.5	0.5	2.0	3.0		
IP5		1.4	6.6	0.7	2.9		
IP6		11.2	6.1	5.6	7.6		
IP7		14	15.1	3.4	10.8		
IP8	14.4				14.4	1800%	411%
IP10	5.9	21	24.6	5.0	14.13	785%	290%
IP11		1.3			1.3		29%
IP12		1.1	2.9	1.9	2.0		
IP13	0.1	1.3	5.7	1.6	2.2	1086%	105%
IP14	4.8	1.9	7.8	4.5	4.8	475%	35%
IP15	0.1	0	1.5	0.6	0.6	69%	117%
IP17	0.2	0.9	1.9	1.1	1.0	103%	48%
IP18		0	7.5	1.7	3.1		
IP19	0.1	0	1.6	2.0	0.9	231%	39%
IP20	2.9	0	2.5	1.7	1.8	296%	31%
IP21	1.4	0	1.3	0.7	0.9	61%	21%
IP22	0.2	0.5	3.0	0.8	1.1	281%	48%
IP23	0.2	0	2.5	0.9	0.9	150%	44%
MP1		6.8	4.0	8.7	6.5		
MP4	14.9				14.9	350%	235%
MP6		1.5	8.6	5.1	5.1		
MP7	0.7				0.7	50%	17%
MP8		2.5	10.9	1.9	5.1		
MP9	0.3	1.2	2.7	0.9	1.3	128%	85%
MP10		1.8	6.5	4.6	4.3		
MP12		0	1.1	2.7	1.3		
MP13		0	3.2	3.4	2.2		
MP14	2.5	3	6.3	2.2	3.5	350%	66%
MP15	0.2	0	5.6	0.2	1.5	250%	44%
MP16	0.2	0	2.9	1.7	1.2	2000%	84%
Ave.	**2.8**	**2.9**	**5.5**	**2.5**	**3.4**	430%	114%

Blank data indicates the point was an injection point not a monitoring point at this time during the project

Bioventing Data Table: Carbon Dioxide Concentrations at Monitoring Points (percent)

	4/23/07	7/24/07	10/24/07	1/23/08	Average Concentration During 2007	Percentage of Pretest Reading	Percentage of 2006 Reading
IP1	3.7	5.8	0.9	0.6	2.8		
IP2		0	0.1	0.0	0.0		
IP3		0	0.1	0.0	0.0		
IP4		0	0.1	0.0	0.0		
IP5	1.8	2.3	0.1	0.1	1.1		
IP6	12.6	7.8	0.9	0.3	5.4		
IP7	9.9	0	0.1	0.0	2.5		
IP8		0	0.1	0.0	0.0	4%	0%
IP9		0.7	0	0.0	0.2		
IP10	17.3	8.5	0.1	0.1	6.5	361%	46%
IP11		0	0.1	0.0	0.0	0%	3%
IP12	5. 3	0	0.1	0.0	1.4		
IP13	0.7	0.9	0.1	0.1	0.5	225%	21%
IP14	3.8	3	0.6	0.7	2.0	203%	43%
IP15	0	0.3	0.1	0.0	0.1	13%	18%
IP16		0	0.1	0.0	0.0		
IP17	0.2	0.3	0.3	0.1	0.2	23%	22%
IP18	9.2	2.4	0.1	0.0	2.9		
IP19	1.9	2.9	0.6	0.1	1.4	344%	148%
IP20	2.3	1.1	0.3	0.1	1.0	158%	53%
IP21	0.1	0.3	0.2	0.0	0.2	11%	18%
IP22	0.8	0.8	0.1	0.0	0.4	106%	38%
IP23	M	0.4	0.2	0.0	0.2	33%	22%
MP1	5.3	2.7	0.4	0.0	2.1		
MP2		0	0.1	0.6	0.2		
MP3		0.4	0.7	0.5	0.5		
MP4	14.9	0	0.1	0.0	0.0	3%	0%
MP5		0	0.1	0.0	0.0		
MP6	14.2	4.1	0.7	0.0	4.8		
MP7		0	0.1	0.0	0.0	2%	5%
MP8	2.6	5.6	0.4	0.0	2.2		
MP9	0.2	0.9	0.2	0.0	0.3	33%	25%
MP10	11.7	0.1	0.7	0.3	3.2		
MP11	9.9	3	0.1	0.0	3.3		
MP12	0	0.3	0.6	0.2	0.3		
MP13	4.6	2	1.3	0.3	2.1		
MP14	1.8	2.2	0.1	0.2	1.1	108%	31%
MP15	2.6	3.1	0.1	0.0	1.5	242%	97%
MP16	0.6	2.1	2	0.0	1.2	1958%	98%
Ave.	**4.7**	1.6	0.3	0.1	1.3	167%	35%

Blank data indicates the point was an injection point not a monitoring point at this time during the project

Bioventing Data Table: Oxygen Concentrations in Monitoring Points (percent)

	2/10/03	2/17/03 1332 hrs	2/17/03 1601hrs	2/18/03	2/19/03	2/21/03	2/24/03	2/25/03	3/5/03	3/19/03	10/21/04	1/20/04	Average Concentration During Operations	Percentage of Pretest Reading
IP10	17.20	2.00	5.50	0.90	2.80	2.90	0.90	0.90	6.00	1.00	10.10	1.60	3.15	18%
IP11	20.90	20.90	20.90	20.90	20.90	20.90	20.90	20.90	20.00	20.90	9.20	18.20	19.51	93%
IP13	20.90	20.60	18.40	18.60	19.60	18.00	18.60	18.60	17.90	16.70	20.50	17.30	18.62	89%
IP14	19.90	15.70	1.70	14.70	5.60	0.90	10.40	6.50	3.10	3.30	0	1.60	5.77	29%
IP15	20.90	20.90	20.70	17.30	20.90	20.90	20.90	20.70	20.40	20.80	18.70	18.60	20.07	96%
IP17	20.90	20.60	20.80	20.30	20.60	20.90	20.90	20.80	20.70	20.40	19.60	19.20	20.44	98%
IP19	20.90	18.30	18.80	18.90	18.80	20.20	19.20	19.10	18.00	20.90	20.40	19.40	19.27	92%
IP20	20.50	14.00	14.00	13.30	10.40	2.20	3.20	3.00	2.20	0.90	0	1.50	5.88	29%
IP21	20.90	19.70	19.50	19.90	19.80	18.10	19.20	18.00	16.20	13.80	19.90	17.50	18.33	88%
IP22	20.90	19.60	20.80	19.90	20.40	20.90	20.90	20.30	19.80	19.10	21.10	18.70	20.14	96%
IP23	20.90	20.90	20.90	20.70	20.90	20.90	20.90	20.90	20.30	20.90	20.70	19.60	20.69	99%
IP8	20.20	4.60	2.10	4.00	2.90	3.30	11.50	1.80	2.00	2.20	0	1.40	3.25	16%
MP14	19.20	13.10	13.70	14.80	14.30	13.70	17.30	15.40	13.10	11.20	19.30	10.30	14.20	74%
MP15	20.90	17.90	18.10	19.90	18.50	19.70	20.30	18.80	17.60	18.50	19.30	13.80	18.40	88%
MP16	20.90	19.90	20.20	19.70	20.30	20.90	20.80	20.10	19.20	19.40	20.90	19.80	20.11	96%
MP4	19.00	1.10	1.00	3.40	2.60	1.80	3.00	1.70	3.10	3.40	0	0.20	1.94	10%
MP7	18.60	7.70	2.40	1.20	1.20	5.30	8.20	10.40	3.10	1.10	15.70	15.90	6.56	35%
MP9	20.50	19.40	19.30	19.00	18.90	19.90	20.60	19.30	18.80	18.40	16.00	17.70	13.13	64%
Ave.	20.23	15.38	14.38	14.86	14.41	13.97	15.43	14.29	13.42	12.94	13.97	12.91	13.86	67%

System was started on 2/17/03 0900 hrs

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Bioventing Data Table: Oxygen Concentrations in Monitoring Points (percent)

	4/29/2004	7/28/2004	10/19/04	1/12/2005	Average Concentration During 2004	Percentage of Pretest Reading	Percentage of 2003 Reading
IP10	11.40	11.30	15.20	11.60	12.38	72%	393%
IP11	18.60	5.40	-	10.50	8.63	41%	44%
IP13	19.70	20.30	17.30	18.50	18.95	91%	102%
IP14	-	18.00	-	-	4.50	23%	78%
IP15	20.20	18.90	20.10	20.50	19.93	95%	99%
IP17	19.40	19.70	19.30	18.40	19.20	92%	94%
IP19	na	na	na	16.2	16.20	78%	84%
IP20	2.20	14.30	4.10	8.10	7.18	35%	122%
IP21	18.10	17.20	18.20	18.90	18.10	87%	99%
IP22	17.90	14.70	17.70	19.70	17.50	84%	87%
IP23	19.60	19.30	19.10	na	19.33	93%	93%
IP8	0.50	18.50	-	0.20	4.80	24%	147%
MP14	4.80	16.10	4.20	8.10	8.30	43%	58%
MP15	17.90	14.90	14.70	12.00	14.88	71%	81%
MP16	19.70	18.00	19.70	18.40	18.95	91%	94%
MP4	1.90	19.40	-	3.30	6.15	32%	318%
MP7	6.60	19.20	-	5.60	7.85	42%	120%
MP9	19.90	17.60	17.80	20.20	18.88	92%	144%
Ave.	12.85	16.64	11.02	12.36	13.43	66%	125%

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Bioventing Data Table: Oxygen Concentrations in Monitoring Points (percent)

	4/27/2005	7/28/2005	10/25/05	Average Concentration During 2005	Percentage of Pretest Reading	Percentage of 2004 Reading
IP10	0	14.4	0	4.8	28%	39%
IP11	0	20.6	19.9	13.5	65%	156%
IP13	16.7	20.4	17.7	18.3	88%	97%
IP14	7.8	2.4	0	3.4	17%	76%
IP15	20.2	21.1	19.7	20.3	97%	102%
IP17	19.3	20.6	17.2	19.0	91%	99%
IP19	16.9	19	18.4	18.1	87%	112%
IP20	13.0	15.0	12.5	13.5	66%	188%
IP21	19.9	20.5	18.8	19.7	94%	109%
IP22	16.6	20.9	16.8	18.3	88%	105%
IP23	17.9	20.9	17.3	18.7	89%	97%
IP8	0	0	0.1	0.03	0.1%	0.01%
MP14	13.2	17.8	11.3	14.1	73%	17%
MP15	10.8	19.6	12.1	14.2	68%	95%
MP16	19.9	20.7	18.0	19.5	93%	103%
MP4	0.7	5.2	0	2.0	105%	33%
MP7	19.6	16.9	6.2	14.2	76%	181%
MP9	18.5	20.4	19.1	19.3	94%	102%
Ave.	12.8	16.5	12.5	13.9	73%	95%

Note: Due to pump failure, no readings are available for the fourth quarter of 2005.

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Bioventing Data Table: Oxygen Concentrations at Monitoring Points (percent)

	4/20/06	7/25/06	10/25/06	1/31/07	Average Concentration During 2006	Percentage of Pretest Reading	Percentage of 2005 Reading
IP1		11.4	19.9	16	15.8		
IP5		15.4	7.6	19.6	14.2		
IP6		2.4	13.1	13.0	9.5		
IP7		1.9	4.9	15.7	7.5		
IP8	0				0	0%	0%
IP10	15.6	0	0	13	7.2	42%	149%
IP11	19.6				19.6	94%	145%
IP12		15.8	16.8	18.9	17.2		
IP13	20.2	17.8	14.8	18.7	17.9	86%	98%
IP14	14	19.7	12.9	5.7	15.6	78%	458%
IP15	20.3	20	19.4	20.1	20	95%	98%
IP17	20.1	18.6	19	19.8	19.4	93%	102%
IP18		19.9	8.2	18.4	15.5		
IP19	20.6	19.4	19	18.6	19.4	93%	107%
IP20	17.7	20.1	16	17.4	17.8	87%	132%
IP21	20.2	18	17.2	19.2	18.7	89%	95%
IP22	20.6	18.6	17.8	19.8	19.2	92%	105%
IP23	20.5	18.4	18.5	20	19.35	93%	103%
MP1		11.9	16.6	8	12.2		
MP4	0				0	0%	0%
MP6		12.7	3	13.7	9.8		
MP7	18.5				18.5	99%	130%
MP8		12.5	6.2	18.4	12.4		
MP9	20.1	17.3	18.2	19.8	18.9	92%	98%
MP10		17	11.7	11	13.2		
MP12		20.3	19.2	16.4	18.6		
MP13		20.3	15.8	14.9	17		
MP14	18	15	13	17.6	15.9	83%	113%
MP15	20.5	19.2	13.6	20.3	18.4	88%	130%
MP16	20.4	19.2	18.3	19.2	19.3	92%	99%
Ave.	**17.1**	**15.5**	**13.9**	**17.0**	**14.9**	74%	107%

Blank data indicates the point was an injection point not a monitoring point at this time during the project

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Bioventing Data Table: Oxygen Concentrations at Monitoring Points (percent)

	4/23/07	7/24/07	10/24/07	1/23/08	Average Concentration During 2007	Percentage of Pretest Reading	Percentage of 2006 Reading
IP1	15.1	14.2	19.5	19.6	17.1		
IP2		20.2	20.8	20.6	20.5		
IP3		19.8	20.7	20.1	20.2		
IP4		20.1	20.8	20.7	20.5		
IP5	18	17.3	20.7	20.6	19.2		
IP6	6.7	13.5	19.9	20.3	15.1		
IP7	10.7	20	20.8	20.6	18.0		
IP8		20	20.8	20.6	20.5	101%	0%
IP9		13.2	20.6	20.6	18.1		
IP10	5.2	12	20.6	20.3	14.5	84%	203%
IP11		20	20.7	20.6	20.4	98%	104%
IP12	12.3	20	20.8	20.6	18.4		
IP13	19.1	18	20.7	20.3	19.5	93%	109%
IP14	16.9	17.3	20.3	19.6	18.5	93%	119%
IP15	20.2	19.7	20.7	20.5	20.3	97%	102%
IP16		20.1	20.9	20.5	20.5		
IP17	20.3	19.4	20.4	20.4	20.1	96%	104%
IP18	11.3	17.8	20.9	20.3	17.6		
IP19	18.4	17	20.6	20.4	19.1	91%	98%
IP20	16.4	18.5	20.8	20.2	19.0	93%	107%
IP21	19.5	19.1	20.8	20.4	20.0	95%	107%
IP22	19.4	19.1	20.9	20.6	20.0	96%	104%
IP23		19.2	20.9	20.5	20.2	97%	104%
MP1	13.5	17.2	20.4	20.6	17.9		
MP2		20	20.6	20.6	20.4		
MP3		13.2	18.3	19.6	17.0		
MP4		20	20.8	20.6	20.5	108%	0%
MP5		20.2	50.6	20.7	30.5		
MP6	6.7	15.7	19.9	20.6	15.7		
MP7		20.1	20.7	20.6	20.5	110%	111%
MP8	14.6	16.8	20.4	20.4	18.1		
MP9	19.8	18	20.4	20.3	19.6	96%	104%
MP10	7.6	19.4	20	20.3	16.8		
MP11	10	17.3	20.9	20.5	17.2		
MP12	19.9	18.5	20.1	20.2	19.7		
MP13	12.8	16.6	19.6	20.1	17.3		
MP14	18.1	17	20.9	20.2	19.1	99%	120%
MP15	18.4	16.6	21	20.6	19.2	92%	104%
MP16	19.6	17.8	19.3	20.5	19.3	92%	100%
Ave.	**14.6**	**17.9**	**21.2**	**20.4**	**19.1**	95%	121%

Blank data indicates the point was an injection point not a monitoring point at this time during the project

Lodestar Services, Incorporated
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Appendix D

Summary of Groundwater Analyses

Summary of Groundwater Analytical Results for BTEX - September 1994 Through January 2008

NMWQCC Standards		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
		10	750	750	620
MW-2	Sep-94	**640**	600	82	**690**
	Apr-95	**220**	280	53	430
	Sep-99	NSP	NSP	NSP	NSP
	Dec-99	NSP	NSP	NSP	NSP
	May-01	NSP	NSP	NSP	NSP
	May-02	NSP	NSP	NSP	NSP
	Jan-03	**1700**	ND	650	**3200**
	Jan-04	**1100**	ND	340	**1800**
	Jan-05	**430**	ND	360	**1000**
	Jan-06	**250**	ND	410	**790**
	Sept-06	**230**	50	290	**640**
	Jan-07	8.7	9.7	16	55
	Aug-07	4.2	20	30	68
	Oct-07	0.87	18	120	180
	Jan-08	4.4	45	24	100
MW-3	Sep-94	ND	ND	ND	ND
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	0.8	ND	ND	ND
	Jan-08	ND	ND	ND	ND
MW-4	Sep-94	2.1	ND	ND	1.2
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	ND
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	ND	ND	ND	ND
	Jan-08	ND	ND	ND	ND
MW-5	Sep-94	NS	NS	NS	NS
	Apr-95	ND	ND	ND	ND
	Sep-99	ND	ND	ND	ND

NMWQCC Standards		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
		10	**750**	**750**	**620**
	Dec-99	ND	ND	ND	ND
	May-01	ND	ND	ND	ND
	May-02	ND	ND	ND	ND
	Jan-03	ND	ND	ND	ND
	Jan-04	ND	ND	ND	1.1
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	ND	ND
	Jan-07	ND	ND	ND	ND
	Jan-08	ND	ND	ND	ND
MW-6	May-01	**12**	15	13	83
	May-02	ND	ND	0.53	1.4
	Oct -02	ND	ND	ND	3.2
	Jan-03	6.0	20	87	350
	Jul-03	ND	2.7	3.2	16
	Sept-03	0.8	3.7	4.0	24
	Jan-04	0.9	1.6	2.9	16
	Jan-05	ND	ND	ND	ND
	Jan-06	ND	ND	14	32
	Jan-07	ND	ND	3.6	9.1
	Jan-08	0.9	11	130	930*
MW-7	May-01	**2,400**	ND	380	**2,800**
	June-02	**2,000**	ND	140	**1,100**
	Oct-02	**1100**	ND	79	490
	Jan-03	**3200**	ND	400	**3100**
	Jan-04	**3300**	ND	460	**3300**
	Jan-05	**1600**	ND	220	**1500**
	Jan-06	**1400**	ND	280	**1500**
	Jan-07	**1200**	ND	450	**2500**
	Jan-08	**750**	ND	520	**3100**

*Reported from a 5X dilution run on 01/28/08.

Notes:
µg/L = micrograms per liter
ND = not detected
NS = not sampled
NSP = not sampled due to product in well
*MW-1 was not screened within the aquifer
**MW-6 and MW-7 were installed in May 2001
NMWQCC = New Mexico Water Quality Control Commission

Summary of Groundwater Analytical Results for General Water Chemistry

		Lab pH (su)	Conductivity (µmhos/cm)	TDS (mg/L)	Alkalinity ($CaCO_3$) (mg/L)	Hardness ($CaCO_3$) (mg/L)	Sodium Absorption Ratio	Bicarbonate (HCO_3) (mg/L)	Carbonate (CO_3) (mg/L)	Hydroxide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)
NMWQCC Standards		6-9	No Std	1,000	No Std	No Std	No Std	No Std	No Std	No Std	250	600	No Std	No Std	No Std	No Std
MW2	1994	6.6	4,920	3,049	957	NT	11.785	1,170	0	0	1,050	245	325	30	1.4	828
	2001	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP
	2002	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP	NSP
	2003	7	3230	3220	1520	416	NT	1850	<1	<1	51	369	133	20	1	660
	2004	7	3100	2000	1500	420	NT	1500	<1	<1	85	130	140	18	3	680
	2005	7.6	3000	2000	1300	430	NT	1300	7	<1	110	58	140	19	3.8	620
	2006	7.4	3400	2000	1400	440	NT	1400	4.3	<1	130	150	150	18	2.4	610
	2007	7.4	5490	4580	726	1190	NT	724	2.57	<1	43.5	2460	476	59.5	12.5	869
	2008	7.5	5100	4350	543	1220	NT	534	<1	<1	42.3	2468	463	49.5	2.93	739
MW3	1994	7.1	4,250	3,413	521	NT	8.147	635	0	0	48	1,920	439	37	1.4	661
	2001	7.3	4,500	3,960	459	1,220	NT	559	<1	<1	78	2,250	423	40.4	2.5	711
	2002	7	4,440	3,820	358	1,290	NT	437	<1	<1	46	2,520	446	43	0.6	705
	2003	7	4320	3660	560	1230	NT	683	<1	<1	56	2330	428	39.4	1.6	671
	2004	7.3	4500	4000	560	1400	NT	560	1	<1	44	2300	320	44	3.6	780
	2005	7.4	4700	2000	560	1400	NT	560	1	<1	37	2100	450	47	3.9	690
	2006	7.5	5100	3600	580	1300	NT	580	1.5	<1	37	2200	450	47	3.7	680
	2007	7.5	4780	3750	565	1120	NT	563	1.92	<1	36.2	1920	449	43	10.3	649
	2008	7.5	4330	3600	627	1090	NT	626	1.32	<1	34.8	1690	419	39.8	2.36	594
MW4	1994	7.0	5,420	4,389	576	NT	10.883	703	0	0	175	2,470	439	53	3.5	907
	2001	7.1	5,090	4,630	490	1,460	NT	597	<1	<1	77	2,680	500	52.5	4.2	900
	2002	6.9	5,140	4,420	358	1,310	NT	437	<1	<1	47	2,930	449	47	2.6	873
	2003	7	4460	3850	400	1070	NT	488	<1	<1	40	2570	361	40.8	2.8	667
	2004	7.3	4500	3900	400	1200	NT	400	3	<1	27	2500	390	44	6.7	810
	2005	7.3	4900	4000	420	1300	NT	420	1	<1	30	2200	450	49	10	740
	2006	7.4	5400	3700	450	1200	NT	450	5.9	<1	31	2500	410	47	7	790

NMWQCC Standards		Lab pH (su)	Conductivity (µmhos/cm)	TDS (mg/L)	Alkalinity ($CaCO_3$) (mg/L)	Hardness ($CaCO_3$) (mg/L)	Sodium Absorption Ratio	Bicarbonate (HCO_3) (mg/L)	Carbonate (CO_3) (mg/L)	Hydroxide (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)
		6-9	No Std	1,000	No Std	No Std	No Std	No Std	No Std	No Std	250	600	No Std	No Std	No Std	No Std
	2007	7.2	4700	3690	455	1020	NT	454	1.17	<1	54.5	1730	410	43.3	12.1	678
	2008	7.6	4500	3710	458	1040	NT	457	<1	<1	<5	1790	394	41.2	3.55	637
MW5	1994	6.9	6,000	4,410	775	NT	8.84	945	0	0	996	1,390	634	51	6.6	861
	2001	6.7	7,000	5,230	757	2,010	NT	923	<1	<1	1,320	1,230	700	63.2	5.6	924
	2002	6.5	6,880	4,810	567	1,880	NT	692	<1	<1	1,200	1,230	661	55.3	4.9	855
	2003	6.6	6910	5080	830	1780	NT	1010	<1	<1	1090	1330	616	58.1	4.8	829
	2004	6.8	6700	4600	840	2000	NT	840	1	<1	1300	1400	690	57	11	1000
	2005	7.0	6800	4800	870	1900	NT	870	<1	<1	1100	1200	670	60	10	910
	2006	7.1	8000	4300	990	1800	NT	990	<1	<1	1000	1200	630	58	12	920
	2007	7.3	6630	4750	915	1320	NT	914	1.11	<1	884	1800	621	57.6	16.6	896
	2008	7.1	6750	4780	933	1510	NT	932	<1	<1	109	1310	585	51.5	5.11	834
MW6	2001	6.9	5,470	4,580	740	1,550	NT	903	<1	<1	80	2,780	534	53.3	6.3	1,030
	2002	6.8	4,460	3,560	669	932	NT	816	<1	<1	55	1,900	319	33	2.5	830
	2003	7	3070	2180	1140	602	NT	1390	<1	<1	79	540	203	23.1	2.1	514
	2004	7.2	4100	3000	1000	1100	NT	1000	<1	<1	96	1400	390	63	29	870
	2005	7.2	4100	3000	1100	670	NT	1100	2	<1	93	940	220	28	6.7	670
	2006	7.2	7000	4500	800	1400	NT	800	3.6	<1	82	2600	440	68	24	1200
	2007	7.1	7460	6070	678	1320	NT	676	2.23	<1	57.5	3140	529	65.1	17.3	1500
	2008	7.5	2840	1920	1140	533	NT	1140	1.25	1.25	<1	312	195	25.6	2.83	442
MW7	2001	6.7	2,160	1,710	600	843	NT	732	<1	<1	52	642	296	25.6	1.6	234
	2002	6.8	1,870	1,570	432	758	NT	527	<1	<1	20	700	258	27.8	2.2	151
	2003	6.7	1310	810	696	531	NT	849	<1	<1	35	57	152	36.8	1.0	126
	2004	6.8	1400	920	720	520	NT	720	<1	<1	13	120	170	23	7.0	170
	2005	7.0	1500	930	740	540	NT	740	1	<1	15	190	180	20	3.3	150
	2006	7.4	1800	1200	750	660	NT	750	3.2	<1	16	310	220	23	3.3	170
	2007	7.1	1460	858	638	402	NT	636	1.38	<1	22.4	127	161	20.2	8.84	124
	2008	7.3	1320	810	748	369	NT	747	<1	<1	18.1	50.9	139	15.4	1.2	120

Notes: s.u. = standard units
µmhos/cm = micromhos per centimeter
mg/L = milligrams per liter
NMWQCC = New Mexico Water Quality Control Commission
No Std = no standard
NS = not sampled; MW-1 was not screened within the aquifer
NSP = no sample collected due to product in the well
NT = not tested

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Summary of Groundwater Analytical Results for Polynuclear Aromatic Hydrocarbons (EPA 610) - September 1994

Units: µg/L	MW-3	MW-2	MW-4
Naphthalene	<0.5	8.9	<0.50
Acenaphthylene	<1.0	<1.0	<1.0
Acenaphthene	<0.50	<0.50	<0.50
Fluorene	<0.10	1.2	<0.10
Phenanthrene	<0.05	1.8	<0.05
Anthracene	<0.05	<0.05	<0.05
Fluoranthene	<0.10	1.2	<0.10
Pyrene	<0.10	<0.10	<0.10
Benzo(a)Anthracene	<0.10	<0.10	<0.10
Chrysene	<0.10	0.17	<0.10
Benzo(b)Fluoranthene	>0.10	<0.10	<0.10
Benzo(k)Fluoranthene	<0.10	<0.10	<0.10
Benzo(a)Pyrene	<0.10	<0.10	<0.10
Dibenzo(a,h)Anthracene	<0.20	<0.20	<0.20
Benzo(g,h,I)Perylene	<0.10	<0.10	<0.10
Indeno(1,2,3-CD)Pyrene	<0.10	<0.10	<0.10
1-Methylnaphthalene	<0.30	5.9	<0.30
1-Methylnaphthalene	<0.30	5.8	<0.30

Notes:
µg/L = micrograms per liter

Summary of Groundwater Analytical Results for Priority Pollutant Metals - September 1994

Metal	NMWQCC Standards	MW-2	MW-3	MW-4
Silver (mg/L)	0.05	<0.01	<0.01	<0.01
Arsenic (mg/L)	0.1	<0.005	<0.005	<0.005
Beryllium (mg/L)	No Std	<0.004	<0.004	<0.004
Cadmium (mg/L)	0.01	<0.0005	<0.0005	<0.0005
Chromium (mg/L)	0.05	0.010	<0.01	<0.01
Copper (mg/L)	1	0.012	<0.01	<0.01
Mercury (mg/L)	0.002	<0.0002	<0.0002	<0.0002
Nickel (mg/L)	0.2	<0.02	<0.02	<0.02
Lead (mg/L)	<0.05	<0.002	<0.002	<0.002
Antimony (mg/L)	No Std	<0.05	<0.05	<0.05
Selenium (mg/L)	0.05	<0.005	<0.005	<0.005
Thallium (mg/L)	No Std	<0.005	<0.005	<0.005
Zinc (mg/L)	10	0.032	0.023	0.026

Notes:
mg/L = milligrams per liter
NMWQCC = New Mexico Water Quality Control Commission
No Std = no standard