1R - 272

REPORTS

DATE:

2000

Highlander Environmental Corp.

Midland, Texas

June 19, 2000

Mr. Wayne Price
Environmental Bureau
New Mexico Oil Conservation Division
Energy, Minerals and Natural Resources Department
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: Addendum Subsurface Investigation Report for Open Abandoned Pit Designated as ATB 1-1 in Lovington Paddock/Lovington San Andres Unit, Operated by Pure Resources L.P., Lea County, New Mexico.

Dear Mr. Price,

Titan Exploration and Production, Inc. (Titan) has changed its company name to Pure Resources, L.P. and all future correspondence and reports will be from Pure Resources, L.P. (Pure) On behalf of Pure, please find enclosed one (1) copy of the report titled, " Addendum Subsurface Investigation Report". The report was prepared by Highlander Environmental Corp. (Highlander) and details the results of the additional subsurface investigation activities conducted at the Site.

Please call if you have questions.

Sincerely,
Highlander Environmental Corp.

Ike Tavarez
Geologist/ Project Manager

Encl.

cc: Mr. Ron Lechwar, Titan

Highlander Environmental Corp.

Midland, Texas

June 16, 2000

Mr. Wayne Price
Environmental Bureau
New Mexico Oil Conservation Division
Energy, Minerals and Natural Resources Department
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: Addendum Subsurface Investigation Report for Open Abandoned Pit Designated as ATB 1-1 in Lovington Paddock/Lovington San Andres Unit, Operated by Pure Resources L.P., Lea County, New Mexico.

Dear Mr. Price,

Pure Resources L.P. (Pure), formerly Titan Exploration, Inc., retained Highlander Environmental Corp. (Highlander) to conduct subsurface investigations at an abandoned pit designated ATB 1-1, Pure Lovington Paddock/Lovington San Andres Unit (Site), located in the SE/4, Section 1, Township 17 South, Range 36 East, Lea County, New Mexico. Figure 1 presents a Site location and topographic map, and Figure 2 presents a Site drawing. This report summarizes previous work performed at this site and presents the results of recent borehole installation activities conducted at the Site.

Background

In May 1999, Highlander submitted a report titled "Subsurface Investigation Report for the Titan Lovington Paddock/Lovington San Andres Unit, Abandoned Pit ATB 1-1". On December 12, 1999, Mr. Wayne Price with the New Mexico Oil Conservation Division (NMOCD) responded with a list of items, which he felt required additional investigation. In his response letter, Mr. Price requested a work plan to further address those issues. The NMOCD response letter and workplan are shown in Appendix A.

As discussed in the Assessment Report, two subsurface hydrocarbon plumes, which have impacted groundwater at the site, were observed. One plume appears to have originated from subsurface migration of hydrocarbons that had been discharged into the pit. Hydrocarbon contamination has occurred in the groundwater in the vicinity of the abandoned pit and extends in a northeast direction from the pit. The groundwater impact from the pit has been defined and appears to be confined to the immediate area downgradient. During the investigation of the pit area, a second plume was discovered which has impacted the area of monitor wells MW-4 and MW-6, upgradient

from the pit. Research of historical aerial photographs revealed that two former tank battery pads were present at this location and were considered a possible source of this second plume. Another suspected source for the groundwater impact is an underground pipeline, operated by Texas New Mexico Pipeline Company, located south of MW-4 and MW-6. In order to further evaluate the source for the second plume, boreholes were proposed to assess and determine the location of the secondary source. Highlander proposed to install up to 6 to 8 boreholes in the area of the two former tank pads and pipeline right-of-way to evaluate the subsurface soil. Depending on the results of the soil assessment, one monitor well was proposed between the pipeline and the former tank pad.

Borehole Installation

A total of six (6) boreholes were installed at the Site. At the former tank battery pads, boreholes (BH-6 and BH-7) were installed to total depth of 63' below ground surface (BGS). Four (4) boreholes (BH-8, BH-9, BH-10 and BH-11) were installed south of the tank pads near the active pipeline operated by Texas New Mexico Pipeline Company. These boreholes were installed to assess the area of the underground line as a possible secondary source. The borehole locations are shown in Figure 2. The borehole logs are shown in Appendix B.

Soil samples were collected during rotary drilling operations using a split spoon sampler or core barrel sampler. During sample collection, a portion of each soil sample was places into a clean plastic sample bag and sealed. After a short period of time at ambient temperature storage, the concentration of organic vapors in the headspace of the sample bag was measured with a Thermo Environmental Instruments, Model 580B, Organic Vapor Meter (OVM). The OVM is a photoionization detection instrument that measures the total ionizable hydrocarbon content of the soil headspace gas. The OVM was calibrated to a 75 parts per million (ppm) isobutylene standard and has a detection limit of 0.1 ppm. According to NMOCD guidelines (Guidelines for Unlined Surface Impoundment Closure, February 1993), a soil headspace gas measurement of 100 ppm may be substituted for laboratory analysis of benzene and total BTEX (sum of benzene, toluene, ethylbenzene and xylene). However, a headspace gas analysis cannot be substituted for total petroleum hydrocarbon (TPH) analysis. The cumulative OVM headspace readings are shown in Table 1.

The splitspoon and core barrel samplers were washed between boreholes and sampling events using potable water and laboratory grade detergent. All down hole equipment (i.e., drill rods, drill bits, etc.) was thoroughly decontaminated between each use with a high-pressure hot water wash and rinse. Soil cuttings from drilling will be stockpiled adjacent to the well until disposal is arranged. Following the completion of the drilling activities, all boreholes were grouted to surface.

Soil Sampling and Analysis

All the samples were collected in laboratory supplied containers and preserved properly during transport. Soil samples from each borehole were submitted under chain-of-custody control to Trace Analysis, Inc. in Lubbock, Texas. The samples were analyzed for Total Petroleum Hydrocarbons (TPH) method SW 846 8015, and Benzene, Toluene, Ethyl-benzene and Xylenes (BTEX) by EPA method 602/8020. The laboratory reports are shown in Appendix C.

Soil Sample Results

Referring to Table 2, the soil samples collected from BH-6 and BH-7 did not show impact to the subsurface soil in the area of the former tank pads. Both the BTEX and TPH levels were below the method detection limits, which would exclude this area as a possible source of the second groundwater plume.

When no apparent subsurface impact was observed in the vicinity of the former tank pads, boreholes BH-8, BH-9, BH-10 and BH-11 were installed along the Texas New Mexico Pipeline to assess the area of the pipeline. The soil samples from boreholes BH-9 and BH-10 did not show subsurface impact with TPH and BTEX levels both below the method detection limits. In borehole BH-8, subsurface TPH levels were observed with TPH (DRO) levels at 64 mg/kg in the 40'-41' sample and 69 mg/kg at 62'-63'. The BTEX levels were below the method detection limit. The surface around where BH-11 was placed, showed some evident of previous impact as this area appeared to have been worked over, possibly for a line repair. OVM readings in BH-11 were elevated virtually the entire depth of the boring and were as high as 666 ppm (20'-21'). Several intervals were in the 500 to 600 ppm range. Soil sample results from four intervals showed elevated TPH and BTEX levels. The bottom hole sample from 62'-63' had a TPH level of 11,300 mg/kg and a benzene level of 103 mg/kg. The total BTEX level was 788 mg/kg. It is apparent from this borehole that a spill in the vicinity of BH-11 has migrated to the groundwater.

Monitor Well Installation

Based upon the elevated OVM readings, borehole BH-11 was converted into a monitor well (MW-10). The monitor well completion is shown in Appendix B. The borehole was drilled out to a total depth of 76 feet below ground surface (BGS) and constructed using two-(2) inch diameter schedule 40 PVC threaded casing and factory slotted screen. The well was constructed with approximately twenty (20) feet of well screen with approximately five (5) feet of screen above and fifteen (15) feet below the groundwater. The well screens were surrounded with graded silica sand to a depth 3 feet above the screen. A layer of bentonite pellets, 3 feet thick, was placed in the borehole above the sand. The remainder of the annulus was filled with cement and bentonite grout to about one (1) foot below ground. The well was secured with a locking steel protector anchored in a concrete pad measuring approximately 3 feet by 3 feet.

Monitor Well Sampling and Analysis

The new monitor well (MW-10) was inspected for the presence of phase-separated hydrocarbons (PSH). An oil-water interface probe was used to measure a PSH thickness of 0.33'. A sample of the PSH was collected and analyzed by gas chromatography (GC) to determine composition and origin. The chromatographic fingerprint analysis of the PSH from MW-10 showed a hydrocarbon range of C6-C28, and the sample representative of a crude oil or a mixture of gasoline and diesel. The gas chromatography (GC) result is shown in Appendix C. The sample previously submitted from MW-4 showed hydrocarbons in the C10-C28 range, which resembled a diesel standard. The gas chromatography (GC) result is shown in Appendix A. While there are some similarities in the two samples, the laboratory is of the opinion that these are two different products.

Conclusions

1. Two boreholes, BH-6 and BH-7 were installed to total depth of 63' below ground surface (BGS) to investigate subsurface conditions at two former tank pads upgradient of the abandoned pit. The soil samples collected from BH-6 and BH-7 did not show impact to the subsurface soil in the area of the former tank pads. Both the BTEX and TPH levels were below the method detection limits, which would exclude this area as a possible source of the second groundwater plume.

2. When no apparent subsurface impact was observed in the vicinity of the former tank pads, boreholes BH-8, BH-9, BH-10 and BH-11 were installed along the Texas New Mexico Pipeline to assess the area of the pipeline. The soil samples from boreholes BH-9 and BH-10 did not show subsurface impact with TPH and BTEX levels both below the method detection limits. In borehole BH-8, subsurface TPH levels were observed with TPH (DRO) levels at 64 mg/kg in the 40'-41' sample and 69 mg/kg at 62'-63'. The BTEX levels were below the method detection limit. The surface around where BH-11 was placed, showed some evident of previous impact as this area appeared to have been worked over, possibly for a line repair. OVM readings in BH-11 were elevated virtually the entire depth of the boring and were as high as 666 ppm (20'-21'). Several intervals were in the 500 to 600 ppm range. Soil sample results from four intervals showed elevated TPH and BTEX levels. The bottom hole sample from 62'-63' had a TPH level of 11,300 mg/kg and a benzene level of 103 mg/kg. The total BTEX level was 788 mg/kg. It is apparent from this borehole that a spill in the vicinity of BH-11 has migrated to the groundwater.

3. Based upon the elevated OVM readings, borehole BH-11 was converted into a monitor well (MW-10). The new monitor well (MW-10) was inspected for the presence of phase-separated hydrocarbons (PSH). An oil-water interface probe was used to measure a PSH thickness of 0.33'. A sample of the PSH was collected and analyzed by gas chromatography (GC) to determine composition and origin. The chromatographic fingerprint analysis of the PSH from MW-10 showed a hydrocarbon range of C6-C28, and the sample representative of a crude oil or a mixture of gasoline and diesel. The sample previously submitted from MW-4 showed hydrocarbons in the C10-C28 range, which resembled a diesel standard. While there are some similarities in the two samples, the laboratory is of the opinion that these are two different products.

4. It appears that the two-groundwater plumes have two different sources. The plume in the vicinity of the abandoned pit would appear to emanate from the pit area itself, however, the second groundwater plume would appear to emanate from leaks or spills associated with the Texas-New Mexico (Now EOTT) pipeline. The benzene

concentration map is shown in Figure 3.

5. Pure Resources, LP will further evaluate options for remediation of the groundwater plume in the vicinity of the abandoned pit area, however, the plume, which appears to emanate from the pipeline right-of-way, should be the responsibility of the pipeline company.

Highlander will prepare a workplan following your review and approval of the report. Please call if you have questions.

Sincerely,

Highlander Environmental Corp.

Ike Tavarez

Project Manager/Geologist

Encl.
cc: Mr. Ron Lechwar, Pure Resources, L.P.

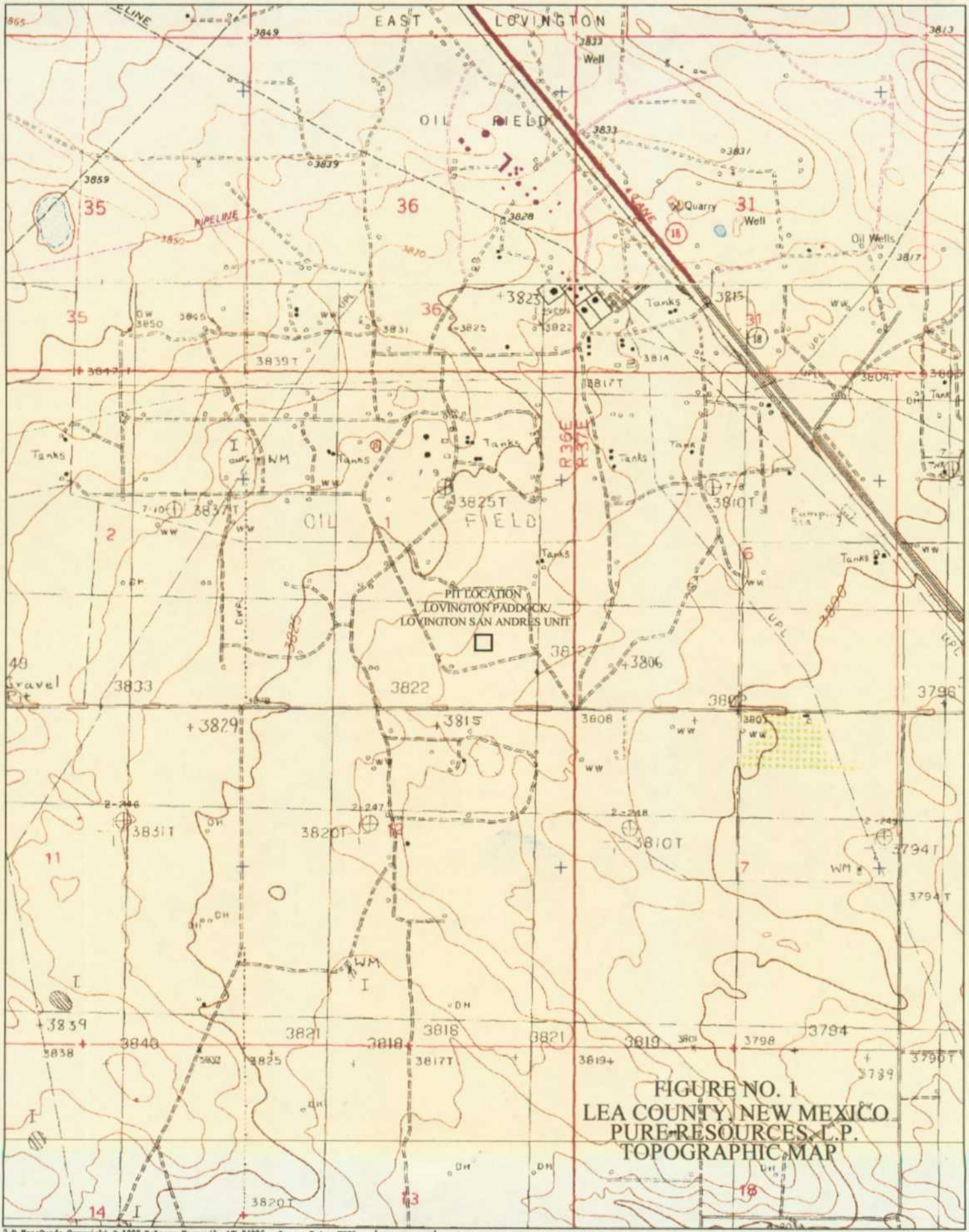
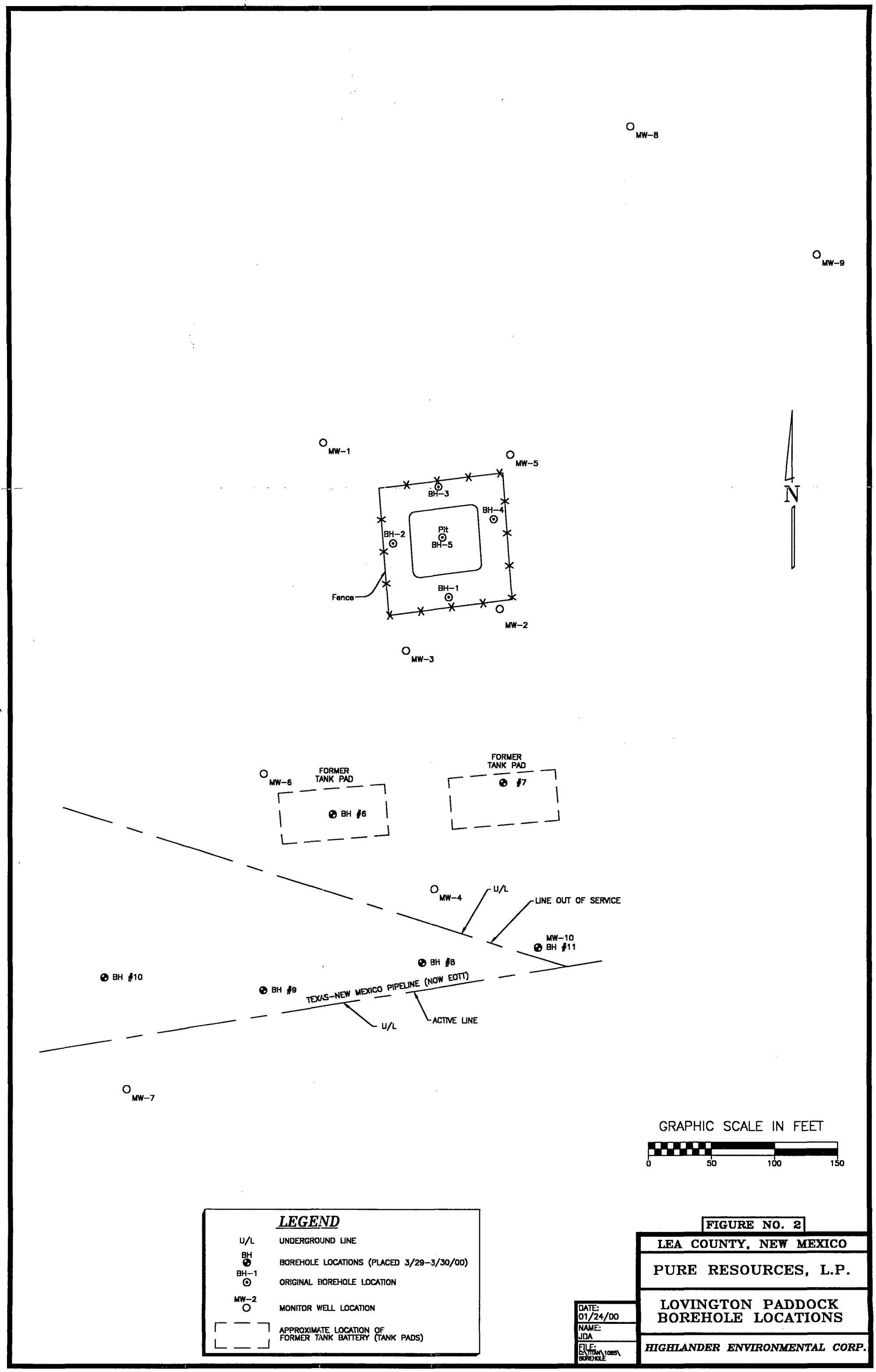
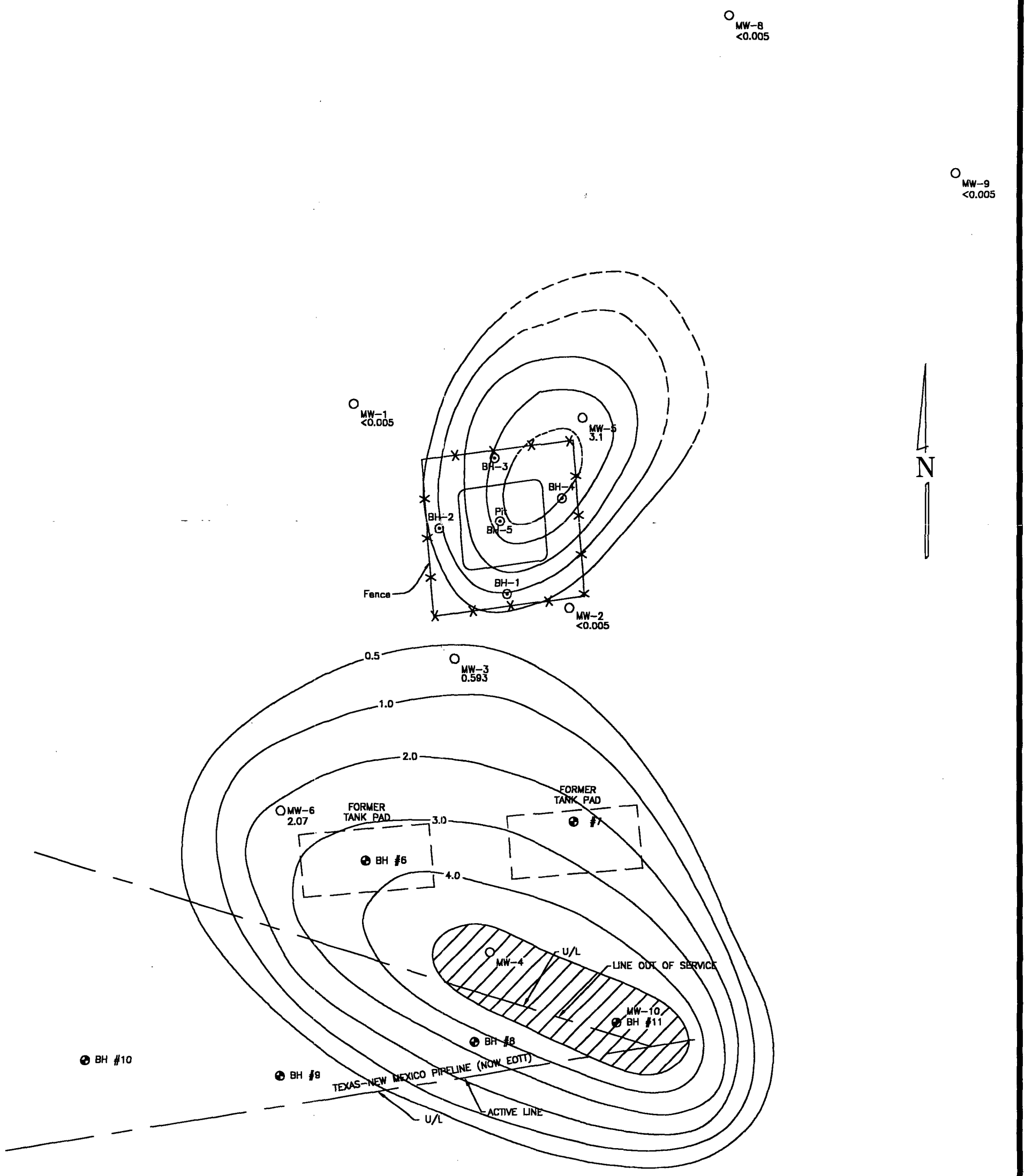


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
PURE RESOURCES, L.P.
TOPOGRAPHIC MAP


MW-8
MW-9
MW-1
MW-5
BH-3
BH-4
BH-2
Pit
BH-5
BH-1
Fence
MW-2
MW-3
N
MW-6
FORMER TANK PAD
BH #6
FORMER TANK PAD
#7
MW-4
U/L
LINE OUT OF SERVICE
MW-10
BH #11
BH #8
BH #10
BH #9
TEXAS-NEW MEXICO PIPELINE (NOW EOTT)
U/L
ACTIVE LINE
MW-7
GRAPHIC SCALE IN FEET
0
50
100
150
LEGEND
U/L
UNDERGROUND LINE
BH
BOREHOLE LOCATIONS (PLACED 3/29-3/30/00)
BH-1
ORIGINAL BOREHOLE LOCATION
MW-2
MONITOR WELL LOCATION
APPROXIMATE LOCATION OF FORMER TANK BATTERY (TANK PADS)
FIGURE NO. 2
LEA COUNTY, NEW MEXICO
PURE RESOURCES, L.P.
LOVINGTON PADDOCK
BOREHOLE LOCATIONS
DATE:
01/24/00
NAME:
JDA
FILE:
G:\TITAN\1065\
BOREHOLE
HIGHLANDER ENVIRONMENTAL CORP.



LEGEND

U/L	UNDERGROUND LINE
BH	BOREHOLE LOCATIONS (PLACED 3/29-3/30/00)
BH-1	ORIGINAL BOREHOLE LOCATION
MW-2	MONITOR WELL LOCATION
	APPROXIMATE LOCATION OF FORMER TANK BATTERY (TANK PADS)
1.0	BENZENE CONTOURS (mg/L)
	APPROXIMATE AREA OF PHASE SEPARATED HYDROCARBONS

GRAPHIC SCALE IN FEET

0 50 100 150

FIGURE NO. 3

LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

LOVINGTON PADDOCK
BENZENE CONCENTRATION MAP

DATE: 6/28/00
NAME: JDA
FILE: C:\TITAN\1085\BEN-MAP

HIGHLANDER ENVIRONMENTAL CORP.

TABLE 1
Pure Resources, LP
Lovington Paddock Unit - ATB 1-1 Investigation
Cumulative OVM Readings

Sample ID	Date	Depth (ft)	OVM (ppm)		Sample ID	Date	Depth (ft)	OVM (ppm)
BH-1	6/29/98	5-6	4		MW-2	10/1/98	60-61	0
		10-11	4		MW-3	10/1/98	60-61	3
		15-16	4		MW-4	10/2/98	60-61	671
		20-21	4		MW-5	1/27/99	60-61	5
		25-26	3		MW-6	1/27/99	60-61	4
		30-31	1		MW-7	3/24/99	60-61	3
					MW-8	3/24/99	60-61	0
BH-2	6/29/98	5-6	2		MW-9	3/24/99	60-61	5
		10-11	2					
		15-16	17		BH-6	3/29/00	5-6	2
		20-21	6				10-11	2
		25-26	7				15-16	2
		30-31	3				20-21	2
							25-26	2
BH-3	6/29/98	5-6	0				30-31	2
		10-11	0				35-36	2
		15-16	3				40-41	2
		20-21	2				45-46	5
		25-26	1				50-51	6
		30-31	2				55-56	10
							62-63	6
BH-4	6/29/98	5-6	1					
		10-11	0		BH-7		5-6	8
		15-16	1				10-11	1
		20-21	1				15-16	3
		25-26	0				20-21	4
		30-31	0				25-26	5
							30-31	4
BH-5	6/30/98	5-6	520				35-36	3
		10-11	550				40-41	10
		15-16	388				45-46	15
		20-21	500				50-51	22
		25-26	550				55-56	12
		30-31	240				62-63	12
		35-36	350					
		40-41	350					
		45-46	490					
		50-51	560					
		60-61	115					
		70-71	1					

TABLE 1 (con't)
Pure Resources, LP
Lovington Paddock Unit - ATB 1-1 Investigation
Cumulative OVM Readings

Sample ID	Date	Depth (ft)	OVM (ppm)		Sample ID	Date	Depth (ft)	OVM (ppm)
BH-8	3/29/00	5-6	2		BH-11	3/30/00	5-6	39
		10-11	2		(MW-10)		10-11	630
		15-16	0				15-16	225
		20-21	5				20-21	666
		25-26	3				25-26	365
		30-31	4				30-31	69
		35-36	14				35-36	14
		40-41	18				40-41	7
		45-46	10				45-46	8
		50-51	25				50-51	518
		55-56	5				55-56	601
		60-61	5				62-63	370
		62-63	78					
BH-9	3/30/00	5-6	0					
		10-11	0					
		15-16	0					
		20-21	0					
		25-26	0					
		30-31	1					
		35-36	0					
		40-41	0					
		45-46	1					
		50-51	1					
		55-56	2					
		62-63	2					
BH-10	3/30/00	5-6	1					
		10-11	2					
		15-16	2					
		20-21	3					
		25-26	2					
		30-31	2					
		35-36	3					
		40-41	8					
		45-46	2					
		50-51	3					
		55-56	4					
		62-63	3					
		70-71	1					

Table 2
Pure Resources, LP
Lovington Paddock Unit
Cumulative Soil Sample Results
TPH, BTEX and Chloride

Sample ID	Date Sampled	Depth	TPH GRO (mg/kg)	TPH DRO (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
BH-1	6/29/98	10-11'	-	-	-	-	-	-		190
	6/29/98	20-21'	12.1	<50	<0.050	0.057	<0.050	<0.050	0.057	140
	6/29/98	30-31'	12	<50	<0.050	<0.050	<0.050	<0.050	<0.050	210
BH-2	6/29/98	10-11'	-	-	-	-	-	-		16
	6/29/98	15-16'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	14
	6/29/98	30-31'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	17
BH-3	6/30/98	10-11'	-	-	-	-	-	-		8.9
	6/30/98	15-16'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	14
	6/30/98	30-31'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	12
BH-4	6/30/98	10-11'	-	-	-	-	-	-		13
	6/30/98	15-16'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	10
	6/30/98	30-31'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	13
BH-5	8/17/98	10-11'	397	3,940	<0.050	3.57	0.189	59.8	63.56	13
	8/17/98	25-26'	182	1,840	0.167	6.24	21.3	28.4	56.1	24
	8/17/98	40-41'	274	2,080	<0.100	1.63	7.76	17.8	27.19	12
	8/17/98	50-51'	10.1	1,709	<0.100	<0.100	<0.100	<0.100	<0.100	13
MW-2	10/1/98	60-61'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	NA
MW-3	10/1/98	60-61'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	NA
MW-4	10/1/98	60-61'	20.5	1,180	<0.050	1.52	4.70	25.6	31.82	NA

NA - Not Analyzed

Table 2 (con't)
Pure Resources, LP
Lovington Paddock Unit
Cumulative Soil Sample Results
TPH, BTEX and Chloride

Sample ID	Date Sampled	Depth (ft)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
BH-6	3/29/00	20-21	<5.00	<50	<0.05	<0.05	<0.05	<0.05	<0.05	NA
	3/31/00	62-63	<5.00	<50	<0.05	<0.05	<0.05	<0.05	<0.05	NA
BH-7	3/29/00	20-21	<5.00	<50	<0.05	<0.05	<0.05	<0.05	<0.05	NA
	3/29/00	62-63	<5.00	<50	<0.05	<0.05	<0.05	<0.05	<0.05	NA
BH-8	3/29/00	40-41	<5.00	64	<0.05	<0.05	<0.05	<0.05	<0.05	NA
	3/29/00	62-63	<5.00	69	<0.05	<0.05	<0.05	<0.05	<0.05	NA
BH-9	3/30/00	30-31	<5.00	<50	<0.05	<0.05	<0.05	<0.05	<0.05	NA
	3/30/00	62-63	<5.00	<50	<0.05	<0.05	<0.05	<0.05	<0.05	NA
BH-10	3/30/00	40-41	<5.00	<50	<0.05	<0.05	<0.05	<0.05	<0.05	NA
	3/30/00	62-63	<5.00	<50	<0.05	<0.05	<0.05	<0.05	<0.05	NA
BH-11	3/30/00	10-11	100	181	<0.1	0.147	0.222	0.442	0.811	NA
(MW-10)	3/30/00	20-21	114	325	<0.1	<0.1	0.164	0.335	0.5	NA
	3/30/00	50-51	424	721	<0.5	0.575	1.6	4.51	6.69	NA
	3/30/00	62-63	10,200	11,300	103	319	92.8	272	788	NA

NA - Not Anaylzed

TABLE 3
Pure Resources, LP
Lovington Paddock Unit
Lea County, New Mexico
Cumulative Groundwater Sample Results
TPH, BTEX and PAH

Sample ID	Date Sampled	TPH (mg/l) DRO	TPH (mg/l) GRO	B (mg/L)	T (mg/L)	E (mg/L)	X (mg/L)	PAH (mg/L)	PSH
MW-1	11/5/98	-	-	<0.001	<0.001	<0.001	<0.001	ND	ND
MW-1	1/28/99	<5	<0.100	<0.001	<0.001	<0.001	0.001	-	ND
MW-1	1/6/00	-	-	<0.005	<0.005	<0.005	<0.005	ND	ND
MW-2	11/5/98	-	-	<0.001	<0.001	<0.001	<0.001	Naphthalene - 0.001	ND
MW-2	1/28/99	<5	<0.100	<0.001	<0.001	<0.001	<0.001	-	ND
MW-2	1/6/00	-	-	<0.005	<0.005	<0.005	<0.005	ND	ND
MW-3	11/5/98	-	-	0.147	<0.001	<0.001	<0.001	ND	ND
MW-3	1/28/99	<5	<0.100	0.102	<0.001	<0.001	<0.001	-	ND
MW-3	1/6/00	-	-	0.593	<0.005	<0.005	<0.005	Naphthalene - 0.006	ND
MW-4	11/5/98	-	-	0.882	0.808	0.085	0.214	Naphthalene - 0.002	ND
MW-4	1/28/99	<5	8.07	1.85	1.89	0.123	0.682	-	ND
MW-4	1/6/00	-	-	0.569	0.331	0.055	0.109	Naphthalene - 0.008	0.04
MW-4	3/31/00	NA	NA	NA	NA	NA	NA	NA	0.03
MW-5	1/28/99	<5	5.18	2.73	0.001	0.002	0.12	Naphthalene - 0.034	ND
MW-5	1/6/00	-	-	3.1	<0.005	<0.005	0.057	Naphthalene - 0.013	ND
MW-6	1/28/99	<5	5.38	2.58	0.003	0.39	0.108	Naphthalene - 0.038	ND
MW-6	1/6/00	-	-	2.07	<0.005	0.439	0.087	Naphthalene - 0.033	ND
MW-7	3/25/99	<5	<0.100	<0.001	<0.001	<0.001	<0.001	ND	ND
MW-7	1/6/00	-	-	<0.005	<0.005	<0.005	<0.005	ND	ND
MW-8	3/25/99	<5	<0.100	<0.001	<0.001	<0.001	<0.01	ND	ND
MW-8	1/6/00	-	-	<0.005	<0.005	<0.005	<0.005	ND	ND
MW-9	3/25/99	<5	0.155	0.104	<0.001	<0.001	0.002	ND	ND
MW-9	4/14/99	<5	<0.100	<0.001	<0.001	<0.001	<0.001	-	ND
MW-9	1/6/00	-	-	<0.005	<0.005	<0.005	<0.005	ND	ND
MW-10	3/31/00	NA	NA	NA	NA	NA	NA	NA	0.33

(-) Not Analyzed
ND - Not Detected

Table 4:
Summary of Monitor Well Water Levels and Elevation Details
Pure Resources, LP
Lovington Paddock/San Andres Unit, ATB 1-1, Pit
Lea County, New Mexico

Monitor Well	Date	Top of Casing Elevation, feet AMSL	* Depth-to-Groundwater, feet TOC	Groundwater Elevation (ft)	Phase Separated Hydrocarbon (ft)
MW-1	10/1/98	3817.26	65.86	3751.4	-
	1/6/00	3817.26	66.56	3750.70	-
MW-2	10/1/98	3816.07	64.75	3751.32	-
	1/6/00	3816.07	65.45	3750.62	-
MW-3	10/1/98	3817.41	65.83	3751.58	-
	1/6/00	3817.41	66.56	3750.85	-
MW-4	10/2/98	3816.84	64.91	3751.93	-
	1/6/00	3816.84	65.65	3751.19	0.04
	3/31/00	3816.84	64.85	3751.99	0.03
MW-5	1/27/99	3816.23	65.24	3750.99	-
	1/6/00	3816.23	65.96	3750.27	-
MW-6	1/27/99	3817.51	65.36	3752.15	-
	1/6/00	3817.51	66.07	3751.44	-
MW-7	3/24/99	3816.25	63.28	3752.97	-
	1/6/00	3816.25	63.97	3752.28	-
MW-8	3/24/99	3816.38	66.09	3750.29	-
	1/6/00	3816.38	66.78	3749.60	-
MW-9	3/24/99	3815.69	65.55	3750.14	-
	1/6/00	3815.69	66.24	3749.45	-
MW-10	3-31-00	-	66.45	-	0.33

Notes:
1. BGS: Denotes depth in feet below ground surface
2. AMSL: Denotes elevation in feet above mean sea level
3. TOC: Denotes depth in feet below top of well casing
4. *: Depth-to-groundwater collected on 3/29/99

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

March 06, 2000

CERTIFIED MAIL
RETURN RECEIPT NO. 50514621

Mr. Ron Lechwar
Titan Resources, Inc.
500 W. Texas
Suite 500
Midland, Tx 79701

Re: Work Plan for Open Abandoned Pit Designed as ATB 1-1 in Lovington Paddock/Lovington San Andres Unit, Operated by Titan Exploration, Inc. Lea County, New Mexico.

Dear Mr. Lechwar:

The New Mexico Oil Conservation Division (NMOCD) is in receipt of the above captioned work plan dated January 28, 2000 submitted by Highlander Environmental Corp. The NMOCD hereby approves of the plan with the following condition(s):

1. Titan Resources, Inc. will notify the OCD Santa Fe office and the OCD District office at least 48 hours in advance of all scheduled activities such that the OCD has the opportunity to witness the events and/or split samples during OCD's normal business hours.

Please be advised that NMOCD approval of this plan does not relieve Titan Resources, Inc. of liability should their operations fail to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve Titan Resources, Inc. of responsibility for compliance with any other federal, state, or local laws and/or regulations.

If you require any further information or assistance please do not hesitate to write or call me at (505-827-7155).

Sincerely Yours,

Wayne Price

Wayne Price-Pet. Engr. Spec.
Environmental Bureau

cc: OCD Hobbs Office
Highlander Environmental Corp.

attachments-

Highlander Environmental Corp.

Midland, Texas

January 28, 2000

Mr. Wayne Price
Environmental Bureau
Oil Conservation Division
Energy, Minerals and Natural Resources Department
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: Work Plan for Open Abandoned Pit Designated as ATB 1-1 in Lovington Paddock/Lovington San Andres Unit, Operated by Titan Exploration, Inc. Lea County, New Mexico.

Dear Mr. Price,

Introduction

Per your request, Highlander Environmental Corp. (Highlander) has prepared a work plan to conduct additional soil assessments of an abandoned open pit at the Lovington Paddock/Lovington San Andres Unit (Site), operated by Titan Exploration, Inc. (Titan) in Lea County, New Mexico.

Background

Highlander submitted the Subsurface Investigation Report for the Titan Lovington Paddock/Lovington San Andres Unit, Abandoned Pit ATB 1-1, dated May 1999. On December 12, 1999, Wayne Price with the New Mexico Oil Conservation Division (NMOCD) addressed several concerns about the Site and requested a work plan to address the following:

1. Groundwater Gradient.
2. Recommended Remediation Action Level (RRAL) of 1,000-mg/kg and contaminated soil in the vadose zone at the pit and the old tank battery.
3. Location of the initial recovery well, construction details and information concerning the pump test.

Groundwater Gradient and Sampling

As discussed in the Subsurface Investigation Report, the regional groundwater flow is generally from the northwest to southwest, however, the Site groundwater flow showed a southwest to northeast hydraulic gradient. On January 6, 2000, Highlander personnel collected static water level measurements to confirm the hydraulic gradient at the Site. The static water levels and groundwater elevations are shown in Table 1. The hydraulic gradient continues to show a southwest to northeast flow. The water table map is shown in Figure 1.

For additional evaluation, on January 6, 2000, Highlander purged and sampled the monitor wells at the Site for BTEX and PAH analysis. The analysis did not show a significant change from the previous sampling event. Prior to sampling, each well was checked for Phase Separated Hydrocarbon (PSH) and one monitor well (MW-4) showed a thickness of 0.04'. A fingerprint analysis was performed on the PSH. The results revealed the hydrocarbon present in the C10 –C20 range. The chromatogram resembles diesel standard of an aged product. The cumulative groundwater sample results are shown in Table 2. The groundwater analyses are attached.

Recovery Well Installation

As mentioned in the Subsurface Assessment Report, a groundwater recovery program was proposed to remediate the groundwater at the Site. Highlander is delaying the groundwater remediation options until the entire soil assessment of the vadose zone is completed. Once the soil assessment is completed, a work plan will be submitted detailing the remediation of the groundwater.

Abandoned Pit

As mentioned in the Subsurface Investigation Report, the recommended remediation action levels (RRAL) for the soil in the pit was proposed at 1,000 mg/kg. However, due to the depth of impact encountered in the pit, an RRAL of TPH 100 mg/kg is usually required for the contaminated soil in the vadose zone. Currently, several remedial options are being evaluated for the contaminated soil in the vadose zone encountered in the abandoned pit. The remedial option for the impacted soil will be determined after the subsurface soil investigation, at former tank pads and the Texas New Mexico pipeline right of way, has been assessed. Once the assessment is complete, a workplan for the impacted soil in the vadose zone will be submitted for review and approval.

Proposed Work Plan

Former Tank Battery Pads

As discussed in the Assessment Report, two groundwater hydrocarbon plumes were observed at the Site. One plume is due to the impact from the abandoned pit and extends northeast from the pit. The groundwater impact from the pit has been defined and appears to be confined to the immediate area downgradient of the pit. The second plume is located in the area of MW-4 and MW-6, upgradient from the pit. Two former tank battery pads were present at this location and may be the source of this plume. Another suspected source for the groundwater impact may be from an underground pipeline, operated by Texas New Mexico Pipeline Company, located south of MW-4 and MW-6. These suspect areas will require additional evaluation.

Boreholes are proposed to assess and determine the location of the secondary source. Highlander proposes to install up to 6 to 8 boreholes in the area of the two former tank pads to evaluate the subsurface soil. The boreholes will be initially planned to a depth of 20 to 30 feet. However, deeper samples will be collected for proper delineation, if deemed necessary. One borehole is proposed in each tank battery pad. If impact is encountered, additional boreholes will be

installed around the tank pad for horizontal extents. At least two soil samples from each borehole will be collected for TPH and BTEX evaluation. The proposed locations of the boreholes are shown in Figure 2.

In addition, three (3) boreholes are proposed south of the tank pads near the active pipeline operated by Texas New Mexico Pipeline Company. The boreholes will be installed to assess the area of the underground line. The locations of the proposed boreholes are shown in Figure 1. At least two soil samples from each borehole will be collected for TPH and BTEX. At this time, a monitor well is not proposed at the Site. However, depending on the results of the soil assessment, one monitor well may be installed between the pipeline and the former tank pad. If installed, the well will be completed as stated in the monitor well section of this workplan.

Soil samples will be collected during rotary drilling using a split spoon sampler or core sampler. The soil samples will be field screened using a Thermo Environmental Equipment Model 580B, Organic Vapor Meter (OVM). The headspace gas survey will be performed by collecting discrete soil samples and placing a portion of the sample in a clean plastic sample bag, leaving a vacant headspace in the top of the bag. The bag is sealed and after approximately fifteen minutes at ambient temperature storage, the concentration of organic vapors in the sample bag headspace will be measured using the OVM.

All the samples will be collected in laboratory supplied containers and preserved properly during transport. Soil samples from each borehole will be analyzed for Total Petroleum Hydrocarbons (TPH) method SW 846 8015, Benzene, Toluene, Ethyl-benzene and Xylenes (BTEX) by EPA method 602/8020.

The splitspoon sampler will be washed between boreholes and sampling events using potable water and laboratory grade detergent. All down hole equipment (i.e., drill rods, drill bits, etc.) will be thoroughly decontaminated between each use with a high-pressure hot water wash and rinse. Soil cuttings from drilling will be stockpiled adjacent to the well until disposal is arranged. Following the completion of the drilling activities, all boreholes will be grouted to surface.

Monitor well Installation

If necessary, one monitor well will be drilled using air rotary drilling techniques, and constructed using two-(2) inch diameter schedule 40 PVC threaded casing and factory slotted screen. The well will be constructed with approximately twenty (20) feet of well screen. The well will be drilled to depths of approximately 75 to 80 feet below ground surface (BGS), and the well screen will be installed with about five (5) feet of screen above and fifteen (15) feet below the groundwater. The well screens will be surrounded with graded silica sand to a depth approximately 2 feet above the screen. A layer of bentonite pellets, approximately 2 feet thick, will be placed in the borehole above the sand. The remainder of the annulus will be filled with cement and bentonite grout to about one (1) foot below ground. The well will be secured with a locking steel protector anchored in a concrete pad measuring approximately 3 feet by 3 feet. A land surveyor licensed in the State of New Mexico will survey the well for elevation and relative position.

Following installation, the well will be developed by bailing with a rig or hand bailer, or pumped with an electric submersible pump to remove fine grained sediment disturbed during drilling and to ensure collection of representative groundwater samples. Water removed from the well will be placed in appropriate containers (i.e., 55-gallon drums, portable tank, etc.) and retained at the Site until disposal is arranged. Groundwater samples will be collected following well development and analyzed for BTEX, and PAH analysis. The well will be inspected for the presence of phase-separated hydrocarbons (PSH) and, if present, a sample will be collected and analyzed by gas chromatography (GC) to determine composition and origin. If PSH is detected in a monitor well, a groundwater sample will not be collected from that well. The samples will be delivered to the laboratory by overnight delivery and under chain of custody control.

Data Evaluation and Reporting

Upon receipt of analytical data from the laboratory, Highlander will assemble all data in tables for presentation in a report. The report will contain discussions of field sampling techniques and laboratory results. Highlander will compare the laboratory test results for soil samples to applicable New Mexico OCD or WQCC action levels or cleanup standards. Detailed Site drawings will be presented in the report. The report will also submit a workplan detailing a remedial plan or closure plan for the soil and groundwater at the Site.

Highlander will schedule the proposed field activities following your review and approval. Please call if you have questions.

Sincerely,
Highlander Environmental Corp.

Ike Tavarez
Project Manager/Geologist

Encl.
cc: Mr. Ron Lechwar, Titan Exploration.

Table 1:
Summary of Monitor Well Water Levels and Elevation Details
Titan Exploration, Inc.,
Lovington Paddock/San Andres Unit, ATB 1-1, Pit
Lea County, New Mexico

Monitor Well	Date	Top of Casing Elevation, feet AMSL	* Depth-to-Groundwater feet TOC	Groundwater Elevation (ft)	Phase Separated Hydrocarbon (ft)
MW-1	10/1/98	3817.26	65.86	3751.4	-
	1/6/00	3817.26	66.56	3750.70	-
MW-2	10/1/98	3816.07	64.75	3751.32	-
	1/6/00	3816.07	65.45	3750.62	-
MW-3	10/1/98	3817.41	65.83	3751.58	-
	1/6/00	3817.41	66.56	3750.85	-
MW-4	10/2/98	3816.84	64.91	3751.93	-
	1/6/00	3816.84	65.65	3751.19	0.04
MW-5	1/27/99	3816.23	65.24	3750.99	-
	1/6/00	3816.23	65.96	3750.27	-
MW-6	1/27/99	3817.51	65.36	3752.15	-
	1/6/00	3817.51	66.07	3751.44	-
MW-7	3/24/99	3816.25	63.28	3752.97	-
	1/6/00	3816.25	63.97	3752.28	-
MW-8	3/24/99	3816.38	66.09	3750.29	-
	1/6/00	3816.38	66.78	3749.60	-
MW-9	3/24/99	3815.69	65.55	3750.14	-
	1/6/00	3815.69	66.24	3749.45	-

Notes:

1. BGS: Denotes depth in feet below ground surface
2. AMSL: Denotes elevation in feet above mean sea level
3. TOC: Denotes depth in feet below top of well casing
4. *: Depth-to-groundwater collected on 3/29/99

TABLE 2
Titan Exploration & Production Inc.
Lovington Paddock Unit
Lea County, New Mexico

Cumulative Groundwater Sample Results
TPH, BTEX and PAH

Sample ID	Date Sampled	TPH (mg/l) DRO	TPH (mg/l) GRO	B (mg/L)	T (mg/L)	E (mg/L)	X (mg/L)	PAH (mg/L)	Phase Separated Hydrocarbon
MW-1	11/5/98	-	-	<0.001	<0.001	<0.001	<0.001	ND	ND
MW-1	1/28/99	<5	<0.100	<0.001	<0.001	<0.001	0.001	-	ND
MW-1	1/6/00	-	-	<0.005	<0.005	<0.005	<0.005	ND	ND
MW-2	11/5/98	-	-	<0.001	<0.001	<0.001	<0.001	Naphthalene - 0.001	ND
MW-2	1/28/99	<5	<0.100	<0.001	<0.001	<0.001	<0.001	-	ND
MW-2	1/6/00	-	-	<0.005	<0.005	<0.005	<0.005	ND	ND
MW-3	11/5/98	-	-	0.147	<0.001	<0.001	<0.001	ND	ND
MW-3	1/28/99	<5	<0.100	0.102	<0.001	<0.001	<0.001	-	ND
MW-3	1/6/00	-	-	0.593	<0.005	<0.005	<0.005	Naphthalene - 0.006	ND
MW-4	11/5/98	-	-	0.882	0.808	0.085	0.214	Naphthalene - 0.002	ND
MW-4	1/28/99	<5	8.07	1.85	1.89	0.123	0.682	-	ND
MW-4	1/6/00	-	-	0.569	0.331	0.055	0.109	Naphthalene - 0.008	0.04
MW-5	1/28/99	<5	5.18	2.73	0.001	0.002	0.12	Naphthalene - 0.034	ND
MW-5	1/6/00	-	-	3.1	<0.005	<0.005	0.057	Naphthalene - 0.013	ND
MW-6	1/28/99	<5	5.38	2.58	0.003	0.39	0.108	Naphthalene - 0.038	ND
MW-6	1/6/00	-	-	2.07	<0.005	0.439	0.087	Naphthalene - 0.033	ND
MW-7	3/25/99	<5	<0.100	<0.001	<0.001	<0.001	<0.001	ND	ND
MW-7	1/6/00	-	-	<0.005	<0.005	<0.005	<0.005	ND	ND
MW-8	3/25/99	<5	<0.100	<0.001	<0.001	<0.001	<0.01	ND	ND
MW-8	1/6/00	-	-	<0.005	<0.005	<0.005	<0.005	ND	ND
MW-9	3/25/99	<5	0.155	0.104	<0.001	<0.001	0.002	ND	ND
MW-9	4/14/99	<5	<0.100	<0.001	<0.001	<0.001	<0.001	-	ND
MW-9	1/6/00	-	-	<0.005	<0.005	<0.005	<0.005	ND	ND

(-) Not Analyzed
ND - Not Detected

SAMPLE LOG

Boring/Well: MW-1
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 75 feet
Date Installed: 10/1/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche, broken
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and trace of white caliche and cemented sandstone, dense layers
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone
60-75	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -75'

SAMPLE LOG

Boring/Well: MW-2
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 76 feet
Date Installed: 10/1/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche, broken
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 50% sand / 50% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone
60-61	0	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-76	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -76'

SAMPLE LOG

Boring/Well: MW-3
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 75 feet
Date Installed: 10/1/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche, broken
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 50% sand / 50% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone
60-61	3	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-75	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -75'

SAMPLE LOG

Boring/Well: MW-4
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 75 feet
Date Installed: 10/2/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche, broken
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 30% sand / 70% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone
60-61	671	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-75	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -75'

SAMPLE LOG

Boring/Well: MW-5
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 77 feet
Date Installed: 1/27/99

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated , dense
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 50% sand / 50% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone, 50% / 50%
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone, layered
60-61	4	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-77	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -77'

SAMPLE LOG

Boring/Well: MW-6
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 77 feet
Date Installed: 1/27/99

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated , dense
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 80% sand 20% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone, 50% / 50%
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone, layered
60-61	4	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-77	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -77'

SAMPLE LOG

Boring/Well: MW-7
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 77 feet
Date Installed: 3/24/99

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, dense
10-20	-	White, caliche, dense and friable layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 80% sand 20% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone, 50% / 50%
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone, layered
60-61	3	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-77	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -77'

SAMPLE LOG

Boring/Well: MW-8
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 77 feet
Date Installed: 3/24/99

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, dense
10-20	-	White, caliche, dense and friable layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 60% sand 40% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone, 50% / 50%
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone, layered
60-61	0	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-77	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -77'

SAMPLE LOG

Boring/Well: MW-9
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 77 feet
Date Installed: 3/24/99

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, dense
10-20	-	White, caliche, dense and friable layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 70% sand 30% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone, 50% / 50%
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone, layered
60-61	5	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-77	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -77'

SAMPLE LOG

Boring/Well: BH-1
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/29/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche
5-6	4	White, caliche, dense layer
10-11	4	White, caliche, dense and friable layer
15-16	4	White, caliche, dense and friable layer
20-21	4	White, caliche, dense, tan fine grain sand encountered at 23', loose
25-26	4	Tan, fine grain sand, loose, trace of caliche layers and cemented sandstone
30-31	3	Tan, fine grain sand, loose, cemented sandstone layers
		TD -31'

SAMPLE LOG

Boring/Well: BH-2
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/29/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche
5-6	2	White, caliche, dense layer
10-11	2	White, caliche, dense and friable layer, trace of fine grain sand
15-16	17	Tan, fine grain sand , and trace of white caliche, dense layers
20-21	6	Tan, fine grain sand, and trace of white caliche, dense layers
25-26	7	Tan, fine grain sand, loose, trace of caliche layers and cemented sandstone
30-31	3	Tan, fine grain sand, loose, traces of cemented sandstone
		TD -31'

SAMPLE LOG

Boring/Well: BH-3
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/29/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche
5-6	0	White, caliche, dense, layer
10-11	0	White, caliche, dense and friable layer, unconsolidated layer, trace of fine grain sand
15-16	3	Tan, fine grain sand, and trace of white caliche, dense layers
20-21	2	Tan, fine grain sand, and trace of white caliche and cemented sandstone, dense layers
25-26	1	Tan, fine grain sand, loose, trace of caliche layers and cemented sandstone
30-31	2	Tan, fine grain sand, loose, traces of cemented sandstone
		TD -31'

SAMPLE LOG

Boring/Well: BH-4
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/29/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche, broken
5-6	1	White, caliche, dense, layer, unconsolidated
10-11	0	White, caliche, dense and friable layer, unconsolidated layer
15-16	1	Tan, fine grain sand, and trace of white caliche, dense layers
20-21	1	Tan, fine grain sand, and trace of white caliche and cemented sandstone, dense layers
25-26	0	Tan, fine grain sand, loose, trace of caliche layers and cemented sandstone
30-31	0	Tan, fine grain sand, loose, traces of cemented sandstone
		TD -31'

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Ike Tavarez
Highlander Environmental Services
1910 N. Big Spring St.
Midland, TX 79705

Report Date: 4/13/00

Project Number: 1085
Project Name: Lovington Paddock Unit
Project Location: N/A

Order ID Number: A00040406

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to TraceAnalysis, Inc. for analysis:

Sample Number	Sample Description	Matrix	Date Taken	Time Taken	Date Received
143792	BH-6 (20-21')	Soil	3/29/00	-	4/4/00
143795	BH-6 (62-63')	Soil	3/31/00	-	4/4/00
143797	BH-7 (20-21')	Soil	3/29/00	-	4/4/00
143800	BH-7 (62-63')	Soil	3/29/00	-	4/4/00
143803	BH-8 (40-41')	Soil	3/29/00	-	4/4/00
143805	BH-8 (62-65')	Soil	3/29/00	-	4/4/00
143807	BH-9 (30-31')	Soil	3/30/00	-	4/4/00
143808	BH-9 (62-63')	Soil	3/30/00	-	4/4/00
143810	BH-10 (40-41')	Soil	3/30/00	-	4/4/00
143811	BH-10 (62-63')	Soil	3/30/00	-	4/4/00
143812	BH-11 (10-11')	Soil	3/30/00	-	4/4/00
143813	BH-11 (20-21')	Soil	3/30/00	-	4/4/00
143816	BH-11 (50-51')	Soil	3/30/00	-	4/4/00
143817	BH-11 (62-63')	Soil	3/30/00	-	4/4/00

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director

Analytical Results Report

Sample Number: 143792
Description: BH-6 (20-21')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	4.54	50	0.1	91	72 - 128	RC	PB01641	QC01962
4-BFB	3.72	50	0.1	74	72 - 128	RC	PB01641	QC01962

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
TPH DRO (mg/Kg)									
DRO	<50	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01943	50
TPH GRO (mg/Kg)									
GRO	<5.00	50	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143795
Description: BH-6 (62-63')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	4.47	50	0.1	89	72 - 128	RC	PB01641	QC01962
4-BFB	4.59	50	0.1	92	72 - 128	RC	PB01641	QC01962

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
TPH DRO (mg/Kg)									
DRO	<50	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01943	50
TPH GRO (mg/Kg)									
GRO	<5.00	50	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143797
Description: BH-7 (20-21')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #	
TFT	4.48	50	0.1	90	72 - 128	RC	PB01641	QC01962	
4-BFB	4.93	50	0.1	99	72 - 128	RC	PB01641	QC01962	
TPH DRO (mg/Kg)									
DRO	<50	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01943	50
TPH GRO (mg/Kg)									
GRO	<5.00	50	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143800
Description: BH-7 (62-63')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #	
TFT	5.01	50	0.1	100	72 - 128	RC	PB01641	QC01962	
4-BFB	4.44	50	0.1	89	72 - 128	RC	PB01641	QC01962	
TPH DRO (mg/Kg)									
DRO	<50	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01943	50
TPH GRO (mg/Kg)									
GRO	<5.00	50	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143803
Description: BH-8 (40-41')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #	
TFT	4.63	50	0.1	93	72 - 128	RC	PB01641	QC01962	
4-BFB	3.85	50	0.1	77	72 - 128	RC	PB01641	QC01962	
TPH DRO (mg/Kg)									
DRO	64	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01923	50
TPH GRO (mg/Kg)									
GRO	<5.00	50	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143805
Description: BH-8 (62-65')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	5.42	50	0.1	108	72 - 128	RC	PB01641	QC01962
4-BFB	4.72	50	0.1	94	72 - 128	RC	PB01641	QC01962

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
TPH DRO (mg/Kg)									
DRO	69	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01943	50
TPH GRO (mg/Kg)									
GRO	<5.00	50	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143807
Description: BH-9 (30-31')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	4.98	50	0.1	100	72 - 128	RC	PB01641	QC01962
4-BFB	4.26	50	0.1	85	72 - 128	RC	PB01641	QC01962

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
TPH DRO (mg/Kg)									
DRO	<50	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01944	50
TPH GRO (mg/Kg)									
GRO	<5.00	50	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143808
Description: BH-9 (62-63')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #	
TFT	5.07	50	0.1	101	72 - 128	RC	PB01641	QC01962	
4-BFB	4.46	50	0.1	89	72 - 128	RC	PB01641	QC01962	
TPH DRO (mg/Kg)									
DRO	<50	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01944	50
TPH GRO (mg/Kg)									
GRO	<5.00	50	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143810
Description: BH-10 (40-41')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #	
TFT	4.96	50	0.1	99	72 - 128	RC	PB01641	QC01962	
4-BFB	4.44	50	0.1	89	72 - 128	RC	PB01641	QC01962	
TPH DRO (mg/Kg)									
DRO	<50	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01944	50
TPH GRO (mg/Kg)									
GRO	<5.00	50	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143811
Description: BH-10 (62-63')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	<0.05	50	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #	
TFT	4.87	50	0.1	97	72 - 128	RC	PB01641	QC01962	
4-BFB	4.78	50	0.1	96	72 - 128	RC	PB01641	QC01962	
TPH DRO (mg/Kg)									
DRO	<50	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01944	50
TPH GRO (mg/Kg)									
GRO	<5.00	50	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143812
Description: BH-11 (10-11')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.1	100	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	0.147	100	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	0.222	100	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	0.442	100	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	0.811	100	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	11.8	100	0.1	118	72 - 128	RC	PB01641	QC01962
4-BFB	10.5	100	0.1	105	72 - 128	RC	PB01641	QC01962

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
TPH DRO (mg/Kg)									
DRO	181	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01944	50
TPH GRO (mg/Kg)									
GRO	100	100	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143813
Description: BH-11 (20-21')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.1	100	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	<0.1	100	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	0.164	100	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	0.335	100	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	0.5	100	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	11.4	100	0.1	114	72 - 128	RC	PB01641	QC01962
4-BFB	12.3	100	0.1	123	72 - 128	RC	PB01641	QC01962

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
TPH DRO (mg/Kg)									
DRO	325	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01944	50
TPH GRO (mg/Kg)									
GRO	114	100	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143816
Description: BH-11 (50-51')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	<0.5	500	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	0.575	500	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	1.6	500	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	4.51	500	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	6.69	500	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #	
TFT	52.6	500	0.1	105	72 - 128	RC	PB01641	QC01962	
4-BFB	40.2	500	0.1	80	72 - 128	RC	PB01641	QC01962	
TPH DRO (mg/Kg)									
DRO	721	1	Mod. 8015B	4/5/00	4/5/00	BP	PB01611	QC01944	50
TPH GRO (mg/Kg)									
GRO	424	500	8015B	4/8/00	4/8/00	RC	PB01640	QC01964	0.1

Sample Number: 143817
Description: BH-11 (62-63')

Param	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/Kg)									
Benzene	103	500	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Toluene	319	500	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Ethylbenzene	92.8	500	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
M,P,O-Xylene	272	500	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001
Total BTEX	788	500	S 8021B	4/8/00	4/8/00	RC	PB01641	QC01962	0.001

Surrogate (mg/Kg)		Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT		51.4	500	0.1	103	72 - 128	RC	PB01641	QC01962
4-BFB	*	168	500	0.1	336	72 - 128	RC	PB01641	QC01962

* 4-BFB - Surrogate is out of limits due to the matrix of the sample..

TPH DRO (mg/Kg)								
DRO	11,300	1	Mod. 8015B	4/5/00	4/10/00	BP	PB01699	QC02035	50
TPH GRO (mg/Kg)									
GRO	10200	500	8015B	4/4/00	4/8/00	RC	PB01650	QC01964	0.1

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

April 11, 2000
Receiving Date: 04/04/2000
Sample Type: Product
Project No: 1085
Project Location: NA

Extraction Date: 04/04/2000
Analysis Date: 04/05/2000
Sampling Date: 03/31/2000
Sample Condition: I & C
Sample Received by: VH
Project Name: Titan/Lovington
Paddock Pit
Lea County, NM
Client Name: Titan

TA#: T143818
FIELD CODE: MW-10

FINGERPRINT

Fingerprint shows hydrocarbons throughout the C6-C28 range representative of crude oil or a mixture of gasoline and diesel.

CV Avg.: 478
EA: 84
IA: 96
RPD: 9

CHEMIST: BP

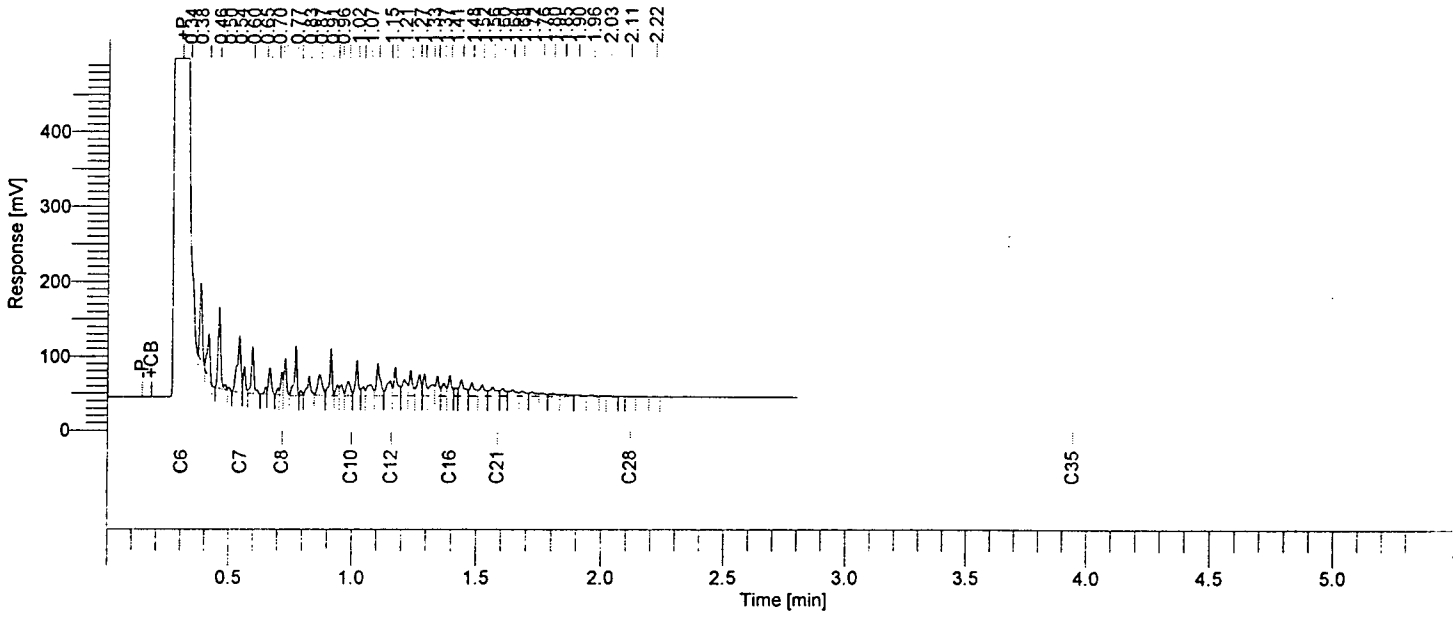
Director, Dr. Blair Leftwich

4-11-00
DATE

Software Version	: 6.1.0.2:G07	Date	: 04/10/00 09:10:30 AM
Operator	: TurboChrom	Sample Name	: 143818
Sample Number	: 039	Study	: QC01894
AutoSampler	: BUILT-IN	Rack/Vial	: 0/39
Instrument Name	: GC6	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 2.80 min
Sampling Rate	: 25.0000 pts/s		
Volume Injected	: 1.000000 ul	Area Reject	: 0.000000
Sample Amount	: 1.0000	Dilution Factor	: 20.00
Data Acquisition Time	: 04/05/00 08:30:38 PM	Cycle	: 39

Raw Data File : T:\Data\GC6\DR6A039.raw
Inst Method : D:\Method\BP from T:\Data\GC6\DR6A039.raw
Proc Method : D:\Method\TX1006F.mth
Calib Method : D:\Method\TX1006F.mth
Sequence File : D:\Sequence\DR6A.seq

143818
MW 10



TX1005

Analytical Method: TX1005
Reporting Units: mg/L
Matrix: water

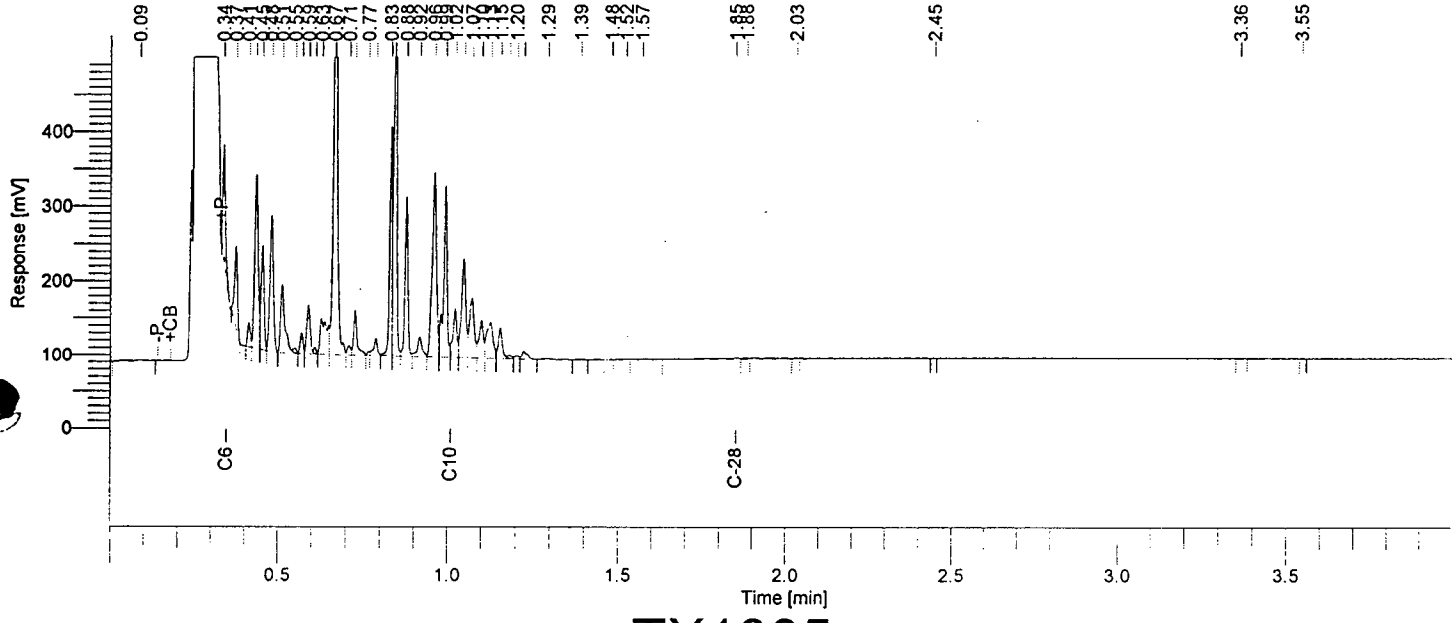
Component Name	Adjusted Amount	Raw Amount	Area [µV·s]
>C6-C7	7056.9	352.8	298169.03
>C6-C8	10277.3	513.9	434238.90
>C7-C8	3220.4	161.0	136069.87
>C8-C10	5701.5	285.1	240902.80
>C10-C12	3551.9	177.6	150077.83
>C12-C16	6045.2	302.3	255422.44
>C16-C21	3077.0	153.8	130008.68
C6-C35	31369.3	1568.5	1283107.37
>C16-C35	4791.8	239.6	202465.40
>C21-C35	1714.9	85.7	72456.72
			3202919.04

Report stored in ASCII file: .TX0

Software Version	: 6.1.0.2:G07	Date	: 02/09/99 01:31:47 PM
Operator	: TurboChrom	Sample Name	: Gasoline*100
Sample Number	: 004	Study	: TPH
AutoSampler	: BUILT-IN	Rack/Vial	: 0/4
Instrument Name	: GC6	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 4.00 min
Sampling Rate	: 25.0000 pts/s		
Volume Injected	: 1.000000 ul	Area Reject	: 0.000000
Sample Amount	: 1.0000	Dilution Factor	: 100.00
Data Acquisition Time	: 02/09/99 12:34:33 PM	Cycle	: 4

Raw Data File : T:\Data\GC6\BN6A004.raw
Inst Method : D:\Method\TPHEZ from T:\Data\GC6\BN6A004.raw
Proc Method : T:\Method\TPHEZ.mth
Calib Method : T:\Method\TPHEZ.mth
Sequence File : D:\Sequence\BN6A.seq

Gasoline



TX1005

Analytical Method: TX1005
Reporting Units: mg/L
Matrix: water

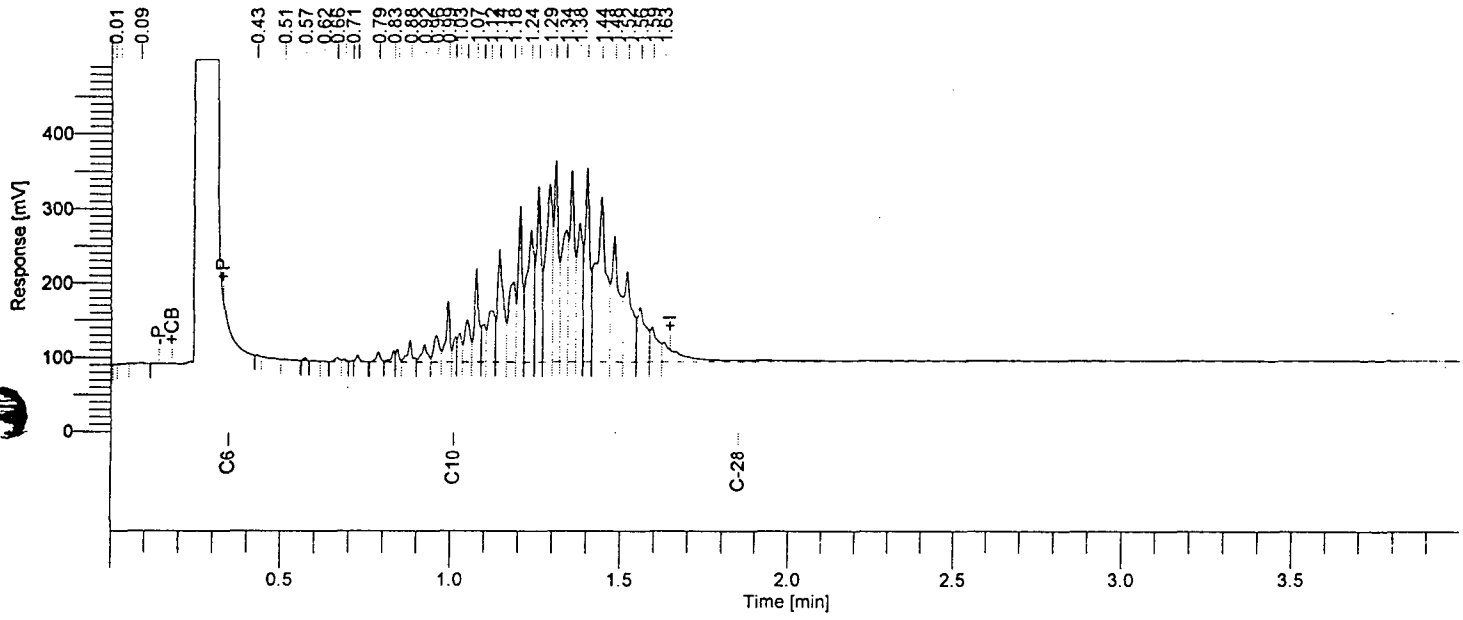
Component Name	Adjusted Amount	Raw Amount	Area [µV·s]
	0.7	0.0	7469.00
C6	8.0	0.1	80386.66
TPH AS GASOLINE	515292.0	5152.9	2330238.71
TPH AS DIESEL	60228.5	602.3	443364.97
	0.3	0.0	2651.41
	0.2	0.0	1628.05
	0.0	0.0	209.85
	0.0	0.0	239.83
	0.0	0.0	203.58
			2866392.07

Report stored in ASCII file: .TX0

Software Version	: 6.1.0.2:G07	Date	: 02/09/99 01:32:35 PM
Operator	: TurboChrom	Sample Name	: Diesel*100
Sample Number	: 005	Study	: TPH
AutoSampler	: BUILT-IN	Rack/Vial	: 0/5
Instrument Name	: GC6	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 4.00 min
Sampling Rate	: 25.0000 pts/s		
Volume Injected	: 1.000000 ul	Area Reject	: 0.000000
Sample Amount	: 1.0000	Dilution Factor	: 100.00
Data Acquisition Time	: 02/09/99 12:45:40 PM	Cycle	: 5

Raw Data File : T:\Data\GC6\BN6A005.raw
Inst Method : D:\Method\TPHEZ from T:\Data\GC6\BN6A005.raw
Proc Method : T:\Method\TPHEZ.mth
Calib Method : T:\Method\TPHEZ.mth
Sequence File : D:\Sequence\BN6A.seq

Diesel



TX1005

Analytical Method: TX1005
Reporting Units: mg/L
Matrix: water

Component Name	Adjusted Amount	Raw Amount	Area [µV·s]
	0.1	0.0	743.15
	0.2	0.0	2463.95
	0.3	0.0	2637.81
TPH AS GASOLINE	48401.0	484.0	212577.14
TPH AS DIESEL	447838.2	4478.4	4269768.32
			4488190.37

Report stored in ASCII file: .TX0

Quality Control Report
Method Blanks

Param	Flag	Blank Result	Reporting Limit	Date Analyzed	Prep Batch #	QC Batch #
Benzene (mg/Kg)		<0.05	0.05	4/8/00	PB01641	QC01962
Toluene (mg/Kg)		<0.05	0.05	4/8/00	PB01641	QC01962
Ethylbenzene (mg/Kg)		<0.05	0.05	4/8/00	PB01641	QC01962
M,P,O-Xylene (mg/Kg)		<0.05	0.05	4/8/00	PB01641	QC01962
Total BTEX (mg/Kg)		<0.05	0.05	4/8/00	PB01641	QC01962

Surrogate	Result	Spike Amount	% Rec.	% Rec. Limit	QC Batch #
TFT (mg/Kg)	5.02	0.1	100	72 - 128	QC01962
4-BFB (mg/Kg)	4.79	0.1	96	72 - 128	QC01962

Param	Flag	Blank Result	Reporting Limit	Date Analyzed	Prep Batch #	QC Batch #
DRO (mg/Kg)		<50	50	4/5/00	PB01611	QC01923
DRO (mg/Kg)		<50	50	4/5/00	PB01611	QC01943
DRO (mg/Kg)		<50	50	4/5/00	PB01611	QC01944

Param	Flag	Blank Result	Reporting Limit	Date Analyzed	Prep Batch #	QC Batch #
GRO (mg/Kg)		<5	0.1	4/8/00	PB01650	QC01964
GRO (mg/Kg)		<5	0.1	4/8/00	PB01640	QC01964

Quality Control Report
Matrix Spike and Matrix Duplicate Spike

Standard	Param	Sample Result	Dil.	Spike Amount Added	Matrix Spike Result	% Rec.	RPD	% Rec. Limit	RPD Limit	QC Batch #
MS	DRO (mg/Kg)	64	1	250	335	108		70 - 130	-	QC01923
MSD	DRO (mg/Kg)	64	1	250	288	90	19	-	0 - 20	QC01923

Standard	Param	Sample Result	Dil.	Spike Amount Added	Matrix Spike Result	% Rec.	RPD	% Rec. Limit	RPD Limit	QC Batch #
MS	Benzene (mg/Kg)	<0.05	50	0.1	5.67	114		80 - 120	-	QC01962
MS	Toluene (mg/Kg)	<0.05	50	0.1	5.76	115		80 - 120	-	QC01962
MS	Ethylbenzene (mg/Kg)	<0.05	50	0.1	5.92	118		80 - 120	-	QC01962
MS	M,P,O-Xylene (mg/Kg)	<0.05	50	0.3	17.9	119		80 - 120	-	QC01962

Standard	Surrogate	Result	Dil.	Spike Amount	Analyst	% Rec.		% Rec. Limit	Prep Batch #	QC Batch #
MS	TFT (mg/Kg)	5.59	1	0.1	RC	112		72 - 128	PB01641	QC01962
MS	4-BFB (mg/Kg)	6.25	1	0.1	RC	125		72 - 128	PB01641	QC01962

Standard	Param	Sample Result	Dil.	Spike Amount Added	Matrix Spike Result	% Rec.	RPD	% Rec. Limit	RPD Limit	QC Batch #
MSD	Benzene (mg/Kg)	<0.05	50	0.1	5.57	112	2	-	0 - 20	QC01962
MSD	Toluene (mg/Kg)	<0.05	50	0.1	5.72	114	1	-	0 - 20	QC01962
MSD	Ethylbenzene (mg/Kg)	<0.05	50	0.1	5.9	118	0	-	0 - 20	QC01962
MSD	M,P,O-Xylene (mg/Kg)	<0.05	50	0.3	17.9	119	0	-	0 - 20	QC01962

Standard	Surrogate	Result	Dil.	Spike Amount	Analyst	% Rec.		% Rec. Limit	Prep Batch #	QC Batch #
MSD	TFT (mg/Kg)	5.34	1	0.1	RC	127		72 - 128	PB01641	QC01962
MSD	4-BFB (mg/Kg)	6.3	1	0.1	RC	126		72 - 128	PB01641	QC01962

Quality Control Report
Lab Control Spikes and Duplicate Spike

	Param	Blank Result	Dil.	Spike Amount Added	Matrix Spike Result	% Rec.	RPD	% Rec. Limit	RPD Limit	QC Batch #
LCS	MTBE (mg/Kg)	<0.05	50	0.1	5.04	101		80 - 120	-	QC01962
LCS	Benzene (mg/Kg)	<0.05	50	0.1	4.93	99		80 - 120	-	QC01962
LCS	Toluene (mg/Kg)	<0.05	50	0.1	4.92	98		80 - 120	-	QC01962
LCS	Ethylbenzene (mg/Kg)	<0.05	50	0.1	4.86	97		80 - 120	-	QC01962
LCS	M,P,O-Xylene (mg/Kg)	<0.05	50	0.3	14.6	97		80 - 120	-	QC01962

Standard	Surrogate	Dil.	Spike Amount	Result	% Rec.	% Rec. Limit	QC Batch #
LCS	TFT (mg/Kg)	50	0.1	5.11	102	72 - 128	QC01962
LCS	4-BFB (mg/Kg)	50	0.1	5.22	104	72 - 128	QC01962

LCSD	MTBE (mg/Kg)	<0.05	50	0.1	5.16	103	2	-	0 - 20	QC01962
LCSD	Benzene (mg/Kg)	<0.05	50	0.1	5.02	100	2	-	0 - 20	QC01962
LCSD	Toluene (mg/Kg)	<0.05	50	0.1	5.03	101	2	-	0 - 20	QC01962
LCSD	Ethylbenzene (mg/Kg)	<0.05	50	0.1	5.02	100	3	-	0 - 20	QC01962
LCSD	M,P,O-Xylene (mg/Kg)	<0.05	50	0.3	14.9	99	2	-	0 - 20	QC01962

Standard	Surrogate	Dil.	Spike Amount	Result	% Rec.	% Rec. Limit	QC Batch #
LCSD	TFT (mg/Kg)	50	0.1	4.97	99	72 - 128	QC01962
LCSD	4-BFB (mg/Kg)	50	0.1	4.85	97	72 - 128	QC01962

	Param	Blank Result	Dil.	Spike Amount Added	Matrix Spike Result	% Rec.	RPD	% Rec. Limit	RPD Limit	QC Batch #
LCS	DRO (mg/Kg)	<50	1	250	294	118		70 - 130	-	QC01923
LCSD	DRO (mg/Kg)	<50	1	250	278	111	6	-	0 - 20	QC01923

	Param	Blank Result	Dil.	Spike Amount Added	Matrix Spike Result	% Rec.	RPD	% Rec. Limit	RPD Limit	QC Batch #
LCS	DRO (mg/Kg)	<50	1	250	240	96		70 - 130	-	QC01943
LCSD	DRO (mg/Kg)	<50	1	250	253	101	5	-	0 - 20	QC01943

	Param		Blank Result	Dil.	Spike Amount Added	Matrix Spike Result	% Rec.	RPD	% Rec. Limit	RPD Limit	QC Batch #
LCS	DRO (mg/Kg)	*	<50	1	250	263	105		70 - 130	-	QC01944

* DRO - LCS AND LCSD WERE USED FOR %EA AND RPD DUE TO HIGH LEVEL IN SAMPLE USED FOR MS AND MSD.

LCSD	DRO (mg/Kg)	*	<50	1	250	264	106	0	-	0 - 20	QC01944

* DRO - LCS AND LCSD WERE USED FOR %EA AND RPD DUE TO HIGH LEVEL IN SAMPLE USED FOR MS AND MSD.

	Param	Blank Result	Dil.	Spike Amount Added	Matrix Spike Result	% Rec.	RPD	% Rec. Limit	RPD Limit	QC Batch #
LCS	GRO (mg/Kg)	<5	1	1	0.963	96		80 - 120	-	QC01964
LCS	GRO (mg/Kg)	<5	1	1	0.963	96		80 - 120	-	QC01964
LCSD	GRO (mg/Kg)	<5	1	1	1.14	114	17	-	0 - 20	QC01964
LCSD	GRO (mg/Kg)	<5	1	1	1.14	114	17	-	0 - 20	QC01964

Quality Control Report
Continuing Calibration Verification Standard

Standard	Param	Flag	CCVs TRUE Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed	QC Batch #
ICV	Benzene (mg/Kg)		0.1	0.099	99	80 - 120	4/8/00	QC01962
ICV	Toluene (mg/Kg)		0.1	0.1	100	80 - 120	4/8/00	QC01962
ICV	Ethylbenzene (mg/Kg)		0.1	0.1	100	80 - 120	4/8/00	QC01962
ICV	M,P,O-Xylene (mg/Kg)		0.3	0.298	99	80 - 120	4/8/00	QC01962
CCV 1	Benzene (mg/Kg)		0.1	0.106	106	80 - 120	4/8/00	QC01962
CCV 1	Toluene (mg/Kg)		0.1	0.107	107	80 - 120	4/8/00	QC01962
CCV 1	Ethylbenzene (mg/Kg)		0.1	0.106	106	80 - 120	4/8/00	QC01962
CCV 1	M,P,O-Xylene (mg/Kg)		0.3	0.32	107	80 - 120	4/8/00	QC01962
CCV 2	Benzene (mg/Kg)		0.1	0.093	93	80 - 120	4/8/00	QC01962
CCV 2	Toluene (mg/Kg)		0.1	0.088	88	80 - 120	4/8/00	QC01962
CCV 2	Ethylbenzene (mg/Kg)		0.1	0.085	85	80 - 120	4/8/00	QC01962
CCV 2	M,P,O-Xylene (mg/Kg)		0.3	0.255	85	80 - 120	4/8/00	QC01962

Standard	Param	Flag	CCVs TRUE Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed	QC Batch #
ICV	DRO (mg/Kg)		250	320	128	70 - 130	4/5/00	QC01923
CCV 1	DRO (mg/Kg)		250	281	112	70 - 130	4/5/00	QC01923

Standard	Param	Flag	CCVs TRUE Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed	QC Batch #
ICV	DRO (mg/Kg)		250	275	110	70 - 130	4/5/00	QC01943
CCV 1	DRO (mg/Kg)		250	292	117	70 - 130	4/5/00	QC01943
CCV 2	DRO (mg/Kg)		250	279	112	70 - 130	4/5/00	QC01943

Standard	Param	Flag	CCVs TRUE Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed	QC Batch #
ICV	DRO (mg/Kg)		250	308	123	70 - 130	4/5/00	QC01944
CCV 1	DRO (mg/Kg)		250	266	106	70 - 130	4/5/00	QC01944
CCV 2	DRO (mg/Kg)		250	268	107	70 - 130	4/5/00	QC01944

Standard	Param	Flag	CCVs TRUE Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed	QC Batch #
ICV	DRO (mg/Kg)		250	268	107	70 - 130	4/10/00	QC02035
CCV 1	DRO (mg/Kg)		250	287	115	70 - 130	4/10/00	QC02035

Quality Control Report
Continuing Calibration Verification Standard

Standard	Param	Flag	CCVs TRUE Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed	QC Batch #
ICV	GRO (mg/Kg)		1	0.804	80	80 - 120	4/8/00	QC01964
ICV	GRO (mg/Kg)		1	0.804	80	80 - 120	4/8/00	QC01964
CCV 1	GRO (mg/Kg)		1	1.14	114	80 - 120	4/8/00	QC01964
CCV 1	GRO (mg/Kg)		1	1.14	114	80 - 120	4/8/00	QC01964
CCV 2	GRO (mg/Kg)		1	0.951	95	80 - 120	4/8/00	QC01964
CCV 2	GRO (mg/Kg)		1	0.951	95	80 - 120	4/8/00	QC01964

TRACEANALYSIS, INC.

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Ike Tavarez
Highlander Environmental Services
1910 N. Big Spring St.
Midland, TX 79705

Report Date: 1/19/00

Project Number: 1026
Project Name: Titan Lovington Unit
Project Location: Lea Co. NM.

Order ID Number: A00010804

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to TraceAnalysis, Inc. for analysis:

Sample Number	Sample Description	Matrix	Date Taken	Time Taken	Date Received
138372	MW-1	Water	1/6/00	-	1/8/00
138373	MW-2	Water	1/6/00	-	1/8/00
138374	MW-3	Water	1/6/00	-	1/8/00
138375	MW-4	Water	1/6/00	-	1/8/00
138376	MW-5	Water	1/6/00	-	1/8/00
138377	MW-6	Water	1/6/00	-	1/8/00
138378	MW-7	Water	1/6/00	-	1/8/00
138379	MW-8	Water	1/6/00	-	1/8/00
138380	MW-9	Water	1/6/00	-	1/8/00

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director

Analytical Results Report

Sample Number: 138372
Description: MW-1

Param	Flag	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/L)										
Benzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Toluene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Ethylbenzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
M,P,O-Xylene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Total BTEX		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001

Surrogate (mg/L)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	0.53	5	0.1	106	72 - 128	RC	PB00303	QC00398
4-BFB	0.517	5	0.1	103	72 - 128	RC	PB00303	QC00398

Sample Number: 138373
Description: MW-2

Param	Flag	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/L)										
Benzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Toluene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Ethylbenzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
M,P,O-Xylene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Total BTEX		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001

Surrogate (mg/L)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	0.553	5	0.1	111	72 - 128	RC	PB00303	QC00398
4-BFB	0.534	5	0.1	107	72 - 128	RC	PB00303	QC00398

Sample Number: 138374
Description: MW-3

Param	Flag	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/L)										
Benzene		0.593	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Toluene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Ethylbenzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
M,P,O-Xylene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Total BTEX		0.593	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001

Surrogate (mg/L)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	0.541	5	0.1	108	72 - 128	RC	PB00303	QC00398
4-BFB	0.547	5	0.1	109	72 - 128	RC	PB00303	QC00398

Sample Number: 138375
Description: MW-4

Param	Flag	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/L)										
Benzene		0.569	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Toluene		0.331	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Ethylbenzene		0.055	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
M,P,O-Xylene		0.109	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Total BTEX		1.06	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001

Surrogate (mg/L)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	0.523	5	0.1	105	72 - 128	RC	PB00303	QC00398
4-BFB	0.527	5	0.1	105	72 - 128	RC	PB00303	QC00398

Sample Number: 138376
Description: MW-5

Param	Flag	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/L)										
Benzene		3.1	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Toluene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Ethylbenzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
M,P,O-Xylene		0.057	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Total BTEX		3.16	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001

Surrogate (mg/L)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	0.535	5	0.1	107	72 - 128	RC	PB00303	QC00398
4-BFB	0.538	5	0.1	108	72 - 128	RC	PB00303	QC00398

Sample Number: 138377
Description: MW-6

Param	Flag	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/L)										
Benzene		2.07	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Toluene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Ethylbenzene		0.439	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
M,P,O-Xylene		0.087	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Total BTEX		2.6	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001

Surrogate (mg/L)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	0.532	5	0.1	106	72 - 128	RC	PB00303	QC00398
4-BFB	0.53	5	0.1	106	72 - 128	RC	PB00303	QC00398

Sample Number: 138378
Description: MW-7

Param	Flag	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/L)										
Benzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Toluene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Ethylbenzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
M,P,O-Xylene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001

Total BTEX	<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001

Surrogate (mg/L)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	0.53	5	0.1	106	72 - 128	RC	PB00303	QC00398
4-BFB	0.526	5	0.1	105	72 - 128	RC	PB00303	QC00398

Sample Number: 138379
Description: MW-8

Param	Flag	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/L)										
Benzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Toluene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Ethylbenzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
M,P,O-Xylene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Total BTEX		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001

Surrogate (mg/L)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	0.548	5	0.1	110	72 - 128	RC	PB00303	QC00398
4-BFB	0.541	5	0.1	108	72 - 128	RC	PB00303	QC00398

Sample Number: 138380
Description: MW-9

Param	Flag	Result	Dilution	Analytical Method	Date Prepared	Date Analyzed	Analyst	Prep Batch #	QC Batch #	RDL
BTEX (mg/L)										
Benzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Toluene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Ethylbenzene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
M,P,O-Xylene		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001
Total BTEX		<0.005	5	S 8021B	1/17/00	1/17/00	RC	PB00303	QC00398	0.001

Surrogate (mg/L)	Result	Dilution	Spike Amount	% Rec.	% Rec. Limit	Analyst	Prep Batch #	QC Batch #
TFT	0.505	5	0.1	101	72 - 128	RC	PB00303	QC00398
4-BFB	0.517	5	0.1	103	72 - 128	RC	PB00303	QC00398

Quality Control Report
Method Blanks

Param	Flag	Blank Result	Reporting Limit	Date Analyzed	Prep Batch #	QC Batch #
Benzene (mg/L)		<0.001	0.001	1/17/00	PB00303	QC00398
Toluene (mg/L)		<0.001	0.001	1/17/00	PB00303	QC00398
Ethylbenzene (mg/L)		<0.001	0.001	1/17/00	PB00303	QC00398
M,P,O-Xylene (mg/L)		<0.001	0.001	1/17/00	PB00303	QC00398
Total BTEX (mg/L)		<0.001	0.001	1/17/00	PB00303	QC00398

Surrogate	Result	Spike Amount	% Rec.	% Rec. Limit	QC Batch #
TFT (mg/L)	0.108	0.1	108	72 - 128	QC00398
4-BFB (mg/L)	0.1	0.1	100	72 - 128	QC00398

Quality Control Report
Lab Control Spikes and Duplicate Spike

	Param	Blank Result	Dil.	Spike Amount Added	Matrix Spike Result	% Rec.	RPD	% Rec. Limit	RPD Limit	QC Batch #
LCS	MTBE (mg/L)	<0.001	1	0.1	0.094	94		80 - 120	0 - 20	QC00398
LCS	Benzene (mg/L)	<0.001	1	0.1	0.093	93		80 - 120	0 - 20	QC00398
LCS	Toluene (mg/L)	<0.001	1	0.1	0.093	93		80 - 120	0 - 20	QC00398
LCS	Ethylbenzene (mg/L)	<0.001	1	0.1	0.091	91		80 - 120	0 - 20	QC00398
LCS	M,P,O-Xylene (mg/L)	<0.001	1	0.3	0.269	90		80 - 120	0 - 20	QC00398

Standard	Surrogate	Dil.	Spike Amount	Result	% Rec.	% Rec. Limit	QC Batch #
LCS	TFT (mg/L)	1	0.1	0.1	100	72 - 128	QC00398
LCS	4-BFB (mg/L)	1	0.1	0.1	100	72 - 128	QC00398

LCSD	MTBE (mg/L)	<0.001	1	0.1	0.099	99	5	80 - 120	0 - 20	QC00398
LCSD	Benzene (mg/L)	<0.001	1	0.1	0.096	96	3	80 - 120	0 - 20	QC00398
LCSD	Toluene (mg/L)	<0.001	1	0.1	0.095	95	2	80 - 120	0 - 20	QC00398
LCSD	Ethylbenzene (mg/L)	<0.001	1	0.1	0.092	92	1	80 - 120	0 - 20	QC00398
LCSD	M,P,O-Xylene (mg/L)	<0.001	1	0.3	0.272	91	1	80 - 120	0 - 20	QC00398

Standard	Surrogate	Dil.	Spike Amount	Result	% Rec.	% Rec. Limit	QC Batch #
LCSD	TFT (mg/L)	1	0.1	0.098	98	72 - 128	QC00398
LCSD	4-BFB (mg/L)	1	0.1	0.099	99	72 - 128	QC00398

Quality Control Report
Continuing Calibration Verification Standard

Standard	Param	Flag	CCVs TRUE Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed	QC Batch #
ICV	Benzene (mg/L)		0.1	0.099	99	80 - 120	1/17/00	QC00398
ICV	Toluene (mg/L)		0.1	0.1	100	80 - 120	1/17/00	QC00398
ICV	Ethylbenzene (mg/L)		0.1	0.098	98	80 - 120	1/17/00	QC00398
ICV	M,P,O-Xylene (mg/L)		0.3	0.289	96	80 - 120	1/17/00	QC00398
CCV (1	Benzene (mg/L)		0.1	0.101	101	80 - 120	1/17/00	QC00398
CCV (1	Toluene (mg/L)		0.1	0.101	101	80 - 120	1/17/00	QC00398
CCV (1	Ethylbenzene (mg/L)		0.1	0.099	99	80 - 120	1/17/00	QC00398
CCV (1	M,P,O-Xylene (mg/L)		0.3	0.295	98	80 - 120	1/17/00	QC00398
CCV (2	Benzene (mg/L)		0.1	0.097	97	80 - 120	1/17/00	QC00398
CCV (2	Toluene (mg/L)		0.1	0.098	98	80 - 120	1/17/00	QC00398
CCV (2	Ethylbenzene (mg/L)		0.1	0.096	96	80 - 120	1/17/00	QC00398
CCV (2	M,P,O-Xylene (mg/L)		0.3	0.285	95	80 - 120	1/17/00	QC00398

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

January 27, 2000
Receiving Date: 01/08/2000
Sample Type: Water
Project No: 1085
Project Location: NA

Prep Date: 01/26/2000
Analysis Date: 01/26/2000
Sampling Date: 01/06/2000
Sample Condition: I & C
Sample Received by: MS
Project Name: Titan Lovington Paddock - ATB-1-1 (Pit) Lea County,NM
Client Name: Titan Exploration

TA#: T138375
FIELD CODE: MW-4

FINGERPRINT

Hydrocarbons present in the C10-C28 range.
Chromatogram resembles diesel standard.
Typical of an aged product.

CV Avg.: 461
EA: 100
IA: 92
RPD: 7

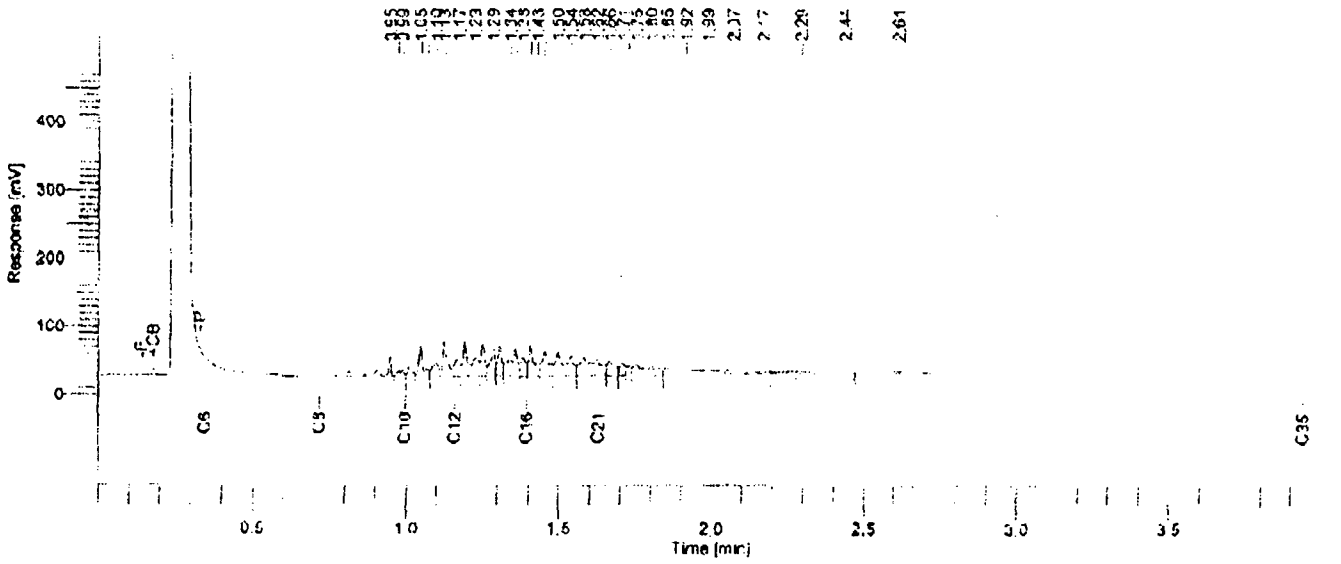
CHEMIST: MA

Director, Dr. Blair Leftwich

1-21-00
DATE

Software Version	: 6.1.0.2:G07	Date	: 01/27/00 12:55:09 PM
Operator	: TurboChrom	Sample Name	: 138375
Sample Number	: 047	Study	: QC00572
AutoSampler	: BUILT-IN	Rack/Vial	: 0/47
Instrument Name	: GC6	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 2.80 min
Sampling Rate	: 25.0000 pts/s		
Volume Injected	: 1.000000 ul	Area Reject	: 0.000000
Sample Amount	: 1.0000	Dilution Factor	: 1.00
Data Acquisition Time	: 01/27/00 11:36:08 AM	Cycle	: 47

Raw Data File : D:\Data\GC6\AZ6C047.raw
Inst Method : D:\Method\TPHEZ from D:\Data\GC6\AZ6C047.raw
Proc Method : D:\Method\TX1006AL.mth
Calib Method : D:\Method\TX1006AL.mth
Sequence File : D:\Sequence\AZ6C.seq



TX1005

Analytical Method: TX1005
Reporting Units: mg/Kg
Matrix: soil

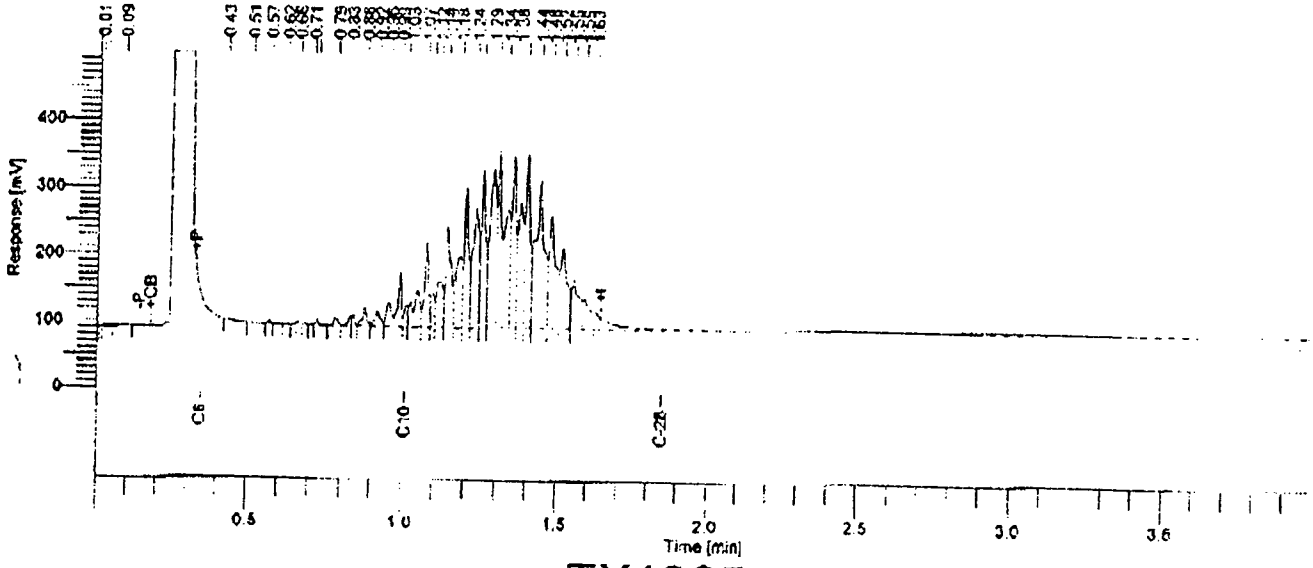
Component Name	Adjusted Amount	Raw Amount	Area [µV·s]
>C6-C8 AL	0.0	0.0	0.00
>C8-C10 AL	32.0	32.0	30494.01
>C10-C12AL	146.0	146.0	139281.67
>C12-16 AL	372.2	372.2	355139.34
>C16-21 AL	308.4	308.4	294282.16
>C21-C35	307.1	307.1	293022.47
			1112219.65

Report stored in ASCII file: .TX0

Software Version	: 6.1.0.2:G07	Date	: 02/09/99 01:32:35 PM
Operator	: TurboChrom	Sample Name	: Diesel*100
Sample Number	: 005	Study	: TPH
AutoSampler	: BUILT-IN	Rack/Vial	: 0/5
Instrument Name	: GC6	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 4.00 min
Sampling Rate	: 25.0000 pts/s		
Volume Injected	: 1.000000 ul	Area Reject	: 0.000000
Sample Amount	: 1.0000	Dilution Factor	: 100.00
Data Acquisition Time	: 02/09/99 12:45:40 PM	Cycle	: 5

Raw Data File : T:\Data\GC6\BN6A005.raw
Inst Method : D:\Method\TPHEZ from T:\Data\GC6\BN6A005.raw
Proc Method : T:\Method\TPHEZ.mth
Calib Method : T:\Method\TPHEZ.mth
Sequence File : D:\Sequence\BN6A.seq

Diesel Standard



TX1005

Analytical Method: TX1005
Reporting Units: mg/L
Matrix: water

Component Name	Adjusted Amount	Raw Amount	Area [µV·s]
	0.1	0.0	743.15
	0.2	0.0	2463.95
	0.3	0.0	2637.81
TPH AS GASOLINE	48401.0	484.0	212577.14
TPH AS DIESEL	447838.2	4478.4	4269768.32
			4468190.37

Report stored in ASCII file: .TX0

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E-Mail: lab@traceanalysis.com

January 13, 2000

Receiving Date: 01/08/2000
Sample Type: Water
Project No: 1085
Project Name: Titan Lovington Paddock - ATB-1-1 (Pit) Lea County, NM
Client Name: Titan Exploration
Sampling Date: 01/06/2000
Sample Condition: I & C
Sample Received by: MS
Extraction Date: 01/11/2000
Analysis Date: 01/11/2000

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

PAH Reporting T138372

8270 Compounds (mg/L)	Limit	MW-1	QC	RPD	%EA	%IA
Naphthalene	0.005	ND	59	2	66	99
Acenaphthylene	0.005	ND	60	2	83	101
Acenaphthene	0.005	ND	59	3	79	99
Fluorene	0.005	ND	62	3	87	104
Phenanthrene	0.005	ND	59	2	89	99
Anthracene	0.005	ND	60	1	85	100
Fluoranthene	0.005	ND	59	10	97	100
Pyrene	0.005	ND	67	8	79	112
Benzo[a]anthracene	0.005	ND	60	2	82	101
Chrysene	0.005	ND	59	1	53	99
Benzo[b]fluoranthene	0.005	ND	57	5	79	96
Benzo[k]fluoranthene	0.005	ND	59	3	74	99
Benzo[a]pyrene	0.005	ND	58	4	79	97
Indeno[1,2,3-cd]pyrene	0.005	ND	57	1	76	97
Dibenz[a,h]anthracene	0.005	ND	59	1	53	99
Benzo[g,h,i]perylene	0.005	ND	63	1	82	105

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	81
2-Fluorobiphenyl SURR	82
Terphenyl-d14 SURR	53

METHODS: EPA SW 846-8270C, 3510C.
CHEMIST: MA

Director, Dr. Blair Leftwich

1-13-00
DATE

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

January 13, 2000

Receiving Date: 01/08/2000
Sample Type: Water
Project No: 1085
Project Name: Titan Lovington
Paddock - ATB-1-1 (Pit)
Lea County, NM
Client Name: Titan Exploration
Sampling Date: 01/06/2000
Sample Condition: I & C
Sample Received by: MS
Extraction Date: 01/11/2000
Analysis Date: 01/11/2000

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

PAH	Reporting	T138373				
8270 Compounds (mg/L)	Limit	MW-2	QC	RPD	%EA	%IA
Naphthalene	0.005	ND	59	2	66	99
Acenaphthylene	0.005	ND	60	2	83	101
Acenaphthene	0.005	ND	59	3	79	99
Fluorene	0.005	ND	62	3	87	104
Phenanthrene	0.005	ND	59	2	89	99
Anthracene	0.005	ND	60	1	85	100
Fluoranthene	0.005	ND	59	10	97	100
Pyrene	0.005	ND	67	8	79	112
Benzo[a]anthracene	0.005	ND	60	2	82	101
Chrysene	0.005	ND	59	1	53	99
Benzo[b]fluoranthene	0.005	ND	57	5	79	96
Benzo[k]fluoranthene	0.005	ND	59	3	74	99
Benzo[a]pyrene	0.005	ND	58	4	79	97
Indeno[1,2,3-cd]pyrene	0.005	ND	57	1	76	97
Dibenz[a,h]anthracene	0.005	ND	59	1	53	99
Benzo[g,h,i]perylene	0.005	ND	63	1	82	105

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	80
2-Fluorobiphenyl SURR	81
Terphenyl-d14 SURR	66

METHODS: EPA SW 846-8270C, 3510C.

CHEMIST: MA

Director, Dr. Blair Leftwich

1-13-00
DATE

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E-Mail: lab@traceanalysis.com

January 13, 2000

Receiving Date: 01/08/2000
Sample Type: Water
Project No: 1085
Project Name: Titan Lovington
Paddock - ATB-1-1 (Pit)
Lea County, NM
Client Name: Titan Exploration
Sampling Date: 01/06/2000
Sample Condition: I & C
Sample Received by: MS
Extraction Date: 01/11/2000
Analysis Date: 01/11/2000

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

PAH	Reporting	T138374				
8270 Compounds (mg/L)	Limit	MW-3	QC	RPD	%EA	%IA
Naphthalene	0.005	0.006	59	2	66	99
Acenaphthylene	0.005	ND	60	2	83	101
Acenaphthene	0.005	ND	59	3	79	99
Fluorene	0.005	ND	62	3	87	104
Phenanthrene	0.005	ND	59	2	89	99
Anthracene	0.005	ND	60	1	85	100
Fluoranthene	0.005	ND	59	10	97	100
Pyrene	0.005	ND	67	8	79	112
Benzo[a]anthracene	0.005	ND	60	2	82	101
Chrysene	0.005	ND	59	1	53	99
Benzo[b]fluoranthene	0.005	ND	57	5	79	96
Benzo[k]fluoranthene	0.005	ND	59	3	74	99
Benzo[a]pyrene	0.005	ND	58	4	79	97
Indeno[1,2,3-cd]pyrene	0.005	ND	57	1	76	97
Dibenz[a,h]anthracene	0.005	ND	59	1	53	99
Benzo[g,h,i]perylene	0.005	ND	63	1	82	105

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	78
2-Fluorobiphenyl SURR	75
Terphenyl-d14 SURR	70

METHODS: EPA SW 846-8270C, 3510C.
CHEMIST: MA

Director, Dr. Blair Leftwich

1-13-00
DATE

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

January 13, 2000

Receiving Date: 01/08/2000
Sample Type: Water
Project No: 1085
Project Name: Titan Lovington
Paddock - ATB-1-1 (Pit)
Lea County, NM
Client Name: Titan Exploration
Sampling Date: 01/06/2000
Sample Condition: I & C
Sample Received by: MS
Extraction Date: 01/11/2000
Analysis Date: 01/11/2000

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

PAH	Reporting	T138375				
8270 Compounds (mg/L)	Limit	MW-4	QC	RPD	%EA	%IA
Naphthalene	0.005	0.008	59	2	66	99
Acenaphthylene	0.005	ND	60	2	83	101
Acenaphthene	0.005	ND	59	3	79	99
Fluorene	0.005	ND	62	3	87	104
Phenanthrene	0.005	ND	59	2	89	99
Anthracene	0.005	ND	60	1	85	100
Fluoranthene	0.005	ND	59	10	97	100
Pyrene	0.005	ND	67	8	79	112
Benzo[a]anthracene	0.005	ND	60	2	82	101
Chrysene	0.005	ND	59	1	53	99
Benzo[b]fluoranthene	0.005	ND	57	5	79	96
Benzo[k]fluoranthene	0.005	ND	59	3	74	99
Benzo[a]pyrene	0.005	ND	58	4	79	97
Indeno[1,2,3-cd]pyrene	0.005	ND	57	1	76	97
Dibenz[a,h]anthracene	0.005	ND	59	1	53	99
Benzo[g,h,i]perylene	0.005	ND	63	1	82	105

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	69
2-Fluorobiphenyl SURR	67
Terphenyl-d14 SURR	75

METHODS: EPA SW 846-8270C, 3510C.

CHEMIST: MA

Director, Dr. Blair Leftwich

1-13-00
DATE

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

Receiving Date: 01/08/2000
Sample Type: Water
Project No: 1085
Project Name: Titan Lovington
Paddock - ATB-1-1 (Pit)
Lea County, NM
Client Name: Titan Exploration
Sampling Date: 01/06/2000
Sample Condition: I & C
Sample Received by: MS
Extraction Date: 01/11/2000
Analysis Date: 01/11/2000

PAH 8270 Compounds (mg/L)	Reporting Limit	T138376 MW-5	QC	RPD	%EA	%IA
Naphthalene	0.005	0.013	59	2	66	99
Acenaphthylene	0.005	ND	60	2	83	101
Acenaphthene	0.005	ND	59	3	79	99
Fluorene	0.005	ND	62	3	87	104
Phenanthrene	0.005	ND	59	2	89	99
Anthracene	0.005	ND	60	1	85	100
Fluoranthene	0.005	ND	59	10	97	100
Pyrene	0.005	ND	67	8	79	112
Benzo[a]anthracene	0.005	ND	60	2	82	101
Chrysene	0.005	ND	59	1	53	99
Benzo[b]fluoranthene	0.005	ND	57	5	79	96
Benzo[k]fluoranthene	0.005	ND	59	3	74	99
Benzo[a]pyrene	0.005	ND	58	4	79	97
Indeno[1,2,3-cd]pyrene	0.005	ND	57	1	76	97
Dibenz[a,h]anthracene	0.005	ND	59	1	53	99
Benzo[g,h,i]perylene	0.005	ND	63	1	82	105

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	78
2-Fluorobiphenyl SURR	74
Terphenyl-d14 SURR	54

METHODS: EPA SW 846-8270C, 3510C.
CHEMIST: MA

Director, Dr. Blair Leftwich

1-13-00
DATE

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E-Mail: lab@traceanalysis.com

January 13, 2000

Receiving Date: 01/08/2000
Sample Type: Water
Project No: 1085
Project Name: Titan Lovington
Paddock - ATB-1-1 (Pit)
Lea County, NM
Client Name: Titan Exploration
Sampling Date: 01/06/2000
Sample Condition: I & C
Sample Received by: MS
Extraction Date: 01/11/2000
Analysis Date: 01/11/2000

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

PAH Reporting T138377

8270 Compounds (mg/L)	Limit*	MW-6	QC	RPD	%EA	%IA
Naphthalene	0.025	0.033	59	2	66	99
Acenaphthylene	0.025	ND	60	2	83	101
Acenaphthene	0.025	ND	59	3	79	99
Fluorene	0.025	ND	62	3	87	104
Phenanthrene	0.025	ND	59	2	89	99
Anthracene	0.025	ND	60	1	85	100
Fluoranthene	0.025	ND	59	10	97	100
Pyrene	0.025	ND	67	8	79	112
Benzo[a]anthracene	0.025	ND	60	2	82	101
Chrysene	0.025	ND	59	1	53	99
Benzo[b]fluoranthene	0.025	ND	57	5	79	96
Benzo[k]fluoranthene	0.025	ND	59	3	74	99
Benzo[a]pyrene	0.025	ND	58	4	79	97
Indeno[1,2,3-cd]pyrene	0.025	ND	57	1	76	97
Dibenz[a,h]anthracene	0.025	ND	59	1	53	99
Benzo[g,h,i]perylene	0.025	ND	63	1	82	105

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	70
2-Fluorobiphenyl SURR	73
Terphenyl-d14 SURR	57

*NOTE: Elevated reporting limit due to dilution.

METHODS: EPA SW 846-8270C, 3510C.
CHEMIST: MA

Director, Dr. Blair Leftwich

1-13-00
DATE

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E-Mail: lab@traceanalysis.com

January 13, 2000
Receiving Date: 01/08/2000
Sample Type: Water
Project No: 1085
Project Name: Titan Lovington
Paddock - ATB-1-1 (Pit)
Lea County, NM
Client Name: Titan Exploration
Sampling Date: 01/06/2000
Sample Condition: I & C
Sample Received by: MS
Extraction Date: 01/11/2000
Analysis Date: 01/12/2000

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

PAH	Reporting	T138378				
8270 Compounds (mg/L)	Limit	MW-7	QC	RPD	%EA	%IA
Naphthalene	0.005	ND	59	2	66	99
Acenaphthylene	0.005	ND	60	2	83	101
Acenaphthene	0.005	ND	59	3	79	99
Fluorene	0.005	ND	62	3	87	104
Phenanthrene	0.005	ND	59	2	89	99
Anthracene	0.005	ND	60	1	85	100
Fluoranthene	0.005	ND	59	10	97	100
Pyrene	0.005	ND	67	8	79	112
Benzo[a]anthracene	0.005	ND	60	2	82	101
Chrysene	0.005	ND	59	1	53	99
Benzo[b]fluoranthene	0.005	ND	57	5	79	96
Benzo[k]fluoranthene	0.005	ND	59	3	74	99
Benzo[a]pyrene	0.005	ND	58	4	79	97
Indeno[1,2,3-cd]pyrene	0.005	ND	57	1	76	97
Dibenz[a,h]anthracene	0.005	ND	59	1	53	99
Benzo[g,h,i]perylene	0.005	ND	63	1	82	105

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	75
2-Fluorobiphenyl SURR	75
Terphenyl-d14 SURR	56

METHODS: EPA SW 846-8270C, 3510C.
CHEMIST: MA

Director, Dr. Blair Leftwich

1-12-00
DATE

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

January 13, 2000

Receiving Date: 01/08/2000
Sample Type: Water
Project No: 1085
Project Name: Titan Lovington Paddock - ATB-1-1 (Pit) Lea County, NM
Client Name: Titan Exploration
Sampling Date: 01/06/2000
Sample Condition: I & C
Sample Received by: MS
Extraction Date: 01/11/2000
Analysis Date: 01/12/2000

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

PAH	Reporting	T138379				
8270 Compounds (mg/L)	Limit	MW-8	QC	RPD	%EA	%IA
Naphthalene	0.005	ND	59	2	66	99
Acenaphthylene	0.005	ND	60	2	83	101
Acenaphthene	0.005	ND	59	3	79	99
Fluorene	0.005	ND	62	3	87	104
Phenanthrene	0.005	ND	59	2	89	99
Anthracene	0.005	ND	60	1	85	100
Fluoranthene	0.005	ND	59	10	97	100
Pyrene	0.005	ND	67	8	79	112
Benzo[a]anthracene	0.005	ND	60	2	82	101
Chrysene	0.005	ND	59	1	53	99
Benzo[b]fluoranthene	0.005	ND	57	5	79	96
Benzo[k]fluoranthene	0.005	ND	59	3	74	99
Benzo[a]pyrene	0.005	ND	58	4	79	97
Indeno[1,2,3-cd]pyrene	0.005	ND	57	1	76	97
Dibenz[a,h]anthracene	0.005	ND	59	1	53	99
Benzo[g,h,i]perylene	0.005	ND	63	1	82	105

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	65
2-Fluorobiphenyl SURR	71
Terphenyl-d14 SURR	67

METHODS: EPA SW 846-8270C, 3510C.

CHEMIST: MA

Director, Dr. Blair Leftwich

1-12-00
DATE

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

January 13, 2000

Receiving Date: 01/08/2000
Sample Type: Water
Project No: 1085
Project Name: Titan Lovington
Paddock - ATB-1-1 (Pit)
Lea County, NM
Client Name: Titan Exploration
Sampling Date: 01/06/2000
Sample Condition: I & C
Sample Received by: MS
Extraction Date: 01/11/2000
Analysis Date: 01/12/2000

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

PAH	Reporting	T138380				
8270 Compounds (mg/L)	Limit	MW-9	QC	RPD	%EA	%IA
Naphthalene	0.005	ND	59	2	66	99
Acenaphthylene	0.005	ND	60	2	83	101
Acenaphthene	0.005	ND	59	3	79	99
Fluorene	0.005	ND	62	3	87	104
Phenanthrene	0.005	ND	59	2	89	99
Anthracene	0.005	ND	60	1	85	100
Fluoranthene	0.005	ND	59	10	97	100
Pyrene	0.005	ND	67	8	79	112
Benzo[a]anthracene	0.005	ND	60	2	82	101
Chrysene	0.005	ND	59	1	53	99
Benzo[b]fluoranthene	0.005	ND	57	5	79	96
Benzo[k]fluoranthene	0.005	ND	59	3	74	99
Benzo[a]pyrene	0.005	ND	58	4	79	97
Indeno[1,2,3-cd]pyrene	0.005	ND	57	1	76	97
Dibenz[a,h]anthracene	0.005	ND	59	1	53	99
Benzo[g,h,i]perylene	0.005	ND	63	1	82	105

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	74
2-Fluorobiphenyl SURR	75
Terphenyl-d14 SURR	77

METHODS: EPA SW 846-8270C, 3510C.

CHEMIST: MA

Director, Dr. Blair Leftwich

1-13-00
DATE

A00010804

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

PAGE: 1 OF: 1

CLIENT NAME: Titan Exploration
SITE MANAGER: IKE Tavarez
PROJECT NO.: 1085 ~~TBD~~
PROJECT NAME: TMN/Lovington Paddock-ATB-1-1 (Pit) Lea County NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	ECI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	8260 (Highlighted)
138372	1-6-00		W			MW-1	5				✓		X			X													
373			W			MW-2	5				✓		X			X													
374			W			MW-3	5				✓		X			X													
375			W			MW-4	6				✓		X			X													2
376			W			MW-5	5				✓		X			X													
377			W			MW-6	5				✓		X			X													
378			W			MW-7	5				✓		X			X													
379			W			MW-8	5				✓		X			X													
380			W			MW-9	5				✓		X			X													

RELINQUISHED BY: (Signature) Date: 1/7/00 Time: 4:45PM
RECEIVED BY: (Signature) Date: 1/7/00 Time: 4:45 PM
SAMPLED BY: (Print & Sign) IKE Tavarez / Jim Cronat Date: 1/6/00 Time:

RELINQUISHED BY: (Signature) Date: 1/7/00 Time: 6:00PM
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS AIRBILL #: HAND DELIVERED OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: TRACE Analysis Inc.
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: 01/08/00 TIME: 10:00am

HIGHLANDER CONTACT PERSON: IKE Tavarez

Results by:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS: 3°C Bill 159 384 6823 7

Please Fill out all copies – Laboratory retains yellow copy – Return original copy to Highlander Enviromental Corp. – Project Manager retains pink copy – Accounting receives Gold copy.

11/13

SAMPLE LOG

Boring/Well: BH-5
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/29/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	Grayish, caliche, dense layer, trace of black streaks in caliche
5-6	520	Grayish, caliche, dense, layer, trace of black streaks of staining
10-11	550	White, caliche, dense and friable layer, unconsolidated layer
15-16	388	Grayish, fine grain sand, loose, and trace of gray caliche, dense layers
20-21	500	Tan, fine grain sand, and trace of white caliche and cemented sandstone, dense layers traces of gray staining
25-26	550	Tan, fine grain sand, loose, trace of caliche layers and cemented sandstone, trace of gray staining
30-31	240	Tan, fine grain sand, loose, traces of cemented sandstone
35-36	350	Tan, fine grain sand, streaks of cemented sandstone
40-41	350	Tan, fine grain sand, streaks of cemented sandstone
45-46	490	Tan, fine grain sand, streaks of cemented sandstone
50-51	560	Tan, fine grain sand, streaks of cemented sandstone
60-61	115	Tan, fine grain sand, streaks of cemented sandstone, damp
70-71	1	Tan, fine grain sand, streaks of cemented sandstone, moist

SAMPLE LOG

Boring/Well: BH-6
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 63 feet
Date Installed: 3/29/00

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	2	Top soil, tan fine grain sand, white caliche encountered at 3.0' dense
5-6	2	White, caliche, dense and friable layer
10-11	2	White, caliche and traces of fine grain sand and cemented sandstone, dense layers
15-16	2	White, caliche and traces of fine grain sand and cemented sandstone, dense layers
20-21	2	Tan, fine grain sand, loose, traces of cemented sandstone and caliche, 50% / 50%
25-26	2	Tan, fine grain sand, loose, traces of cemented sandstone
30-31	2	Tan, fine grain sand, loose, traces of cemented sandstone
35-36	2	Tan, fine grain sand, loose, traces of cemented sandstone
40-41	2	Tan, fine grain sand, loose, traces of cemented sandstone
45-50	2	Tan, fine grain sand, loose, traces of cemented sandstone TD -41'
50-55	5	Tan, fine grain sand, loose, traces of cemented sandstone
55-56	10	Tan, fine grain sand, loose, traces of cemented sandstone
62-63	6	Tan, fine grain sand, loose, traces of cemented sandstone,damp
		TD - 63'

SAMPLE LOG

Boring/Well: BH-7
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 63 feet
Date Installed: 3/29/00

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	Top soil, tan fine grain sand, white caliche encountered at 3.0' dense
5-6	8	White, caliche, dense and friable layer
10-11	1	White, caliche and traces of fine grain sand and cemented sandstone, dense layers
15-16	3	White, caliche and traces of fine grain sand and cemented sandstone, dense layers
20-21	4	Tan, fine grain sand, loose, traces of cemented sandstone and caliche, 50% / 50%
25-26	5	Tan, fine grain sand, loose, traces of cemented sandstone
30-31	4	Tan, fine grain sand, loose, traces of cemented sandstone
35-36	3	Tan, fine grain sand, loose, traces of cemented sandstone
40-41	10	Tan, fine grain sand, loose, traces of cemented sandstone
45-46	15	Tan, fine grain sand, loose, traces of cemented sandstone
50-51	22	Tan, fine grain sand, loose, traces of cemented sandstone
55-56	12	Tan, fine grain sand, loose, traces of cemented sandstone
62-63	12	Tan, fine grain sand, loose, traces of cemented sandstone,damp
		TD - 63'

SAMPLE LOG

Boring/Well: BH-8
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 63 feet
Date Installed: 3/29/00

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White caliche, dense
5-6	2	White, caliche, dense and friable layer
10-11	2	White, caliche and traces of fine grain sand and cemented sandstone, dense layers
15-16	0	White, caliche and traces of fine grain sand and cemented sandstone, dense layers
20-21	5	Tan, fine grain sand, loose, traces of cemented sandstone, 50% / 50%
25-26	3	Tan, fine grain sand, loose, traces of cemented sandstone
30-31	4	Tan, fine grain sand, loose, traces of cemented sandstone
35-36	14	Tan, fine grain sand, loose, traces of cemented sandstone
40-41	18	Tan, fine grain sand, loose, traces of cemented sandstone
45-46	10	Tan, fine grain sand, loose, traces of cemented sandstone
50-51	25	Tan, fine grain sand, loose, traces of cemented sandstone
55-56	5	Tan, fine grain sand, loose, traces of cemented sandstone
60-61	5	Tan, fine grain sand, loose, traces of cemented sandstone,damp
62-63	78	Tan, fine grain sand, loose, traces of cemented sandstone,damp
		TD - 63'

SAMPLE LOG

Boring/Well: BH-9
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 63 feet
Date Installed: 3/30/00

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White caliche, dense
5-6	0	White, caliche, dense and friable layer
10-11	0	White, caliche and traces of fine grain sand and cemented sandstone, dense layers
15-16	0	White, caliche and traces of fine grain sand and cemented sandstone, dense layers
20-21	0	Tan, fine grain sand, loose, traces of cemented sandstone, becoming sandy with depth
25-26	0	Tan, fine grain sand, loose, traces of cemented sandstone,layers
30-31	1	Tan, fine grain sand, loose, traces of cemented sandstone
35-36	0	Tan, fine grain sand, loose, traces of cemented sandstone
40-41	0	Tan, fine grain sand, loose, traces of cemented sandstone
45-46	1	Tan, fine grain sand, loose, traces of cemented sandstone
50-51	1	Tan, fine grain sand, loose, traces of cemented sandstone
55-56	2	Tan, fine grain sand, loose, traces of cemented sandstone
62-63	2	Tan, fine grain sand, loose, traces of cemented sandstone,damp
		TD - 63'

SAMPLE LOG

Boring/Well: BH-10
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 63 feet
Date Installed: 3/30/00

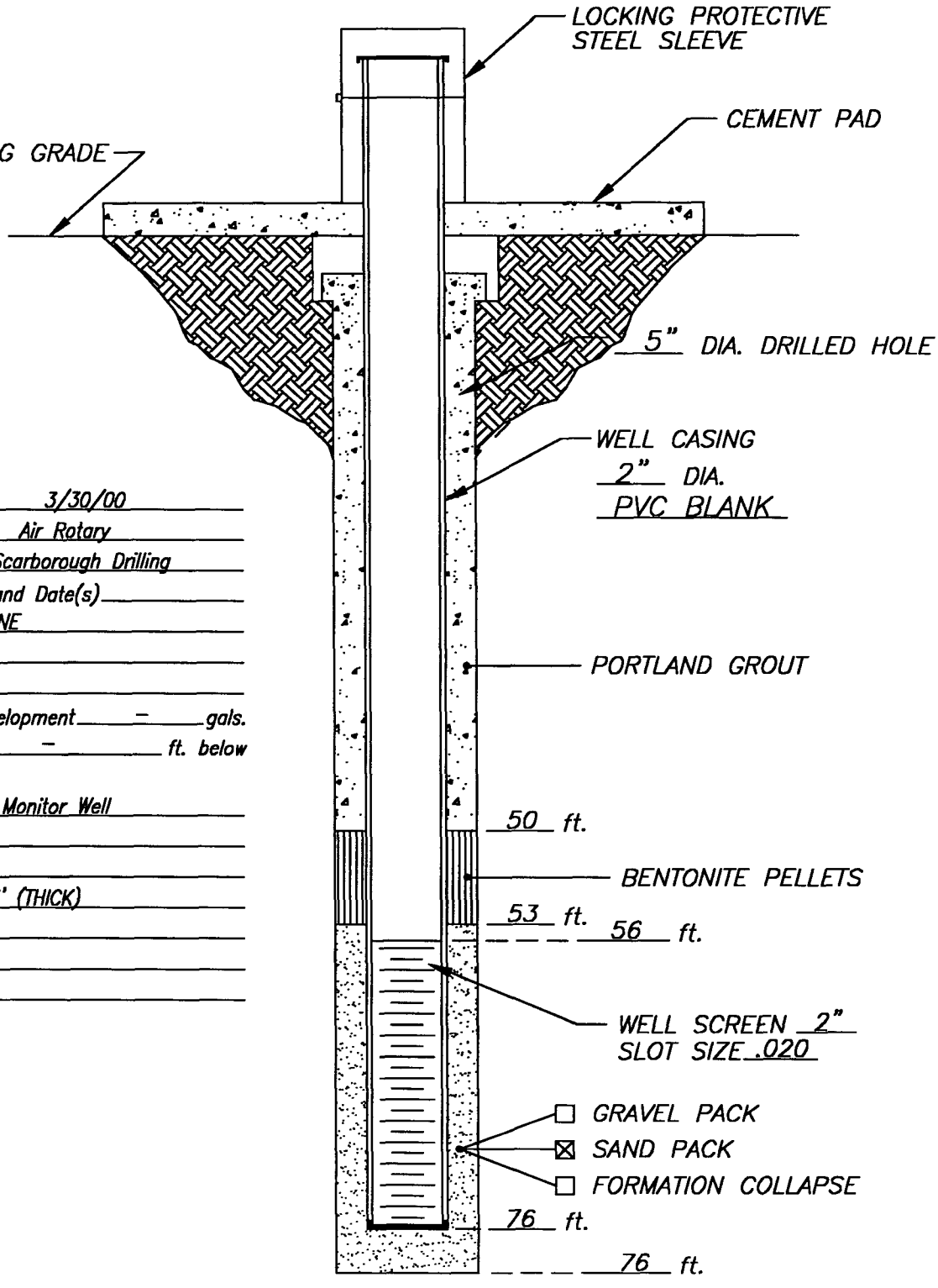
DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White caliche, dense
5-6	1	White, caliche, some silty sand, calich dense and friable layer
10-11	2	White, caliche and traces of fine grain sand and cemented sandstone, dense layers
15-16	2	White, caliche and traces of fine grain sand and cemented sandstone, dense layers, becoming sandy with depth
20-21	3	Tan, fine grain sand, loose, traces of cemented sandstone, becoming sandy with depth
25-26	2	Tan, fine grain sand, loose, traces of cemented sandstone,layers
30-31	2	Tan, fine grain sand, loose, traces of cemented sandstone,layers
35-36	3	Tan, fine grain sand, loose, traces of cemented sandstone
40-41	8	Tan, fine grain sand, loose, traces of cemented sandstone, encountered dense limestone layer at 43'
45-46	2	Tan, fine grain sand, loose, traces of cemented sandstone
50-51	3	Tan, fine grain sand, loose, traces of cemented sandstone, encountered dense sandstone and limestone layer at 52' to 55'
55-56	4	Tan, fine grain sand, loose, traces of cemented sandstone
62-63	3	Tan, fine grain sand, loose, traces of cemented sandstone,damp
		TD - 63'

SAMPLE LOG

Boring/Well: BH-11 (MW-10)
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 76 feet
Date Installed: 3/30/00

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White caliche, dense,hydrocarbon staining
5-6	39	White, caliche, some silty sand, calich dense and friable layer, staining
10-11	630	White, caliche and traces of fine grain sand and cemented sandstone, dense layers, staining, odor
15-16	225	White, caliche and traces of fine grain sand and cemented sandstone, dense layers, becoming sandy with depth
20-21	666	Tan, fine grain sand, loose, traces of cemented sandstone, becoming sandy with depth, odor
25-26	365	Tan, fine grain sand, loose, traces of cemented sandstone,layers
30-31	69	Tan, fine grain sand, loose, traces of cemented sandstone,layers
35-36	14	Tan, fine grain sand, loose, traces of cemented sandstone
40-41	7	Tan, fine grain sand, loose, traces of cemented sandstone, encountered dense limestone layer at 43'
45-46	8	Tan, fine grain sand, loose, traces of cemented sandstone
50-51	519	Tan, fine grain sand, loose, traces of cemented sandstone
55-56	601	Tan, fine grain sand, loose, traces of cemented sandstone
62-63	370	Tan, fine grain sand, loose, traces of cemented sandstone, damp
63-76	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD - 76'

WELL CONSTRUCTION LOG



Installation Date(s) 3/30/00
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
NONE

Water Removed During Development – gals.
Static Depth to Water – ft. below Ground Level
Well Purpose Monitor Well

Remarks
PSH 0.33' (THICK)

DATE: 3/30/00 **Highlander Environmental**	CLIENT: *TITAN EXPLORATION & PRODUCTION, INC.* PROJECT: *LOVINGTON PADDOCK UNIT–PIT, ATB 1–1* LOCATION: *LEA COUNTY, NEW MEXICO*	WELL NO. MW–10

A0000404406

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

PAGE: 1 OF: 3

CLIENT NAME: Titan

SITE MANAGER: IKE Tavarez

PROJECT NO.: 1085

PROJECT NAME: Titan/Lovington-Paddock Pit
Lea County, NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 / 6015 MOD. / TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
143791	3/29/00		S		G	BH-6 (5-6')	1				✓				Hold														
792	3/29/00		S		G	BH-6 (20-21')	1				✓		X		X														
793	3/29/00		S		G	BH-6 (30-31')	1				✓				Hold														
794	3/31/00		S		G	BH-6 (50-51')	1				✓				Hold.														
795	3/31/00		S		G	BH-6 (62-63')	1				✓		X		X														
796	3/29/00		S		G	BH-7 (5-6')	1				✓				Hold.														
797	3/29/00		S		G	BH-7 (20-21')	1				✓		X		X														
798	3/29/00		S		G	BH-7 (40-41')	1				✓				Hold														
799	3/29/00		S		G	BH-7 (50-51')	1				✓				Hold.														
800	3/29/00		S		G	BH-7 (62-63')	1				✓		X		X														

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8020/602 | MTBE 8020/602 | TPH 418.1 / 6015 MOD. / TX1005 (PLO | GLO) | PAH 8270 | RCRA Metals Ag As Ba Cd Cr Pb Hg Se | TCLP Metals Ag As Ba Cd Cr Pd Hg Se | TCLP Volatiles | TCLP Semi Volatiles | RCI | GC/MS Vol. 8240/8260/624 | GC/MS Semi. Vol. 8270/625 | PCB's 8080/608 | Pest. 808/608 | BOD, TSS, pH, TDS, Chloride | Gamma Spec. | Alpha Beta (Air) | PLM (Asbestos)

RELINQUISHED BY: (Signature)	Date: 4/3/00 Time: 4:50PM	RECEIVED BY: (Signature) Helen Hatton	Date: 4/3/00 Time: 4:50PM	SAMPLED BY: (Print & Sign) IKE Tavarez	Date: Time:
RELINQUISHED BY: (Signature) Helen Hatton	Date: 4/3/00 Time: 6:00PM	RECEIVED BY: (Signature)	Date: Time:	SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS	AIRBILL # Greyhound OTHER:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:		
RECEIVING LABORATORY: Trace Lab. ADDRESS: CITY: STATE: ZIP: CONTACT: PHONE:		RECEIVED BY: (Signature) Vicki Hensley DATE: 4-4-00 TIME: 9:30		HIGHLANDER CONTACT PERSON: IKE Tavarez	Results by: MON-APR. 10, 2000 RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS:

Please Fill out all copies – Laboratory retains yellow copy – Return original copy to Highlander Enviromental Corp. – Project Manager retains pink copy – Accounting receives Gold copy.

4/14/00

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Titan SITE MANAGER: Ike Tavarez

PROJECT NO.: 1085 PROJECT NAME: Titan / Lovington Paddock Pit. Lea County NM.

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
14380	3/29/00		S		X	BH-8 (10-11')	1				X	
802			S			BH-8 (20-21')	1				X	
803			S		X	BH-8 (40-41')	1				X	
804			S			BH-8 (50-51')	1				X	
805			S			BH-8 (62-65')	1				X	
806	3/30/00		S			BH-9 (10-11')	1				X	
807	3/30/00		S			BH-9 (30-31')	1				X	
808	3/30/00		S			BH-9 (62-63')	1				X	
809	3/30/00		S			BH-10 (10-11')	1				X	
810	3/30/00		S			BH-10 (40-41')	1				X	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8020/602	MTBE 8020/602	TPH 418.1	8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
(8020/602)																	
			Hold														
X			X														
			Hold														
X			X														
			Hold														
X			X														
X			X														
			Hold														
X			X														

RELINQUISHED BY: (Signature) Date: 4/3/00 Time: 4:50 — RECEIVED BY: (Signature) Helen Shelton Date: 4/3/00 Time: 4:50 PM — SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

RELINQUISHED BY: (Signature) Helen Shelton Date: 4/3/00 Time: 12:00 PM — RECEIVED BY: (Signature) Date: Time: — SAMPLE SHIPPED BY: (Circle) FEDEX HUS UPS HAND DELIVERED AIRBILL #: OTHER:

RELINQUISHED BY: (Signature) Date: Time: — RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace Anal. — RECEIVED BY: (Signature) Vicki Ainsley

ADDRESS: CITY: STATE: ZIP: CONTACT: PHONE: DATE: 4-4-00 TIME: 9:30

HIGHLANDER CONTACT PERSON: Ike Tavarez

Results by: 5PM on APRIL 10, 2000

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS:

Please Fill out all copies – Laboratory retains yellow copy – Return original copy to Highlander Enviromental Corp. – Project Manager retains pink copy – Accounting receives Gold copy.

10 Grand. 1 150-200 mile

13 10 samples - HS

AC000404906

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Titan SITE MANAGER: Ike Tavarez

PROJECT NO: 1085 PROJECT NAME: Titan / Livingston Paddock Pit Lea County NM.

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602 (8260/624)	MTBE 8080/608	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GCMS Vol. 8240/8260/624	GCMS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	BTSG4 Inorganics
143 811	3/30/00		S		G	BH-10 (62-63')	1				✓		X		X															
812			S		G	BH-11 (10-11')	1				✓		X		X															
813			S		G	BH-11 (20-21')	1				✓		X		X															
814			S		G	BH-11 (30-31')	1				✓				Hold															
815			S		G	BH-11 (40-41')	1				✓				Hold.															
816			S		G	BH-11 (50-51')	1				✓		X		X															
817	V		S		G	BH-11 (62-63')	1				✓		X		X															
818	3/31/00		O		G	MW-10	1				✓																		X	
193	3/31/00		O		G	MW-4	1				✓				Hold.															

RELINQUISHED BY: (Signature) Date: 4/3/00 Time: 4:50
RECEIVED BY: (Signature) Helen Shelton Date: 4/3/00 Time: 4:50
SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

RELINQUISHED BY: (Signature) Helen Shelton Date: 4/3/00 Time: 9:00PM
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS AIRBILL #: OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace Lab. ADDRESS: CITY: STATE: ZIP: CONTACT: PHONE:
RECEIVED BY: (Signature) Vicki Houston DATE: 4-4-00 TIME: 9:30

HIGHLANDER CONTACT PERSON: Ike Tavarez

Results by: (A.S.) APR 10, 2000
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W—Water S—Soil A—Air SL—Sludge SD—Solid O—Other

REMARKS:

Please Fill out all copies – Laboratory retains yellow copy – Return original copy to Highlander Enviromental Corp. – Project Manager retains pink copy – Accounting receives Gold copy.

PHOTOGRAPHIC DOCUMENTATION
PURE RESOURCES LP, LOVINGTON PADDOCK ATB 1-1
LEA COUNTY, NEW MEXICO

1. View of former tank pad and borehole BH-6.

2. View of former tank pad and borehole BH-7

PHOTOGRAPHIC DOCUMENTATION
PURE RESOURCES LP, LOVINGTON PADDOCK ATB 1-1
LEA COUNTY, NEW MEXICO

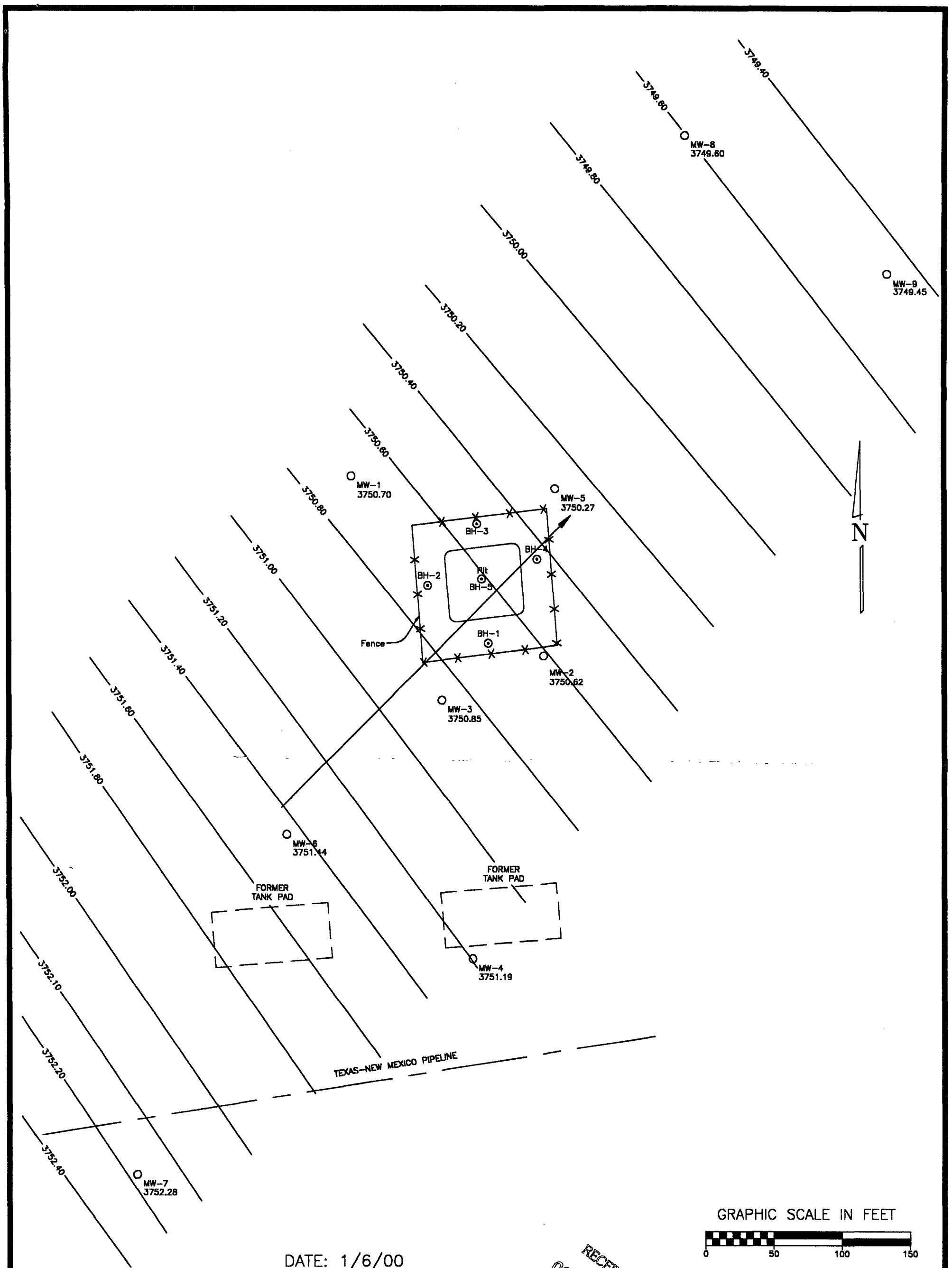
3. West view of Eott pipeline and borehole BH-11

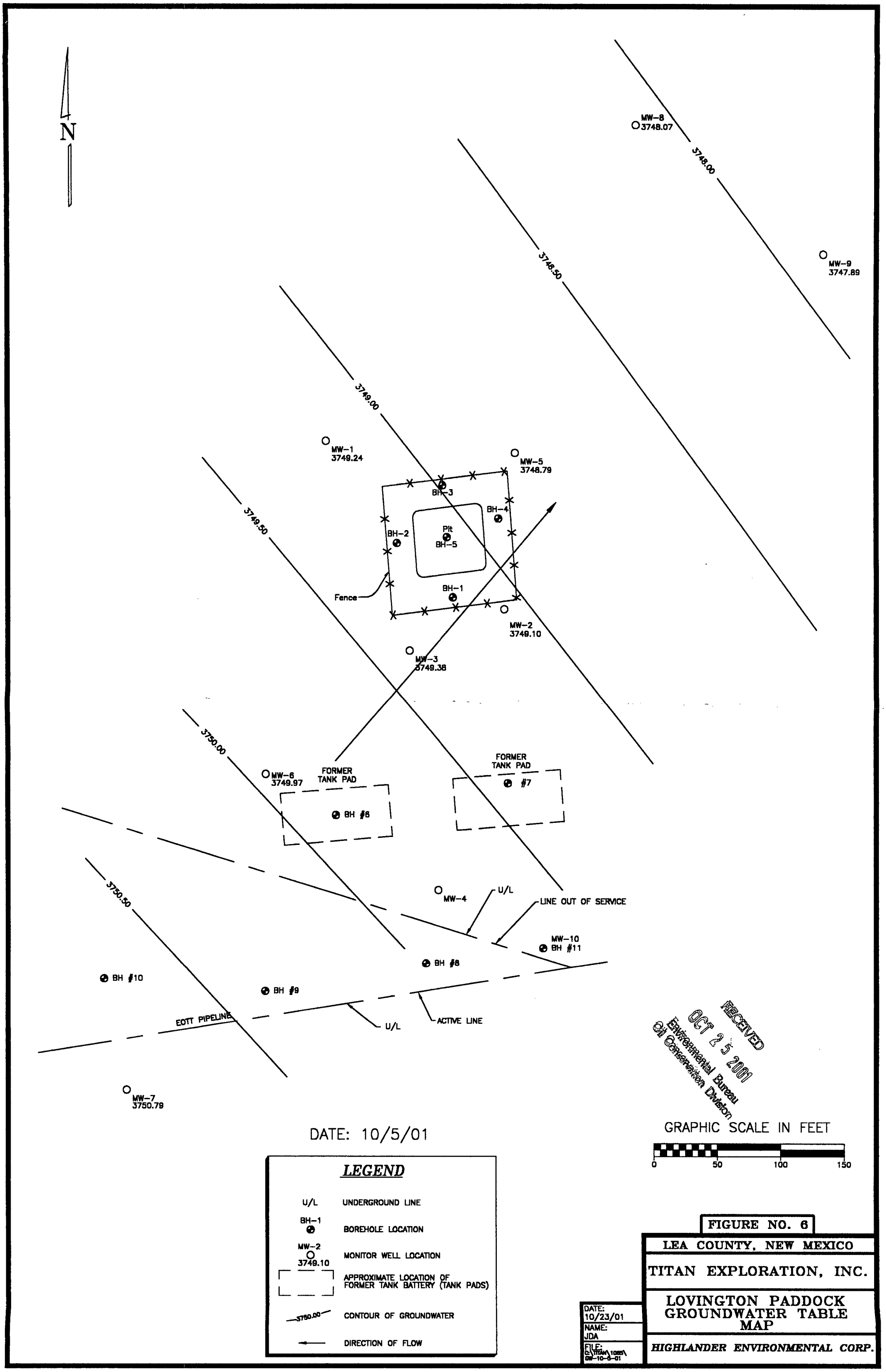
4. East view of Eott pipeline and suspect spill area

PHOTOGRAPHIC DOCUMENTATION
PURE RESOURCES LP, LOVINGTON PADDOCK ATB 1-1
LEA COUNTY, NEW MEXICO

5. West view of Eott pipeline-suspect leak area and monitor well MW-10

6. Northwest view of Eott pipeline-suspect leak area and monitor well MW-10


3749.40
3749.60
MW-8
3749.60
3749.80
3750.00
MW-9
3749.45
3750.20
3750.40
3750.60
MW-1
3750.70
3750.80
MW-5
3750.27
BH-3
BH-4
3751.00
BH-2
Pit
BH-5
3751.20
Fence
BH-1
3751.40
MW-2
3750.62
3751.60
MW-3
3750.85
3751.80
MW-6
3751.14
FORMER
TANK PAD
FORMER
TANK PAD
3752.00
MW-4
3751.19
3752.10
3752.20
TEXAS-NEW MEXICO PIPELINE
3752.40
MW-7
3752.28
N
GRAPHIC SCALE IN FEET
0
50
100
150
DATE: 1/6/00
LEGEND
BH-1
BOREHOLE LOCATION
MW-2
3750.62
MONITOR WELL LOCATION
APPROXIMATE LOCATION OF FORMER TANK BATTERY (TANK PADS)
3752.00
CONTOUR OF GROUNDWATER
DIRECTION OF FLOW
RECEIVED
OCT 25 2001
Environmental Bureau
Oil Conservation Division
FIGURE NO. 5
LEA COUNTY, NEW MEXICO
TITAN EXPLORATION, INC.
LOVINGTON PADDOCK
GROUNDWATER TABLE
MAP
DATE:
01/24/00
NAME:
JDA
FILE:
C:\TITAN\1065\
GW-1-00
HIGHLANDER ENVIRONMENTAL CORP.


N
MW-8
3748.07
3748.00
3748.50
MW-9
3747.89
3749.00
MW-1
3749.24
MW-5
3748.79
BH-3
BH-4
BH-2
Pit
BH-5
3749.50
Fence
BH-1
MW-2
3749.10
MW-3
3749.38
3750.00
MW-6
3749.97
FORMER
TANK PAD
BH #6
FORMER
TANK PAD
#7
3750.50
MW-4
U/L
LINE OUT OF SERVICE
MW-10
BH #11
BH #8
BH #10
BH #9
EOTT PIPELINE
U/L
ACTIVE LINE
MW-7
3750.79
DATE: 10/5/01
LEGEND
U/L
UNDERGROUND LINE
BH-1
BOREHOLE LOCATION
MW-2
3749.10
MONITOR WELL LOCATION
APPROXIMATE LOCATION OF FORMER TANK BATTERY (TANK PADS)
3750.00
CONTOUR OF GROUNDWATER
DIRECTION OF FLOW
RECEIVED
OCT 25 2001
Environmental Bureau
Oil Conservation Division
GRAPHIC SCALE IN FEET
0
50
100
150
FIGURE NO. 6
LEA COUNTY, NEW MEXICO
TITAN EXPLORATION, INC.
LOVINGTON PADDOCK
GROUNDWATER TABLE
MAP
HIGHLANDER ENVIRONMENTAL CORP.
DATE:
10/23/01
NAME:
JDA
FILE:
C:\TITAN\1055\
GW-10-3-01

N

MW-8
3747.93

3747.50

3748.00

MW-9
3747.61

3748.50

3749.00

MW-1
3749.05

3749.50

MW-5
3748.54

BH-3

BH-4

BH-2

Pit
BH-5

BH-1

Fence

MW-2
3748.74

MW-3
3749.04

3749.50

MW-6
3749.61

FORMER
TANK PAD

BH #6

FORMER
TANK PAD

#7

MW-4

U/L

LINE OUT OF SERVICE

MW-10
BH #11

BH #8

BH #10

BH #9

EOTT PIPELINE

U/L

ACTIVE LINE

MW-7
3750.27

RECEIVED
OCT 25 2001
Environmental Bureau
Oil Conservation Division

DATE: 10/17/01

GRAPHIC SCALE IN FEET

0 50 100 150

LEGEND

U/L	UNDERGROUND LINE
BH-1	BOREHOLE LOCATION
MW-2 3748.74	MONITOR WELL LOCATION
	APPROXIMATE LOCATION OF FORMER TANK BATTERY (TANK PADS)
3750.00	CONTOUR OF GROUNDWATER
	DIRECTION OF FLOW

FIGURE NO. 7

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

LOVINGTON PADDOCK
GROUNDWATER TABLE
MAP

DATE: 10/23/01
NAME: JDA
FILE: G:\TITAN\1085\GW-10-17-01

HIGHLANDER ENVIRONMENTAL CORP.

B – <0.005
T – <0.005
E – <0.005
X – <0.005
MW-8

B – <0.005
T – <0.005
E – <0.005
X – <0.005
MW-9

B – <0.005
T – <0.005
E – <0.005
X – <0.005
MW-1

B – 3.1
T – <0.005
E – <0.005
X – 0.057
MW-5

BH-3
BH-4
BH-2
Pit
BH-5
BH-1
Fence

B – <0.005
T – <0.005
E – <0.005
X – <0.005
MW-2

B – 0.593
T – <0.005
E – <0.005
X – <0.005
MW-3

N

B – 2.07
T – <0.005
E – 0.439
X – 0.087
MW-6

FORMER TANK PAD
BH #6

FORMER TANK PAD
#7

10/17/01 – PSH – 0.01'
MW-4

U/L

LINE OUT OF SERVICE

MW-10
BH #11

10/17/01 – PSH – 10.13'

BH #8

BH #10

BH #9

EOTT PIPELINE

U/L

ACTIVE LINE

B – <0.005
T – <0.005
E – <0.005
X – <0.005
MW-7

DATE: 1/6/00

RECEIVED
OCT 25 2001
Environmental Bureau
Oil Conservation Division

GRAPHIC SCALE IN FEET
0 50 100 150

LEGEND

U/L	UNDERGROUND LINE
BH	BOREHOLE LOCATIONS
MW-2	MONITOR WELL LOCATION
	APPROXIMATE LOCATION OF FORMER TANK BATTERY (TANK PADS)
BTEX	CONCENTRATIONS IN mg/L
PSH	PHASE SEPARATED HYDROCARBON

FIGURE NO. 8

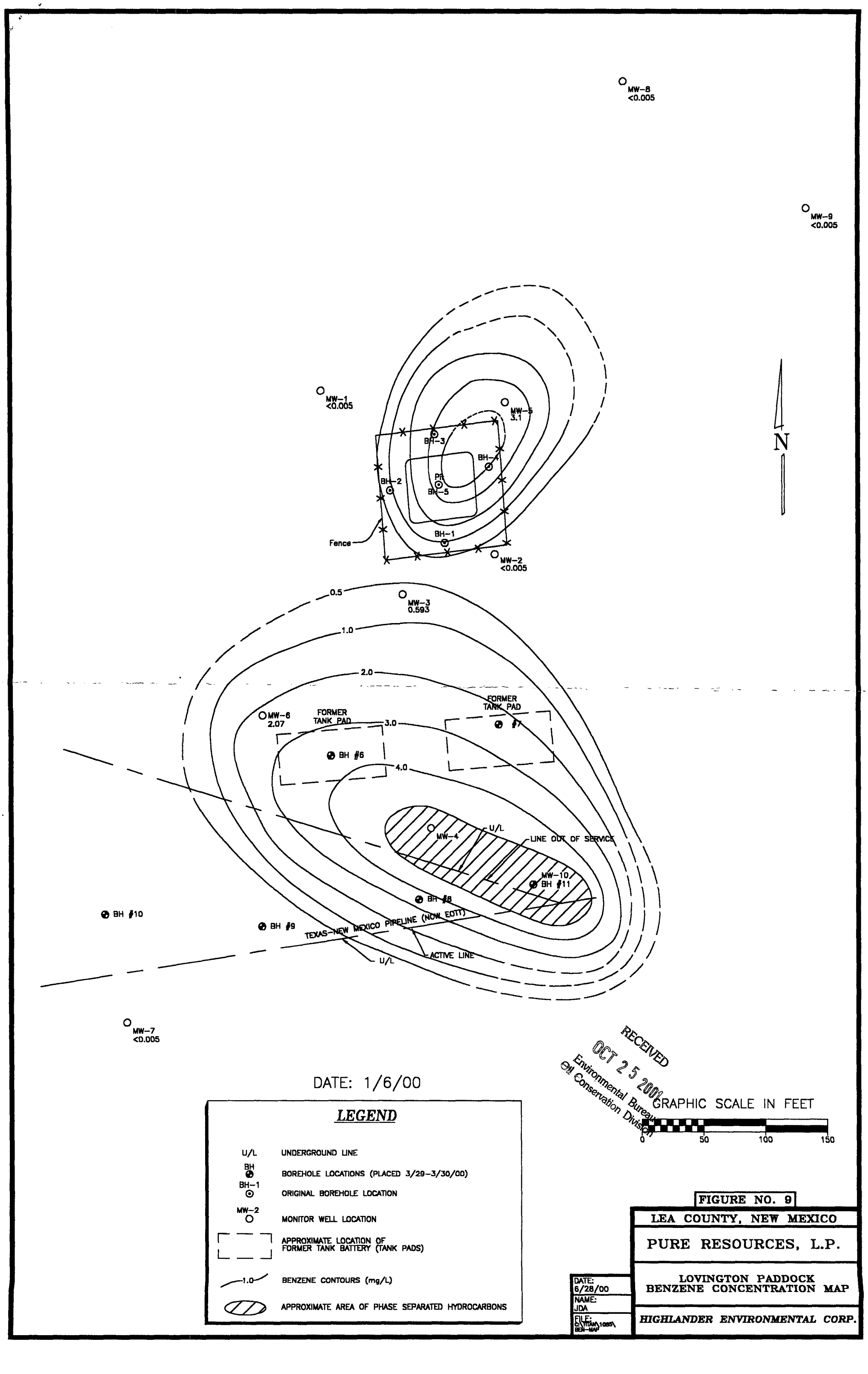
LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

LOVINGTON PADDOCK
BTEX CONCENTRATIONS
IN GROUNDWATER

DATE: 10/22/01
NAME: JDA
FILE: C:\TITAN\1085\BTEX_1-00

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS



DATE: 1/6/00

LEGEND

U/L	UNDERGROUND LINE
BH	BOREHOLE LOCATIONS (PLACED 3/29-3/30/00)
BH-1	ORIGINAL BOREHOLE LOCATION
MW-2	MONITOR WELL LOCATION
	APPROXIMATE LOCATION OF FORMER TANK BATTERY (TANK PADS)
1.0	BENZENE CONTOURS (mg/L)
	APPROXIMATE AREA OF PHASE SEPARATED HYDROCARBONS

FIGURE NO. 9

LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

LOVINGTON PADDOCK
BENZENE CONCENTRATION MAP

HIGHLANDER ENVIRONMENTAL CORP.

DATE:	6/28/00
NAME:	JDA
FILE:	C:\TITAN\1065\BEN-MAP