1R - 272

REPORTS

DATE:

2000

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:

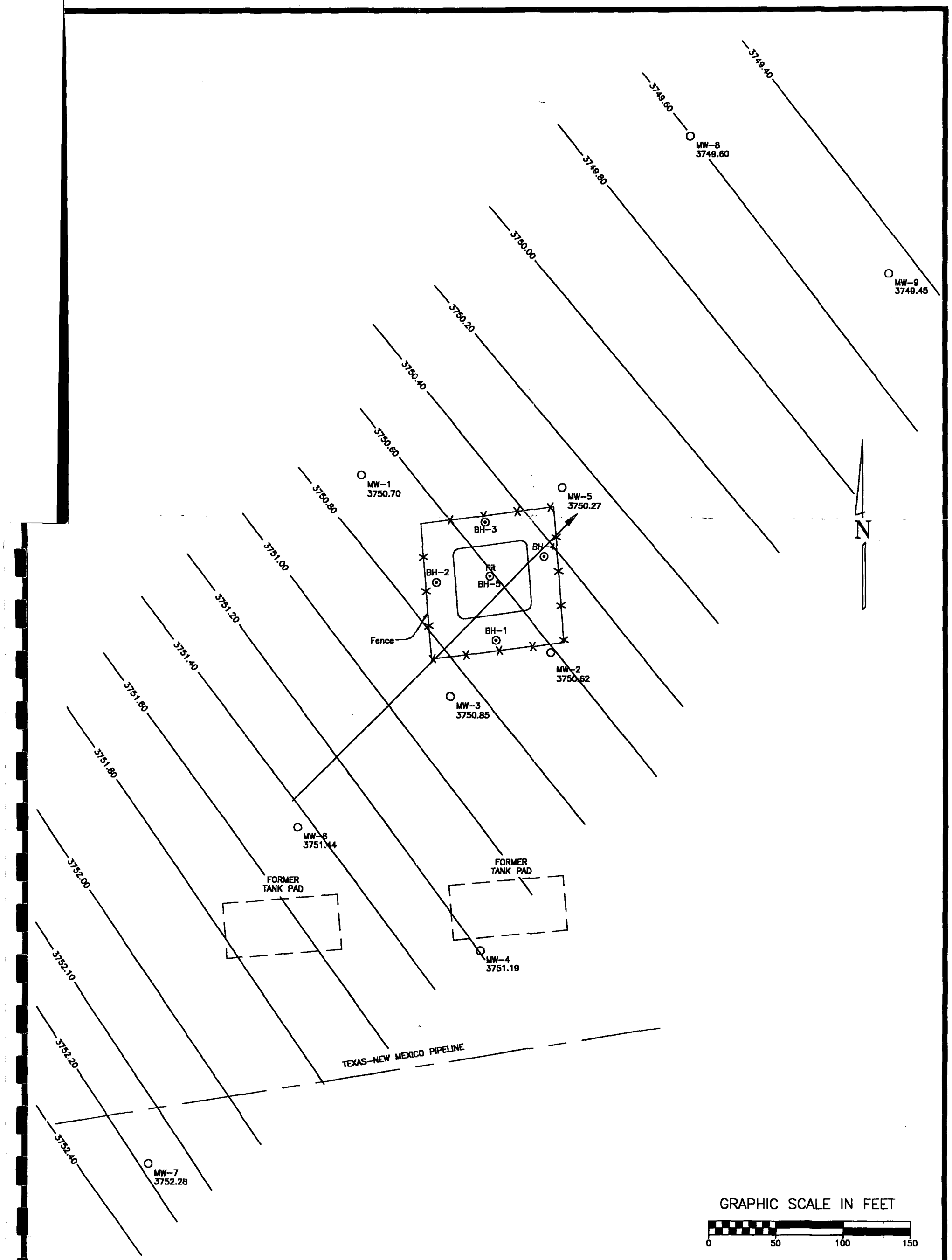
1. BGS: Denotes depth in feet below ground surface
2. AMSL: Denotes elevation in feet above mean sea level
3. TOC: Denotes depth in feet below top of well casing
4. *: Depth-to-groundwater collected on 3/29/99

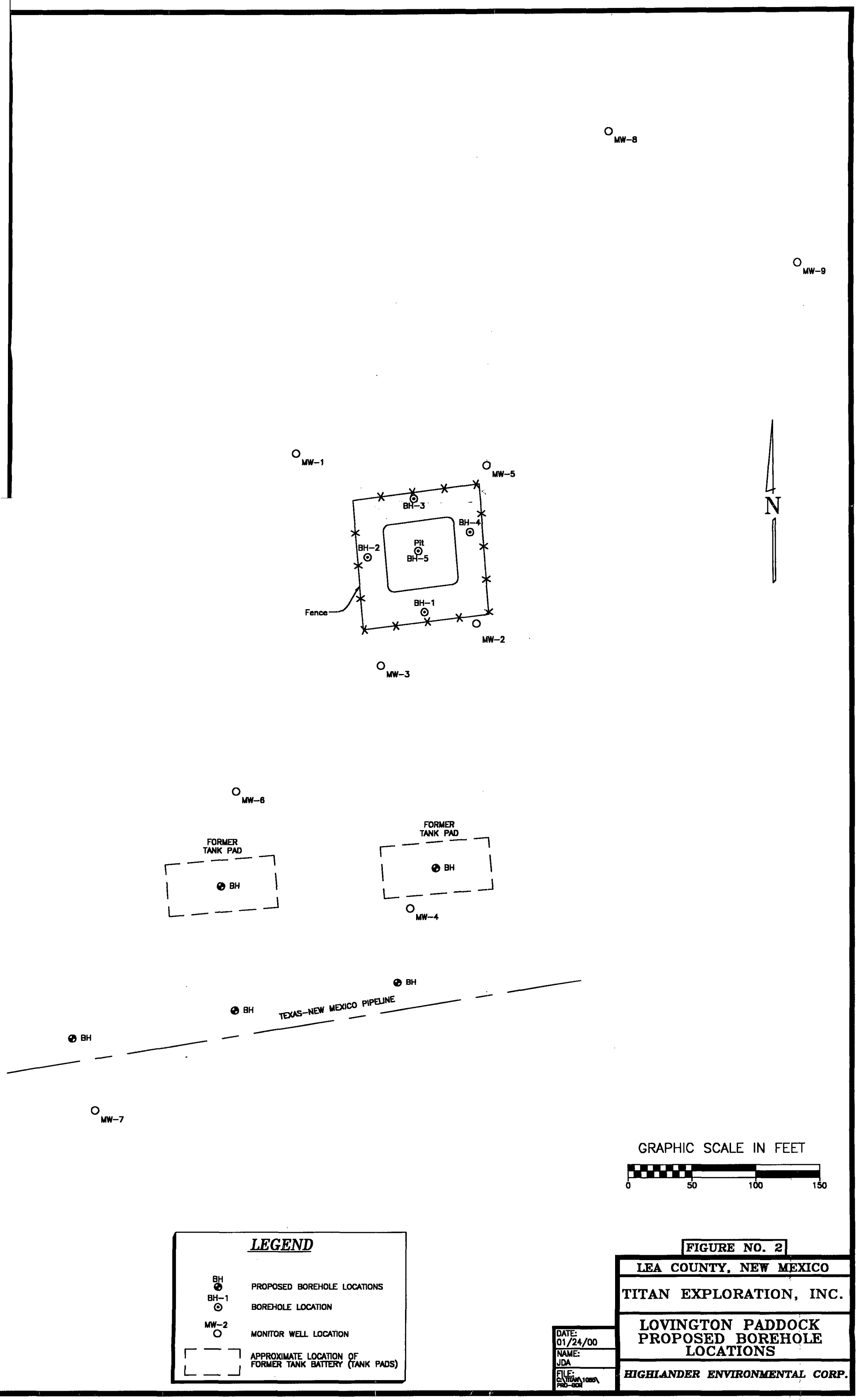
TABLE 2
Titan Exploration & Production Inc.
Lovington Paddock Unit
Lea County, New Mexico

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


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
MW-3
3750.85
3751.60
3751.80
MW-6
3751.44
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
LEGEND
BH-1
BOREHOLE LOCATION
MW-2
3750.62
MONITOR WELL LOCATION
APPROXIMATE LOCATION OF
FORMER TANK BATTERY (TANK PADS)
3753.00
CONTOUR OF GROUNDWATER
DATE: 1/6/00
DIRECTION OF FLOW
FIGURE NO. 1
LEA COUNTY, NEW MEXICO
TITAN EXPLORATION, INC.
LOVINGTON PADDOCK
GROUNDWATER TABLE
MAP
HIGHLANDER ENVIRONMENTAL CORP.
DATE:
01/24/00
NAME:
JDA
FILE:
C:\TITAN\1085\
GW-1-00


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
FORMER TANK PAD
BH
MW-4
BH
BH
TEXAS-NEW MEXICO PIPELINE
BH
MW-7
GRAPHIC SCALE IN FEET
0
50
100
150
LEGEND
BH
PROPOSED BOREHOLE LOCATIONS
BH-1
BOREHOLE LOCATION
MW-2
MONITOR WELL LOCATION
APPROXIMATE LOCATION OF FORMER TANK BATTERY (TANK PADS)
FIGURE NO. 2
LEA COUNTY, NEW MEXICO
TITAN EXPLORATION, INC.
LOVINGTON PADDOCK
PROPOSED BOREHOLE
LOCATIONS
HIGHLANDER ENVIRONMENTAL CORP.
DATE:
01/24/00
NAME:
JDA
FILE:
C:\TITAN\1085\
PRO-BOR

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: 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.

This report consists of a total of 5 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

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

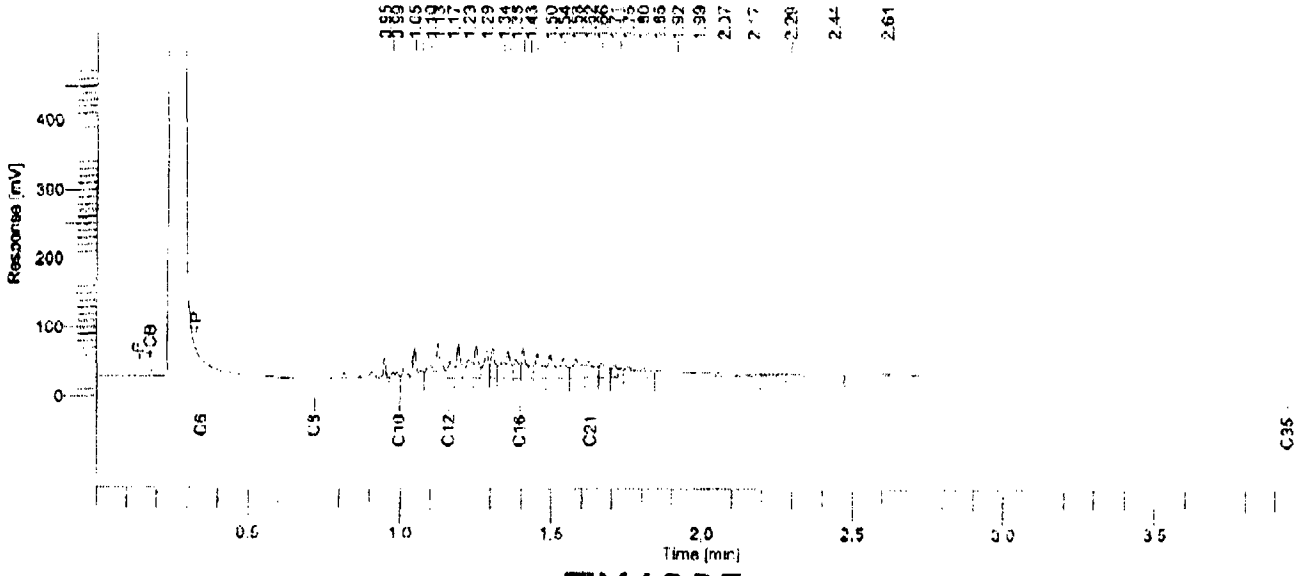
CHEMIST: MA

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

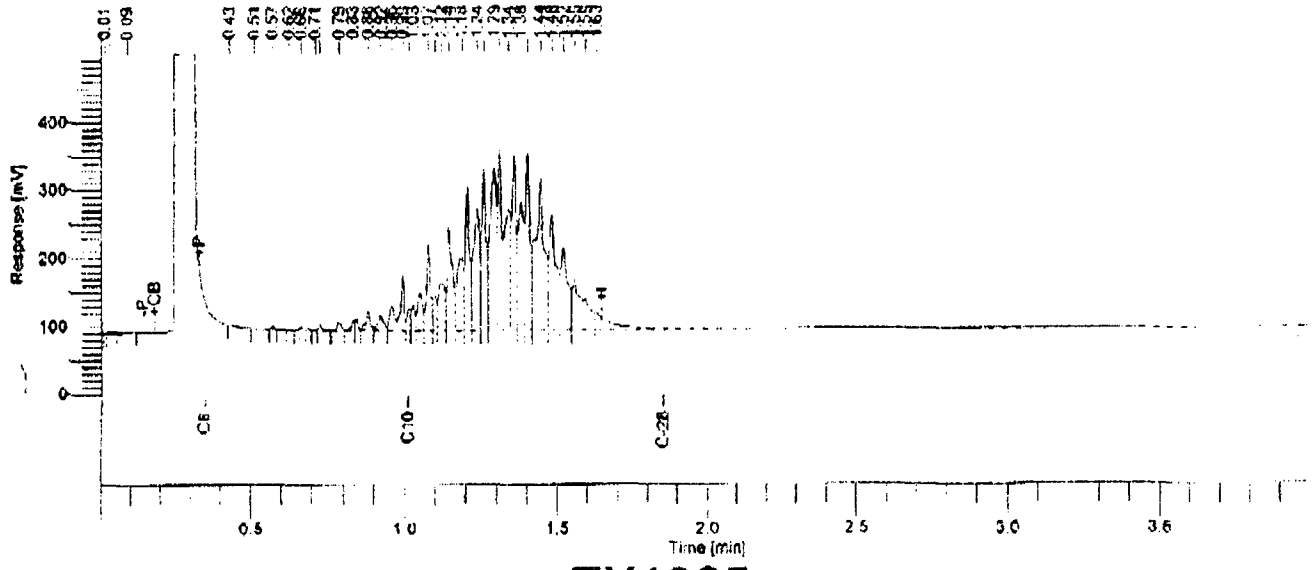
Component Name	Adjusted Amount	Raw Amount	Area [µV·s]
>C8-C8 AL	0.0	0.0	0.00
>C8-C10 AL	32.0	32.0	30494.01
>C10-C12AL	146.0	146.0	139281.67
>C12-16 AL	372.2	372.2	355139.34
>C16-21 AL	308.4	308.4	294282.16
>C21-C35	307.1	307.1	293022.47
			1112219.65

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 8270 Compounds (mg/L)	Reporting Limit	T138372 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

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E-Mail: lab@traceanalysis.com

January 13, 2000

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 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
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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
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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 8270 Compounds (mg/L)	Reporting Limit	T138375 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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January 13, 2000

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 Reporting T138376

8270 Compounds (mg/L)	Limit	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

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 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

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 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

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 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

AC00010804

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: THEM Exploration

SITE MANAGER: IKE Tavarez

PROJECT NO.: 1085 ~~FBF~~

PROJECT NAME: THEM/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 per SKe 1-13-00	MTBE 8020/608	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	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 608/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	
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													X
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 / THEM 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 HAND DELIVERED AIRBILL #: 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

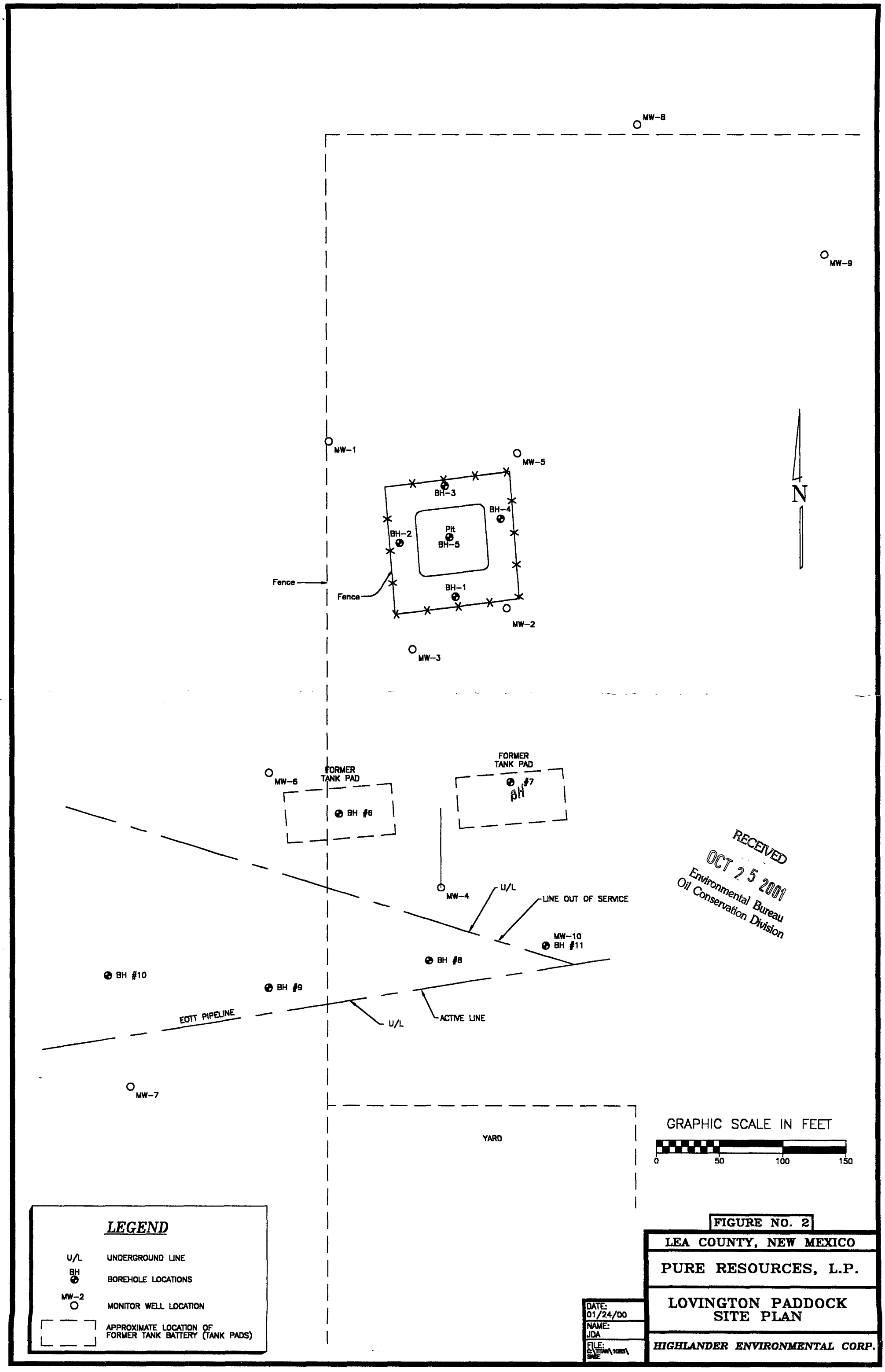
REMARKS: 3°C Bus 159 384 6823 7

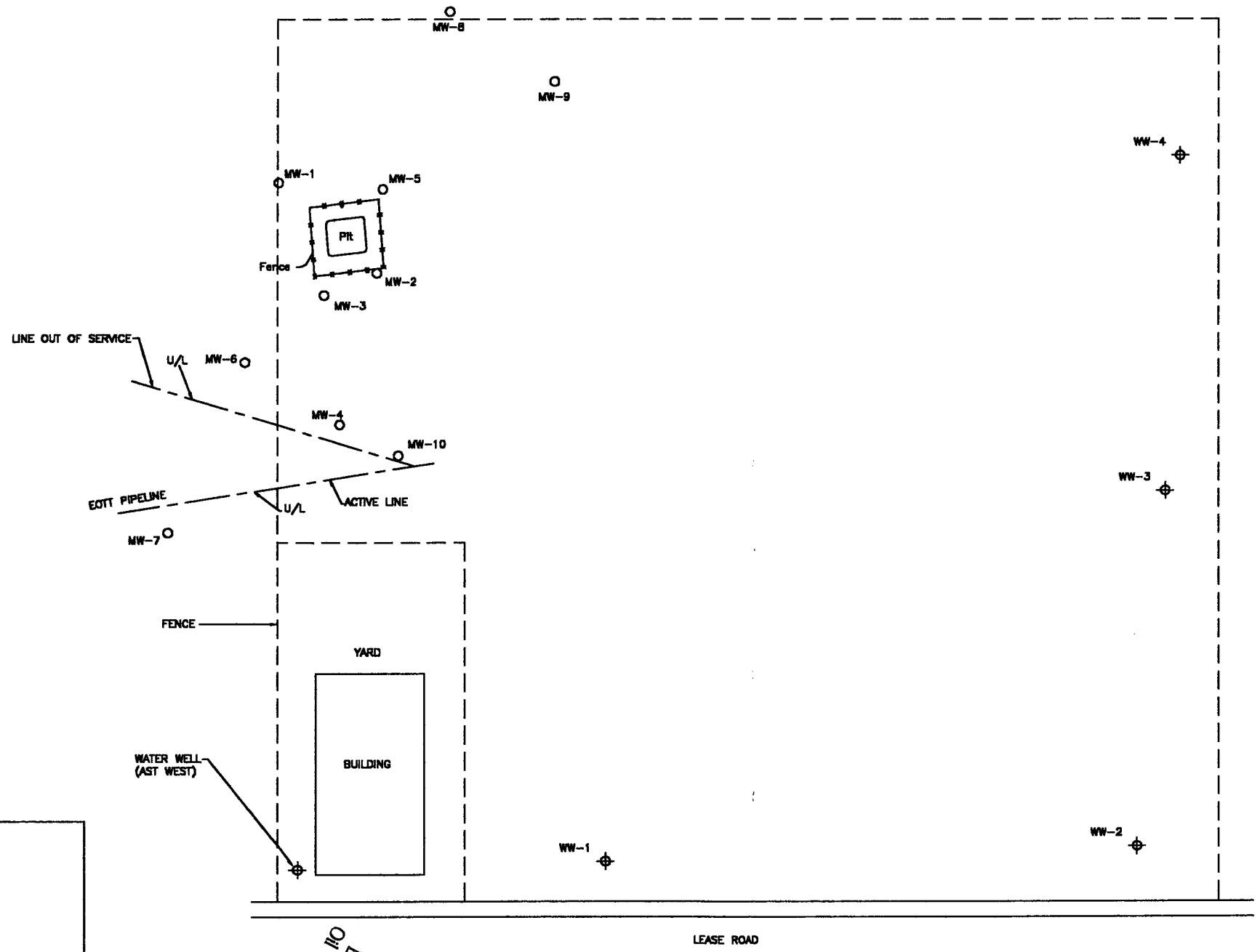
Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Enviromental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

Highlander VLC (7221)

Lil. Anmales - HS

1-13-00 1/19





LEGEND

U/L	UNDERGROUND LINE
MW-2 ○	MONITOR WELL LOCATION
WW-1 ⊕	WATER WELL LOCATION

GRAPHIC SCALE IN FEET

0 200 300 400

FIGURE NO. 3

LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

LOVINGTON PADDOCK
SITE PLAN

HIGHLANDER ENVIRONMENTAL CORP.

DATE: 10/14/01
NAME: JDA
FILE: G:\WORK\1600\1600-3

BH-1

DEPTH (FT)	OVM (PPM)
5-6	4
10-11	4
15-16	4
20-21	4
25-26	3
30-31	1

BH-2

DEPTH (FT)	OVM (PPM)
5-6	2
10-11	2
15-16	17
20-21	6
25-26	7
30-31	3

BH-3

DEPTH (FT)	OVM (PPM)
5-6	0
10-11	0
15-16	3
20-21	2
25-26	1
30-31	2

BH-4

DEPTH (FT)	OVM (PPM)
5-6	1
10-11	0
15-16	1
20-21	1
25-26	0
30-31	0

BH-5

DEPTH (FT)	OVM (PPM)
5-6	520
10-11	550
15-16	388
20-21	500
25-26	550
30-31	240
35-36	350
40-41	350
45-46	490
50-51	560
60-61	1
70-71	1

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

DEPTH (FT)	OVM (PPM)
5-6	2
10-11	2
15-16	2
20-21	2
25-26	2
30-31	2
35-36	2
40-41	2
45-46	2
50-51	6
55-56	10
62-63	6

MW-6

FORMER TANK PAD

BH #6

DEPTH (FT)	OVM (PPM)
5-6	8
10-11	1
15-16	3
20-21	4
25-26	5
30-31	4
35-36	3
40-41	10
45-46	15
50-51	22
55-56	12
62-63	12

FORMER TANK PAD

#7

DEPTH (FT)	OVM (PPM)
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
60-61	4
62-63	3
70-71	1

BH #10

DEPTH (FT)	OVM (PPM)
60-61	671

MW-4

U/L

LINE OUT OF SERVICE

MW-10
BH #11

ACTIVE LINE

BH #8

U/L

BH #9

EOTT PIPELINE

DEPTH (FT)	OVM (PPM)
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
60-61	2
62-63	2

DEPTH (FT)	OVM (PPM)
5-6	2
10-11	2
15-16	0
20-21	5
25-26	3
30-31	4
35-36	14
40-41	18
45-46	10
50-51	25
55-56	5
60-61	5
62-63	78

DEPTH (FT)	OVM (PPM)
5-6	39
10-11	630
15-16	225
20-21	666
25-26	365
30-31	69
35-36	14
40-41	7
45-46	8
50-51	518
55-56	601
62-63	370

MW-7

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)

FIGURE NO. 4

LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

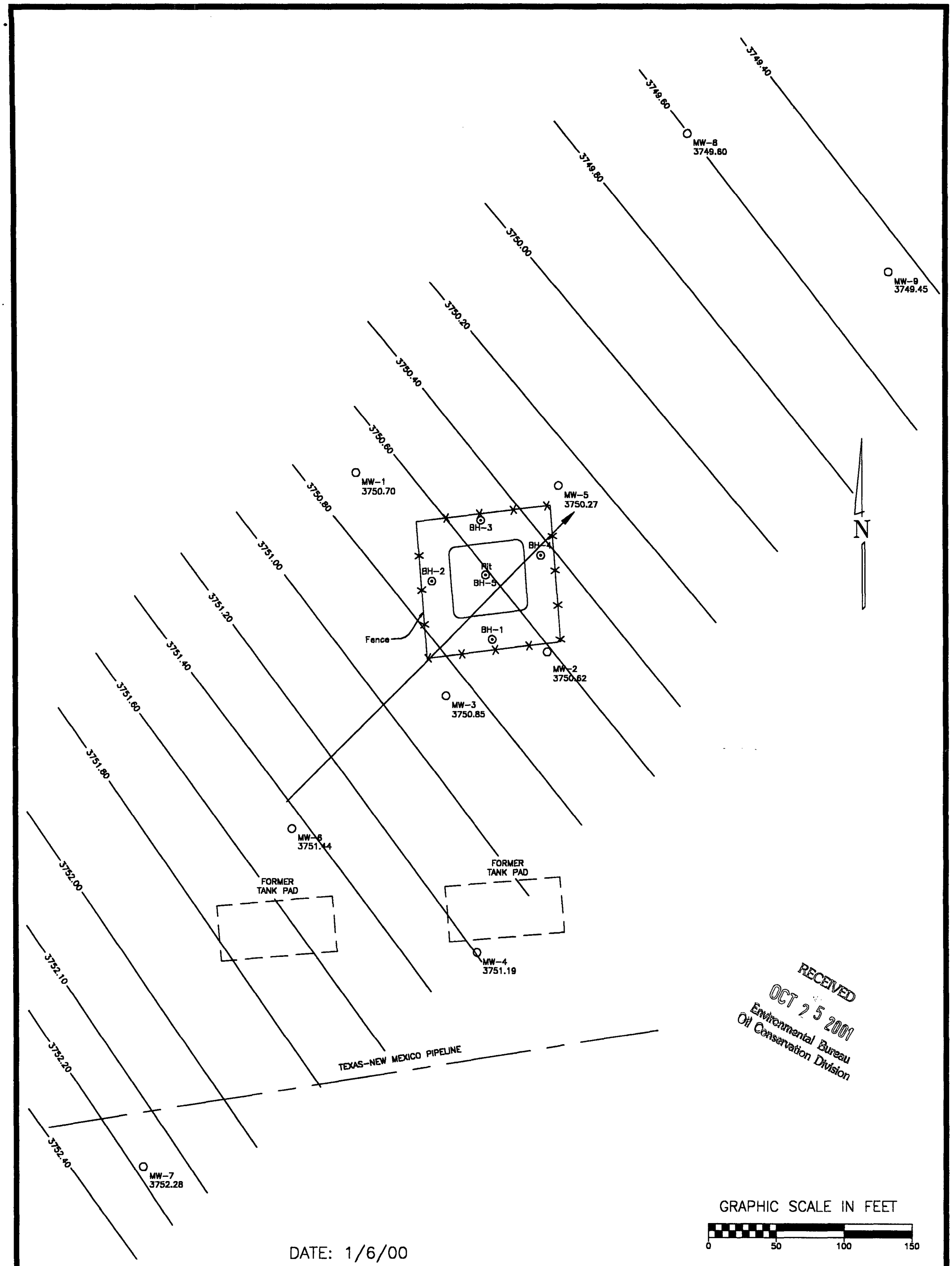
LOVINGTON PADDOCK
OVM READINGS

DATE: 01/24/00

NAME: JDA

FILE: S:\TITAN\1085\OVM

HIGHLANDER ENVIRONMENTAL CORP.



N

MW-8
3748.07

MW-9
3747.89

3748.00

3748.50

3749.00

3749.50

3750.00

3750.50

MW-1
3749.24

MW-5
3748.79

BH-3

BH-4

Pit
BH-5

BH-2

BH-1

Fence

MW-2
3749.10

MW-3
3749.38

MW-6
3749.97

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
3750.79

RECEIVED
OCT 25 2001
Environmental Bureau
Oil Conservation Division

DATE: 10/5/01

GRAPHIC SCALE IN FEET

0 50 100 150

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

FIGURE NO. 6

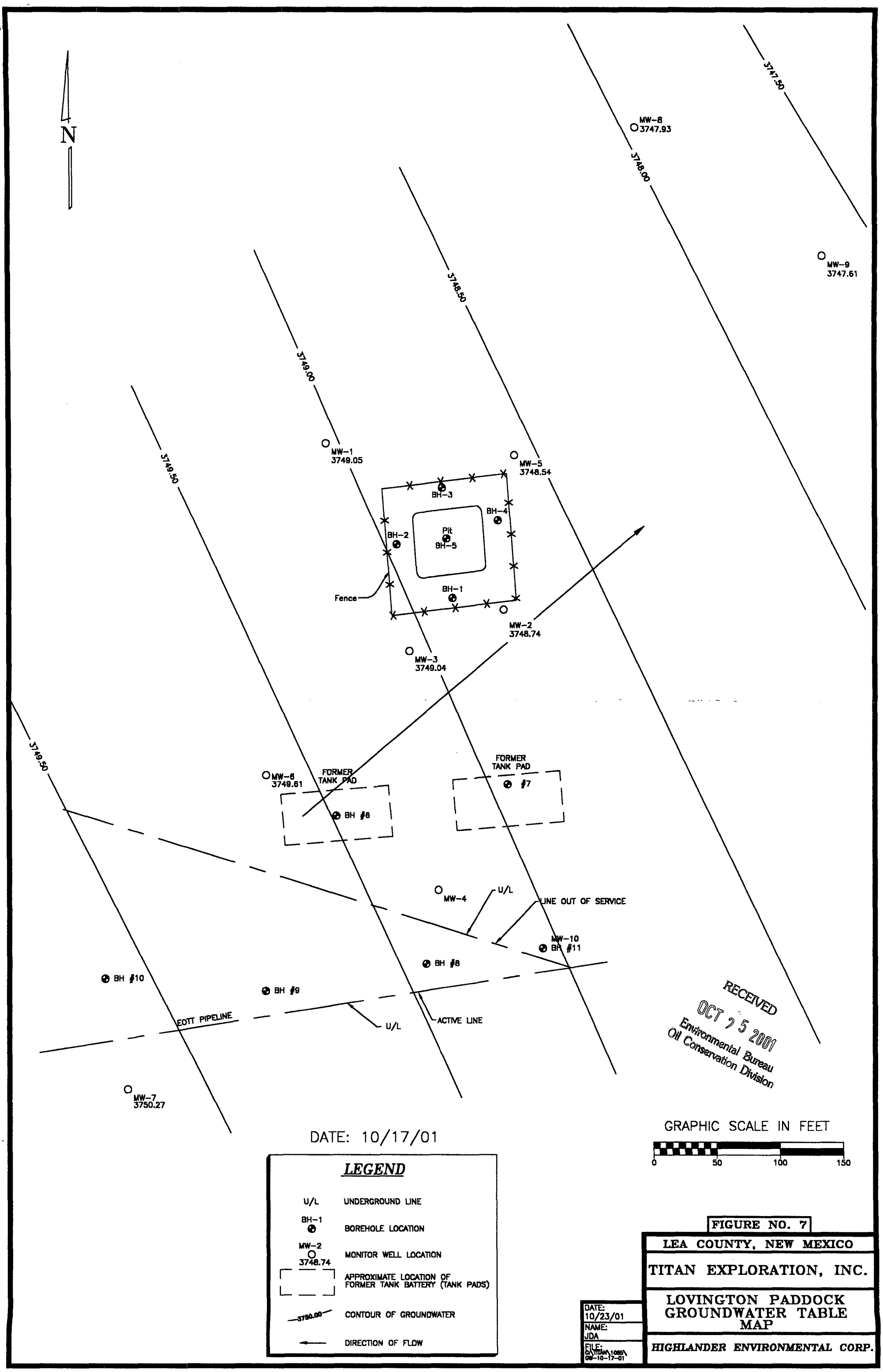
LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

LOVINGTON PADDOCK GROUNDWATER TABLE MAP

DATE: 10/23/01
NAME: JDA
FILE: G:\TITAN\1085\GW-10-8-01

HIGHLANDER ENVIRONMENTAL CORP.


N
MW-8
3747.93
3747.50
3748.00
MW-9
3747.61
3748.50
3749.00
MW-1
3749.05
MW-5
3748.54
3749.50
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
HIGHLANDER ENVIRONMENTAL CORP.
DATE:
10/23/01
NAME:
JDA
FILE:
G:\TITAN\1085\
GW-10-17-01

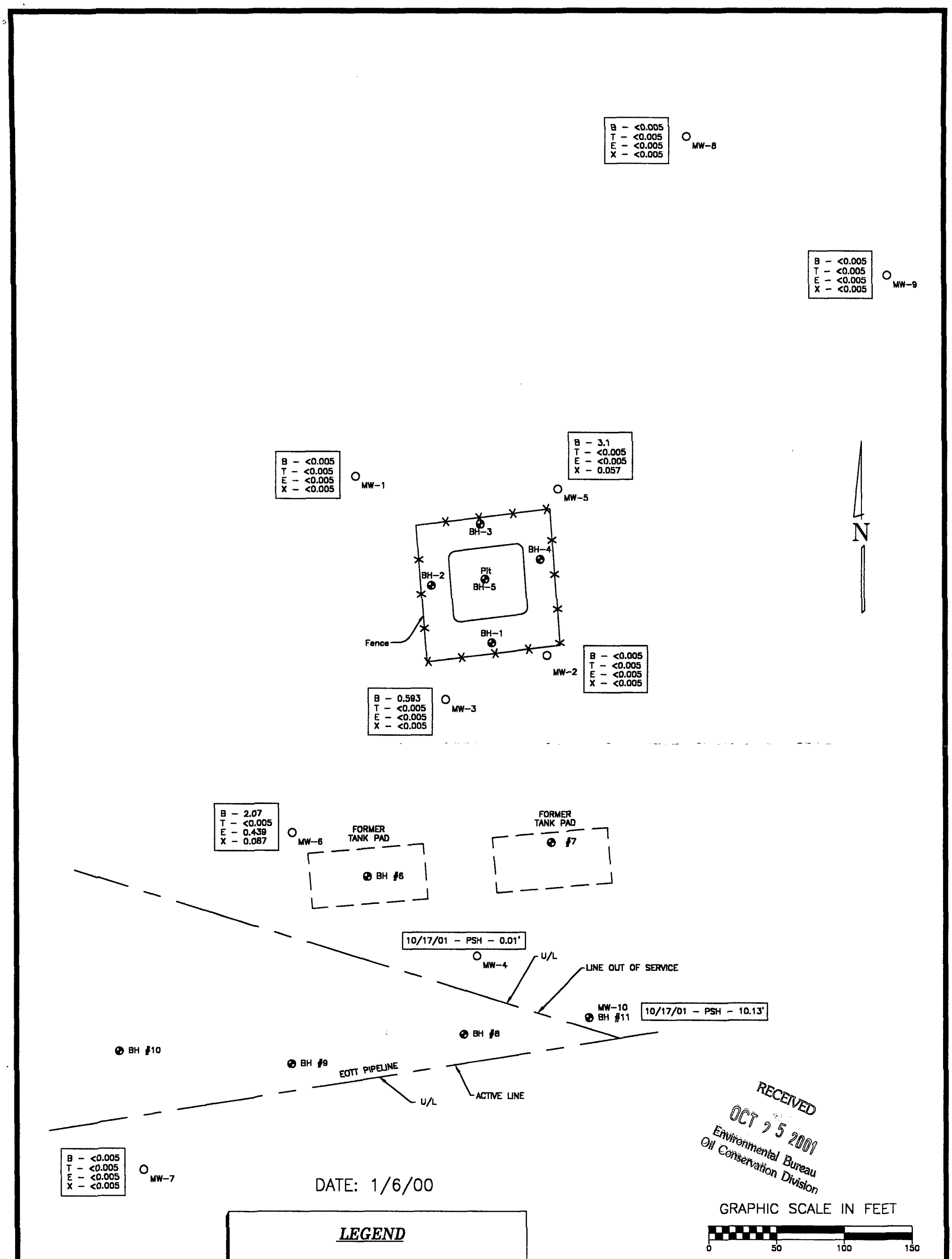


FIGURE NO. 8

LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

LOVINGTON PADDOCK
BTEX CONCENTRATIONS
IN GROUNDWATER

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

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

MW-8
<0.005

MW-9
<0.005

MW-1
<0.005

MW-5
3.1

BH-3

BH-4

BH-2

Pit

BH-5

BH-1

Fence

MW-2
<0.005

N

0.5

MW-3
0.593

1.0

2.0

MW-6
2.07

FORMER
TANK PAD

3.0

FORMER
TANK PAD

#7

BH #6

4.0

MW-4

U/L

LINE OUT OF SERVICE

MW-10
BH #11

BH #8

BH #10

BH #9

TEXAS-NEW MEXICO PIPELINE (NOW EOTT)

ACTIVE LINE

U/L

MW-7
<0.005

RECEIVED
OCT 25 2001
Environmental Bureau
Oil Conservation Division

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

GRAPHIC SCALE IN FEET

0 50 100 150

FIGURE NO. 9

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.

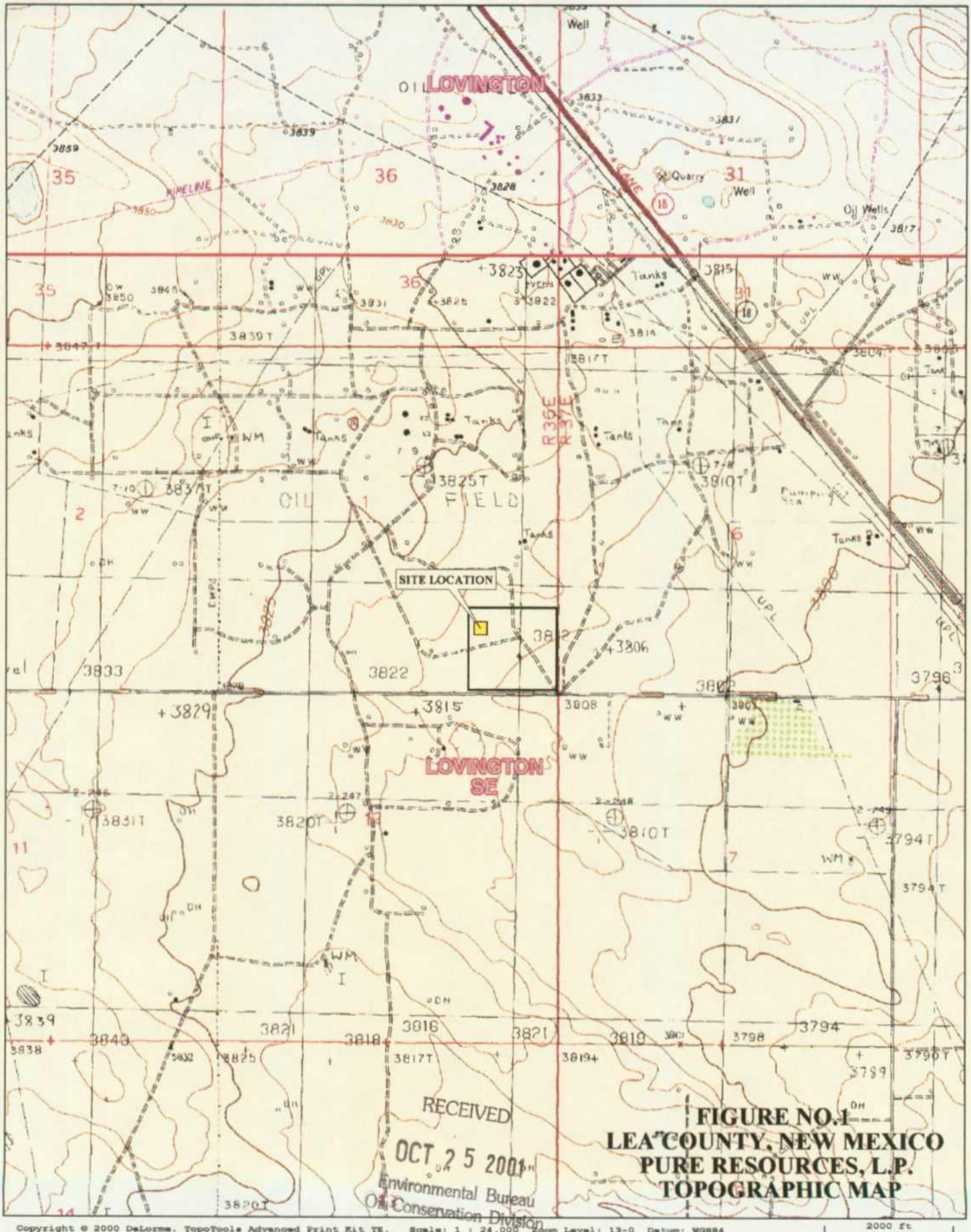


FIGURE NO.1
LEA COUNTY, NEW MEXICO
PURE RESOURCES, L.P.
TOPOGRAPHIC MAP

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	Groundwater Depth feet TOC	Phase Separated Hydrocarbon Depth (ft)	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	-
	10/5/01	3817.26	68.02	-	3749.24	
	10/17/01	3817.26	68.21	-	3749.05	
MW-2	10/1/98	3816.07	64.75	-	3751.32	-
	1/6/00	3816.07	65.45	-	3750.62	-
	10/5/01	3816.07	66.97	-	3749.10	
	10/17/01	3816.07	67.33	-	3748.74	
MW-3	10/1/98	3817.41	65.83	-	3751.58	-
	1/6/00	3817.41	66.56	-	3750.85	-
	10/5/01	3817.41	68.03	-	3749.38	-
	10/17/01	3817.41	68.37	-	3749.04	-
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
	10/5/01	3816.84	67.18	67.22	-	0.04
	10/17/01	3816.84	67.82	67.83	-	0.01
MW-5	1/27/99	3816.23	65.24	-	3750.99	-
	1/6/00	3816.23	65.96	-	3750.27	-
	10/5/01	3816.23	67.44	-	3748.79	-
	10/17/01	3816.23	67.69	-	3748.54	-

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

Table 4 (con't)
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	Groundwater Depth feet TOC	Phase Separated Hydrocarbon Depth (ft)	Groundwater Elevation (ft)	Phase Separated Hydrocarbon (ft)
MW-6	1/27/99	3817.51	65.36	-	3752.15	-
	1/6/00	3817.51	66.07	-	3751.44	-
	10/5/01	3817.51	67.54	-	3749.97	-
	10/17/01	3817.51	67.90	-	3749.61	-
MW-7	3/24/99	3816.25	63.28	-	3752.97	-
	1/6/00	3816.25	63.97	-	3752.28	-
	10/5/01	3816.25	65.46	-	3750.79	-
	10/17/01	3816.25	65.98	-	3750.27	-
MW-8	3/24/99	3816.38	66.09	-	3750.29	-
	1/6/00	3816.38	66.78	-	3749.60	-
	10/5/01	3816.38	68.31	-	3748.07	-
	10/17/01	3816.38	68.45	-	3747.93	-
MW-9	3/24/99	3815.69	65.55	-	3750.14	-
	1/6/00	3815.69	66.24	-	3749.45	-
	10/5/01	3815.69	67.80	-	3747.89	-
	10/17/01	3815.69	68.08	-	3747.61	-
MW-10	3/31/00	-	66.45	-	-	0.33
	10/5/01	-	64.45	74.19	-	9.74
	10/17/01	-	65.33	75.46	-	10.13

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

Table 4: (con't)
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	Groundwater Depth feet TOC	Phase Separated Hydrocarbon Depth (ft)	Groundwater Elevation (ft)	Remarks
WW-1	10/5/01	-	62.22	-	-	Static
	10/17/01	-	85.10	-	-	*
WW-2	10/5/01	-	62.51	-	-	Static
	10/17/01	-	82.7	-	-	*
WW-3	10/5/01	-	65.00	-	-	Static
	10/17/01	-	85.45	-	-	*
WW-4	10/5/01	-	67.55	-	-	Static
	10/17/01	-	69.42	-	-	*

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. * Wells were shut down, wells pumped the week of Oct. 7, 2001

Table 5: Summary of Monitor Well Drilling and Completion Details
Titan Exploration, Inc.,
Lovington Paddock/San Andres Unit, ATB 1-1, Pit
Lea County, New Mexico

Monitor Well	Installation Date	Drilled Depth, feet BGS	Ground Elevation, feet AMSL	Top of Casing Elevation, feet AMSL	Screen Interval, feet BGS
MW-1	10/1/98	75.0	3814.96	3817.26	55-75
MW-2	10/1/98	76.0	3813.91	3816.07	56-76
MW-3	10/1/98	75.0	3815.32	3817.41	55-75
MW-4	10/2/98	75.0	3814.64	3816.84	55-75
MW-5	1/27/99	77.0	3814.67	3816.23	57-77
MW-6	1/27/99	77.0	3814.25	3817.51	57-77
MW-7	3/24/99	77.0	3813.94	3816.25	57-77
MW-8	3/24/99	77.0	3814.12	3816.38	57-77
MW-9	3/24/99	77.0	3813.32	3815.69	57-77
MW-10	3/30/00	76.0	-	-	56-76

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

Price, Wayne

From: Price, Wayne
Sent: Wednesday, April 10, 2002 11:38 AM
To: 'enviplus1@aol.com'
Cc: Sheeley, Paul; Johnson, Brian
Subject: EOTT/Pure Resources Lovington Paddock ABT 1-1 OCD Case # 1R0272

Contacts: Pat McCasland

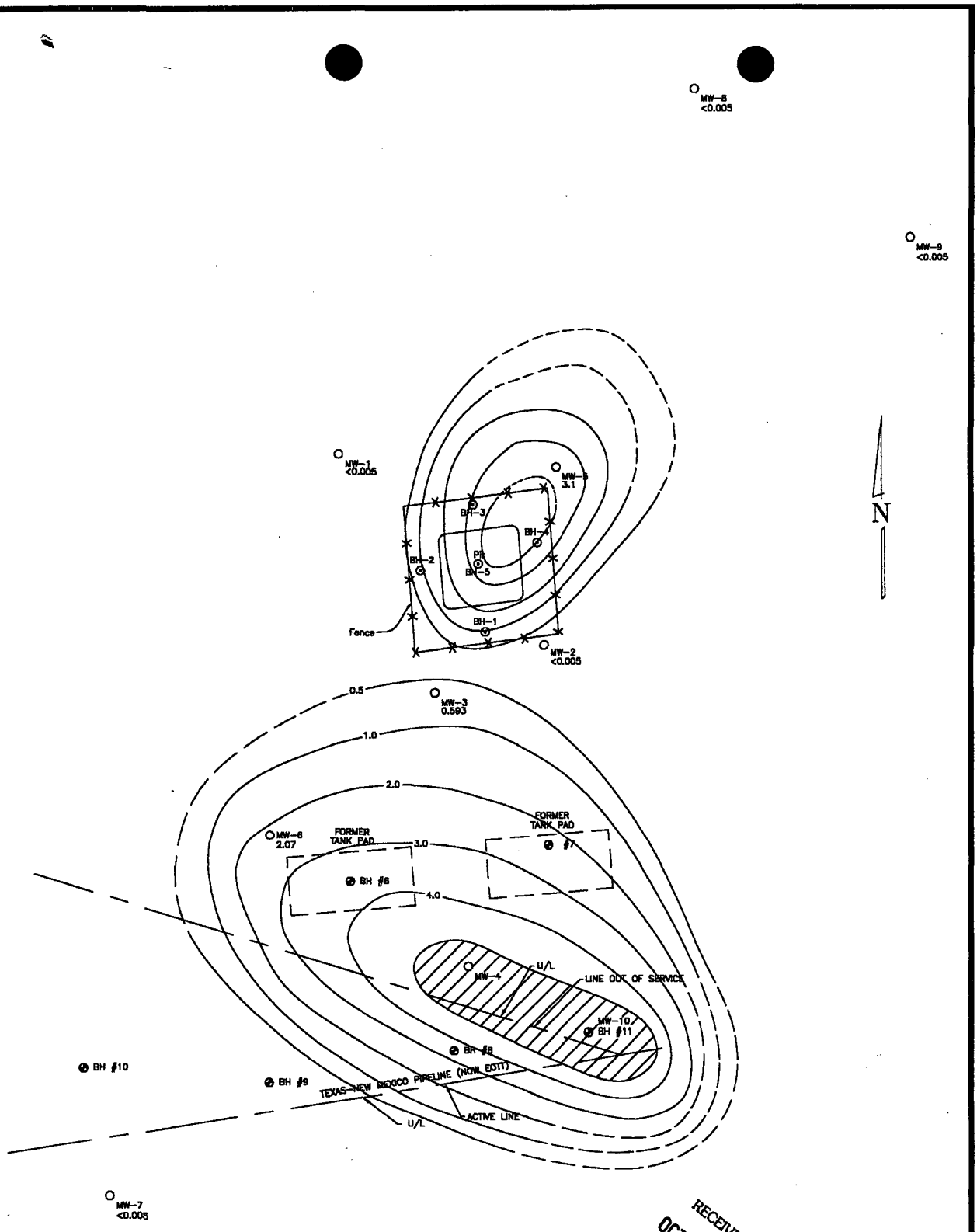
Dear Pat:

Frank Hernandez e-mail is not working so he requested that I e-mail to you site information for the above subject site, please pass this along to Frank. It appears that there is approximately 10-11 feet of PSH below the two pipelines. Please inform EOTT that under Rule 19 there is an emergency provision for the company to start immediate recovery. I would like to know within 10 days as to EOTT's intentions. OCD is concerned about new water wells installed in close proximity to this site.


Lovington Paddock.tif


LP#2.tif


LP#3.tif



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OCT 25 2001
Environmental Bureau
Oil Conservation Division

DATE: 1/6/00

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)
- 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

DATE: 6/28/00
NAME: JDA
FILE: [illegible]

HIGHLANDER ENVIRONMENTAL CORP.

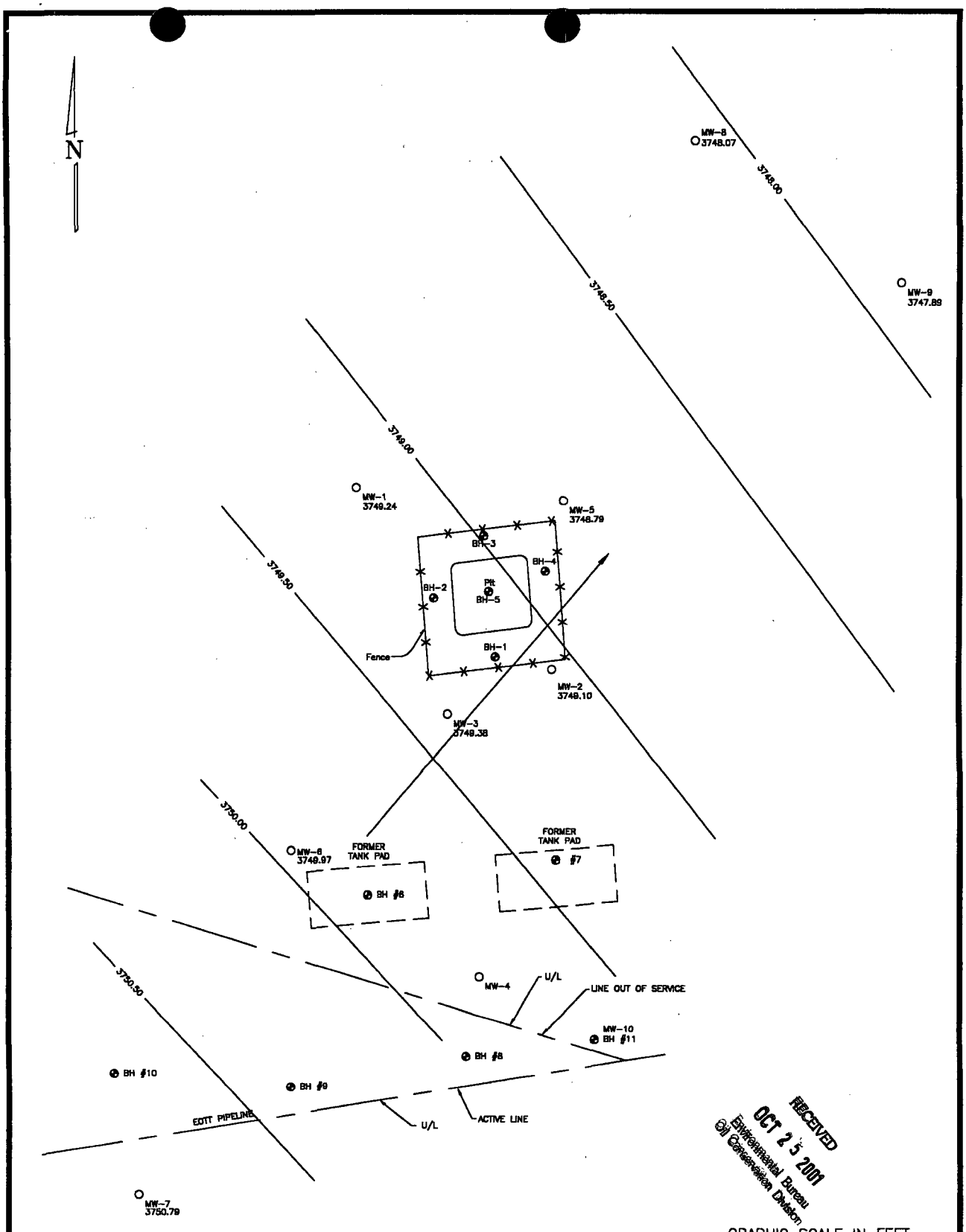


FIGURE NO. 6

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

LOVINGTON PADDOCK GROUNDWATER TABLE MAP

HIGHLANDER ENVIRONMENTAL CORP.

DATE: 10/23/01
NAME: JDA
FILE: [illegible]

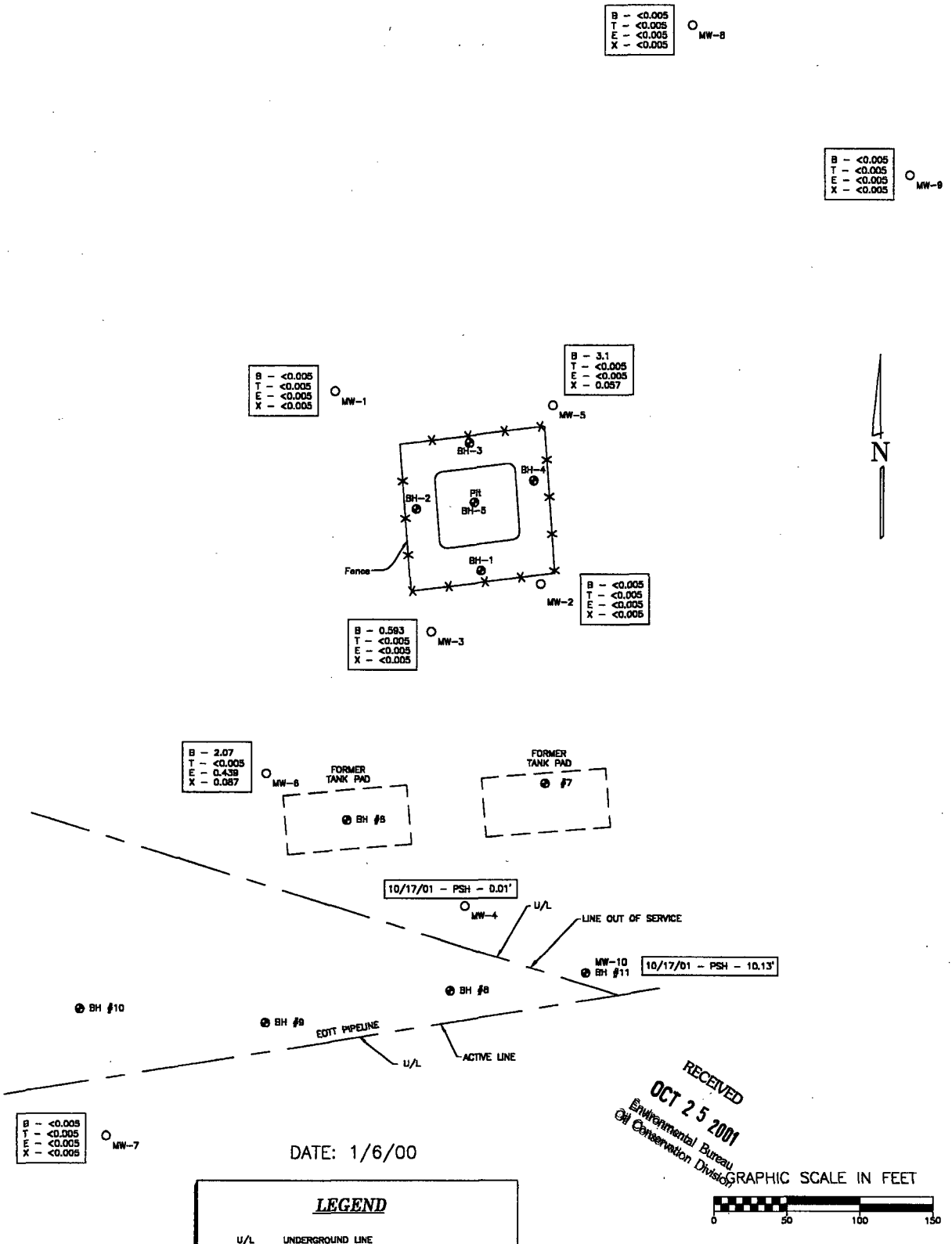


FIGURE NO. 8

LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

LOVINGTON PADDOCK
BTEX CONCENTRATIONS
IN GROUNDWATER

DATE: 10/22/01
NAME: JDA
FILE: C:\WORK\1005\BTEX_1.DG

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

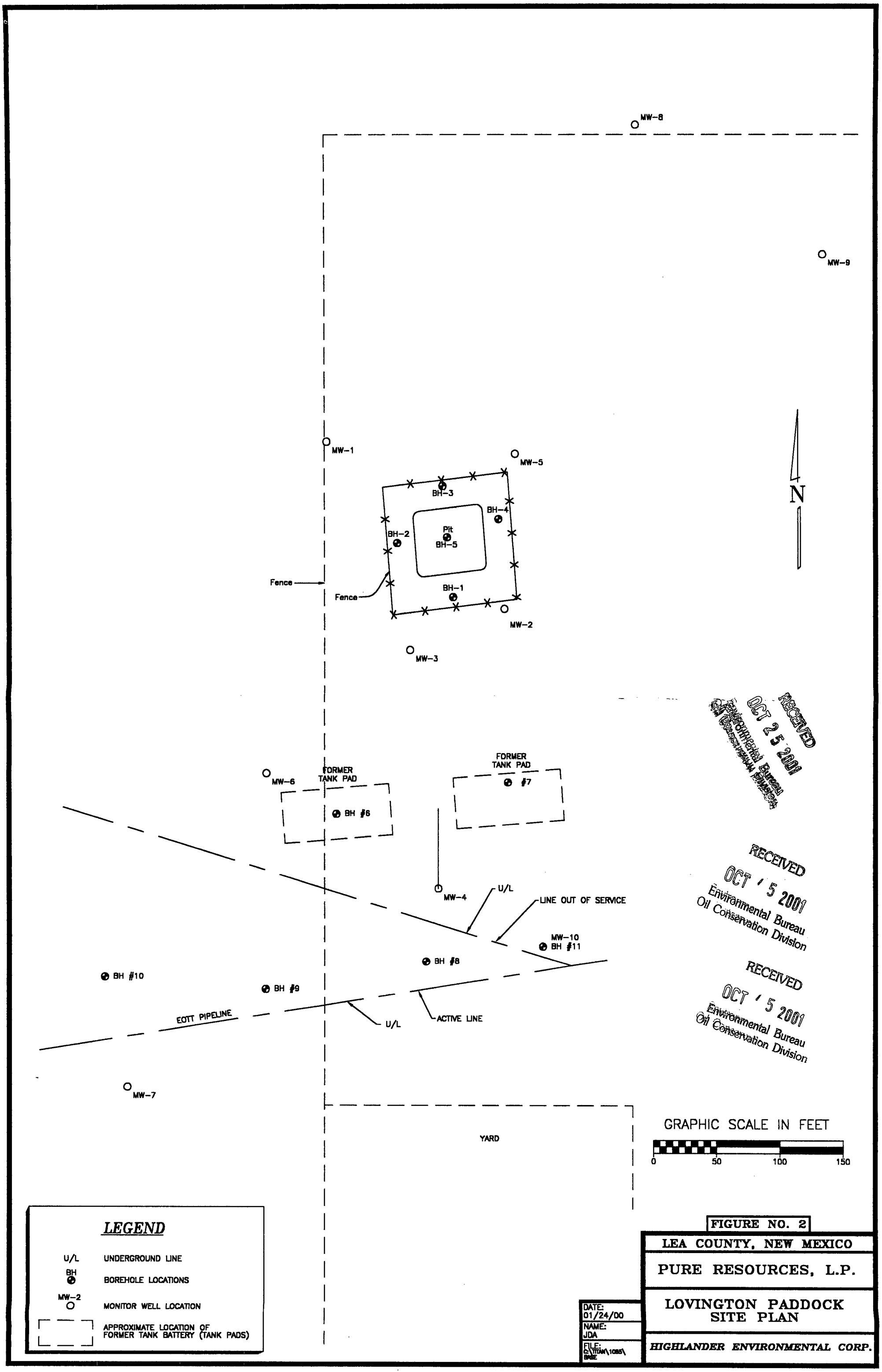


FIGURE NO. 2

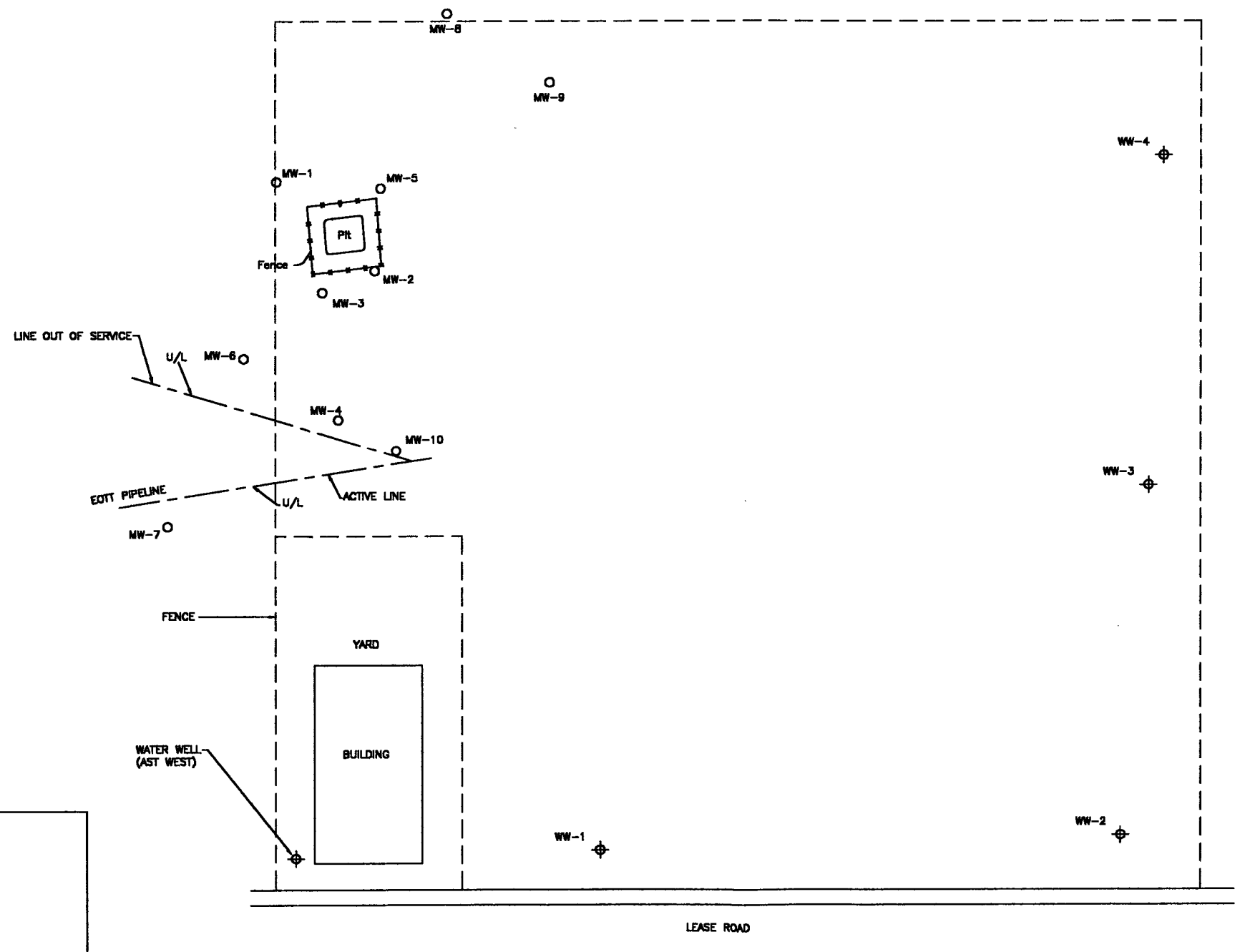
LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

LOVINGTON PADDOCK
SITE PLAN

DATE: 01/24/00
NAME: JDA
FILE: C:\TITAN\1085\BASE

HIGHLANDER ENVIRONMENTAL CORP.



N

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Environmental Bureau
Oil Conservation Division

LEGEND

U/L	UNDERGROUND LINE
MW-2 ○	MONITOR WELL LOCATION
WW-1 ⊕	WATER WELL LOCATION

GRAPHIC SCALE IN FEET

0 200 300 400

FIGURE NO. 3

LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

LOVINGTON PADDOCK
SITE PLAN

DATE: 10/14/01
NAME: JDA
FILE: CATIA\10265\SHEET-3

HIGHLANDER ENVIRONMENTAL CORP.

BH-1

DEPTH (FT)	OVM (PPM)
5-6	4
10-11	4
15-16	4
20-21	4
25-26	3
30-31	1

BH-2

DEPTH (FT)	OVM (PPM)
5-6	2
10-11	2
15-16	17
20-21	6
25-26	7
30-31	3

BH-3

DEPTH (FT)	OVM (PPM)
5-6	0
10-11	0
15-16	3
20-21	2
25-26	1
30-31	2

BH-4

DEPTH (FT)	OVM (PPM)
5-6	1
10-11	0
15-16	1
20-21	1
25-26	0
30-31	0

BH-5

DEPTH (FT)	OVM (PPM)
5-6	520
10-11	550
15-16	388
20-21	500
25-26	550
30-31	240
35-36	350
40-41	350
45-46	490
50-51	560
60-61	1
70-71	1

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

DEPTH (FT)	OVM (PPM)
5-6	2
10-11	2
15-16	2
20-21	2
25-26	2
30-31	2
35-36	2
40-41	2
45-46	2
50-51	6
55-56	10
62-63	6

MW-6

FORMER TANK PAD

BH #6

DEPTH (FT)	OVM (PPM)
5-6	8
10-11	1
15-16	3
20-21	4
25-26	5
30-31	4
35-36	3
40-41	10
45-46	15
50-51	22
55-56	12
62-63	12

FORMER TANK PAD

#7

DEPTH (FT)	OVM (PPM)
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
60-61	4
62-63	3
70-71	1

BH #10

DEPTH (FT)	OVM (PPM)
60-61	671

MW-4

U/L

LINE OUT OF SERVICE

MW-10
BH #11

ACTIVE LINE

BH #8

U/L

BH #9

EOTT PIPELINE

DEPTH (FT)	OVM (PPM)
5-6	39
10-11	630
15-16	225
20-21	666
25-26	365
30-31	69
35-36	14
40-41	7
45-46	8
50-51	518
55-56	601
62-63	370

DEPTH (FT)	OVM (PPM)
5-6	2
10-11	2
15-16	0
20-21	5
25-26	3
30-31	4
35-36	14
40-41	18
45-46	10
50-51	25
55-56	5
60-61	5
62-63	78

DEPTH (FT)	OVM (PPM)
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
60-61	2
62-63	2

MW-7

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)

FIGURE NO. 4

LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

LOVINGTON PADDOCK
OVM READINGS

HIGHLANDER ENVIRONMENTAL CORP.

DATE: 01/24/00

NAME: JDA

FILE: S:\TITAN\1085\OVM

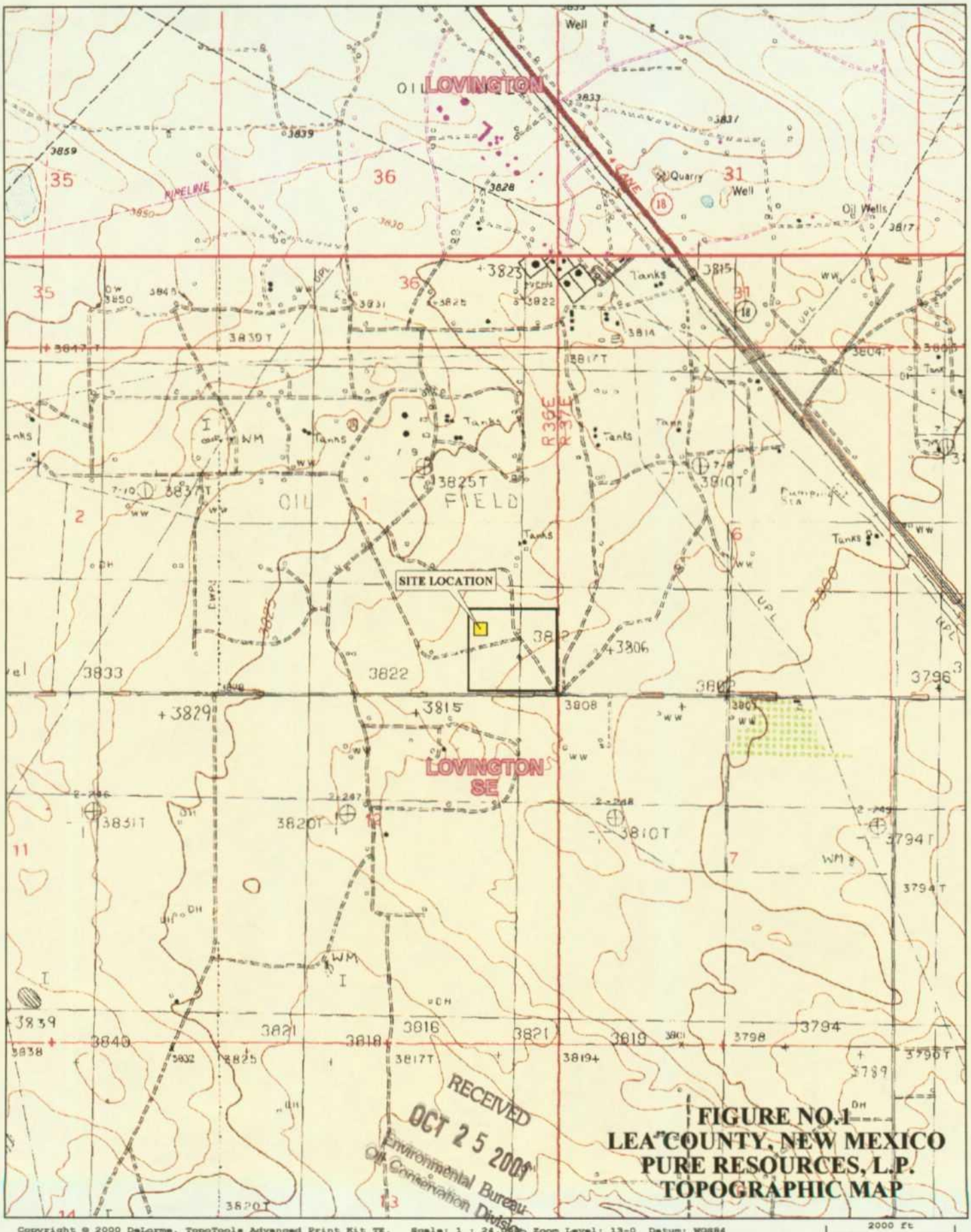


FIGURE NO.1
LEA COUNTY, NEW MEXICO
PURE RESOURCES, L.P.
TOPOGRAPHIC MAP

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	Groundwater Depth feet TOC	Phase Separated Hydrocarbon Depth (ft)	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	-
	10/5/01	3817.26	68.02	-	3749.24	
	10/17/01	3817.26	68.21	-	3749.05	
MW-2	10/1/98	3816.07	64.75	-	3751.32	-
	1/6/00	3816.07	65.45	-	3750.62	-
	10/5/01	3816.07	66.97	-	3749.10	
	10/17/01	3816.07	67.33	-	3748.74	
MW-3	10/1/98	3817.41	65.83	-	3751.58	-
	1/6/00	3817.41	66.56	-	3750.85	-
	10/5/01	3817.41	68.03	-	3749.38	-
	10/17/01	3817.41	68.37	-	3749.04	-
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
	10/5/01	3816.84	67.18	67.22	-	0.04
	10/17/01	3816.84	67.82	67.83	-	0.01
MW-5	1/27/99	3816.23	65.24	-	3750.99	-
	1/6/00	3816.23	65.96	-	3750.27	-
	10/5/01	3816.23	67.44	-	3748.79	-
	10/17/01	3816.23	67.69	-	3748.54	-

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

Table 4 (con't)
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	Groundwater Depth feet TOC	Phase Separated Hydrocarbon Depth (ft)	Groundwater Elevation (ft)	Phase Separated Hydrocarbon (ft)
MW-6	1/27/99	3817.51	65.36	-	3752.15	-
	1/6/00	3817.51	66.07	-	3751.44	-
	10/5/01	3817.51	67.54	-	3749.97	-
	10/17/01	3817.51	67.90	-	3749.61	-
MW-7	3/24/99	3816.25	63.28	-	3752.97	-
	1/6/00	3816.25	63.97	-	3752.28	-
	10/5/01	3816.25	65.46	-	3750.79	-
	10/17/01	3816.25	65.98	-	3750.27	-
MW-8	3/24/99	3816.38	66.09	-	3750.29	-
	1/6/00	3816.38	66.78	-	3749.60	-
	10/5/01	3816.38	68.31	-	3748.07	-
	10/17/01	3816.38	68.45	-	3747.93	-
MW-9	3/24/99	3815.69	65.55	-	3750.14	-
	1/6/00	3815.69	66.24	-	3749.45	-
	10/5/01	3815.69	67.80	-	3747.89	-
	10/17/01	3815.69	68.08	-	3747.61	-
MW-10	3/31/00	-	66.45	-	-	0.33
	10/5/01	-	64.45	74.19	-	9.74
	10/17/01	-	65.33	75.46	-	10.13

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

Table 4: (con't)
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	Groundwater Depth feet TOC	Phase Separated Hydrocarbon Depth (ft)	Groundwater Elevation (ft)	Remarks
WW-1	10/5/01	-	62.22	-	-	Static
	10/17/01	-	85.10	-	-	*
WW-2	10/5/01	-	62.51	-	-	Static
	10/17/01	-	82.7	-	-	*
WW-3	10/5/01	-	65.00	-	-	Static
	10/17/01	-	85.45	-	-	*
WW-4	10/5/01	-	67.55	-	-	Static
	10/17/01	-	69.42	-	-	*

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. * Wells were shut down, wells pumped the week of Oct. 7, 2001

Table 5: Summary of Monitor Well Drilling and Completion Details
Titan Exploration, Inc.,
Lovington Paddock/San Andres Unit, ATB 1-1, Pit
Lea County, New Mexico

Monitor Well	Installation Date	Drilled Depth, feet BGS	Ground Elevation, feet AMSL	Top of Casing Elevation, feet AMSL	Screen Interval, feet BGS
MW-1	10/1/98	75.0	3814.96	3817.26	55-75
MW-2	10/1/98	76.0	3813.91	3816.07	56-76
MW-3	10/1/98	75.0	3815.32	3817.41	55-75
MW-4	10/2/98	75.0	3814.64	3816.84	55-75
MW-5	1/27/99	77.0	3814.67	3816.23	57-77
MW-6	1/27/99	77.0	3814.25	3817.51	57-77
MW-7	3/24/99	77.0	3813.94	3816.25	57-77
MW-8	3/24/99	77.0	3814.12	3816.38	57-77
MW-9	3/24/99	77.0	3813.32	3815.69	57-77
MW-10	3/30/00	76.0	-	-	56-76

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

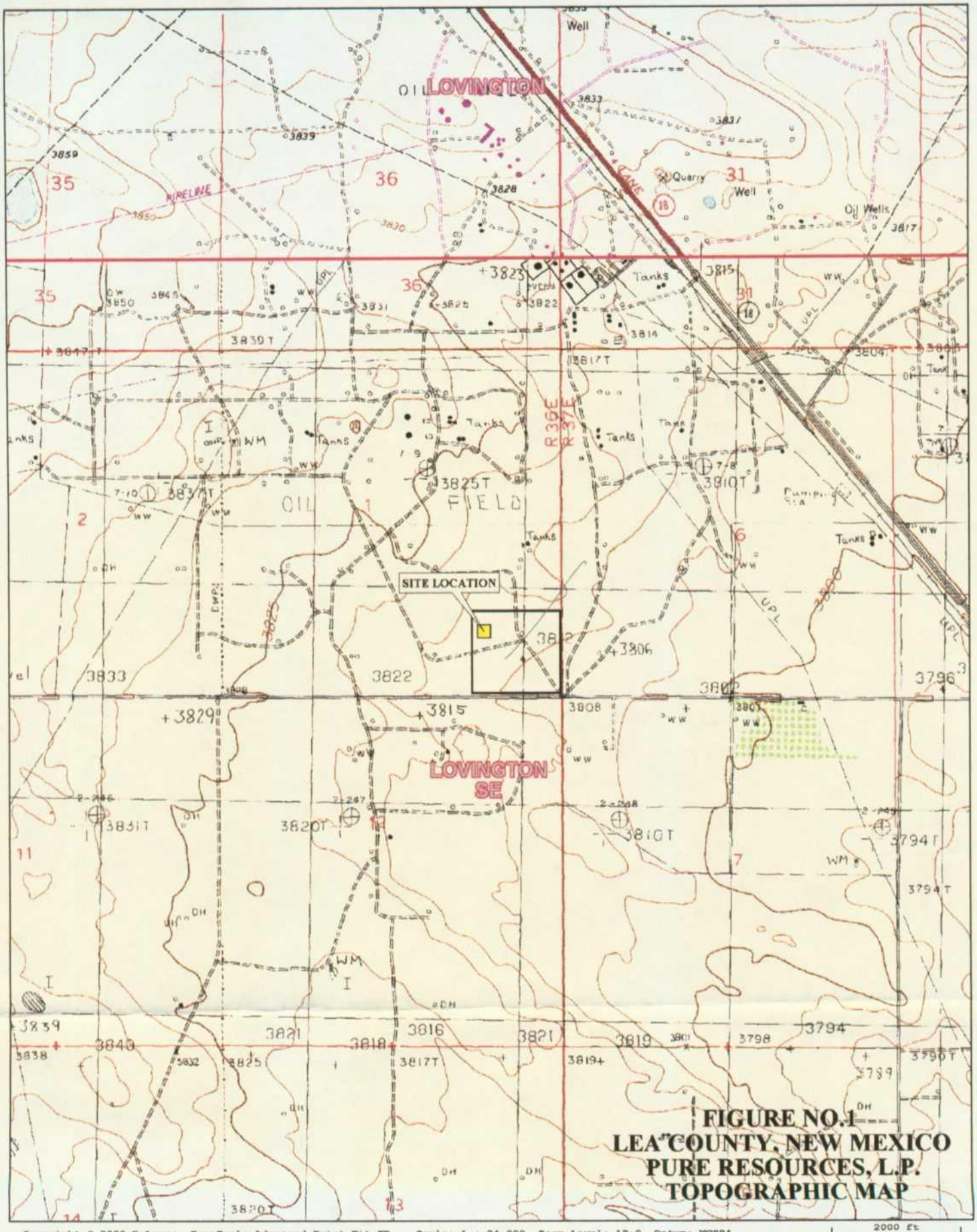
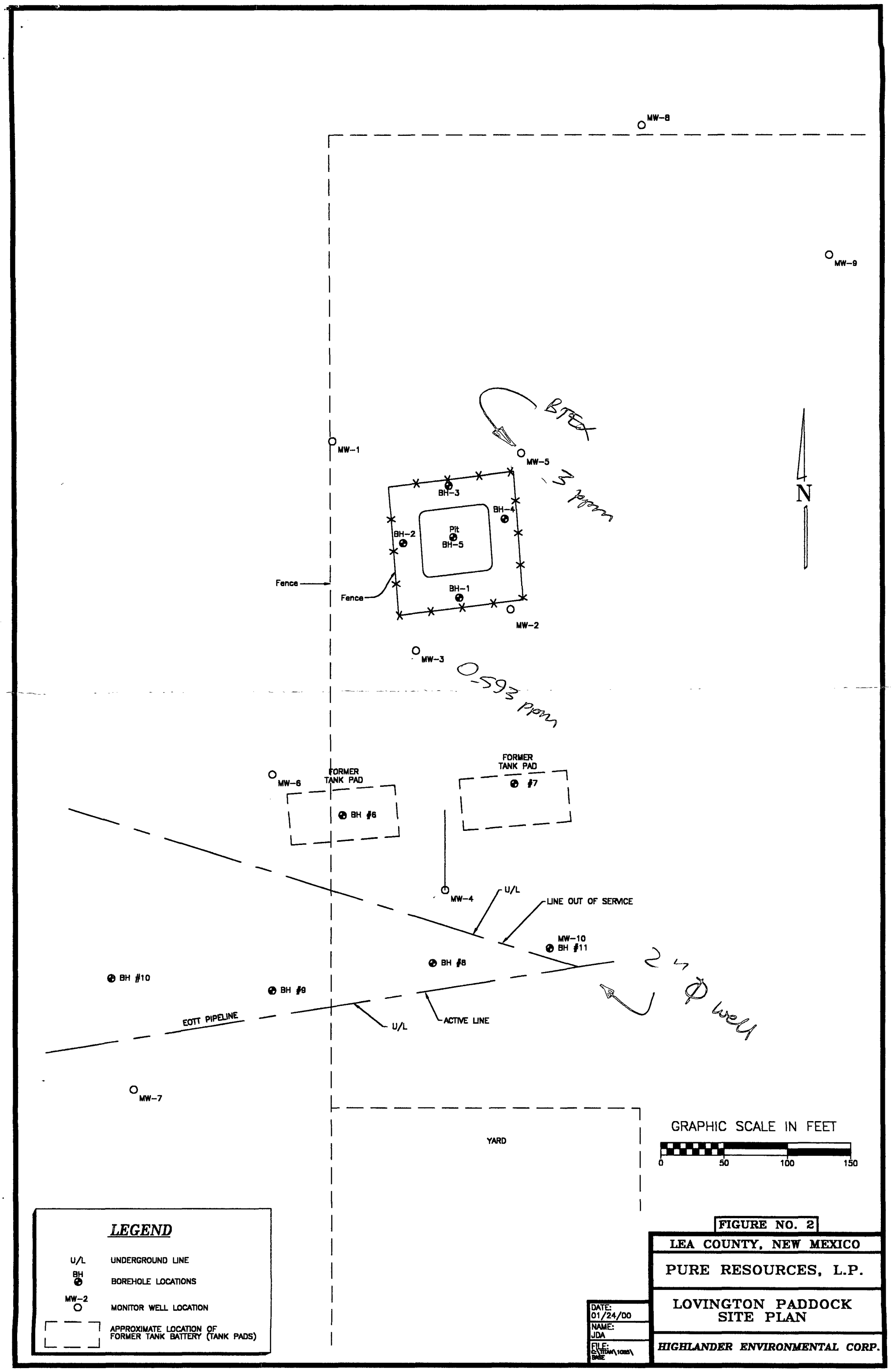
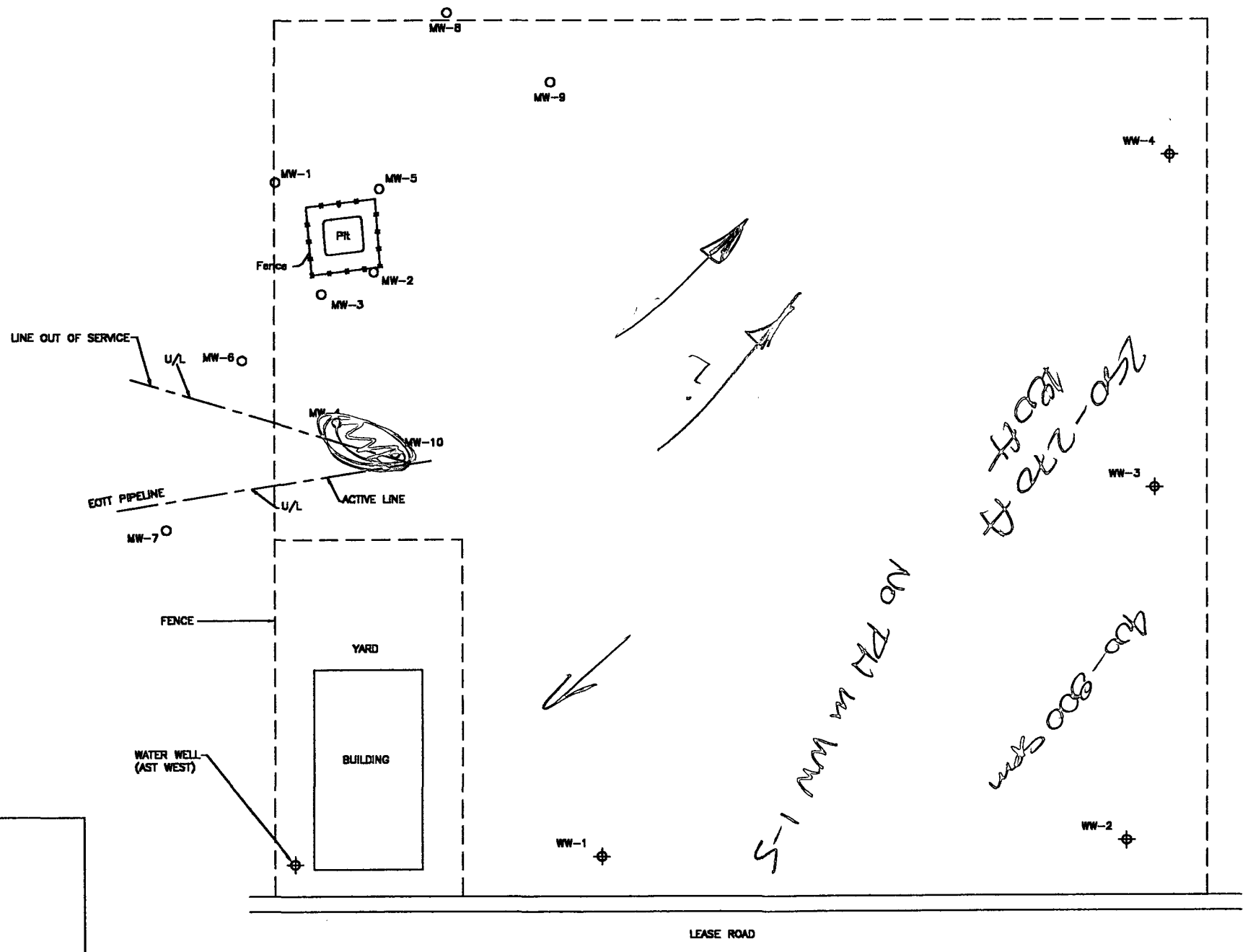


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
PURE RESOURCES, L.P.
TOPOGRAPHIC MAP

 Scale: 1 : 24,000 Zoom Level: 13-0 Datum: WGS84


MW-8
MW-9
MW-1
MW-5
BTEX
BH-3
BH-4
BH-2
Pit
BH-5
BH-1
Fence
Fence
MW-2
MW-3
0-593 ppm
N
4 ppm
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
EOTT PIPELINE
U/L
ACTIVE LINE
2 ppm
Ø well
MW-7
YARD
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)
FIGURE NO. 2
LEA COUNTY, NEW MEXICO
PURE RESOURCES, L.P.
LOVINGTON PADDOCK SITE PLAN
HIGHLANDER ENVIRONMENTAL CORP.
DATE: 01/24/00
NAME: JDA
FILE: G:\TITAN\1085\BASE



N

LEGEND

U/L	UNDERGROUND LINE
MW-2 O	MONITOR WELL LOCATION
WW-1 ⊕	WATER WELL LOCATION

GRAPHIC SCALE IN FEET

0 200 300 400

FIGURE NO. 3

LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

LOVINGTON PADDOCK
SITE PLAN

HIGHLANDER ENVIRONMENTAL CORP.

DATE: 10/14/01
NAME: JDA
FILE: C:\Projects\1035\DWG-3

BH-1

DEPTH (FT)	OVM (PPM)
5-6	4
10-11	4
15-16	4
20-21	4
25-26	3
30-31	1

BH-2

DEPTH (FT)	OVM (PPM)
5-6	2
10-11	2
15-16	17
20-21	6
25-26	7
30-31	3

BH-3

DEPTH (FT)	OVM (PPM)
5-6	0
10-11	0
15-16	3
20-21	2
25-26	1
30-31	2

BH-4

DEPTH (FT)	OVM (PPM)
5-6	1
10-11	0
15-16	1
20-21	1
25-26	0
30-31	0

BH-5

DEPTH (FT)	OVM (PPM)
5-6	520
10-11	550
15-16	388
20-21	500
25-26	550
30-31	240
35-36	350
40-41	350
45-46	490
50-51	560
60-61	1
70-71	1

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

DEPTH (FT)	OVM (PPM)
5-6	2
10-11	2
15-16	2
20-21	2
25-26	2
30-31	2
35-36	2
40-41	2
45-46	2
50-51	6
55-56	10
62-63	6

MW-6

FORMER TANK PAD

BH #6

FORMER TANK PAD

#7

DEPTH (FT)	OVM (PPM)
5-6	8
10-11	1
15-16	3
20-21	4
25-26	5
30-31	4
35-36	3
40-41	10
45-46	15
50-51	22
55-56	12
62-63	12

DEPTH (FT)	OVM (PPM)
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
60-61	4
62-63	3
70-71	1

BH #10

DEPTH (FT)	OVM (PPM)
60-61	671

MW-4

U/L

LINE OUT OF SERVICE

MW-10
BH #11

ACTIVE LINE

BH #8

U/L

BH #9

EOTT PIPELINE

DEPTH (FT)	OVM (PPM)
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
60-61	2
62-63	2

MW-7

DEPTH (FT)	OVM (PPM)
5-6	2
10-11	2
15-16	0
20-21	5
25-26	3
30-31	4
35-36	14
40-41	18
45-46	10
50-51	25
55-56	5
60-61	5
62-63	78

DEPTH (FT)	OVM (PPM)
5-6	39
10-11	630
15-16	225
20-21	666
25-26	365
30-31	69
35-36	14
40-41	7
45-46	8
50-51	518
55-56	601
62-63	370

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)

FIGURE NO. 4

LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

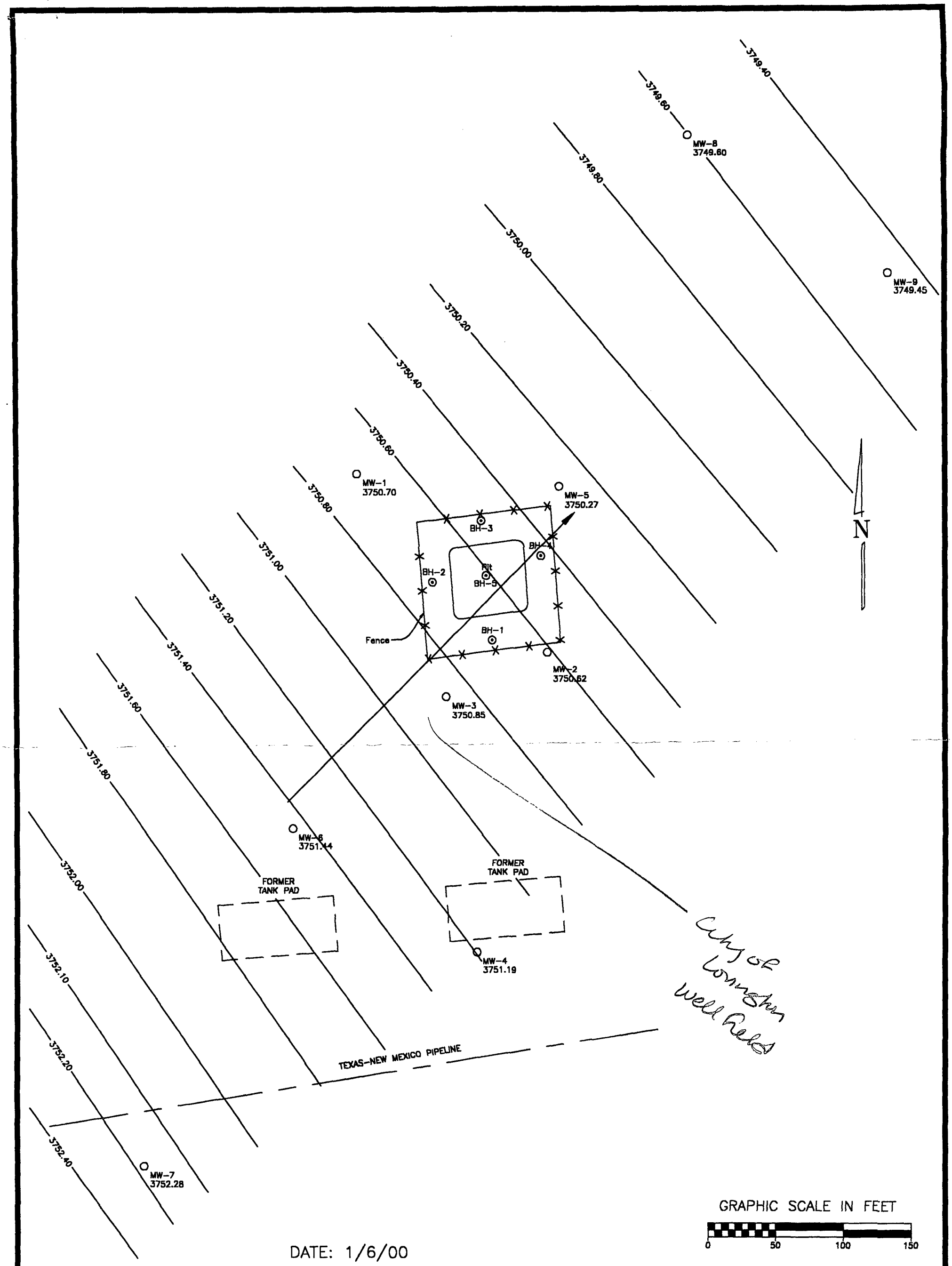
LOVINGTON PADDOCK
OVM READINGS

DATE: 01/24/00

NAME: JDA

FILE: C:\TITAN\1085\OVM

HIGHLANDER ENVIRONMENTAL CORP.


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
3751.44
FORMER
TANK PAD
FORMER
TANK PAD
3752.00
MW-4
3751.19
3752.10
TEXAS-NEW MEXICO PIPELINE
3752.20
3752.40
MW-7
3752.28
N
City of Lovington Well Fields
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
FIGURE NO. 5
LEA COUNTY, NEW MEXICO
TITAN EXPLORATION, INC.
LOVINGTON PADDOCK GROUNDWATER TABLE MAP
DATE: 01/24/00
NAME: JDA
FILE: S:\TITAN\1085\GW-1-00
HIGHLANDER ENVIRONMENTAL CORP.

N

MW-8
3748.07

MW-9
3747.89

3748.00

3748.50

3749.00

3749.50

MW-1
3749.24

MW-5
3748.79

BH-3

BH-4

BH-2

Pit
BH-5

BH-1

Fence

MW-2
3749.10

MW-3
3749.38

3750.00

MW-6
3749.97

FORMER
TANK PAD

BH #6

FORMER
TANK PAD

#7

MW-4

U/L

LINE OUT OF SERVICE

MW-10
BH #11

BH #8

3750.50

BH #10

BH #9

EOTT PIPELINE

U/L

ACTIVE LINE

MW-7
3750.79

Bare Gas pump

DATE: 10/5/01

GRAPHIC SCALE IN FEET

0 50 100 150

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

FIGURE NO. 6

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

LOVINGTON PADDOCK GROUNDWATER TABLE MAP

DATE: 10/23/01
NAME: JDA
FILE: G:\TITAN\1085\GW-10-5-01

HIGHLANDER ENVIRONMENTAL CORP.

N

3747.50

MW-8
3747.93

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
3748.61

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

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

Plan Goes Map by

FIGURE NO. 7

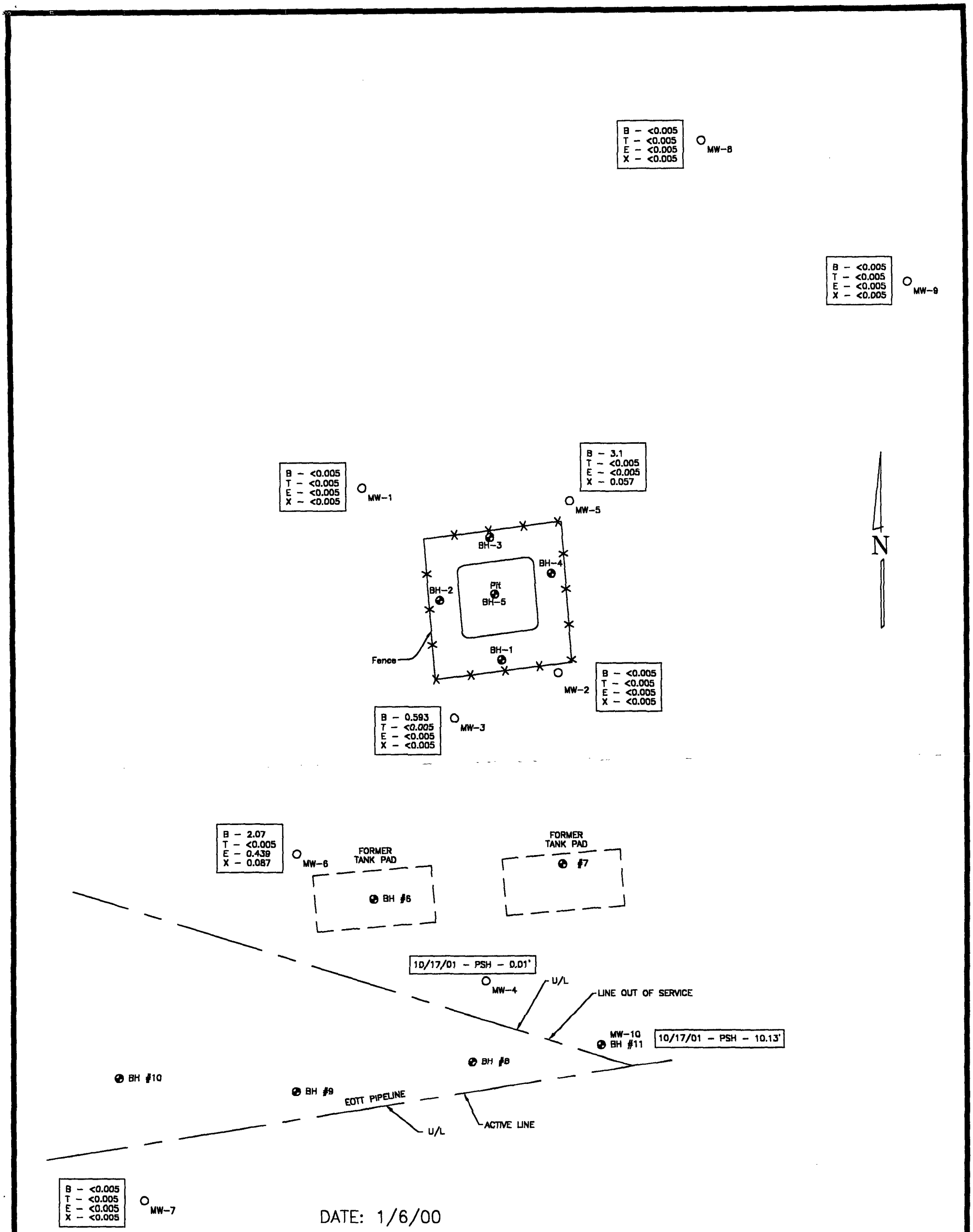
LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

LOVINGTON PADDOCK GROUNDWATER TABLE MAP

HIGHLANDER ENVIRONMENTAL CORP.

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



DATE: 1/6/00

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

GRAPHIC SCALE IN FEET

0 50 100 150

FIGURE NO. 8

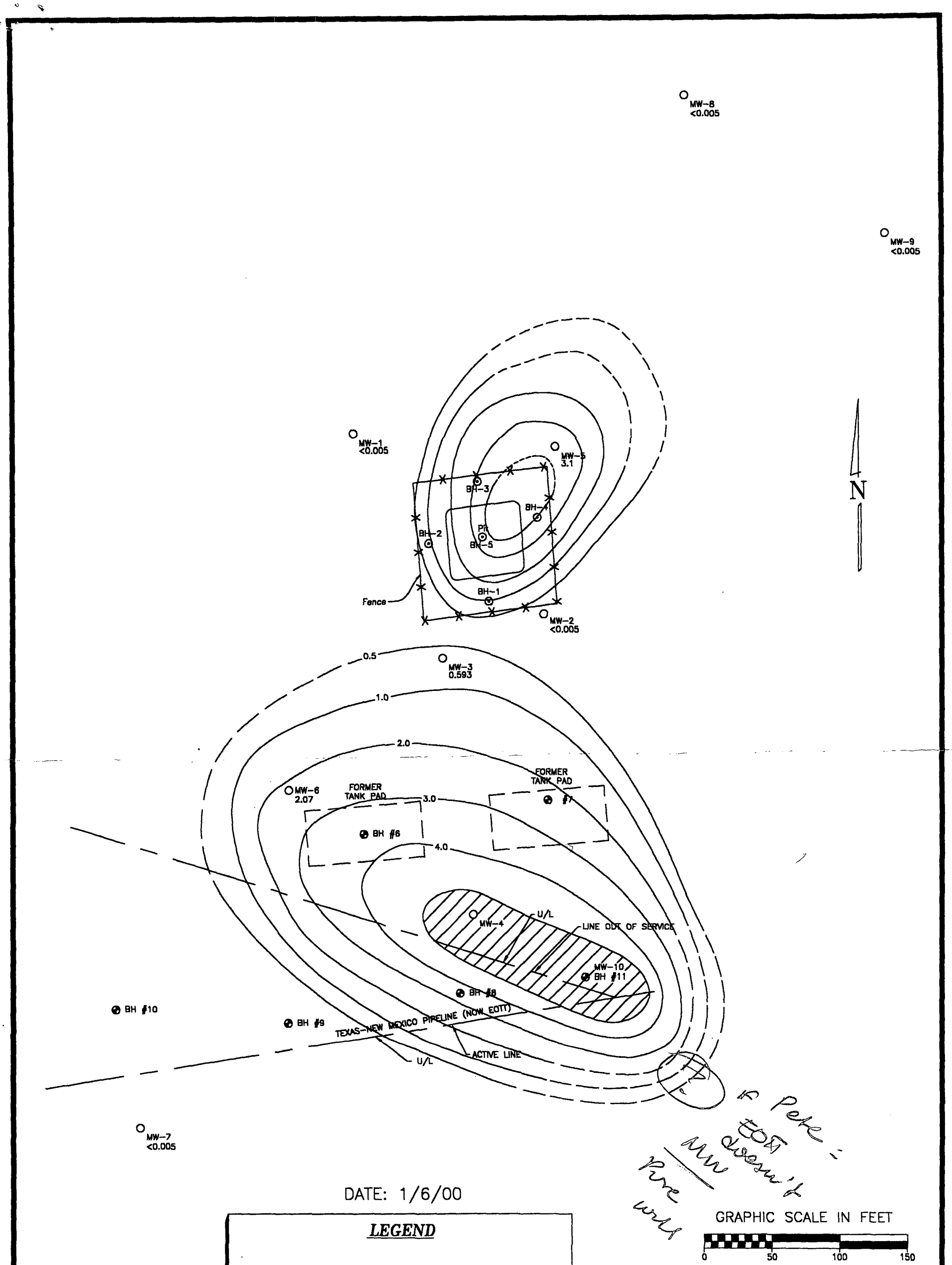
LEA COUNTY, NEW MEXICO

PURE RESOURCES, L.P.

LOVINGTON PADDOCK BTEX CONCENTRATIONS IN GROUNDWATER

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

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS


MW-8
<0.005
MW-9
<0.005
MW-1
<0.005
MW-5
3.1
BH-3
BH-4
Pit
BH-2
BH-5
BH-1
Fence
MW-2
<0.005
N
0.5
MW-3
0.593
1.0
2.0
MW-6
2.07
FORMER
TANK PAD
3.0
FORMER
TANK PAD
#7
BH #6
4.0
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
<0.005
K Pek - EOT doesn't MW Pure wells
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
GRAPHIC SCALE IN FEET
0
50
100
150
FIGURE NO. 9
LEA COUNTY, NEW MEXICO
PURE RESOURCES, L.P.
LOVINGTON PADDOCK
BENZENE CONCENTRATION MAP
DATE: 6/28/00
NAME: JDA
FILE: G:\TITAN\1085\BEN-MAP
HIGHLANDER ENVIRONMENTAL CORP.