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SUBSURFACE INVESTIGATION REPORT
TITAN EXPLORATION AND PRODUCTION, INC.
WEST LOVINGTON UNIT – PIT
LEA COUNTY, NEW MEXICO

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ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Prepared for

Titan Exploration and Production, Inc.
500 West North Lorraine
Midland, Texas

December 1998

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SUBSURFACE INVESTIGATION REPORT
TITAN EXPLORATION, INC.
WEST LOVINGTON UNIT - PIT
LEA COUNTY, NEW MEXICO

1.0 INTRODUCTION

Titan Exploration, Inc. has retained Highlander Environmental Corp. (Highlander) to conduct a Subsurface Environmental Assessment (Assessment) at an abandon pit designated ATB 33-1, Titan Lovington Unit (Site), located in the SW/4, Section 33, Township 16 South, Range 36 East, Lea County, New Mexico. Figure 1 presents a Site location and topographic map. Figure 2 presents a Site drawing.

1.1 Purpose and Scope

The purpose of the Assessment was to evaluate and determine the extent of subsurface impacts, which may have occurred from releases of petroleum hydrocarbons from the abandoned pit. Prior to the assessment of the pit, the sludge material in the pit was characterized and disposed of at an approved disposal facility. The Assessment consisted of the installation of machine air rotary drilled soil borings, and collection of soil samples for field and laboratory testing. One permanent monitor well was also installed at the pit area to evaluate groundwater quality.

2.0 SITE SETTING

2.1. Topography

The Site area is located on a moderately flat terrain. The altitude of the ground surface at the site is approximately 3900 feet above mean sea level (MSL). The natural ground surface slopes to the southeast. There are no active or dry creeks or surface impoundments in the vicinity of the the Site.

2.2 Hydrogeology

The Ogallala aquifer underlies the northern part of Lea County, New Mexico. The Tertiary Ogallala Formation is composed of terrigenous deposits such as sands, gravels, and finer sediments. Quaternary deposits cover the aquifer, and it unconformably overlies Cretaceous, Triassic, and Permian rocks. The upper part of the formation consists of several hard, caliche-cemented, erosionally resistant beds called the "Caprock". A windblown cover of fine silt, sand, and soil overlies the Caprock.

Groundwater in the Ogallala Formation generally is unconfined. The groundwater elevation in the vicinity of West Lovington Unit is approximately 3825 feet above MSL. The saturated thickness of the Ogallala in the area is between 60 and 100 feet. Thickness is highly controlled by the configuration of the sub-Ogallala surface.

Water from the Ogallala Formation in northern Lea County has been used for municipal, irrigation, and industrial purposes for many years. Characteristically, it is hard, high in silica content, and contains sulfate slightly in excess of chloride. The dissolved solids content is generally less than 600 ppm.

Most of the information in this section was derived from "Hydrogeology and Hydrochemistry of the Ogallala Aquifer, Southern High Plains, Texas Panhandle and Eastern New Mexico" by Ronit Nativ, Bureau of Economic Geology Report No. 177, 1988.

3.0 ENVIRONMENTAL INVESTIGATION ACTIVITIES

3.1 Waste Characterization and Disposal

The pit area measured approximately 30' x 30' with 2' of oily sludge/soil material. On June 18, 1998, Highlander personnel collected a composite sample of the sludge material in the pit for waste characterization. On August 8, 1998, the material was excavated and placed into lined transport trucks. The material was excavated to a depth of 2.0' below surface where a dense caliche rock was encountered. A total of 90 cubic yards of oil sludge/soil material was removed and transported to Control Recovery, Inc. located in Hobbs, New Mexico for disposal. The sludge/soil material is considered exempt oil field waste. The manifests are found in Appendix C.

3.2 Rotary Drilled Soil Borings

Highlander supervised drilling of five air rotary boreholes at the Site. The boreholes (BH-1 thru BH-5) were drilled at the pit area. Boreholes (BH-1 thru BH-4) were installed as close to the pit as possible to a depth of 31 feet below surface. The remaining borehole, BH-5 was installed in the center of the pit to a depth of 71 feet below surface. The locations of the boreholes are shown in Figure 2. Scarborough Drilling, Inc. of Lamesa, Texas drilled the boreholes using a truck mounted rotary drilling rig. The soil samples were collected with a splitspoon sampler. Soil samples were collected at various depths from each soil boring for potential laboratory testing and headspace gas screening. All samples collected for laboratory analysis were collected and preserved according to EPA protocols, and analyzed within appropriate holding times. A portion of each sample was collected for headspace gas screening using an Thermal 580-B Organic Vapor Meter (OVM) to provide supporting data and determine which samples would be selected for laboratory analysis. Lithological sample logs were prepared from each borehole are presented in Appendix B.

The splitspoon sampler was washed between boreholes and sampling events using potable water and laboratory grade detergent. The drilling rig and all downhole equipment were washed between borings using a high-pressure hot water washer. Following the completions of the drilling activities, all boreholes were cemented to surface.

3.3 Monitor well Installation

On October 5, 1998, one-monitor well (MW-1) was installed on the south edge of pit to evaluate groundwater quality. The location of the monitor well is shown in Figure 2. The well construction log is presented in Appendix A. The monitor well was drilled to total depth of 198 feet below surface to top of the redbed/clay or base of the Ogallala.

The monitor well was constructed with 2-inch diameter schedule 40 PVC threaded casing and screen. The well screen, 20 feet long, was placed in the borehole with 5 feet above and 15 feet below the groundwater surface observed during the drilling. The well screen was backfilled with 10-20 graded Brady silica sand, which was placed from the bottom of the borehole to about two feet above the screen. A layer of bentonite pellets was placed over the filter sand pack and hydrated with water. The remaining borehole annulus in the monitor wells was filled with cement and bentonite grout to a depth approximately one to two feet below ground. The top of the well was covered with a watertight steel sleeve cover and locking cap.

3.4 Soil Headspace Gas Surveys

Soil samples were collected using a splitspoon sampler. The soil sample screening consisted of placing a small portion of each sample in a plastic sample bag leaving a vacant headspace in the bag. The soil samples were field screened using A Thermo Environmental Industries, Inc., Model 580 B, Organic Vapor Meter (OVM). Table 1 presents a summary of the soil headspace gas reading.

3.5 Soil Sampling and Analysis

One soil sample from the pit was collected for analysis to characterize the sludge material in the pit. The analysis included volatile organic compounds (EPA SW 846-8240), semi-volatile organic compounds (EPA SW 846-8270), and total metals (EPA SW 846-3051,6010,7471). Table 1 and 2 summarizes the results of the sludge/soil material in the pit.

Soil samples from the boreholes were selected with elevated OVM readings were analyzed for Total Petroleum Hydrocarbon (TPH) by method modified 8015, Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method SW 846-8020 and chloride by method EPA 300.0. The analytical laboratory reports, chain of custody forms, and Quality Assurance/Quality Control samples are shown in Appendix B. Table 4 summaries the analytical results of the boreholes.

3.6 Groundwater Sampling and Analysis

On November 5, 1998, Highlander personnel collected a groundwater sample from the monitor well (MW-1). The monitor well was developed and purged by Scarborough Drilling, Inc. using a 10-foot long rig bailer. The well was purged to remove a minimum of three casing volumes of groundwater. The purge water from the monitor well was contained and disposed of in the Titan Central Tank Battery sump.

Groundwater samples from the monitor well were collected using a clean disposable bailer. The samples were transferred into labeled and preserved containers provided by the laboratory. The groundwater samples was analyzed for Polynuclear Aromatics Hydrocarbons (PAH) by method EPA SW 846-8270, 3510, Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8020, Total Metals by method EPA SW 846-3015, 6010B, and 7470 and Major Ions by method EPA 150.1, 300.0, 353.3, 310.1, 160.1. The groundwater samples from the monitor well were shipped to Trace Analysis Inc. in Lubbock, Texas. The metal sample was field filtered to 0.45 micron using a dedicated disposable filter prior to preservation and shipment to the laboratory. The analytical results are summarized in Tables 5, 6, and 7.

4.0 ENVIRONMENTAL INVESTGATION RESULTS

4.1. Soil Sample Results

Soil samples were collected at selected depth intervals from each borehole. Refering to Table 3, the OVM headspace readings showed traces of organic vapor ranging from 0 ppm to 3 ppm in the subsurface soil. Referring to Table 4, the TPH and BTEX constituents were below method detection limits. Borehole BH-5 (60 feet to 61 feet) showed a trace of xylene of 0.785 mg/kg. All of the soil samples for TPH and BTEX are below the New Mexico Oil Conservation Division (OCD) Unlined Surface Impoundment Closure Guidelines.

The chloride analysis of the soil samples results, from boreholes (BH-1, BH-2, BH-3, and BH-4) outside the pit, showed levels ranging from 59 ppm to 790 ppm from 5 to10 feet below surface. The deeper soil samples at 30 feet below surface showed chloride level ranging from 71 ppm to 440 ppm. The borehole BH-5 installed in the center of the pit indicated to have an elevated chloride level of 1,600 ppm at 5 feet below surface, which decreased with depth to a chloride of 510 ppm at 60 feet. Based on the chloride levels, one monitor well was installed at the Site.

4.2 Groundwater Sample Analysis

Referring to Table 5, the BTEX levels in the groundwater were below method detection limits in MW-1. The PAH analysis showed a trace of naphthalene (0.001 mg/l) which is well below the New Mexico Water Quality Control Commission (WQCC) standard of 0.03 mg/l. The dissolved metal analysis detected silver level of 0.07 mg/l. The silver level is slightly above the WQCC Standard for silver of 0.05 mg/l. In addition, the chloride level detected in the well showed a concentration of 120 mg/l, which is below the WQCC standard of 250 mg/l. Based on the

groundwater sample results, the constituents encountered in the pit and subsurface soil has not impacted the ground water at the site.

5.0 CONCLUSIONS

1. The Ogallala aquifer underlies the northern part of Lea County, New Mexico. Groundwater in the Ogallala Formation generally is unconfined. The groundwater elevation in the vicinity of West Lovington Unit is approximately 3825 feet above MSL. The saturated thickness of the Ogallala in the area is between 60 and 100 feet. Thickness is highly controlled by the configuration of the sub-Ogallala surface. The monitor well (MW-1) was installed to a depth of 198 feet. The depth of groundwater water measured 67.71 feet top of casing with 130 feet of saturated thickness.

2. A total of 90 cubic yards of oil sludge/soil material was removed from the abandon pit and transported to Control Recovery, Inc. located in Hobbs, New Mexico for disposal. The sludge material is considered exempt oil field waste..

3. Based on the soil sample results, the hydrocarbon in the pit has not impacted the subsurface soil. The OVM headspace readings showed traces of organic vapors ranging from 0 ppm to 3 ppm in the subsurface soil. Referring to Table 4, the TPH and BTEX constituents were below method detection limits. Borehole BH-5 (60 feet to 61 feet) showed a trace of xylene of 0.785 mg/kg. All of the soil samples for TPH and BTEX are below the OCD Unlined Surface Impoundment Closure Guidelines.

4. The chloride levels from the boreholes (BH-1, BH-2, BH-3, and BH-4) ranged from 59 ppm to 570 ppm and decreased with depth. The borehole (BH-5) installed in the center of the pit had an elevated chloride level of 1,600 ppm at 5 feet below surface which decreased with depth to a chloride level of 510 ppm at 60 feet.

5. One monitor well (MW-1) was installed at the Site and drilled to total depth of 198 feet below surface to top of the redbed/clay, or base of the Ogallala. The groundwater sample for BTEX was below method detection limits. The PAH analysis showed a trace of naphthalene (0.001 mg/l) which was below the WQCC standard of 0.03 mg/l. In addition, the chloride level of 120 mg/l was below the WQCC standard of 250 mg/l. The total metal analysis detected silver of 0.07 mg/l. The silver is slightly above the WQCC Standard for silver of 0.05 mg/l. In the absence of the constituents, the silver level is considered to be a laboratory error. Based upon the results of testing, the groundwater has not been impacted by the abandoned pit.

6.0 RECOMMENDATIONS

1. Based on the subsurface assessment, Highlander proposes closure of the pit (Site). Due to the elevated chloride levels encountered in the subsurface soil. Highlander Environmental recommends a clay cap to prevent further water percolation and possible downward migration of the chlorides.

2. The silver of 0.07 mg/l encountered in the groundwater will be resampled. If the silver is not present or is below the WQCC standard in the subsequent groundwater sample, the monitor well will be grouted to surface.

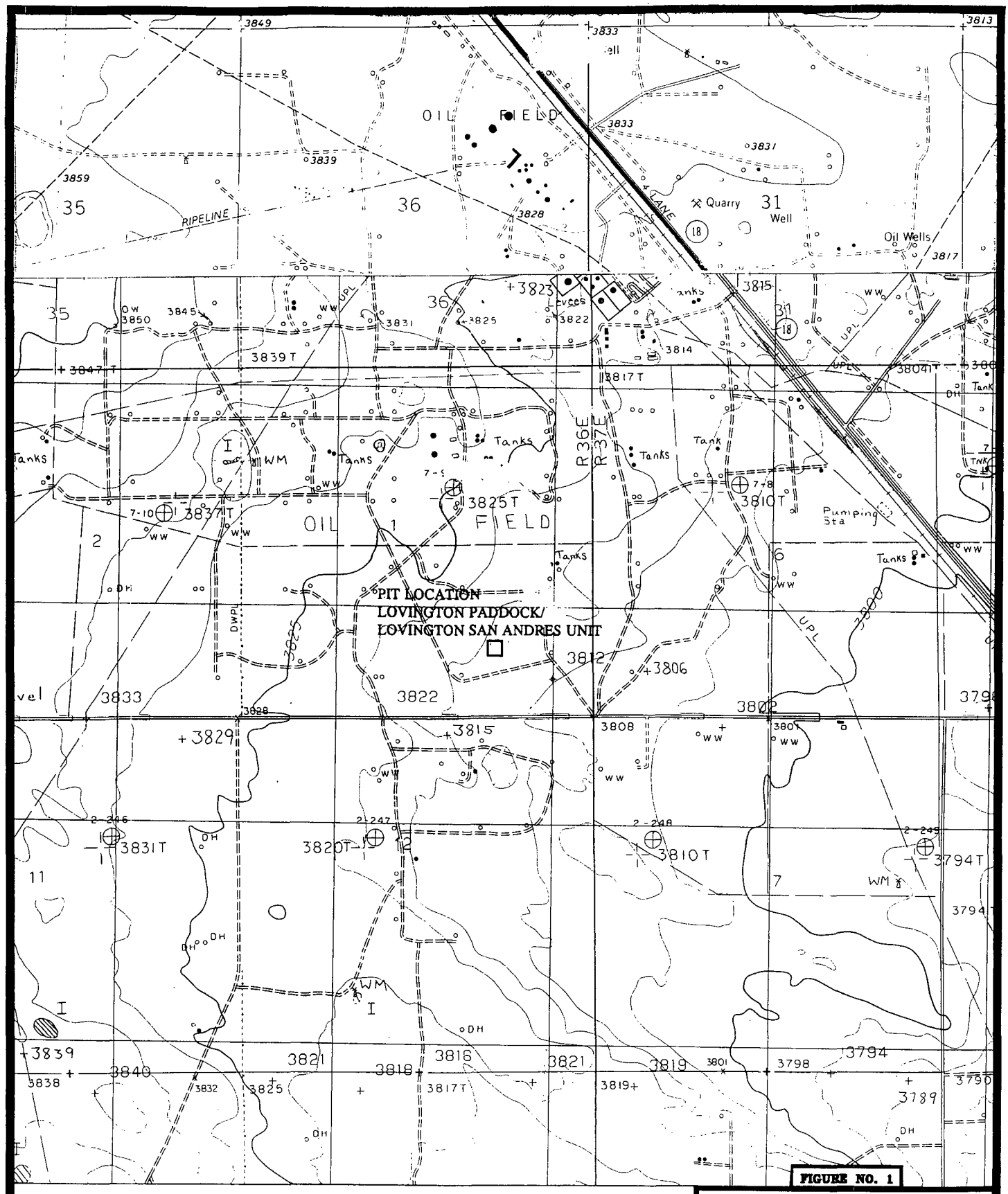


FIGURE NO. 1

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

TOPOGRAPHIC MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

TAKEN FROM U.S.G.S.
LOVINGTON, LOVINGTON SE
NEW MEXICO
7.5' QUADRANGLE

LEGEND

☐ TANK BATTERY

SCALE: 1"=2000'

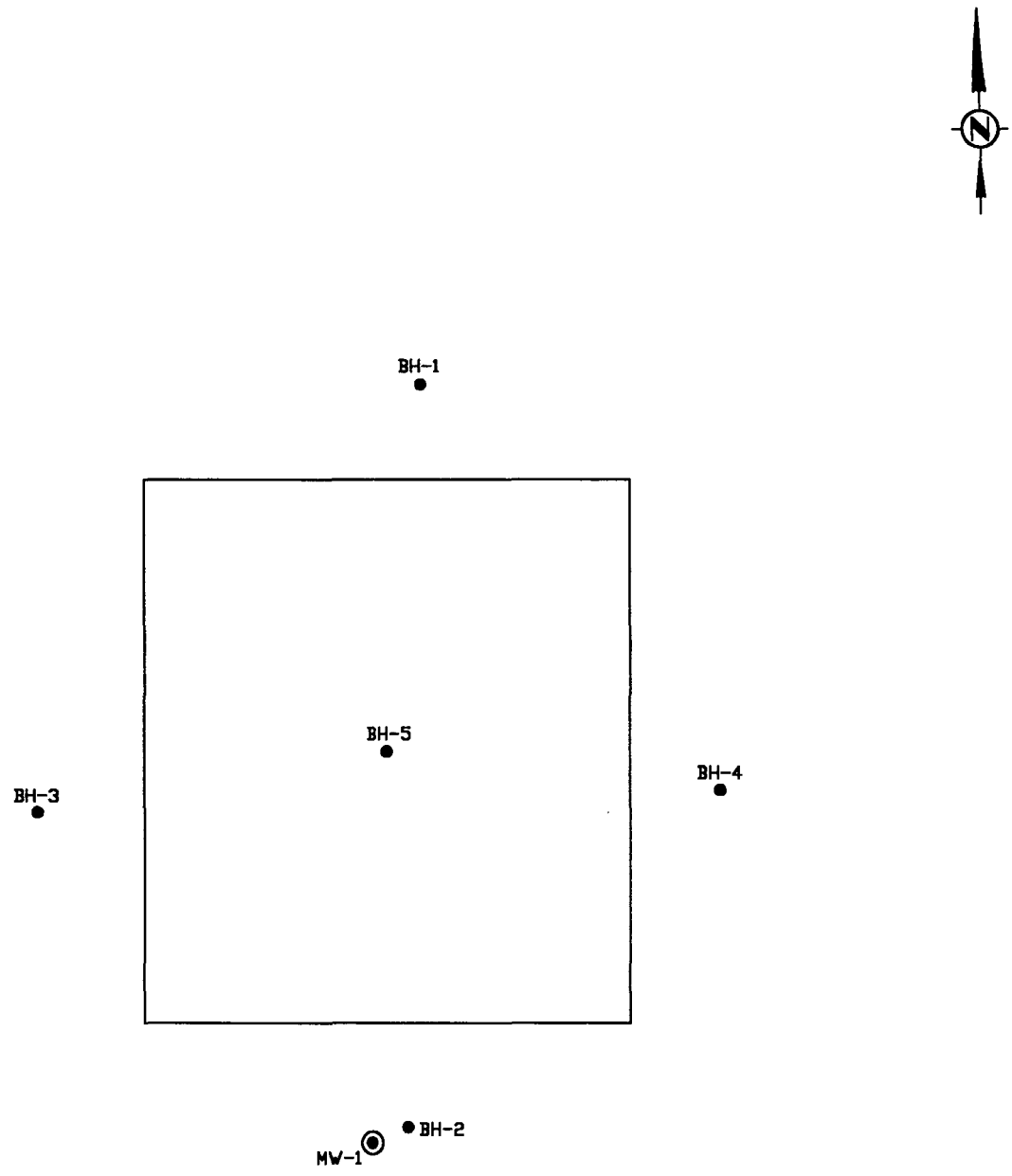


FIGURE NO. 2

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

WEST LOVINGTON UNIT
SITE PLAN

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 12/9/98

DRWN. BY: JDA

FILE: C:\TITAN\1098\WLU-1

SCALE: 1"=10'

Table 1
Titan Exploration, Inc.
West Lovington Unit -Pit
Waste Characterazation

TPH, Volatile Organic and Semi-Volatile Organics

Sample ID	TPH mg/kg Modified 8015	Volatile Organics mg/kg	Semi-Volatiles mg/kg
West Lovington Unit Pit	7,136	Benzene - 48	2-Methylnaphthalene - 260
		Toluene - 220	1-Methylnaphthalene - 390
		Ethylbenzene - 220	
		m&p-Xylene - 170	
		o-Xylene - 77	
		Isopropylbenzene - 34	
		n-Propylbenzene - 55	
		1,3,5-Trimethylbenzene - 25	
		1,2,4-Trimethylbenzene - 95	
		sec-Butylbenzene - 20	
		n-Butylbenzene - 31	
		Naphthalene - 49	

Titan Exploration, Inc.
West Lovington Unit

Table 2

Waste Characterization
Total Metals

Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Silver (mg/kg)	Selenium (mg/kg)
West Lovington Pit	<10	12	<2.0	<5.0	24	<0.25	<2.0	<10

Table 3: Summary of Headspace Gas Analysis from Soil Samples, West Lovington Unit Pit, Titan Exploration, Inc., Eunice, New Mexico

Borehole Number	Date Collected	Depth Interval, Feet BGL	OVM Reading, PPM	Comments
BH-1	6-30-98	5.0 – 6.0	1	Background - Soil: 0.0 ppm Air: 0.0 ppm
		10.0 - 11.0	2	
		15.0 - 16.0	3	
		20.0 – 21.0	3	
		25.0 - 26.0	2	
		30.0 – 31.0	1	
TD: 31'				
BH-2	6-30-98	5.0 – 6.0	1	Background - Soil: 0.0 ppm Air: 0.0 ppm
		10.0 – 11.0	1	
		15.0 – 16.0	1	
		20.0 – 21.0	2	
		25.0 - 26.0	2	
TD: 31'		30.0 – 31.0	1	
BH-3	7-1-98	5.0 – 6.0	0	Background - Soil: 0.0 ppm Air: 0.0 ppm
		10.0 – 11.0	1	
		15.0 – 16.0	0	
		20.0 – 21.0	1	
		25.0 - 26.0	1	
		30.0 – 31.0	1	
TD: 31'				

Notes:
1. BGL: Denotes sample depth in feet below ground level.
2. PPM: Denotes concentration of total ionizable hydrocarbons in parts per million

Table 3 (cont) : Summary of Headspace Gas Analysis from Soil Samples, West Lovington Unit Pit, Titan Exploration, Inc., Eunice, New Mexico

Borehole Number	Date Collected	Depth Interval, Feet BGL	OVM Reading, PPM	Comments
BH-4	7-1-98	5.0 – 6.0	1	Background - Soil: 0.0 ppm Air: 0.0 ppm
		10.0 - 11.0	1	
		15.0 - 16.0	0	
		20.0 – 21.0	0	
		25.0 - 26.0	0	
		30.0 – 31.0	1	
TD: 31'				
BH-5	6-30-98	5.0 – 6.0	0	Background - Soil: 0.0 ppm Air: 0.0 ppm
		10.0 – 11.0	0	
		15.0 – 16.0	0	
		20.0 – 21.0	0	
		30.0 – 31.0	0	
		40.0 – 41.0	0	
		50.0 – 51.0	0	
		60.0 – 61.0	0	
		70.0 – 71.0	0	
TD: 31'				

Notes:
1. BGL: Denotes sample depth in feet below ground level.
2. PPM: Denotes concentration of total ionizable hydrocarbons in parts per million

Titan Exploration, Inc.
West Lovington Unit

Table 4

Soil Samples
TPH, BTEX and Chlorides

Sample ID	Depth	TPH		B	T	E	X	Chlorides
		GRO (mg/kg)	DRO (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH-1	10-11'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	200
BH-1	30-31'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	71
BH-2	10-11'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	50
BH-2	30-31'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	360
BH-3	10'-11'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	190
BH-3	30-31'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	440
BH-4	5-6'	-	-	-	-	-	-	59
BH-4	10-11'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	790
BH-4	30-31'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	520
BH-5	5-6'	<5.00	210	<0.050	<0.050	<0.050	<0.050	1,600
BH-5	20-21'	-	-	-	-	-	-	1,200
BH-5	30-31'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	870
BH-5	40-41'	-	-	-	-	-	-	530
BH-5	50-51'	-	-	-	-	-	-	180
BH-5	60-61'	7.88	<50	<0.050	<0.050	<0.050	0.785	510

Titan Exploration, Inc.
West Lovington Unit

Table 5

Groundwater Sample Results
BTEX and PAH

Sample ID	B (mg/L)	T (mg/L)	E (mg/L)	X (mg/L)	PAH (mg/L)
MW-1	<0.002	<0.002	<0.002	<0.002	Napthalene - 0.001

Titan Exploration, Inc.
West Lovington Unit

Table 6

Groundwater Sample Results
Total Metals

Sample ID	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Mercury (mg/L)	Silver (mg/L)	Selenium (mg/L)
MW-1	<0.10	<0.10	<0.02	<0.05	<0.10	<0.0010	0.07	<0.10

Titan Exploration, Inc.
West Lovington Unit

TABLE 7

Major Ions

Sample ID	Potassium (mg/l)	Magnesium (mg/l)	Calcium mg/l)	Sodium (mg/l)	Chloride (mg/l)	Hardness (mg/l)	Sulfate (mg/l)	Alkalinity (mg/l)	Nitrate (mg/l)	TDS (mg/l)	pH (mg/l)
MW-1	5.6	19	86	75	120	293	140	190	0.8	580	7.8

SAMPLE LOG

Boring/Well: BH-1
Investigated Area: West Lovington Unit - Pit
Site Location: Titan Exploration, Inc.
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/30/98

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

SAMPLE LOG

Boring/Well: BH-2
Investigated Area: West Lovington Unit Pit
Site Location: Titan Exploration, Inc.
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/30/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	0-3' white, caliche dense layer, 3-5' layered , fine grain sand and caliche dense
5-6	1	White caliche, dense, friable, traces of fine grain sand, encountered sand at 9'
10-11	1	Tan, fine grain sand, trace of cemented sandstone, dense
15-16	1	Tan, fine grain sand, loose, layers of cemented sandstone, dense
20-21	2	Tan, fine grain sand, loose, layers of cemented sandstone, dense
25-26	2	Tan, fine grain sand, loose, layers of cemented sandstone, dense
30-31	1	Tan, fine grain sand, loose, layers of cemented sandstone, dense
		TD - 31'

SAMPLE LOG

Boring/Well: BH-3
Investigated Area: West Lovington Unit Pit
Site Location: Titan Exploration, Inc.
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 7/1/98

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

SAMPLE LOG

Boring/Well: BH-4
Investigated Area: West Lovington Unit Pit
Site Location: Titan Exploration, Inc.
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 7/1/98

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

SAMPLE LOG

Boring/Well: BH-5
Investigated Area: West Lovington Unit Pit
Site Location: Titan Exploration, Inc.
Location: Lea County, New Mexico
Total Depth: 71 feet
Date Installed: 8/17/98

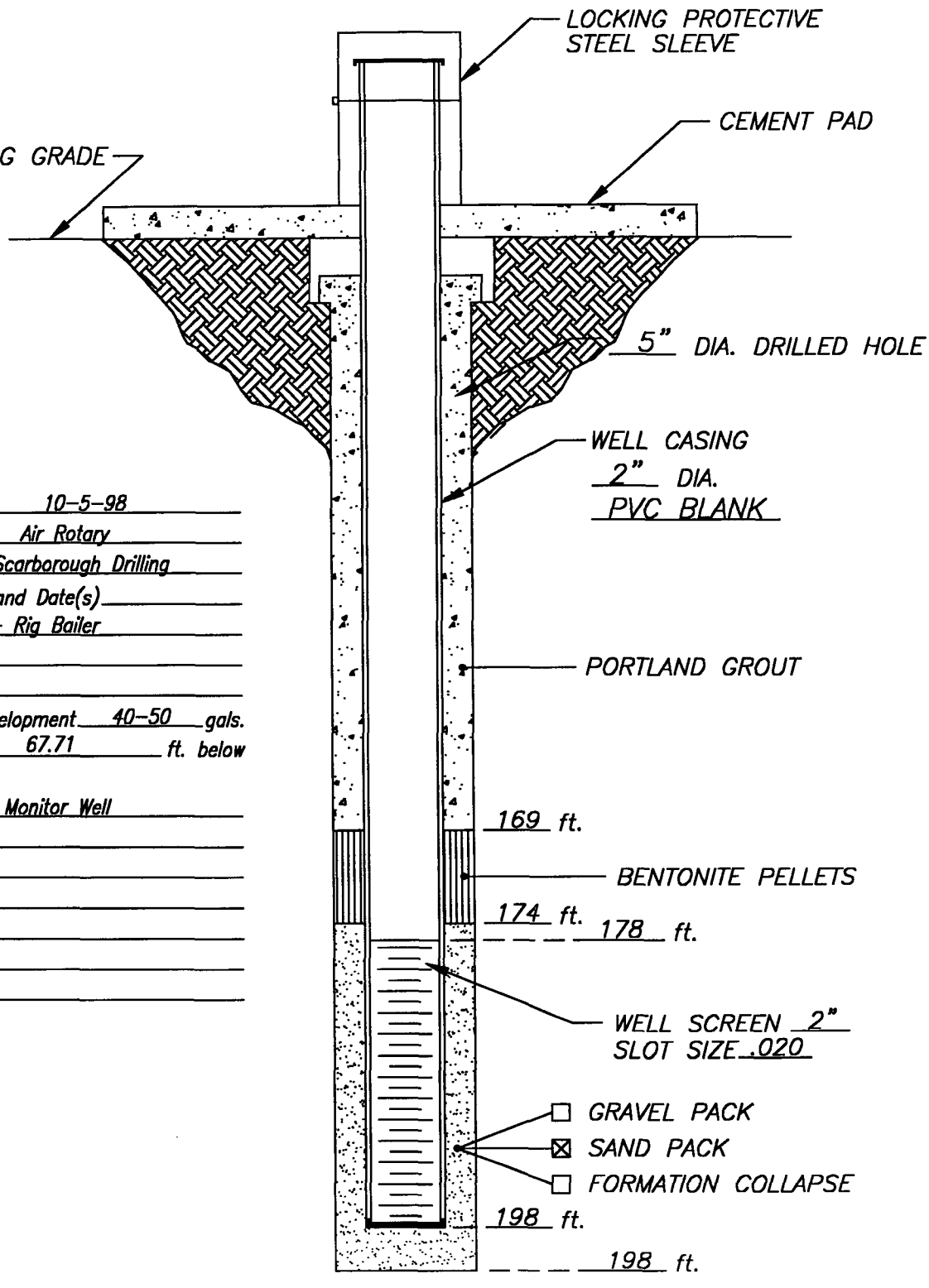
DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	0-5' white, caliche dense, layered , fine grain sand and caliche dense
5-6	0	White caliche, dense, friable, traces of fine grain sand, sandy layer encountered at 6'
10-11	0	Tan, fine grain sand, trace of caliche and cemented sandstone, dense, friable
15-16	0	Tan, fine grain sand, loose, layers of cemented sandstone, dense
20-21	0	Tan, fine grain sand, loose, layers of cemented sandstone, dense
30-31	0	Tan, fine grain sand, loose, layers of cemented sandstone, dense
40-41	0	Tan, fine grain sand, loose, layers of cemented sandstone, dense
50-51	0	Tan, fine grain sand, loose, layers of cemented sandstone, dense
60-61	0	Tan, fine grain sand, loose, layers of cemented sandstone, dense, damp at 65'
70-71	0	Tan, fine grain sand, loose, layers of cemented sandstone, dense
		TD - 71'

SAMPLE LOG

Boring/Well: MW-1
Investigated Area: West Lovington Unit Pit
Site Location: Titan Exploration, Inc.
Location: Lea County, New Mexico
Total Depth: 198 feet
Date Installed: 10/5/98

DEPTH (Ft)	SAMPLE DESCRIPTION
0-10	0-5' white, caliche dense, layered , fine grain sand and caliche dense
10-20	White caliche, dense, friable, traces of fine grain sand, sandy layer encountered at 6'
20-30	Tan, fine grain sand, trace of caliche and cemented sandstone, dense, friable
30-40	Tan, fine grain sand, loose, layers of cemented sandstone, dense
40-50	Tan, fine grain sand, loose, layers of cemented sandstone, dense
50-60	Tan, fine grain sand, loose, layers of cemented sandstone, dense
60-70	Tan, fine grain sand, loose, layers of cemented sandstone, dense, damp at 65'
70-80	Tan, fine grain sand, loose, layers of cemented sandstone, dense
80-90	Tan, fine grain sand, loose, layers of cemented sandstone
90-100	Tan, fine grain sand, loose, layers of cemented sandstone, dense
100-100	Tan, fine grain sand, loose, layers of cemented sandstone, dense
110-120	Tan, fine grain sand, loose, layers of cemented sandstone, dense
120-130	Tan, fine grain sand, well sorted sand, loose, traces of layers of cemented sandstone
130-140	Tan, fine grain sand, well sorted sand, traces of layered cemented sandstone
140-150	Tan, fine grain sand, well sorted sand, traces of layered cemented sandstone
150-160	Tan, fine grain sand, well sorted sand, traces of layered cemented sandstone
160-170	Tan, fine grain sand, loose, trace of gravel
170-180	Tan, fine grain sand and gravel, loose, well sorted sand
180-190	Tan, fine grain sand and gravel loose, well sorted sand
190-198	Tan, fine grain sand and gravel loose, traces of red clay encountered at 195', Red clay/shale encountered at 198'
	TD - 198'

WELL CONSTRUCTION LOG



Installation Date(s) 10-5-98
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
11-5-98 - Rig Bailer

Water Removed During Development 40-50 gals.
Static Depth to Water 67.71 ft. below Ground Level
Well Purpose Monitor Well

Remarks

DATE: 10-5-98	CLIENT: *TITAN EXPLORATION & PRODUCTION, INC.*	WELL NO.
Highlander Environmental	PROJECT: *WEST LOVINGTON UNIT-PIT, ATB 31-1*	MW-1
	LOCATION: *LEA COUNTY, NEW MEXICO*	

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Tim Reed
1910 N. Big Spring Street
Midland, TX 79705

June 26, 1998
Receiving Date: 06/20/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Paddock Pit/W. Lovington Pit

Prep Date: 06/24/98
Analysis Date: 06/24/98
Sampling Date: 06/18/98
Sample Condition: Intact
Sample Received by: VW
Project Name: Titan

TA#	FIELD CODE	TVHC (mg/kg)
T100765	W. Lovington Pit @ ATB 33-1	7,136
T100766	Lovington Paddock Pit @ ATB 1-1	7,390
QC		0.950
Reporting Limit		100
Method Blank		<100
RPD		0
% Instrument Accuracy		95

METHODS: EPA SW 846-8015 Modified.
CHEMIST: JG
TVHC QC: 1.0 mg/kg TVHC.

Director, Dr. Blair Leftwich

6-26-98
Date

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

June 29, 1998
Receiving Date: 06/20/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Paddock Pit/
W. Lovington Pit

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Tim Reed
1910 N. Big Spring Street
Midland, TX 79705

Prep Date: 06/22/98
Analysis Date: 06/24/98
Sampling Date: 06/18/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Titan

TOTAL METALS (mg/kg)

TA#	Field Code	As	Se	Cd	Cr	Pb	Ag	Ba	Hg
T100765	W. Lovington Pit @ ATB 33-1	<10	<10	<2.0	<5.0	24	<2.0	12	<0.25
T100766	Lovington Paddock Pit @ ATB 1-1	<10	<10	<2.0	<5.0	14	<2.0	240	<0.25
ICV		0.99	1.0	1.0	1.0	1.0	0.19	0.97	5.0
CCV		0.99	1.0	1.0	1.0	1.0	0.19	1.0	5.0
Reporting Limit		10	10	2.0	5.0	10	2.0	10	0.25
RPD		2	4	2	3	7	2	2	9
% Extraction Accuracy		95	93	94	102	110	84	95	92
% Instrument Accuracy		99	100	100	100	100	95	98	100

CHEMIST: As, Se, Cd, Cr, Pb, Ag, Ba, Sb: RR Hg: HC
METHODS: EPA SW 846-3015, 6010B, 7470.
TOTAL METALS SPIKE: 200 mg/kg As, Se, Cd, Cr, Pb, Ba, Sb; 5.0 mg/kg Ag; 2.5 mg/kg Hg.
TOTAL METALS CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba, Sb; 0.20 mg/L Ag; 5.0 mg/L Hg.

Director, Dr. Blair Leftwich

6-29-98
Date

TRACEANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Tim Reed
1910 N. Big Spring Street
Midland, TX 79705

June 29, 1998
Receiving Date: 06/20/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Paddock Pit/W. Lovington Pit

Prep Date: 06/22/98
Analysis Date: 06/22/98
Sampling Date: 06/18/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Titan

TA #: T100765
FIELD CODE: W. Lovington Pit @ ATB 33-1

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	10,000	ND				
Chloromethane	10,000	ND				
Vinyl chloride	20,000	ND	98			98
Bromomethane	50,000	ND				
Chloroethane	10,000	ND				
Trichlorofluoromethane	10,000	ND				
1,1-Dichloroethene	10,000	ND	113	1	89	113
Methylene chloride	50,000	ND				
trans-1,2-Dichloroethene	10,000	ND				
1,1-Dichloroethane	10,000	ND				
cis-1,2-Dichloroethene	10,000	ND				
Chloroform	10,000	ND	114			114
2,2-Dichloropropane	10,000	ND				
Bromochloromethane	10,000	ND				
1,2-Dichloroethane	10,000	ND				
1,1,1-Trichloroethane	10,000	ND				
Carbon Tetrachloride	10,000	ND				
1,1-Dichloropropene	10,000	ND				
Benzene	10,000	48,000		0	99	
1,2-Dichloropropane	10,000	ND	106			106
Trichloroethene	10,000	ND		1	105	
Dibromomethane	10,000	ND				
Bromodichloromethane	10,000	ND				
cis-1,3-Dichloropropene	10,000	ND				
trans-1,3-Dichloropropene	10,000	ND				
Toluene	10,000	220,000	106	0	88	106
1,1,2-Trichloroethane	10,000	ND				
1,3-Dichloropropane	10,000	ND				
MTBE	10,000	ND				

HIGHLANDER SERVICES

Project No: 1085/1086
Client Name: Titan
Project Name: Paddock Pit/W. Lovington Pit

TA #: T100765
Field Code: W. Lovington Pit @ ATB 33-1

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	10,000	ND				
1,2-Dibromoethane	10,000	ND				
Tetrachloroethene	10,000	ND				
Chlorobenzene	10,000	ND	109	2	100	109
1,1,1,2-Tertachloroethane	10,000	ND				
Ethylbenzene	10,000	220,000	115			115
m & p-Xylene	10,000	170,000				
Bromoform	10,000	ND				
Styrene	10,000	ND				
o-Xylene	10,000	77,000				
1,1,2,2-Tetrachloroethane	10,000	ND				
1,2,3-Trichloropropane	10,000	ND				
Isopropylbenzene	10,000	34,000				
Bromobenzene	10,000	ND				
2-Chlorotoluene	10,000	ND				
n-Propylbenzene	10,000	55,000				
4-Chlorotoluene	10,000	ND				
1,3,5-Trimethylbenzene	10,000	25,000				
tert-Butylbenzene	10,000	ND				
1,2,4-Trimethylbenzene	10,000	95,000				
1,4-Dichlorobenzene	20,000	ND				
sec-Butylbenzene	10,000	20,000				
1,3-Dichlorobenzene	20,000	ND				
4-Isopropyltoluene	10,000	ND				
1,2-Dichlorobenzene	20,000	ND				
n-Butylbenzene	10,000	31,000				
1,2-Dibromo-3-chloropropane	50,000	ND				
1,2,3-Trichlorobenzene	50,000	ND				
Naphthalene	10,000	49,000				
1,2,4-Trichlorobenzene	50,000	ND				
Hexachlorobutadiene	50,000	ND				

	% Recovery
Dibromofluoromethane	92
Toluene-d8	100
4-Bromofluorobenzene	102

ND = Not Detected

Methods: EPA SW 846-5030, 8260.
CHEMIST: AG

Director, Dr. Blair Leftwich

6-25-98
Date

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

June 30, 1998
Receiving Date: 06/20/98
Sample Type: Soil
Sampling Date: 06/18/98
TA # T100765
Field Code: W. Lovington Pit @ ATB 33-1

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL
Attention: Tim Reed
1910 N. Big Spring Street
Midland, TX 79705

Sample Condition: Intact
Sample Received by: BL
Project Location: Levelland Unit
Central Battery
Project Name: Chemical Dock
Extraction Date: 06/22/98
Analysis Date: 06/25/98

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	250	ND				
2-Picoline	250	ND				
Methyl methanesulfonate	250	ND				
Ethyl methanesulfonate	250	ND				
Phenol	250	ND	81	3	75	101
Aniline	1250	ND				
bis(2-Chloroethyl)ether	1250	ND				
2-Chlorophenol	1250	ND		2	72	
1,3-Dichlorobenzene	250	ND				
1,4-Dichlorobenzene	250	ND	80	1	78	100
Benzyl alcohol	1250	ND				
1,2-Dichlorobenzene	250	ND				
2-Methylphenol	250	ND				
bis(2-chloroisopropyl)ether	1250	ND				
4-Methylphenol/3-Methylphenol	250	ND				
Acetophenone	1250	ND				
n-Nitrosodi-n-propylamine	250	ND		2	84	
Hexachloroethane	250	ND				
Nitrobenzene	250	ND				
N-Nitrosopiperidine	1250	ND				
Isophorone	1250	ND				
2-Nitrophenol	1250	ND	86			100
2,4-Dimethylphenol	1250	ND				
bis(2-Chloroethoxy)methane	250	ND				
Benzoic acid	2500	ND				
2,4-Dichlorophenol	1250	ND	70			88
1,2,4-Trichlorobenzene	250	ND		3	79	
a,a-Dimethylphenethylamine	2500	ND				
Naphthalene	250	ND				

TA# T100765
FIELD CODE: W. Lovington Pit @ ATB 33-1

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	1250	ND				
2,6-Dichlorophenol	1250	ND				
Hexachlorobutadiene	250	ND	82			103
N-Nitroso-di-n-butylamine	1250	ND				
4-Chloro-3-methylphenol	1250	ND	88	3	90	110
2-Methylnaphthalene/1-Methylnapthalene	250	260/390				
1,2,4,5-Tetrachlorobenzene	250	ND				
Hexachlorocyclopentadiene	250	ND				
2,4,6-Trichlorophenol	1250	ND	84			105
2,4,5-Trichlorophenol	1250	ND				
2-Chloronaphthalene	250	ND				
1-Chloronaphthalene	250	ND				
2-Nitroaniline	1250	ND				
Dimethylphthalate	250	ND				
Acenaphthylene	250	ND				
2,6-Dinitrotoluene	250	ND				
3-Nitroaniline	1250	ND				
Acenaphthene	250	ND	78	2	82	98
2,4-Dinitrophenol	1250	ND				
Dibenzofuran	12550	ND				
Pentachlorobenzene	250	ND				
4-Nitrophenol	1250	ND			134	
1-Napthylamine	1250	ND				
2,4-Dinitrotoluene	250	ND		3	89	
2-Napthylamine	1250	ND				
2,3,4,6-Tetrachlorophenol	1250	ND				
Fluorene	250	ND				
Diethylphthalate	250	ND				
4-Chlorophenyl-phenylether	250	ND				
4-Nitroaniline	1250	ND				
4,6-Dinitro-2-methylphenol	1250	ND				
n-Nitrosodiphenylamine & Diphenylamine	250	ND	76			95
Diphenylhydrazine	1250	ND				

TA #100765
FIELD CODE: W. Lovington Pit @ ATB 33-1

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	250	ND				
Phenacetin	1250	ND				
Hexachlorobenzene	250	ND				
4-Aminobiphenyl	1250	ND				
Pentachlorophenol	1250	ND	95	21**	60	119
Pentachloronitrobenzene	1250	ND				
Pronamide	250	ND				
Phenanthrene	250	ND				
Anthracene	250	ND				
Di-n-butylphthalate	250	ND				
Fluoranthene	250	ND	76			95
Benzidine	2500	ND				
Pyrene	250	ND		1	83	
p-Dimethylaminoazobenzene	250	ND				
Butylbenzylphthalate	250	ND				
Benzo[a]anthracene	250	ND				
3,3-Dichlorobenzidine	1250	ND				
Chrysene	250	ND				
bis(2-Ethylhexyl)phthalate	250	ND				
Di-n-octlphthalate	250	ND	73			91
Benzo[b]fluoranthene	250	ND				
7,12-Dimethylbenz(a)anthracene	250	ND				
Benzo[k]fluoranthene	250	ND				
Benzo[a]pyrene	250	ND	79			99
3-Methylcholanthrene	250	ND				
Dibenzo(a,j)acridine	250	ND				
Indeno[1,2,3-cd]pyrene	250	ND				
Dibenz[a,h]anthracene	250	ND				
Benzo[g,h,i]perylene	250	ND				
N-Nitrosodimethylamine	250	ND				

HIGHLANDER SERVICES
Project Location: Paddock Pit/W. Lovington Pit
Project Name: Titan

TA #T100765
Field Code: W. Lovington Pit @ ATB 33-1

SURROGATES	% RECOVERY
2-Fluorophenol SURR	51
Phenol-d6 SURR	7***
Nitrobenzene-d5 SURR	87
2-Fluorobiphenyl SURR	103
2,4,6-Tribromophenol SURR	52
Terphenyl-d14 SURR	112

*NOTE: Elevated reporting limits due to sample matrix interference.
**NOTE: RPD out of control limits <20 Pentachlorophenol
***NOTE: Surrogate out of control limits due to matrix

ND = NOT DETECTED

METHODS: EPA SW 8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

6-30-98
Date

100765-66

354

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

SITE MANAGER: Tim Reed

PROJECT NO.: 1085/1086

PROJECT NAME: Paddock Pit / W. Lovington Pit

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 (modified 8015)	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)
100765	6.18.98	2:00	SL		X	W. Lovington Pit @ ATB 33-1					X				X	X	X					X	X						
766	6.18.98	2:45	SL		X	~~Paddock~~ Lovington Paddock Pit @ ATB 1-1					X				X	X	X					X	X						

RELINQUISHED BY: (Signature) John A Ward Date: 6.19.98 Time: 3:10 pm

RECEIVED BY: (Signature) Date: 6/19/98 Time: 3:10

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace

ADDRESS:

CITY: Lubbock STATE: ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature) Vicki Wondham

DATE: 6-20-98 TIME: 9:30 Am

SAMPLED BY: (Print & Sign) Lynn A Ward Date: Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX BUS AIRBILL # E-30497

HAND DELIVERED UPS OTHER:

HIGHLANDER CONTACT PERSON: Tim Reed

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 20C

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

REMARKS: Need results by 6-26-98 fax 6-24 gs FED-30 HTUHCS (8:10)

Project Manager retains pink copy - Accounting receives Gold copy

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E-Mail: lab@traceanalysis.com

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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/10/98
Analysis Date: 07/10/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	TVHC (mg/kg)
T101932	LPU BH-1 (20-21')	12.1
T101933	LPU BH-1 (30-31')	12.0
T101935	LPU BH-2 (15-16')	<5.00
T101937	LPU BH-2 (30-31')	<5.00
T101939	LPU BH-3 (15-16')	<5.00
T101941	LPU BH-3 (30-31')	<5.00
T101943	LPU BH-4 (15-16')	<5.00
T101944	LPU BH-4 (30-31')	<5.00
T101945	WLU BH-1 (10-11')	<5.00
T101947	WLU BH-1 (30-31')	<5.00
T101948	WLU BH-2 (10-11')	<5.00
T101950	WLU BH-2 (30-31')	<5.00
T101951	WLU BH-3 (10-11')	<5.00
T101953	WLU BH-3 (30-31')	<5.00
T101955	WLU BH-4 (10-11')	<5.00
T101957	WLU BH-4 (30-31')	<5.00
QC	Quality Control	0.880
METHOD BLANK		<5.00
REPORTING LIMIT		5.00
RPD		1
% Extraction Accuracy		92
% Instrument Accuracy		88

METHODS: EPA SW 846-5030, Modified 8015.
CHEMIST: JG
TVHC SPIKE: 1.000 mg/kg TVHC.
TVHC QC: 1.000 mg/L TVHC.

Director, Dr. Blair Leftwich

7-13-98
Date

TRACEANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

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

July 10, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	DRO (mg/kg)
T101932	LPU BH-1 (20-21')	<50
T101933	LPU BH-1 (30-31')	<50
T101935	LPU BH-2 (15-16')	<50
T101937	LPU BH-2 (30-31')	<50
T101939	LPU BH-3 (15-16')	<50
T101941	LPU BH-3 (30-31')	<50
T101943	LPU BH-4 (15-16')	<50
T101944	LPU BH-4 (30-31')	<50
T101945	WLU BH-1 (10-11')	<50
T101947	WLU BH-1 (30-31')	<50
T101948	WLU BH-2 (10-11')	<50
T101955	WLU BH-4 (10-11')	<50
T101957	WLU BH-4 (30-31')	<50
QC	Quality Control	224
REPORTING LIMIT		50
RPD		24
% Extraction Accuracy		85
% Insturment Accuracy		90

METHODS: EPA SW 846-8015B, 8011.
CHEMIST: MS
DRO SPIKE: 250 mg/kg DRO.
DRO QC: 250 mg/L DRO.

Director, Dr. Blair Leftwich

7-10-98
Date

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

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

July 10, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	DRO (mg/kg)
T101950	WLU BH-2 (30-31)	<50
T101951	WLU BH-3 (10-11)	<50
T101953	WLU BH-3 (30-31)	<50
QC	Quality Control	218
REPORTING LIMIT		50
RPD		24
% Extraction Accuracy		83
% Insturment Accuracy		87

METHODS: EPA SW 846-8015B, 8011.
CHEMIST: MS
DRO SPIKE: 250 mg/kg DRO.
DRO QC: 250 mg/L DRO.

Director, Dr. Blair Leftwich

7-10-98
Date

TRACE ANALYSIS, 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 RESULTS FOR
Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Lab Receiving # : 9807000072
Sampling Date: 6/29/98 - 6/30/98
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Jul 13, 1998
Date Rec: 7/3/98
Project: 1085-1086
Proj Name: Paddock Pit /W. Lovington Pit
Proj Loc: N/A

TA#	Field Code	MATRIX	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M,P,O XYLENE (mg/Kg)	TOTAL BTEX (mg/Kg)
101932	LPU BH-1 (20-21')	Soil	<0.050	0.057	<0.050	<0.050	0.057
101933	LPU BH-1 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101935	LPU BH-2 (15-16')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101937	LPU BH-2 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101939	LPU BH-3 (15-16')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101941	LPU BH-3 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101943	LPU BH-4 (15-16')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101944	LPU BH-4 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101945	WLU BH-1 (10-11)	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101947	WLU BH-1 (30-31)	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
Method Blank			<0.050	<0.050	<0.050	<0.050	
Reporting Limit			0.05	0.05	0.05	0.05	
QC			0.098	0.098	0.097	0.312	
RPD			3	4	3	2	
% Extraction Accuracy			102	101	101	109	
% Instrument Accuracy			98	98	97	104	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
BTEX	EPA 5030	7/10/98	EPA 8021B	7/10/98	JG	0.100 ea	5 ea

BL

Director, Dr. Blair Leftwich

7-13-98

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

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Lab Receiving # : 9807000072
Sampling Date: 6/30/98 - 7/1/98
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Jul 10, 1998
Date Rec: 7/3/98
Project: 1085-1086
Proj Name: Paddock Pit /W. Lovington Pit
Proj Loc: N/A

TA#	Field Code	MATRIX	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M,P,O XYLENE (mg/Kg)	TOTAL BTEX (mg/Kg)
101948	WLU BH-2 (10-11)	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101950	WLU BH-2 (30-31)	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101951	WLU BH-3 (10-11')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101953	WLU BH-3 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101955	WLU BH-4 (10-11')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101957	WLU BH-4 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
Method Blank			<0.050	<0.050	<0.050	<0.050	
Reporting Limit			0.05	0.05	0.05	0.05	
QC			0.098	0.098	0.097	0.312	
RPD			3	4	3	2	
% Extraction Accuracy			102	101	101	109	
% Instrument Accuracy			98	98	97	104	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
BTEX	EPA 5030	7/10/98	EPA 8021B	7/10/98	JG	0.100 ea	5 ea

Director, Dr. Blair Leftwich

7-10-98
Date

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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	CHLORIDE (mg/kg)
T101931	LPU BH-1 (10-11')	190
T101932	LPU BH-1 (20-21')	140
T101933	LPU BH-1 (30-31')	210
T101934	LPU BH-2 (10-11')	16
ICV		13
CCV		11
REPORTING LIMIT		0.5
RPD		1
% Extraction Accuracy		93
% Instrument Accuracy		95

METHODS: EPA 300.0.
CHEMIST: JS
CHLORIDE SPIKE: 12.5 mg/kg CHLORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

7-13-98
Date

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	CHLORIDE (mg/kg)
T101935	LPU BH-2 (15-16')	14
T101937	LPU BH-2 (30-31')	17
T101938	LPU BH-3 (10-11')	8.9
T101939	LPU BH-3 (15-16')	14
T101941	LPU BH-3 (30-31')	12
ICV		11
CCV		11
REPORTING LIMIT		0.5
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		95

METHODS: EPA 300.0.
CHEMIST: JS
CHLORIDE SPIKE: 12.5 mg/kg CHLORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

7.13-98
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

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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	CHLORIDE (mg/kg)
T101942	LPU BH-4 (10-11')	13
T101943	LPU BH-4 (15-16')	10
T101944	LPU BH-4 (30-31')	13
T101945	WLU BH-1 (10-11')	200
ICV		11
CCV		11
REPORTING LIMIT		0.5
RPD		0
% Extraction Accuracy		94*
% Instrument Accuracy		95

***NOTE: Chloride matrix spikes % Extraction Accuracy high. LRB spikes % Extraction Accuracy used due to matrix difficulties. LRB spikes in range.**

METHODS: EPA 300.0.
CHEMIST: JS
CHLORIDE SPIKE: 12.5 mg/kg CHLORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

7-13-98
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

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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	CHLORIDE (mg/kg)
T101948	WLU BH-2 (10-11')	50
T101950	WLU BH-2 (30-31')	360
T101951	WLU BH-3 (10-11')	190
T101953	WLU BH-3 (30-31')	440
ICV		11
CCV		12
REPORTING LIMIT		0.5
RPD		1
% Extraction Accuracy		99*
% Instrument Accuracy		96

***NOTE: Chloride matrix spikes % Extraction Accuracy high. LRB spikes % Extraction Accuracy used due to matrix difficulties. LRB spikes in range.**

METHODS: EPA 300.0.
CHEMIST: JS
CHLORIDE SPIKE: 12.5 mg/kg CHLORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

7-13-98
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

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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/09/98
Analysis Date: 07/09/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	CHLORIDE (mg/kg)
T101947	WLU BH-1 (30-31')	71
T101954	WLU BH-4 (5-6')	59
T101955	WLU BH-4 (10-11')	790
T101957	WLU BH-4 (30-31')	520
ICV		12
CCV		12
REPORTING LIMIT		0.5
RPD		0
% Extraction Accuracy		85
% Instrument Accuracy		98

METHODS: EPA 300.0.
CHEMIST: JS
CHLORIDE SPIKE: 62.5 mg/kg CHLORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

7-13-98
Date

+2

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 Exploration, Inc. SITE MANAGER: Ike Tavarez

PROJECT NO.: 1085 / 1086 PROJECT NAME: Titan - Lovington Paddock & West Lovington 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
101931	6/29/98		S		1	LPU BH-1 (10-11')	1				/	
32			S		1	LPU BH-1 (20-21')	1				/	
33			S		1	LPU BH-1 (30-31')	1				/	
34			S		1	LPU. BH-2 (10-11')	1				/	
35			S		1	LPU. BH-2 (15-16')	1				/	
36			S		1	LPU BH-2 (20-21')	1				/	
37			S		1	LPU BH-2 (30-31')	1				/	
38	6-30-98		S		1	LPU BH-3 (10-11')	1				/	
39	6-30-98		S		1	LPU BH-3 (15-16')	1				/	
40	6-30-98		S		1	LPU BH-3 (20-21')	1				/	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8020/602	MTBE 8020/602	TPH (8015) GRO/DRO per 7-3-98 email Xavier	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)	Chloride
																	X
X		X															X
X		X															X
																	X
X		X															X
		Hold.															
X		X															X
																	X
																	X
																	X

RELINQUISHED BY: (Signature) Ike Tavarez Date: 7/2/98 Time: 3:00

RELINQUISHED BY: (Signature) Helen Shelton Date: 7/2/98 Time: 5:30 PM

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Helen Shelton Date: 7/2/98 Time: 5:00 PM

RECEIVED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX (BUS) UPS HAND DELIVERED AIRBILL # 155-758 9500 OTHER:

RECEIVING LABORATORY: Trace. ADDRESS: CITY: STATE: ZIP: CONTACT: PHONE:

RECEIVED BY: (Signature) Date: 7-3-98 Time: 9:40 AM B

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:

7/13/98

White - Laboratory retains yellow copy. Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

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: 2 OF: 3

CLIENT NAME: Titan Exploration Inc. SITE MANAGER: Mike Tavarez

PROJECT NO.: 1085/1086 PROJECT NAME: Titan - Lovington Pollock & West Lovington Lea County.

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 (8015) GRO/DRO Jerry Sutton 7-3-98 mg	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. 8240/8260/824	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)	Chlorides
101941	6-30-98		S		1	LPU. BH-3 (30-31')	1				✓		X		X															X
42			S		1	LPU BH-4 (10-11')	1				✓																			X
43			S		1	LPU BH-4 (15-16')	1				✓		X		X															X
44			S		1	LPU BH-4 (30-31')	1				✓		X		X															X
45			S		1	W.LU. BH-1 (10-11)	1				✓		X		X															X
46			S		1	W.LU. BH-1 (20-21)	1				✓		Hold.																	
47			S		1	W.LU. BH-1 (30-31)	1				✓		X		X															X
48			S		1	WLU. BH-2 (10-11)	1				✓		X		X															X
49			S		1	WLU. BH-2 (20-21)	1				✓		Hold																	
50			S		1	WLU. BH-2 (30-31)	1				✓		X		X															X

RELINQUISHED BY: (Signature) Date: 7/2/98 Time: 5:00
RECEIVED BY: (Signature) Helen Shelton Date: 7/2/98 Time: 5:00 PM

RELINQUISHED BY: (Signature) Helen Shelton Date: 7-2-98 Time: 5:30 PM
RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: 7-3-98 Time: 5:40 PM

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

SAMPLED BY: (Print & Sign) Mike Tavarez Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS HAND DELIVERED AIRBILL #: OTHER:

HIGHLANDER CONTACT PERSON: Mike Tavarez

Results by:

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 required information. Laboratory retains yellow copy. Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

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: Intex Exploration, Inc. SITE MANAGER: IKE Tavarez

PROJECT NO.: 1085/1086 PROJECT NAME: IKE Tavarez

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 8015 (GRO/DRO)	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)	Chloride
101951	7/1/98		S		1	WLW. BH-3 (10-11')	1				✓		X		X															X
52			S		1	WLW BH-3 (20-21')	1				✓				Hold.															X
53			S		1	WLW. BH-3 (30-31')	1				✓		X		X															X
54			S		1	WLW. BH-4 ~~(0-1')~~ (5-6')	1				✓																			X
55			S		1	WLW. BH-4 (10-11')	1				✓		X		X															X
56			S		1	WLW. BH-4 (20-21')	1				✓				Hold.															X
57	↓		S		1	WLW. BH-4 (30-31')	1				✓		X		X															X

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Date: 7/2/98 Time: 3:00

RELINQUISHED BY: (Signature) Helen Shelton Date: 7/2/98 Time: 5:30PM

RELINQUISHED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace. ADDRESS: CITY: STATE: ZIP: CONTACT: PHONE:

RECEIVED BY: (Signature) Helen Shelton Date: 7/2/98 Time: 3:00 PM

RECEIVED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Vicky Wrather DATE: 7-3-98 TIME: 9:40 AM

SAMPLED BY: (Print & Sign) IKE Tavarez Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS HAND DELIVERED AIRBILL # OTHER:

HIGHLANDER CONTACT PERSON: IKE Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

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

REMARKS:

Project Manager retains pink copy - Accounting receives Gold copy.

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

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

September 02, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Project No: 1085/1086
Project Location: NA

Prep Date: 09/01/98
Analysis Date: 09/01/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan-Paddock Pit &
West Lovington Pit
Lea County, NM

TA#	FIELD CODE	CHLORIDE (mg/kg)
T105369	LPU BH-5 (40-41')	12
T105371	LPU BH-5 (50-51')	13
T105374	WLU BH-5 (5-6')	1,600
T105379	WLU BH-5 (40-41')	530
T105380	WLU BH-5 (50-51')	180
T105381	WLU BH-5 (60-61')	510
ICV		502
CCV		495
REPORTING LIMIT		2.0
RPD		0
% Extraction Accuracy		105
% Instrument Accuracy		100

METHODS: EPA SM 4500 Cl-B.
CHEMIST: JS
CHLORIDE SPIKE: 10,000 mg/kg CHLORIDE.
CHLORIDE CV: 500 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

9-2-98
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Date: Aug 27, 1998
Date Rec: 8/19/98
Project: Titan-Paddock Pit & West L
Proj Name: Titan-Paddock Pit & West Lovington Pit
Proj Loc: Lea County,NM

Lab Receiving # : 9808000372
Sampling Date: 8/17/98 - 8/19/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M,P,O XYLENE (mg/Kg)	TOTAL BTEX (mg/Kg)
105363	LPU BH-5 (10-11')	Soil	<0.050	3.57	0.189	59.8	63.6
105366	LPU BH-5 (25-26')	Soil	0.167	6.24	21.3	28.4	56.1
105369	LPU BH-5 (40-41')	Soil	<0.100	1.63	7.76	17.8	27.2
105371	LPU BH-5 (50-51')	Soil	<0.100	<0.100	<0.100	<0.100	<0.100
105374	WLU BH-5 (5-6')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
105378	WLU BH-5 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
105381	WLU BH-5 (60-61')	Soil	<0.050	<0.050	<0.050	0.785	0.785
Method Blank			<0.050	<0.050	<0.050	<0.050	
Reporting Limit			0.05	0.05	0.05	0.05	
QC			0.106	0.107	0.107	0.315	
RPD			3	4	3	4	
% Extraction Accuracy			105	106	107	105	
% Instrument Accuracy			106	107	107	105	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
BTEX	EPA 5030	8/26/98	EPA 8021B	8/26/98	CS	0.100 ea	5 ea

Director, Dr. Blair Leftwich

8-27-98
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

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Date: Aug 27, 1998
Date Rec: 8/19/98
Project: Titan-Paddock Pit & West Lovington Pit
Proj Name: Titan-Paddock Pit & West Lovington Pit
Proj Loc: Lea County,NM

Lab Receiving # : 9808000372
Sampling Date: 8/17/98 - 8/19/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	GRO (mg/Kg)
105363	LPU BH-5 (10-11')	Soil	397
105366	LPU BH-5 (25-26')	Soil	182
105369	LPU BH-5 (40-41')	Soil	274
105371	LPU BH-5 (50-51')	Soil	10.1
105374	WLU BH-5 (5-6')	Soil	<5.00
105378	WLU BH-5 (30-31')	Soil	<5.00
105381	WLU BH-5 (60-61')	Soil	7.88
Method Blank			<5.00
Reporting Limit			5
QC			0.98

RPD	4
% Extraction Accuracy	100
% Instrument Accuracy	98

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
GRO	EPA 5030	8/26/98	EPA 8015B	8/27/98	CS	1	1

BL

Director, Dr. Blair Leftwich

8-27-98

Date

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

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

September 01, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Project No: 1085/1086
Project Location: NA

Prep Date: 08/27/98
Analysis Date: 08/27/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Paddock Pit & West Lovington Pit
Lea County, NM

TA#	FIELD CODE	DRO (mg/kg)
T105363	LPU BH-5 (10-11')	3,940
T105378	WLU BH-5 (30-31')	<50
QC	Quality Control	536
REPORTING LIMIT		50
RPD		3
% Extraction Accuracy		84
% Instrument Accuracy		107

METHODS: EPA SW 846-8011, 8015B Modified.
CHEMIST: SLR
DRO SPIKE: 500 mg/kg DRO.
DRO CV: 500 mg/L DRO.

Director, Dr. Blair Leftwich

9-1-98
DATE

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

August 25, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Project No: 1085/1086
Project Location: NA

Prep Date: 08/18/98
Analysis Date: 08/18/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Paddock Pit & West Lovington Pit
Lea County, NM

TA#	FIELD CODE	DRO (mg/kg)
T105366	LPU BH-5 (25-26')	1,840
T105369	LPU BH-5 (40-41')	2,080
T105371	LPU BH-5 (50-51')	1,709
T105374	WLU BH-5 (5-6')	210
T105381	WLU BH-5 (60-61')	<50
QC	Quality Control	227
REPORTING LIMIT		50
RPD		4
% Extraction Accuracy		101
% Instrument Accuracy		91

METHODS: EPA SW 846-8011, 8015B Modified.
CHEMIST: SLR
DRO SPIKE: 250 mg/kg DRO.
DRO CV: 250 mg/L DRO.

Director, Dr. Blair Leftwich

8-25-98
DATE

TRACE ANALYSIS, 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 RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, Texas 79705

August 28, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Location Address: Lea County, NM
Project No: 1085/1086
Project Name: Titan-Paddock Pit & West Lovington Pit

Prep Date: 08/25/98
Analysis Date: 08/25/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW

TA#	FIELD CODE	CHLORIDE (mg/kg)
T105366	LPU BH-5 (25-26)	24
ICV		11.85
CCV		11.81
REPORTING LIMIT		0.5
RPD		0
% Extraction Accuracy		95
% Instrument Accuracy		95

METHODS: EPA 300.0
CHEMIST: JS
TOTAL Cl SPIKE: 12.5 mg/kg TOTAL Cl.
TOTAL Cl CV: 12.5 mg/L TOTAL Cl.

Director, Dr. Blair Leftwich

8-28-98
DATE

TRACE ANALYSIS, 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 RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, Texas 79705

August 28, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Location Address: Lea County, NM
Project No: 1085/1086
Project Name: Titan-Paddock Pit & West Lovington Pit

Prep Date: 08/25/98
Analysis Date: 08/25/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW

TA#	FIELD CODE	CHLORIDE (mg/kg)
T105363	LPU BH-5 (10-11)	13
ICV		11.79
CCV		11.87
REPORTING LIMIT		0.5
RPD		3
% Extraction Accuracy		93
% Instrument Accuracy		95

METHODS: EPA 300.0
CHEMIST: JS
TOTAL Cl SPIKE: 12.5 mg/kg TOTAL Cl.
TOTAL Cl CV: 12.5 mg/L TOTAL Cl.

Director, Dr. Blair Leftwich

8-28-98
DATE

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, Texas 79705

August 28, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Location Address: Lea County, NM
Project No: 1085/1086
Project Name: Titan-Paddock Pit & West Lovington Pit

Prep Date: 08/25/98
Analysis Date: 08/25/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW

TA#	FIELD CODE	CHLORIDE (mg/kg)
T105377	WLU BH-5 (20-21)	1,200
T105378	WLU BH-5 (30-31)	870
ICV		11.84
CCV		11.82
REPORTING LIMIT		0.5
RPD		0
% Extraction Accuracy		85
% Instrument Accuracy		95

METHODS: EPA 300.0
CHEMIST: JS
TOTAL Cl SPIKE: 12.5 mg/kg TOTAL Cl.
TOTAL Cl CV: 12.5 mg/L TOTAL Cl.

Director, Dr. Blair Leftwich

8-28-98
DATE

105362-82

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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 Exploration, Inc. SITE MANAGER: Ike Tavarez

PROJECT NO.: 1085/1086 PROJECT NAME: Titan-Paddock Pit & Layne West Lovington 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	MTBE 8020/602	TPH 8015 (DRO & GRO)	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)	Chloride
105362	8/17/98		S		X	LPH BH-5 (5-7)	1				✓				Hold.															
105363			S		X	LPH BH-5 (10-11')	1				✓		X		X	6														X
105364			S		X	LPH BH-5 (15-16')	1				✓				Hold															
105365			S		X	LPH BH-5 (20-21')	1				✓				Hold.															
105366			S		X	LPH BH-5 (25-26')	1				✓		X		X															X
105367			S		X	LPH BH-5 (30-31')	1				✓				Hold															
105368			S		X	LPH BH-5 (35-36')	1				✓				Hold.															
105369			S		X	LPH BH-5 (40-41')	1				✓		X		X															X
105370			S		X	LPH BH-5 (45-46')	1				✓				Hold.															
			S		X	LPH BH-5 (50-51')	1				✓		X		X															X

RELINQUISHED BY: (Signature) Date: 8/18/98 Time: 4:40 PM
RECEIVED BY: (Signature) Helen Shelton Date: 8/18/98 Time: 4:40 PM

RELINQUISHED BY: (Signature) Helen Shelton Date: 8/18/98 Time: 6:30 PM
RECEIVED BY: (Signature) Date: Time:

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

RECEIVING LABORATORY: Trace Lab.
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) Vicki Wrather
DATE: 8-19-98 TIME: 9:15 AM

SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS HAND DELIVERED
AIRBILL # 155758974 OTHER:

HIGHLANDER CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: Hi Dro 66. XL (512)

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

REMARKS: 3

8/28/98

Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy. - Accounting receives Gold copy.

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: 2 OF: 3

CLIENT NAME: Titan Exploration, Inc. SITE MANAGER: Ike Tavarez

PROJECT NO.: 1085/1086 PROJECT NAME: Titan - Paddock Pit & Lovington Pit, Lea County

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
105372	8/17/98		S		X	CPU BH-5 (60-61')	1				X	
73			S		X	CPU BH-5 (70-71')	1				X	
74			S		X	WLU BH-5 (5-6')	1				X	
75			S		X	WLU BH-5 (10-11')	1				X	
76			S		X	WLU BH-5 (15-16')	1				X	
77			S		X	WLU BH-5 (20-21')	1				X	
78			S		X	WLU BH-5 (30-31')	1				X	
79			S		X	WLU BH-5 (40-41')	1				X	
80			S		X	WLU BH-5 (50-51')	1				X	
81			S		X	WLU BH-5 (60-61')	1				X	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8020/602	MTBE 8020/602	TPH (8015) DRO & GRO	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)	Chloride
			Hold														
			Hold														
X		X															X
			Hold														
			Hold														
																	X
X		X															X
																	X
																	X
X		X															X

RELINQUISHED BY: (Signature) Date: 8/18/98 Time: 4:40 PM
RECEIVED BY: (Signature) Date: 8-18-98 Time: 4:40 PM

RELINQUISHED BY: (Signature) Date: 8/18/98 Time: 6:30 PM
RECEIVED BY: (Signature) Date: Time:

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

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) Vicki Wyndham
DATE: 8-19-98 TIME: 9:15 AM

SAMPLED BY: (Print & Sign) Date: Time:

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS
HAND DELIVERED UPS
AIRBILL # 155 258 976 0
OTHER: Bus

HIGHLANDER CONTACT PERSON:

Results by:

RUSH Charges Authorized:
Yes No

SAMPLE CONDITION WHEN RECEIVED:

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

REMARKS: ND

Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

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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: 3 OF: 3

CLIENT NAME: Titan Exploration, Inc. SITE MANAGER: IKE Tavarez

PROJECT NO.: 1085/1086 PROJECT NAME: Hay-Paddock Pit & W. Lovington P.I. Lea County.

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	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)
105382	8/17/98		SS		✓	WLU BH-5 (70-71)	1				X				Hold.														

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Date: 8/18/98 Time: 4:40 PM
RECEIVED BY: (Signature) Helen Hatton Date: 8/18/98 Time: 4:40 PM

RELINQUISHED BY: (Signature) Helen Hatton Date: 8/18/98 Time: 6:30 PM
RECEIVED BY: (Signature) Date: Time:

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

RECEIVING LABORATORY: Trace Lab
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) Phil Windham
DATE: 8-19-98 TIME: 9:15 AM

SAMPLED BY: (Print & Sign) IKE Tavarez Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS HAND DELIVERED
AIRBILL # Bus 155 758 976 7
OTHER: Bus

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: ONS

Accounting inquiries Cold corru

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

November 19, 1998
Receiving Date: 11/07/98
Sample Type: Water
Project No: 1086
Project Location:

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

Prep Date: 11/09/98
Prep Date: 11/18/99
Sampling Date: 11/05/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan
Project Name: W. Lovington Unit

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)	HARDNESS (mg/L CaC03)
T112193	MW-1	5.6	19	86	75	293
ICV		24	25	25	25	---
CCV		24	25	25	24	---
Reporting Limit		0.10	0.10	0.10	0.10	---
RPD		3	2	1	3	---
% Extraction Accuracy		95	97	100	95	---
% Instrument Accuracy		100	98	98	100	---

METHODS: EPA SW 846-6010B, 3015, SM 2340B.
CHEMIST: RR
SPIKE: 100 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.
CV: 25 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

BL

Director, Dr. Blair Leftwich

11-19-98

Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

November 13, 1998
Receiving Date: 11/07/98
Sample Type: Water
Project No: 1086
Project Location:

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

Sampling Date: 11/05/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan
Project Name: W. Lovington Unit

TA#	FIELD CODE	pH (s.u.)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)	N03-N (mg/L)	ALKALINITY (mg/L as CaCo3)	TDS (mg/L)
T112193	MW-1	7.8	2.3	120	140	0.80	190	580
ICV		7.0	2.59	13.63	12.43	0.121	2,280	---
CCV		7.0	2.60	12.83	12.05	0.115	2,260	---
RPD		0	0	0	1	2	2	1
% Extraction Accuracy		---	95	106	100	101	---	---
% Instrument Accuracy		100	104	106	98	91	94	95
REPORTING LIMIT		---	0.1	0.5	0.5	0.10	1.00	10
PREP DATE		11/07/98	11/09/98	11/09/98	11/09/98	11/11/98	11/11/98	11/10/98
ANALYSIS DATE		11/07/98	11/09/98	11/09/98	11/09/98	11/11/98	11/11/98	11/10/98

METHODS: EPA 150.1, 300.0, 353.3, 310.1, 160.1.
CHEMIST: pH: SA FLUORIDE/CHLORIDE/SULFATE/N03-N: JS ALKALINITY/TDS: RS
FLUORIDE SPIKE: 12.5 mg/L FLUORIDE.
CHLORIDE SPIKE: 62.5 mg/L CHLORIDE.
SULFATE SPIKE: 62.5 mg/L SULFATE.
N03-N SPIKE: 0.665 mg/L N03-N.
FLUORIDE CV: 2.5 mg/L FLUORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE CV: 12.5 mg/L SULFATE.
N03-N CV: 0.133 mg/L N03-N.

Director, Dr. Blair Leftwich

11-13-98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

November 13, 1998
Receiving Date: 11/07/98
Sample Type: Water
Project No: 1086
Project Location:

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

Sampling Date: 11/05/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan
Project Name: W. Lovington Unit

TOTAL METALS (mg/L)

TA#	Field Code	As	Se	Cd	Cr	Pb	Ag	Ba	Hg
T112193	MW-1	<0.10	<0.10	<0.02	<0.05	<0.10	0.07	<0.10	<0.0010
ICV		0.96	0.99	0.99	1.0	0.98	0.20	0.96	0.0052
CCV		0.95	0.94	0.97	0.98	0.96	0.20	0.92	0.0055
Reporting Limit		0.10	0.10	0.02	0.05	0.10	0.05	0.10	0.0010
RPD		11	16	15	15	15	19	15	2
% Extraction Accuracy		85	85	90	90	90	78	90	93
% Instrument Accuracy		95	97	98	99	97	100	94	104
PREP DATE		11/09/98	11/09/98	11/09/98	11/09/98	11/09/98	11/09/98	11/09/98	11/08/98
ANALYSIS DATE		11/10/98	11/10/98	11/10/98	11/10/98	11/10/98	11/10/98	11/10/98	11/09/98

CHEMIST: As, Se, Cd, Cr, Pb, Ag, Ba, : RR Hg: MS
METHODS: EPA SW 846-3015, 6010B, 7470.
TOTAL METALS SPIKE: 2.0 mg/L As, Se, Cd, Cr, Pb, Ba; 0.50 mg/L Ag; 0.0050 mg/L Hg.
TOTAL METALS CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba; 0.20 mg/L Ag; 0.0050 mg/L Hg.

Director, Dr. Blair Leftwich

11-13-98
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

November 13, 1998

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

Receiving Date: 11/07/98
Sample Type: Water
Project No: 1086
Sampling Date: 11/05/98
Sample Condition: I & C
Sample Received by: VW
Client Name: Titan
Proj. Name: W. Lovington Unit
Extraction Date: 11/09/98
Analysis Date: 11/10/98

PAH Reporting T112193

8270 Compounds (mg/L)	Limit	MW-1	QC	RPD	%EA	%IA
Naphthalene	0.001	0.001	74	0	81	93
Acenaphthylene	0.001	ND	74	2	93	93
Acenaphthene	0.001	ND	77	2	84	96
Fluorene	0.001	ND	72	1	81	90
Phenanthrene	0.001	ND	71	1	77	89
Anthracene	0.001	ND	73	0	80	91
Fluoranthene	0.001	ND	67	0	75	84
Pyrene	0.001	ND	76	3	88	95
Benzo[a]anthracene	0.001	ND	71	1	82	89
Chrysene	0.001	ND	73	0	57	91
Benzo[b]fluoranthene	0.001	ND	91	13	101	114
Benzo[k]fluoranthene	0.001	ND	87	13	100	109
Benzo[a]pyrene	0.001	ND	84	2	99	105
Indeno[1,2,3-cd]pyrene	0.001	ND	86	6	93	108
Dibenz[a,h]anthracene	0.001	ND	91	6	76	114
Benzo[g,h,i]perylene	0.001	ND	82	8	92	103

ND = Not Detected

SURROGATES

Nitrobenzene-d5 SURR	63
2-Fluorobiphenyl SURR	63
Terphenyl-d14 SURR	53

METHODS: EPA SW 846-8270, 3510.
CHEMIST: DG

Director, Dr. Blair Leftwich

11-13-98
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Lab Receiving # : 9811000155
Sampling Date: 11/7/98
Sample Condition: Intact and Cool
Sample Received By: BL

Date: Nov 10, 1998
Date Rec: 11/7/98
Project: 1086
Proj Name: W. Lovington Unit
Proj Loc: W. Lovington Unit

TA#	Field Code	MATRIX	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTEX (mg/L)
112206	MW-1 (112193)	Water	<0.002	<0.002	<0.002	<0.002	<0.002
Method Blank			<0.001	<0.001	<0.001	<0.001	
Reporting Limit			0.001	0.001	0.001	0.001	
QC			0.128	0.118	0.109	0.317	
RPD			5	5	5	6	
% Extraction Accuracy			133	123	113	114	
% Instrument Accuracy			128	118	109	106	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	11/7/98	EPA 8021B	11/7/98	CS	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

11-10-98
Date

Cation-Anion Balance Sheet

Sample # 112193 Date: 11/20/98

Cations

	ppm	meq/L
Calcium	86	4.2914
Magnesium	19	1.56351
Sodium	75	3.2625
Potassium	5.6	0.143248

Total Cations 9.26066 in meq/L

Anions

	ppm	meq/L
Alkalinity	190	3.8
Sulfate	140	2.9148
Chloride	120	3.3852
Nitrate as N	0.8	0.057112
Fluoride	2.3	0.121072

Total Anions 10.2782 in meq/L

Percentage Error
10.4154 %
(needs to be <10%)

OTHER INFORMATION

TDS	580
EC	

Measure EC and Cation Sums	926.0658	Range should be:	#VALUE!	to	#VALUE!
Measure EC and Anion Sums	1027.8184	Range should be:	#VALUE!	to	#VALUE!
Calculated TDS/Conductivity	#VALUE!	Range should be:	0.55	to	0.77
Measure TDS and Cation Sums	0.6263054	Range should be:	0.55	to	0.77
Measure TDS and Anion Sums	0.564302	Range should be:	0.55	to	0.77

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

SITE MANAGER: Elke Tavarez

PROJECT NO.: 1036

PROJECT NAME: W. Lovington Unit

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
112193	11/5/98	01:45	W		X	MW-1	5	Y	X	X	X	X
112206												
112193 (112206)												

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8020/602	MTBE 8020/602	TPH	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)	T. Cations + Anions
X			X	X									X				

RELINQUISHED BY: (Signature) Date: 11/6/98 Time: 14:00
RECEIVED BY: (Signature) Helen Shelton Date: 11/6/98 Time: 2:30 PM

RELINQUISHED BY: (Signature) Helen Shelton Date: 11/6/98 Time: 5:30 PM
RECEIVED BY: (Signature) Date: Time:

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

RECEIVING LABORATORY: Xenco Laboratories
ADDRESS: 6701 Aberdeen
CITY: Lubbock STATE: TX ZIP:
CONTACT: Neil PHONE: (800) 378-1296
RECEIVED BY: (Signature) DATE: 11/7/98 TIME: 9:30

SAMPLED BY: (Print & Sign) MD Lovon Date: 11/5/98 Time: 14:45

SAMPLE SHIPPED BY: (Circle) FEDEX HAND DELIVERED BUS UPS AIRBILL #: OTHER:

HIGHLANDER CONTACT PERSON: Elke Tavarez

Results by: 11/12/98

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

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

REMARKS:

11/16

Relinquished original copy to Highlander Environmental Corp. Project Manager retains pink copy - Accounting receives Gold copy.

NON-HAZARDOUS WASTE MANIFEST

#16

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500
City/State Midland, Texas 79701
(915) 682-6612
Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico
Permit No. _____

Property Name (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
✓(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 yds.

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C Ward agent for Titan Exploration — 8-3-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name Texas Lease Works
Address F 20 West Co. Rd.
City/State Odessa TX
915-580-1208
Telephone No.
526
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. Rosario F Lucio — 8-3-98
Signature of Transporter's Agent — Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:

Name Controlled Recovery, Inc.
Address P.O. Box 388
City/State Hobbs, NM 88241
(505)393-1079
Telephone No.

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

Signature of Facility Agent — 8398 1020 A
Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration Inc

LEASE NAME: West Lovington Unit Pit ATB 33-1

TRUCKING COMPANY: Texas Lease Works | TIME: 1020 (AM) - PM

DATE: 8 3 98 | VEHICLE No.: 01 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: OCD

DESCRIPTION

#17

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: _____
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027642

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

#17

NON-HAZARDOUS WASTE MANIFEST

PART I: **Generator** Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico **Permit No.** _____

Property Name (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
✓(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES

RCRA Exempt - Soil/Sludge 12 yds.

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C Ward agent for Titan Exploration — 8-3-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: **TRANSPORTER: (To be completed in full by Transporter)**

Name Texas Lease Works 915-530-0508
Address I 20 West Co Rd. Telephone No.
City/State Odessa TX. 0001
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J B. Zoe A Pechacek — 8-3-98
Signature of Transporter's Agent — Date and time of Received

PART III: **DISPOSAL OR RECLAMATION SITE:**

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

_____ 8398 1020 t
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: TITAN Exploration

LEASE NAME: West Covington Unit pit AIR 33-1

TRUCKING COMPANY: TEXAS Lease Works | TIME: 11:30 (AM) - PM

DATE: 8-3-98 | VEHICLE No.: 520 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS [ ] TANK BOTTOMS [ ] EXEMPT FLUIDS

[ ] COMPLETION FLUIDS [ ] GAS PLANT WASTE [ ] C-117 No.: _____

[X] CONTAMINATED SOIL [ ] OTHER MATERIAL [X] Pit No.: OCD

DESCRIPTION

#18

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [X] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: _____
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027646

#18

NON-HAZARDOUS WASTE MANIFEST

PART I: **Generator** Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico **Permit No.** _____

Property Name (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
✓ (2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)

Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES

RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn Ward agent for Titan Exploration 8-3-98
Signature of Generator's Authorized Agent Date and time of Shipment

PART II: **TRANSPORTER: (To be completed in full by Transporter)**

Name Texas Trash Works 915-0508
Address F 20 West Co Rd Telephone No.
City/State Odessa TX 520
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. Ramirez Jr Perez 8-3-98
Signature of Transporter's Agent Date and time of Received

PART III: **DISPOSAL OR RECLAMATION SITE:**

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

Signature of Facility Agent 8-3-98 11:30
Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration

LEASE NAME: West Lovington Unit (Pit-ATB-33-1

TRUCKING COMPANY: Texas Lease Works | TIME: 12:35 AM (PM)

DATE: 8-3-97 | VEHICLE No.: 526 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: BTM OCD

DESCRIPTION

19

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Rosario Fabjan
(SIGNATURE)

CRI REPRESENTATIVE: Jerry Bird
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS			

05-98-500-4pt.-#27501

Nº 027647

#19

NON-HAZARDOUS WASTE MANIFEST

PART I: **Generator** Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico **Permit No.** _____

Property Name (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
✓(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	x	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12yds.

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C Ward agent for Titan Exploration 8-3-98
Signature of Generator's Authorized Agent Date and time of Shipment

PART II: **TRANSPORTER: (To be completed in full by Transporter)**

Name Texas Lease Works 915-0508
Address I 20 West Co Rd. Telephone No.
City/State Odessa TX 526
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J B. Rosario Fluigo 8-3-98
Signature of Transporter's Agent Date and time of Received

PART III: **DISPOSAL OR RECLAMATION SITE:**

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

Jenny Bush 8-3-98 12:35 pm
Signature of Facility Agent Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration

LEASE NAME: West Lovington Un. T (Pit ATB 33-1)

TRUCKING COMPANY: Texas Lease Works | TIME: 10 45 AM (PM)

DATE: 8-3-98 | VEHICLE No.: 000 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: OCD

DESCRIPTION

H 20

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: _____
(SIGNATURE)

CRI REPRESENTATIVE: Larry Bud
(SIGNATURE)

TANK NO.

OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027648

White - CRI | Canary - CRI Accounting | Pink - CRI Plant | Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#20

PART I: **Generator** Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico **Permit No.** _____

Property Name (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
✓ (2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES

RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C Ward Agent for Titan Exploration 8-3-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: **TRANSPORTER: (To be completed in full by Transporter)**

Name Texas Lease Works 915-0503
Address I 20 West Co Rd. Telephone No.
City/State Odessa TX 0001
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. Zeri A Pehoa 8-3-98
Signature of Transporter's Agent — Date and time of Received

PART III: **DISPOSAL OR RECLAMATION SITE:**

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

Jeremy Bud 8-3-98 12:45 PM
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration

LEASE NAME: West Lovington Unit Pit ATB 33-1

TRUCKING COMPANY: Texas Lease Works | TIME: 430 AM (PM)

DATE: 8 3 98 | VEHICLE No.: 520 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS [ ] TANK BOTTOMS [ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS [ ] GAS PLANT WASTE [ ] C-117 No.: _____
[X] CONTAMINATED SOIL [ ] OTHER MATERIAL [X] Pit No.: 20

DESCRIPTION

#21

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: _____
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO.

OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027650

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#21

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico Permit No. _____

Property Name (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
✓(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C Ward agent for Titan Exploratio — 8-3-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name Texas Lease Works 915-580-0508
Address I 20 West Co Rd. Telephone No.
City/State Odessa TX. 520
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. Manuel M Parra — 8-3-98
Signature of Transporter's Agent — Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

_____ 8 398 430 P
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration Inc

LEASE NAME: West Lovington Unit Pit # TB 33-1

TRUCKING COMPANY: Texas Lone Works | TIME: 4 35 AM (PM)

DATE: 8 3 98 | VEHICLE No.: 520 (526) | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: OCD

DESCRIPTION

22

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [X] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Patrick Fabian
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO.

OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027651

White - CRI | Canary - CRI Accounting | Pink - CRI Plant | Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#22

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico Permit No. _____

Property Name (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
✓ (2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES	
RCRA Exempt - Soil/Sludge	12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C. Ward agent for Titan Exploration — 8.3.98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name Texas Lease Works 915-580-0508
Address I 20 West Co. Rd. Telephone No.
City/State Odessa TX. 526
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J&B. Rosario Fdzian — 8-3-98
Signature of Transporter's Agent — Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

Signature of Facility Agent — 8398 435P
Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration Inc

LEASE NAME: West Lovington Unit Pit ATB 33-1

TRUCKING COMPANY: Texas Lease Works | TIME: 440 AM - PM

DATE: 8 3 98 | VEHICLE No.: 01 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS [ ] TANK BOTTOMS [ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS [ ] GAS PLANT WASTE [ ] C-117 No.: _____
[X] CONTAMINATED SOIL [ ] OTHER MATERIAL [X] Pit No.: 21

DESCRIPTION

#23

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [X] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: _____
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027652

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#23

PART I: **Generator** Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico **Permit No.**

Property Name (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
✓(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C Ward agent for Titan Exploration 8.3.98
Signature of Generator's Authorized Agent Date and time of Shipment

PART II: **TRANSPORTER: (To be completed in full by Transporter)**

Name Texas Lease Works 915-0508
Address I 20 West Co. Rd. Telephone No.
City/State Odessa Tx. 0001
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. Jon A Pedraza 8-3-98
Signature of Transporter's Agent Date and time of Received

PART III: **DISPOSAL OR RECLAMATION SITE:**

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

Signature of Facility Agent 8 3 98 440 P
Date and time of Received