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REPORTS

DATE:

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Highlander Environmental Corp

Midland, Texas

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APR 25 2005

Oil Conservation Division
Environmental Bureau

February 8, 2005

Mr. Roger Anderson
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

Re: Subsurface Investigation and Work Plan for the Pogo Producing Company, E.C. Hill "A, B and C" Tank Battery, Located in Section 27, Township 23 South, Range 37 East, Lea County New Mexico. UNIT O

Dear Mr. Anderson:

Highlander Environmental Corp. (Highlander) has prepared an assessment report and work plan for the E.C. Hill "A, B and C" Tank Battery in Lea County, (Site) located in Section 27, Township 23 South, Range 37 East. The Site is shown in Figure 1. This facility is an old battery, which has had numerous spills from previous operators. Prior to Pogo Producing Company, the facility was operated by Chevron and Midcontinent. The Site information details are shown in Appendix A.

PREVIOUS CORRESPONDENCE

Highlander submitted a report "Subsurface Investigation and Work Plan for the Pogo Producing Company, E.C. Hill "A, B and C" Tank Battery, Located in Section 27, Township 23 South, Range 37 East, Lea County New Mexico" dated June 28, 2004 to the NMOCD for review. In the report, the subsurface soil assessment was discussed. In addition, a monitor well was proposed to assess the groundwater qualities at the Site. This report details the findings of the subsurface soils and groundwater investigation.

BACKGROUND

Under Pogo, several documented spills have occurred over older spills at the facility. The former tanks and vessels are shown in Figure 2. The majority of the spills have occurred around production equipment and active underground lines. Several attempts have been made define the extents of the impact using a stainless steel bucket-type hand auger. A shallow, dense, caliche layer has been encountered from 6" to 1.0' below surface, which causes auger refusal. These spill areas were not accessible for equipment, such as a backhoe or drilling rig.

Initially, Pogo Producing Company had proposed to defer all inaccessible assessment and major cleanup activities until abandonment of the tank battery. Once inactive, Pogo had proposed to remove all production equipment and lines, perform an environmental assessment to vertically define

the extents, and properly address the impacted soil at the facility. In November 2003, Pogo shut down all production to the tank battery and removed all tanks, vessels, equipment and lines making the former tank battery location accessible to perform an assessment.

HYDROLOGY

Groundwater in the Teague Paddock Field study area, southern Lea County, is obtained almost entirely from the Ogallala formation with some wells in the Quaternary alluvium. Sediments of Quaternary age can be observed in southern Lea County in the form of alluvial deposits, probably of both Pleistocene and Recent age, and dune sands of Recent age. The Quaternary alluvium has been deposited in topographically low areas where the older Ogallala formation had been stripped away.

The primary aquifer, the Ogallala formation, consists of inter-fingering bodies of fine to coarse sand, gravel, silt, and clay-material. In places, the upper part of the formation contains several hard, erosionally resistant beds of caliche. The thickness of the Ogallala formation is primarily controlled by the morphology of the eroded pre-Ogallala surface. To the east of the study area, in the San Simon Ridge area, the Ogallala has been stripped. To the west of the study area, in the Rattlesnake Ridge area, the base of the Ogallala is above the elevation of the water table.

Water in the Ogallala formation is unconfined and is contained in the pore spaces of unconsolidated or partly consolidated sediments. The saturated thickness of the Ogallala in the study area varies between 60 and 80 feet. The altitude of the water table in the area is approximately 3,225 feet above mean sea level (MSL) and the average depth to groundwater in the area is about 120 feet below ground surface. Groundwater flow in the general area of the Teague Paddock Field is south-southeast. DTW

The quality of groundwater in the area is generally fresh with a total dissolved solids being typically less than 1,000 ppm. Water from the Quaternary alluvium generally is high in silica (65 to 82 ppm), moderately high in calcium plus magnesium, low in sodium plus potassium, moderately low in sulfate and chloride. Uncontaminated water from the Ogallala formation is high in silica (49 to 73 ppm), contains moderate concentrations of calcium and magnesium. The water is generally hard.

The hydrogeologic data presented in this section was derived from Ground Water Report 6, "Geology and Ground Water Conditions in Southern Lea County, New Mexico," published by New Mexico Institute of Mining & Technology (1961).

GROUNDWATER SEARCH

According to the New Mexico State Engineer Office W.A.T.E.R.S. database, Average Depth to Water Report, water wells are located in Section 9, 16 and 32, Township 23 South, Range 37 East, with an average depth to water of 100', 115' and 106', respectively. Based on a recent monitor well installed at the Site the depth to groundwater at the Site is approximately 88.0' below surface.

CHRONOLOGY OF EVENTS

August 14, 2003	The NMOCD approved the work plan, dated July 23, 2003, to defer the assessment work until the facility was inactive.
August 29, 2003	Highlander submitted a revised work plan, dated August 29, 2003. Pogo Producing proposed to perform soil assessment once the tank battery was dismantled. The work plan consisted of the installation of boreholes.
November 2003	Pogo shut down the production to the tank battery and started to dismantle the tanks, vessel and piping.
February 2004	The impacted soils at the former tanks, vessels and piping were excavated to a depth of 5.0' below surface. A total of 4,640 cubic yards of impacted soil was excavated and properly disposed. The excavation measured approximately 100' x 120' and 50' x 120'. C-141 ?
February 20, 2004	Highlander supervised the installation of backhoe trenches to evaluate the excavation bottom. Several areas inside the excavation were not vertically defined and boreholes were recommended for delineation.
May 13, 2004	Highlander supervised the installation of boreholes to define the vertical extent of the soil impact. A total of eight (8) boreholes were installed inside the excavation and three (3) boreholes were installed north of the excavation for horizontal extents.
June, 2004	Highlander submitted a work plan, dated June 28, 2004. Pogo Producing proposed to install a monitor well to evaluate the groundwater qualities at the Site.
September 8, 2004	Highlander supervised the installation of the monitor well. Additional boreholes were installed to define the horizontal extents of the soil impact in the excavation.
September 17, 2004	Highlander purged and sampled monitor well (MW-1).
October 12, 2004	Highlander purged and resampled monitor well (MW-1).

PREVIOUS SOIL ASSESSMENT

Once the facility was dismantled, the impacted soils were excavated in the areas of the tanks, vessels and lines. The soil was excavated to a depth of approximately 5.0' below surface. The excavation is shown in Figure 3. A total of 4,640 cubic yards of material was transported and disposed of at Sundance Services Inc, located in Eunice, New Mexico. The section below summarized the results of the investigation.

Test Trench Installation and Results

On February 20, 2004, Highlander supervised the installation of fifteen (15) test trenches in the bottom of the excavation, using a backhoe. Prior to the installation of the test trenches, the excavation was segregated into fifteen (15) areas for sampling. The segregated areas and the trench

locations are shown in Figure 3. The trench sample results are summarized in Table 1.

Referring to Table 1, areas 3, 6, 10 and 13 were not vertically defined and showed hydrocarbon impact to a depth of 9.0 below excavation bottom. Area #1 did not show any detectable hydrocarbon impact, however, did exhibit chloride concentrations of 2,280 mg/kg at 0-1' to 1,040 mg/kg at 9.0' below the excavation bottom. Areas 4, 5 and 7 did show TPH concentrations decreasing with depth below 1,000 mg/kg at a depth of 3.0' and 5.0' below excavation bottom.

Based on the results, Highlander installed boreholes in the areas of 1, 3, 6, 10 and 13 to attempt to define the vertical extents of soil impact.

Borehole Installation and Results

On May 13, 2004, Highlander supervised the installation of eight (8) boreholes (BH-1 through BH-8) using an air-rotary type drilling rig. Five (5) boreholes were installed in the excavation in areas 1, 3, 6, 10 and 13. Three (3) boreholes (BH-6, BH-7 and BH-8) were installed north of the excavation for horizontal extents. The boreholes, installed north of the excavation, were installed to a depth of 30' below surface to confirm if the subsurface soils were impacted in this area. The borehole locations are shown in Figure 4. The soil sample results are summarized in Table 2. The borehole logs are shown in Appendix A.

Based on the soils assessment, the hydrocarbon impact appears to have migrated deep into the subsurface soils. Boreholes (BH-1, BH-2, BH-3 and BH-4), installed in the bottom of the excavation, did not vertically define the hydrocarbon impact at the Site. For horizontal extents, boreholes (BH-6, BH-7 and BH-8) were installed north outside the excavation. In the area of BH-8, no hydrocarbon impact was encountered. However, boreholes (BH-6 and BH-7) were not vertically defined, with soil impact to a depth of 30' below surface. Based on the boreholes data, the impact in the excavation extends to near groundwater depth, which was estimated at 95' to 100' below surface.

RECENT SOIL AND GROUNDWATER ASSESSMENT

Boreholes Installation and Results

Prior to the installation of the monitor well, additional boreholes (BH-9, BH-10 and BH-11) were installed to define the horizontal extents of the soil impact. BH-9 was installed east of BH-1 and BH-2, where the hydrocarbon impact was encountered. BH-10 and BH-11 were installed south of the excavation. The borehole locations are shown in Figure 4.

At boreholes BH-9 and BH-10, soil samples were collected at 10', 20' and 30' below excavation bottom. Soil samples were collected at 40' and 60' below surface at BH-11 (MW-1). Soil samples were analyzed for TPH by method SW 846 8015B. The soil sample results are summarized in Table 2. The borehole logs are shown in Appendix A. The laboratory report and chain of custody are enclosed in Appendix B.

Referring to Table 2, the TPH concentrations from boreholes (BH-9, BH-10, BH-11) were all below the method detection limit. Based on the analysis, the soil impact encountered in the excavation is confined to the area of the BH-9, BH-10 and BH-11. Utilizing the boreholes and trench data, Figure 5 shows the extents of the impacted soil at the Site. The total impacted area measured approximately 100' x 180'.

Monitor Well Installation and Sampling

On September 17, 2004, Highlander supervised the installation of one (1) groundwater monitoring well (MW-1). According to published data, the groundwater gradient was reportedly north to south-southeast. The monitor well was installed immediately south of the excavation. The location of the monitor well is shown in Figure 4.

The monitor well was drilled using air/water rotary drilling techniques, and constructed using two (2) inch diameter schedule 40 PVC threaded casing and factory slotted screen. Assuming the depth to groundwater was 100' below surface. The well was drilled to a depth of 115' below surface. To ensure proper screening above the groundwater, a total of forty (40) feet of screen was placed in the well. The well screen was surrounded with a graded silica sand to a depth approximately 3 feet above the screen. A layer of bentonite pellets, approximately 3 feet thick was placed in the borehole above the sand. The remainder of the borehole was filled with cement and bentonite grout to about one (1) foot below ground. The well was secured with locking steel protectors with a concrete pad measuring approximately 3 feet by 3 feet. The monitor well completion details is shown in Appendix C.

Following installation, the well was developed by hand bailing using a dedicated hand bailer to remove fine grained sediment, disturbed during drilling, and to ensure collection of representative groundwater samples. Water removed from the well was placed in a 55-gallon drum.

On September 17, 2004 and October 12, 2004, Highlander purged three casing volumes from the well using a submersible pump. Groundwater samples were collected and analyzed for BTEX by method EPA 8021B and chloride by method EPA 325.3M. All samples were delivered to the laboratory under chain of custody control. Prior to sampling, the well was gauged and inspected for the presence of phase-separated hydrocarbons (PSH). No PSH was encountered in the well. The depth to groundwater was measured at 88.46', top of casing. The laboratory report and chain of custody are shown in Appendix D.

Groundwater Sample Results

Referring to Table 3, the two samples collected from MW-1 showed benzene levels of 0.0385 mg/l and 0.111, exceeding the New Mexico Water Quality Control Commission (WQCC) standard of 0.01 mg/l. The remaining constituents of toluene, ethlybenzene and xylene showed trace amounts, which were all below the WQCC standards of 0.75 mg/l, 0.75 mg/l and 0.62 mg/l, respectively. The chloride concentrations of 195 mg/l and 133 mg/l are below the WQCC standard of 250 mg/l.

CONCLUSIONS

1. Based on the soils assessment, the hydrocarbon impact appears to have migrated deep into the subsurface soils to a depth of 70' to 80' below excavation bottom. Boreholes (BH-1, BH-2, BH-3 and BH-4), installed in the bottom of the excavation, did not vertically define the hydrocarbon impact at the Site and the impact extends to near groundwater depth.

2. The impacted soil encountered in the excavation appears to be confined to the edge of the excavation, with the exception the northwest area outside the excavation. Two of the three boreholes (BH-6, BH-7 and BH-8), installed north of the excavation, showed an impact to the subsurface soils. However, the impact appears to be confined south of BH-8. This north impacted area measured approximately 50' x 120'. Borehole BH-9 was installed east of BH-1 and BH-2, where the deep hydrocarbon impact was encountered and BH-10 and BH-11 were installed south of the excavation. Based on the results, the soil impact encountered in the excavation is confined to the area of the boreholes. Utilizing the boreholes and trench data, it appears the soil impact encountered in the excavation is confined to the boreholes and trenches installed at the Site. The total impacted area measured approximately 100' x 180'.

3. Due to the depth of the soil impact, one (1) groundwater monitoring well (MW-1) was installed to evaluate the groundwater qualities prior to addressing the impacted subsurface soils. According to published data, the groundwater gradient was reportedly in a north to south-southeast direction. The monitor well was placed immediately south of the excavation. The depth to groundwater was measured at 88.46' top of casing.

4. The two samples collected from the MW-1 showed benzene levels of 0.0385 mg/l and 0.111 mg/l, exceeding the New Mexico Water Quality Control Commission (WQCC) standard of 0.01 mg/l. The remaining constituents of toluene, ethlybenzene and xylene were all below the WQCC standards of 0.75 mg/l, 0.75 mg/l and 0.62 mg/l, respectively. The chloride concentrations detected in the groundwater were all below the WQCC standard of 250 mg/l.

PROPOSED WORK PLAN FOR GROUNDWATER

Groundwater Assessment

A water well inventory will be performed to encompass a ½ mile radius around the facility. ✓ The inventory will include a review of water well records on the New Mexico Office of the State Engineer W.A.T.E.R.S. database and United States Geologic Survey (USGS) website. Any water wells denoted on the USGS 7.5 minute topographic quadrangle map within the search radius will be inspected.

To establish a Site gradient, Highlander proposes to install two (2) monitor wells around the perimeter of the excavation. During the drilling operations, soil samples will be collected at ten (10) foot intervals and field screened with a photoionization detector (PID). Selected samples will be submitted to a laboratory for TPH, BTEX and chloride concentrations. The monitor well will be constructed according to EPA and industry standards.

WHERE? (6) 15' SCREENS, NOT 40'

Following installation, the well will be developed by hand bailing using a dedicated hand bailer to remove fine grained sediment, disturbed during drilling, and to ensure collection of representative groundwater samples. Water removed from the well will be placed in a 55-gallon drum and retained at the Site until disposal can be arranged. (7) TCLP FOR BENZENE = 0.5 PPM NB. LONG SCREEN LENGTH

The well will be inspected for the presence of phase-separated hydrocarbons (PSH) and, if present, a sample will be collected and analyzed by gas chromatography (GC) to determine composition and origin. If PSH is detected in the monitor well, a groundwater sample will not be collected. Once inspected, the well will be properly purged and sampled with a clean, dedicated, polyethelene bailers and disposable line. The groundwater sample will be submitted to a laboratory for analysis of Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8021B, and chloride by method 300.0.

PROPOSED WORK PLAN FOR SUBSURFACE SOILS

Soil Capping

Pogo Producing Company proposes capping the impacted soils by installing a 40 mil impervious, synthetic liner in the bottom of the excavation to encapsulate the impacted subsurface soil.

To ensure proper capping, the excavation will need some preparation for the installation of the liner. Included in the capping, the north area (50' x 120') will be excavated to a depth of 3.0' below surface. These soils will be placed into the remaining open excavation and graded. Figure 5 shows the proposed area for capping. The total impacted area prepared for capping estimated at approximately 100' x 180'. The depth of the excavation should be approximately 3.0' below surface. If necessary, approximately 6" of sand will be placed on the bottom of the excavation to prevent damage to the liner if caliche (rock) formation is exposed. Once capped, the excavation will be backfilled with clean fill material. NEED TO DELINEATE AREA TO NORTH TO ≤ 100 PPM TPH

A report that details the investigation activities and results will be submitted to the NMOCD for review. The report will include summary of the proposed activities and recommendations for further action, if necessary. If you have any question or comments concerning the assessment or the activities performed at the Site, please call me at (432) 682-4559.

Respectfully submitted,
Highlander Environmental Corp.

Ike Tavarez
Project Manager/Geologist

cc: Pat Ellis –Pogo
Don Riggs – Pogo
Larry Johnson – NMOCD, Hobbs, NM.

FIGURES

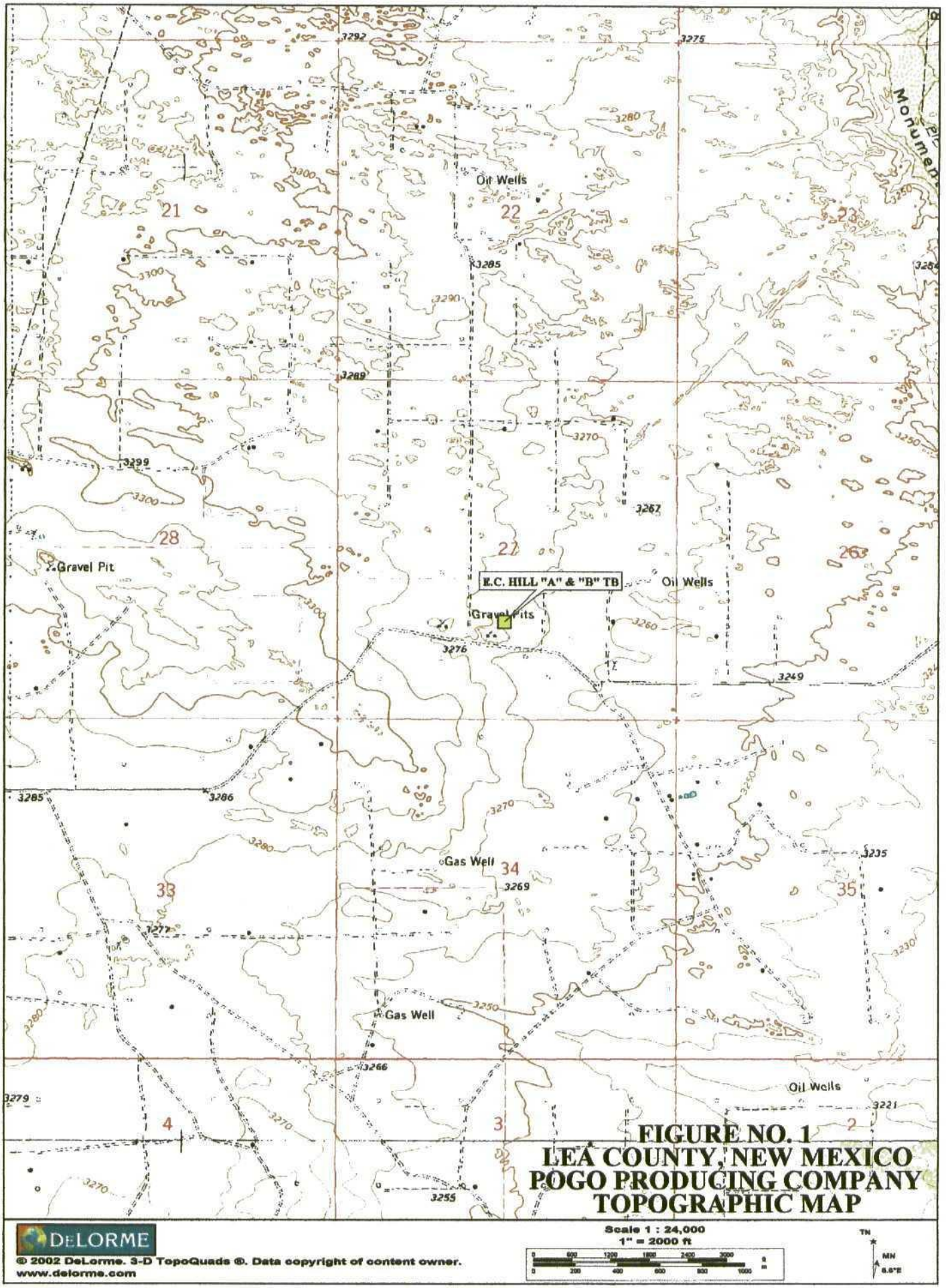


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
POGO PRODUCING COMPANY
TOPOGRAPHIC MAP

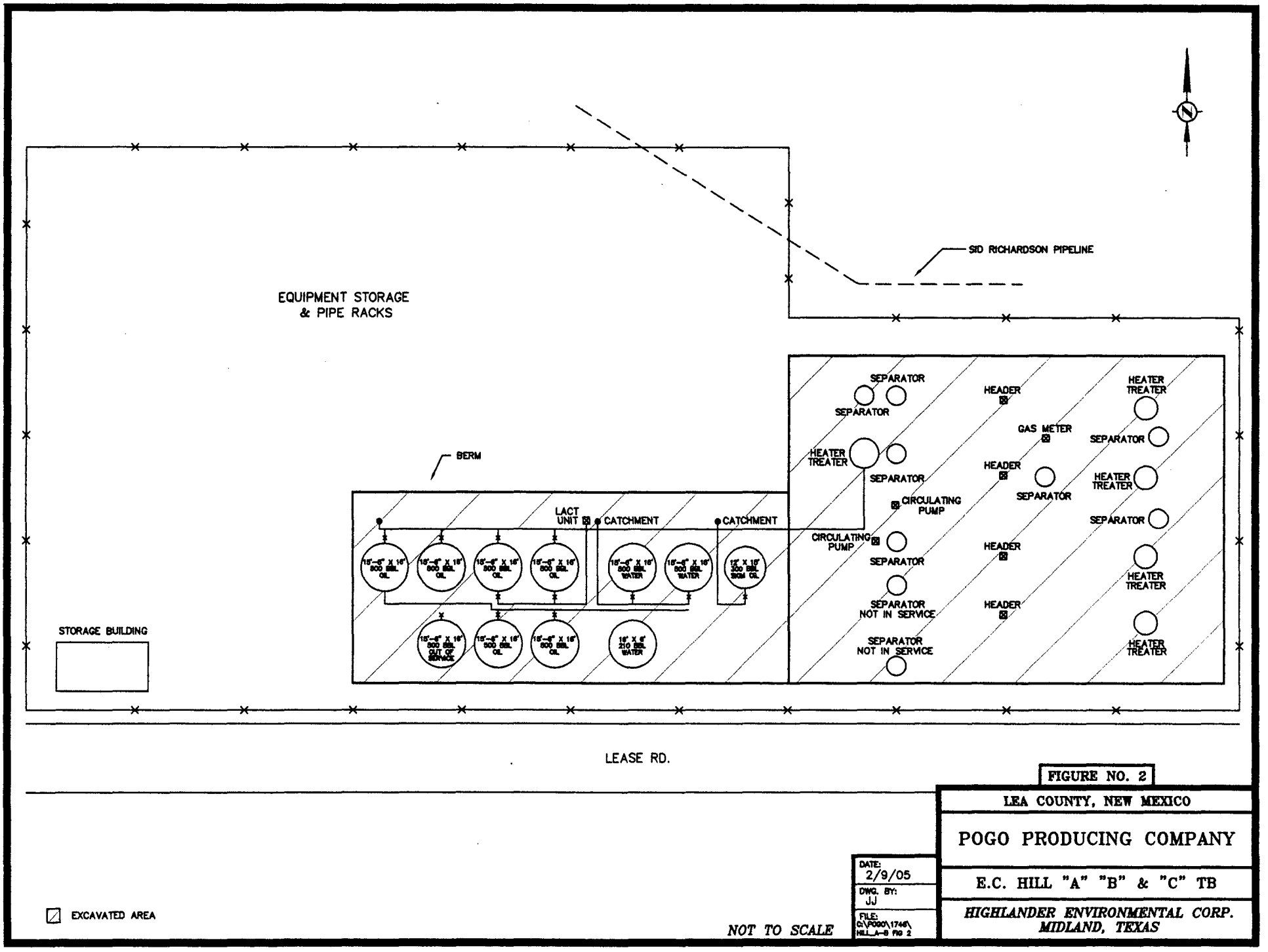


FIGURE NO. 2

LEA COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

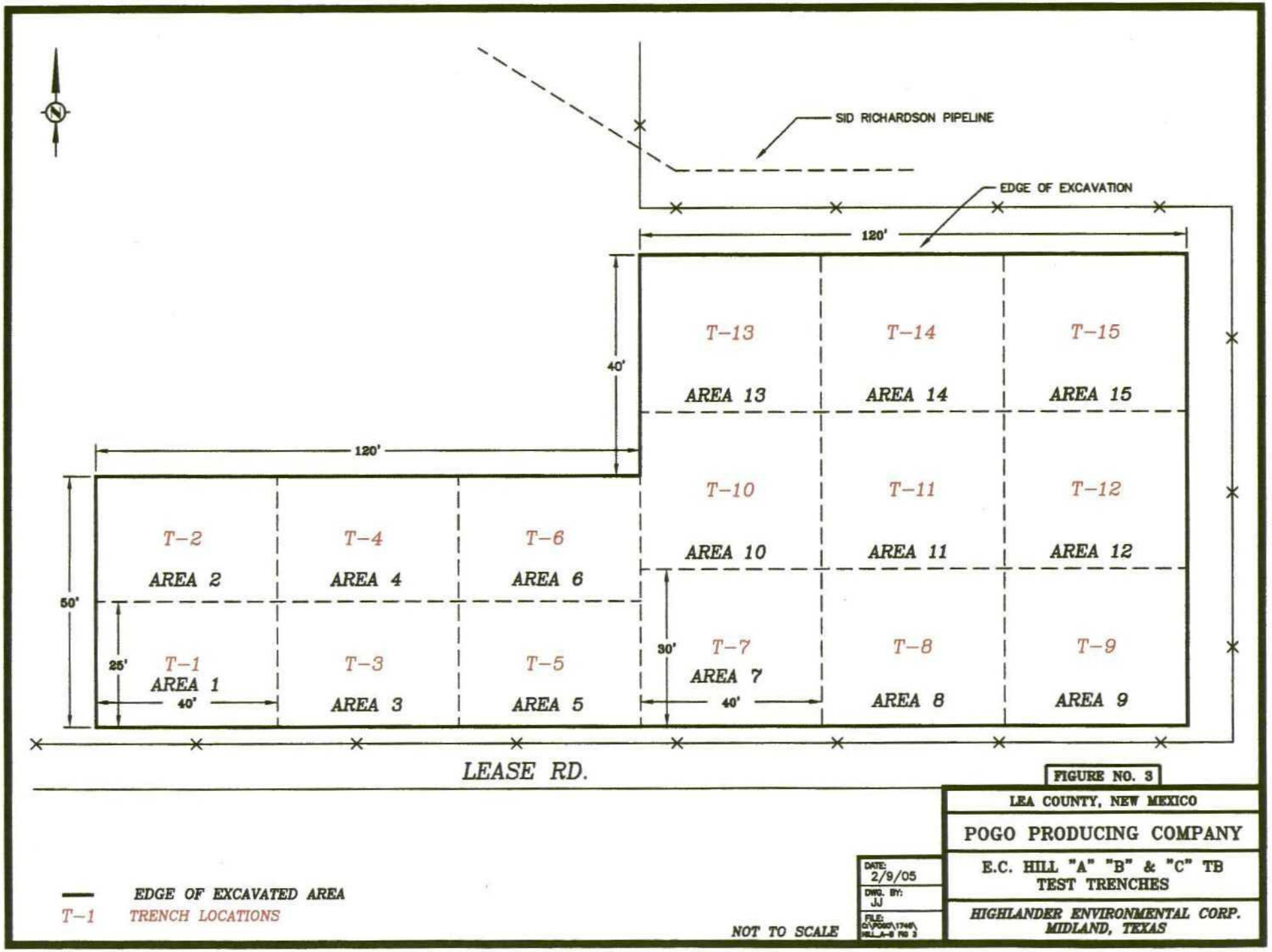
E.C. HILL "A" "B" & "C" TB

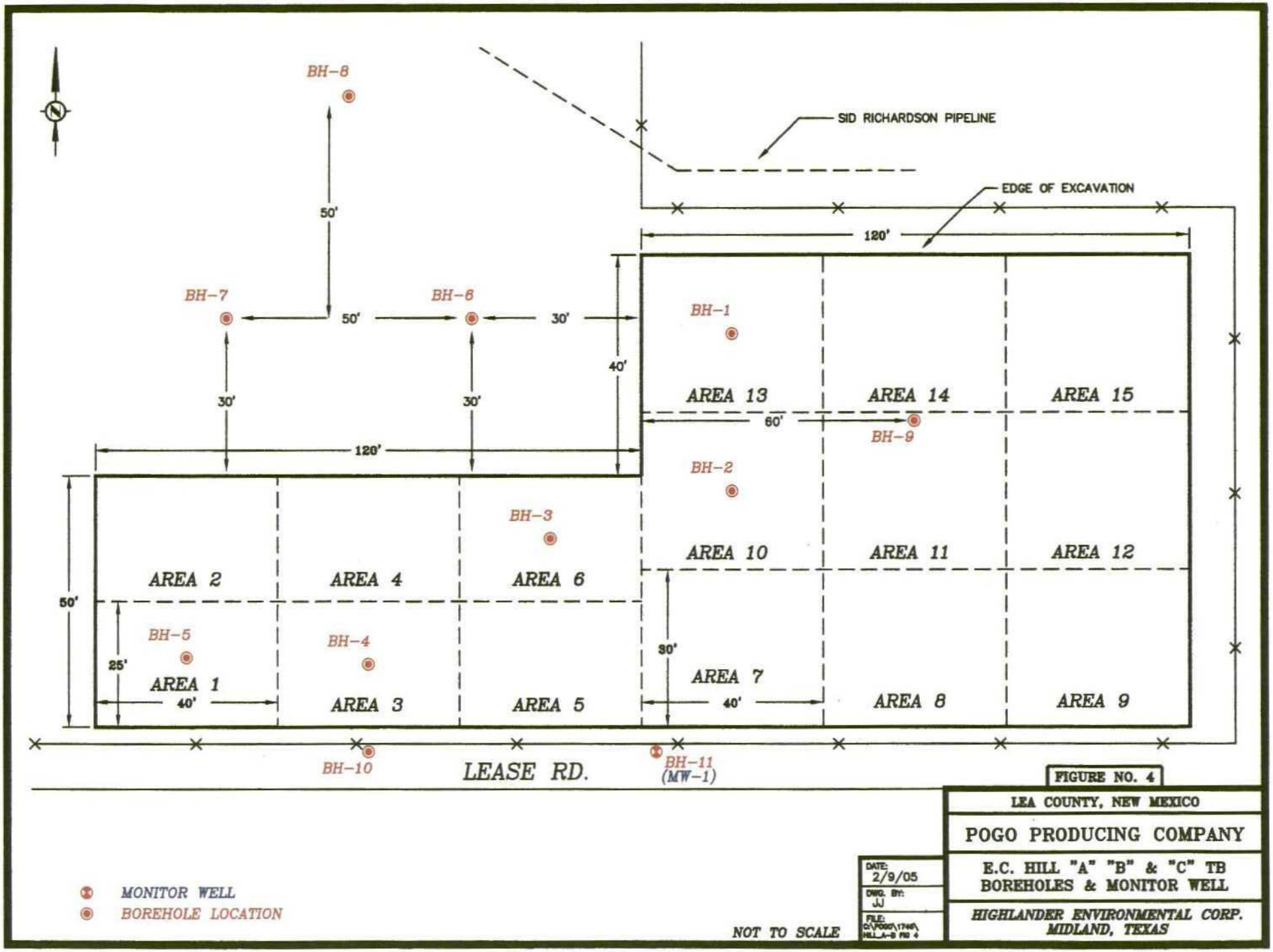
HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 2/9/05
DWG. BY: JJ
FILE: C:\POGO\1746\HILL_A-B FIG 2

EXCAVATED AREA

NOT TO SCALE


SID RICHARDSON PIPELINE
EDGE OF EXCAVATION
120'
120'
40'
50'
25'
30'
40'
40'
T-13
AREA 13
T-14
AREA 14
T-15
AREA 15
T-10
AREA 10
T-11
AREA 11
T-12
AREA 12
T-2
AREA 2
T-4
AREA 4
T-6
AREA 6
T-1
AREA 1
T-3
AREA 3
T-5
AREA 5
T-7
AREA 7
T-8
AREA 8
T-9
AREA 9
LEASE RD.
EDGE OF EXCAVATED AREA
T-1 TRENCH LOCATIONS
NOT TO SCALE
FIGURE NO. 3
LEA COUNTY, NEW MEXICO
POGO PRODUCING COMPANY
E.C. HILL "A" "B" & "C" TB
TEST TRENCHES
HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS
DATE: 2/9/05
DWG. BY: JJ
FILE:


BH-8
SID RICHARDSON PIPELINE
EDGE OF EXCAVATION
50'
120'
BH-7
BH-6
50'
30'
BH-1
40'
30'
30'
AREA 13
AREA 14
AREA 15
60'
BH-9
120'
BH-2
BH-3
AREA 10
AREA 11
AREA 12
AREA 2
AREA 4
AREA 6
50'
BH-5
BH-4
25'
30'
AREA 7
AREA 1
40'
AREA 3
AREA 5
40'
AREA 8
AREA 9
BH-10
LEASE RD.
BH-11
(MW-1)
MONITOR WELL
BOREHOLE LOCATION
NOT TO SCALE
FIGURE NO. 4
LEA COUNTY, NEW MEXICO
POGO PRODUCING COMPANY
E.C. HILL "A" "B" & "C" TB
BOREHOLES & MONITOR WELL
DATE: 2/9/05
DWG. BY: JJ
FILE:
HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

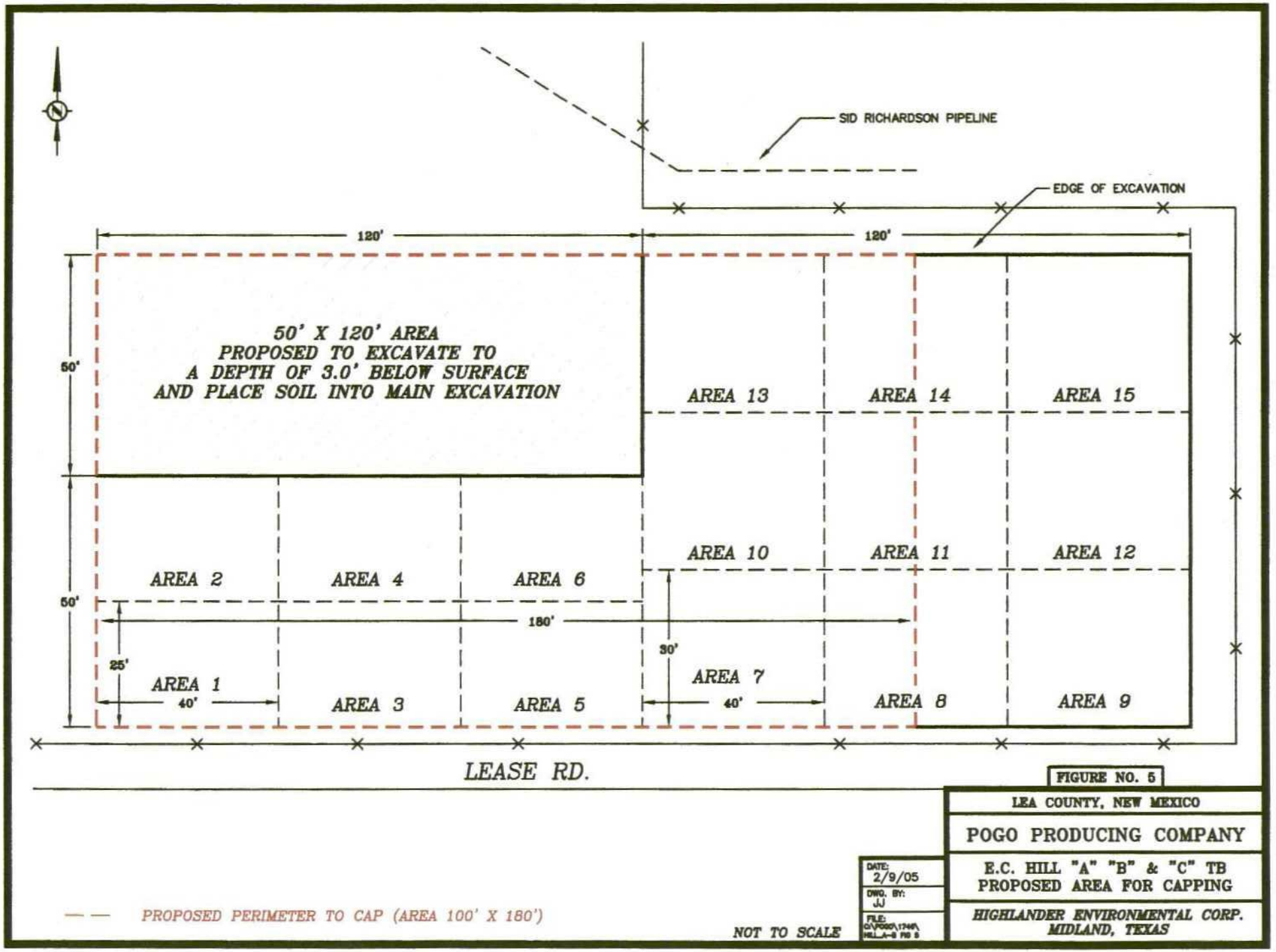


FIGURE NO. 5

LEA COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

E.C. HILL "A" "B" & "C" TB
PROPOSED AREA FOR CAPPING

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

TABLES

Table 1
Pogo Producing Company
E.C. Hill A & B TANK BATTERY
Trench Installation
Lea County, New Mexico

O&G/1746/Table 1

Sample ID	Sample Date	Sample Depth (ft)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg	Xylene (mg/kg)	Chloride (mg/kg)
			C6-C-12	C12-C35	Total					
T-1	2/20/2004	0-1'	<10.0	19.9	19.9	-	-	-	-	2280
		3.0'	-	-	-	-	-	-	-	2550
		7.0'	-	-	-	-	-	-	-	2020
		9.0'	-	-	-	-	-	-	-	1040
T-2	2/20/2004	0-1'	<10.0	17.1	17.1	-	-	-	-	71
T-3	2/20/2004	0'-1'	356	1,730	**2,090**	-	-	-	-	142
		3.0'	2,570	7,470	**10,000**	-	-	-	-	-
		5.0'	1,500	4,090	**5,600**	-	-	-	-	-
		7.0'	1,540	3,770	**5,310**	-	-	-	-	-
		9.0'	1,520	3,970	**5,490**	-	-	-	-	-
T-4	2/20/2004	0-1'	201	3480	**3860**	-	-	-	-	142
		3.0'	<10.0	80.9	80.9	-	-	-	-	-
T-5	2/20/2004	0-1'	249	2,010	**2,260**	-	-	-	-	298
		3.0'	<10.0	10.4	10.4	-	-	-	-	-
T-6	2/20/2004	0-1'	1,540	8,410	**9,950**	0.569	0.271	1.91	6.27	404
		3.0'	1,430	8,150	**9,580**	-	-	-	-	-
		5.0'	1,800	8,830	**10,600**	-	-	-	-	-
		7.0'	916	4,070	**4,980**	-	-	-	-	-
		9.0'	1,350	6,000	**7,350**	-	-	-	-	-
T-7	2/20/2004	0-1'	148	4,430	**4,580**	-	-	-	-	383
		3.0'	85.2	3,860	**3,950**	-	-	-	-	-
		5.0'	<10.0	779	779	-	-	-	-	-
T-8	2/20/2004	0-1'	<10.0	16.8	16.8	-	-	-	-	99

Table 1
Pogo Producing Company
E.C. Hill A & B TANK BATTERY
Trench Installation
Lea County, New Mexico

O&G/1746/Table 1

Sample ID	Sample Date	Sample Depth (ft)	TPH (mg/kg) C6-C-12	C12-C35	Total	Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg	Xylene (mg/kg)	Chloride (mg/kg)
T-9	2/20/2004	0-1'	<10.0	<10.0	<10.0	-	-	-	-	234
T-10	2/20/2004	0-1'	1,180	3,500	**4,680**	0.173	0.635	2.28	7.39	276
		3.0'	1,390	4,060	**5,450**	-	-	-	-	-
		5.0'	2,150	6,880	**9,030**	-	-	-	-	-
		7.0'	943	3,410	**4,350**	-	-	-	-	-
		9.0'	795	3,080	**3,880**	-	-	-	-	-
T-11	2/20/2004	0-1'	<10.0	<10.0	<10.0	-	-	-	-	142
T-12	2/20/2004	0-1'	<10.0	11.1	11.1	-	-	-	-	99
T-13	2/20/2004	0-1'	1,170	5,520	**6,690**	0.285	0.607	1.35	3.28	213
		3.0'	1,320	5,030	**6,350**	-	-	-	-	-
		5.0'	1,850	6,290	**8,140**	-	-	-	-	-
		7.0'	1,410	4,440	**5,850**	-	-	-	-	-
		9.0'	1,740	4,880	**6,620**	-	-	-	-	-
T-14	2/20/2004	0-1'	<10.0	84.3	84.3	-	-	-	-	596
T-15	2/20/2004	0-1'	<10.0	36.8	36.8	-	-	-	-	574

(-) = Not Analyzed
T = Trench (Installed with backhoe)
Sample Depths = 5 feet below excavation bottom

Table 2
Pogo Producing Company
E. C. Hill A&B Tank Battery
Borehole Installation
Lea County, New Mexico

Sample ID	Date Sampled	Depth (ft)	OVM (ppm)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				C6-C12	C12-C35	Total					
BH-1 (Area 13)	5/13/2004	5-6	270	-	-	-	-	-	-	-	-
		10-11	439	-	-	-	-	-	-	-	-
		15-16	606	1,100	3,490	4,590	-	-	-	-	-
		20-21	658	-	-	-	-	-	-	-	-
		25-26	613	-	-	-	-	-	-	-	-
		30-31	902	872	3,420	4,290	-	-	-	-	-
		35-36	897	-	-	-	-	-	-	-	-
		40-41	942	-	-	-	-	-	-	-	-
		45-46	728	-	-	-	-	-	-	-	-
		50-51	925	7,730	14,100	21,800	5.1	20.8	15.7	48.1	
BH-2 (Area 10)	5/13/2004	5-6	142	-	-	-	-	-	-	-	-
		10-11	167	-	-	-	-	-	-	-	-
		15-16	320	432	2,230	2,660	-	-	-	-	-
		20-21	447	-	-	-	-	-	-	-	-
		30-31	618	516	1,560	2,080	-	-	-	-	-
		40-41	847	-	-	-	-	-	-	-	-
		50-51	861	779	2,440	3,220	-	-	-	-	-
		60-61	147	-	-	-	-	-	-	-	-
		70-71	725	-	-	-	-	-	-	-	-
		80-81	405	1,670	4,770	6,440	<0.025	0.157	0.227	1.307	-

(-) Not Analyzed

Table 2
Pogo Producing Company
E. C. Hill A&B Tank Battery
Borehole Installation
Lea County, New Mexico

Sample ID	Date Sampled	Depth (ft)	OVM (ppm)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				C6-C12	C12-C35	Total					
BH-3 (Area 6)	5/14/2004	5-6	260	-	-	-	-	-	-	-	-
		10-11	541	-	-	-	-	-	-	-	-
		15-16	720	2,020	7,250	9,270	-	-	-	-	-
		20-21	836	-	-	-	-	-	-	-	-
		30-31	561	623	3,140	3,760	-	-	-	-	-
		40-41	1022	-	-	-	-	-	-	-	-
		50-51	450	1,010	5,290	6,300	-	-	-	-	-
		60-61	567	-	-	-	-	-	-	-	-
		70-71	554	1,280	5,500	6,780	0.110	1.05	1.54	6.77	-
BH-4 (Area 3)	5/14/2004	5-6	1800	-	-	-	-	-	-	-	-
		10-11	1811	-	-	-	-	-	-	-	-
		15-16	2100	2,710	5,460	8,170	1.94	22.50	23.20	62.80	-
		20-21	1941	-	-	-	-	-	-	-	-
		30-31	2131	1,490	3,340	4,830	-	-	-	-	-
		50-51	1395	-	-	-	-	-	-	-	-
		70-71	960	1,090	4,390	5,480	-	-	-	-	-
BH-5 (Area 1)	5/14/2004	10-11	400	644	2,800	3,440	-	-	-	-	2,760
		15-16	200	586	3,020	3,610	<0.025	0.0616	0.0705	0.4776	744
		20-21	340	-	-	-	-	-	-	-	723
		30-31	39	36.8	386	423	-	-	-	-	304

(-) Not Analyzed

Table 2
Pogo Producing Company
E. C. Hill A&B Tank Battery
Borehole Installation
Lea County, New Mexico

Sample ID	Date Sampled	Depth (ft)	OVM (ppm)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				C6-C12	C12-C35	Total					
BH-6	5/14/2004	5-6	500	1,610	4,420	6,030	-	-	-	-	-
		10-11	962	1,870	3,490	5,360	-	-	-	-	-
		20-21	1081	-	-	-	-	-	-	-	-
		30-31	1131	3,220	6,770	9,990	0.0386	5.09	5.32	20.6	-
BH-7	5/17/2004	5-6	5	<10.0	2,070	2,070	-	-	-	-	-
		10-11	390	521	1,760	2,280	-	-	-	-	-
		20-21	659	-	-	-	-	-	-	-	-
		30-31	556	843	2,530	3,370	<0.025	0.194	0.116	3.33	-
BH-8	5/17/2004	5-6	2	<10.0	42.5	42.5	-	-	-	-	-
		10-11	2	<10.0	<10.0	<10.0	-	-	-	-	-
		20-21	1	-	-	-	-	-	-	-	-
		30-31	1	-	-	-	-	-	-	-	-
BH-9	9/9/2004	10-11	1	<10.0	<10.0	<10.0	-	-	-	-	-
		20-21	0	<10.0	<10.0	<10.0	-	-	-	-	-
		30-31	0	<10.0	<10.0	<10.0	-	-	-	-	-
BH-10	9/9/2004	10-11	0	<10.0	<10.0	<10.0	-	-	-	-	-
		20-21	0	<10.0	<10.0	<10.0	-	-	-	-	-
		30-31	1	<10.0	<10.0	<10.0	-	-	-	-	-
BH-11 (MW-1)	9/8/2004	40-41	1	<10.0	<10.0	<10.0	-	-	-	-	-
		60-61	3	<10.0	<10.0	<10.0	-	-	-	-	-

(-) Not Analyzed

Table 3
Pogo Producing Company
E.C. Hill A & B TANK BATTERY
Monitor Well Sample Results
Lea County, New Mexico

Sample ID	Sample Date	Benzene (mg/l)	Toluene (mg/l)	Ethlybenzene (mg/l	Xylene (mg/l)	Chloride (mg/l)
MW-1	9/17/2004	0.0385	0.0146	0.00694	0.0341	195
MW-1	10/12/2004	0.111	0.0197	0.0166	0.0699	133

New Mexico Water Quality Control Commission (WQCC) Groundwater Standards

Benzene (mg/l)	Toluene (mg/l)	Ethlybenzene (mg/l	Xylene (mg/l)	Chloride (mg/l)
0.01	0.75	0.75	0.62	250

APPENDIX A

Site Information
and
Borehole Logs

C-141

SITE INFORMATION

General Site Information:	
Site:	Former E.C Hill A, B, C Tank Battery
Company:	Pogo Producing Company (Arch Petroleum)
Section, Township and Range	Section 27, T23S, R37 E
Unit Letter:	O
GPS:	32° 16' 20", 103° 09' 02"
Landowner:	D.K Boyd
Directions:	Eunice New Mexico intersection of 18 and 234, go 10.7 miles south near mile marker 21,
	turn left (east) into lease (gate), go 2.0 miles down lease road and turn right (south),
	go 1.6 miles south to "T" - Hill TB located east

Release Data:	
Date Released:	Reportable Releases - 11/23/99, 1/8/00, 10/6/01, 1/11/02
Type Release:	Oil or water
Source of Contamination:	Tank Battery
Fluid Released:	Reported unknown to 20 barrels of fluid released
Fluids Recovered:	On all releases the fluids were recovered and properly disposed.

Official Communication:			
Name:	Pat Ellis	Don Riggs	Ike Tavarez
Company:	Pogo Producing Company	Pogo Producing Company	Highlander Environmental Corp.
Address:	300 N. Marienfeld St.	5 Greenway Plaza, Suite 2700	1910 N. Big Spring
P.O. Box	Box 10340		
City:	Midland Texas, 79701-7340	Houston, Texas 77046	Midland, Texas
Phone number:	(432) 685-8100	(713) 297-5045	(432) 692- 4559
Fax:	(432) 685-8150	(713) 297-4952	(432) 682-3946
Email:	EllisP@pogoproducing.com	riggsd@pogoproducing.com	itavarez@hec-enviro.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	**10**	Groundwater 86' BGS
>100 ft.	0	
WellHead Protection:	***Ranking Score***	***Site Data***
Water Source <1,000 ft., Private <200 ft.	*20*	*None*
Water Source >1,000 ft., Private >200 ft.	***0***	
Surface Body of Water:	***Ranking Score***	***Site Data***
<200 ft.	*20*	*None*
200 ft - 1,000 ft.	10	*None*
>1,000 ft.	0	
Total Ranking Score:	10	

Acceptable Soil RRAL Levels (mg/kg)		
Benzene	*Total BTEX*	*TPH*
10	50	1,000

Boring/Well: BH-1
Project Number: 1746
Client: Pogo Producing Company
Site Location: Pogo/E.C. Hill A, B and C Tank Battery
Location: Lea County, New Mexico
Total Depth 60 feet
Date Installed: 5/13/2004

DEPTH (Ft)	OVM (ppm)	SAMPLE DESCRIPTION
5-6	270	white and tan, caliche, dense
10-11	439	white, caliche, dense, becoming sandy with depth, siltly sand
15-16	606	tan, very fine grain sand, some lenses of white caliche
20-21	658	tan, very fine grain sand, some lenses and nodules of cemented sandstone
25-36	613	tan, very fine grain sand, some lenses of cemented sandstone
30-31	902	tan, fine grain sand, with lenses of cemented sandstone
35-36	897	tan, fine grain sand, with lenses of cemented sandstone
40-41	942	tan, very fine grain sand 90%, loose, with lenses of cemented sandstone
45-46	727	tan, very fine grain sand 90%, with lenses of cemented sandstone
50-51	925	tan to brown, very fine grain sand 90%, with lenses of cemented sandstone, odor
60	-	borehole collapse, formation sandy, could not collected deeper samples
		Total Depth - 60'

depth (ft) - below excavation bottom

Boring/Well: BH-2
Project Number: 1746
Client: Pogo Producing Company
Site Location: Pogo/E.C. Hill A, B and C Tank Battery
Location: Lea County, New Mexico
Total Depth 81 feet
Date Installed: 5/13/2004

DEPTH (Ft)	OVM (ppm)	SAMPLE DESCRIPTION
5-6	142	white and tan, caliche, dense
10-11	167	white, caliche, becoming sandy with depth, siltly sand
15-16	320	tan, very fine grain sand, some lenses of white caliche
20-21	447	tan, very fine grain sand, some lenses of cemented sandstone
30-31	618	tan, fine grain sand, with lenses of cemented sandstone
40-41	847	gray staining from 40 -45', very fine grain sand 90%, with lenses of cemented sandstone
50-51	861	tan, very fine grain sand 90%, loose, with lenses of cemented sandstone
60-61	147	tan, very fine grain sand 90%, loose, with lenses of cemented sandstone
70-71	725	tan, very fine grain sand, loose, with small lenses of cemented sandstone
80-81	405	tan, very fine grain sand, loose, with small lenses of cemented sandstone
		Total Depth - 81'

depth (ft) - below excavation bottom

Boring/Well: BH-3
Project Number: 1746
Client: Pogo Producing Company
Site Location: Pogo/E.C. Hill A, B and C Tank Battery
Location: Lea County, New Mexico
Total Depth 71 feet
Date Installed: 5/14/2004

DEPTH (Ft)	OVM (ppm)	SAMPLE DESCRIPTION
5-6	260	white and tan, caliche, dense
10-11	541	white, caliche, becoming sandy with depth, siltly sand
15-16	720	tan, very fine grain sand, some lenses of white caliche
20-21	836	tan, very fine grain sand, some lenses of cemented sandstone
30-31	561	tan, fine grain sand, with lenses of cemented sandstone
40-41	1022	trace of gray staining 2.0' thick, fine grain sand 90%, with lenses of cemented sandstone
50-51	450	tan, very fine grain sand 90%, loose,with lenses of cemented sandstone
60-61	567	tan, very fine grain sand 90%, loose,with lenses of cemented sandstone
70-71	554	tan, very fine grain sand 90%, loose,with lenses of cemented sandstone
		Total Depth - 71'

depth (ft) - below excavation bottom

Boring/Well:	**BH-4**
Project Number:	**1746**
Client:	**Pogo Producing Company**
Site Location:	**Pogo/E.C. Hill A, B and C Tank Battery**
Location:	**Lea County, New Mexico**
Total Depth	**71 feet**
Date Installed:	**5/14/2004**

DEPTH (Ft)	OVM (ppm)	SAMPLE DESCRIPTION
5-6	1800	white and tan, caliche, dense
10-11	1811	white, caliche, becoming sandy with depth, siltly sand
15-16	2100	tan, very fine grain sand, some lenses of white caliche
20-21	1941	tan, very fine grain sand, some lenses of cemented sandstone
30-31	2131	tan, fine grain sand, with lenses of cemented sandston
37-38	-	fine grain sand with a trace of gray staining 2.0' thick
50-51	1395	tan, very fine grain sand 90%, loose,with lenses of cemented sandstone
70-71	960	tan, very fine grain sand 90%, loose,with lenses of cemented sandstone
		Total Depth - 71'

depth (ft) - below excavation bottom

Boring/Well: BH-5
Project Number: 1746
Client: Pogo Producing Company
Site Location: Pogo/E.C. Hill A, B and C Tank Battery
Location: Lea County, New Mexico
Total Depth 31 feet
Date Installed: 5/14/2004

DEPTH (Ft)	OVM (ppm)	SAMPLE DESCRIPTION
5-6	-	white and tan, caliche, dense
10-11	400	white, caliche, dense, becoming sandy with depth, siltly sand
15-16	200	tan, fine grain sand, some lenses of white caliche and sandstone
20-21	340	tan, fine grain sand, some lenses of cemented sandstone
30-31	39	tan, fine grain sand, with lenses of cemented sandstone
		Total Depth - 31'

depth (ft) - below excavation bottom

Boring/Well: BH-6
Project Number: 1746
Client: Pogo Producing Company
Site Location: Pogo/E.C. Hill A, B and C Tank Battery
Location: Lea County, New Mexico
Total Depth 31 feet
Date Installed: 5/14/2004

DEPTH (Ft)	OVM (ppm)	SAMPLE DESCRIPTION
5-6	500	white and tan, caliche, dense
10-11	962	white, caliche, becoming sandy with depth, siltly sand
20-21	1081	tan, fine grain sand, some lenses of cemented sandstone
30-31	1131	tan, fine grain sand, with lenses of cemented sandstond
		Total Depth - 31'

Boring/Well: BH-7
Project Number: 1746
Client: Pogo Producing Company
Site Location: Pogo/E.C. Hill A, B and C Tank Battery
Location: Lea County, New Mexico
Total Depth 31 feet
Date Installed: 5/17/2004

DEPTH (Ft)	OVM (ppm)	SAMPLE DESCRIPTION
5-6	5	white and tan, caliche, dense
10-11	370	white, caliche, becoming sandy with depth, siltly sand
20-21	659	tan, fine grain sand, some lenses of cemented sandstone
30-31	556	tan, fine grain sand, with lenses of cemented sandstond
		Total Depth - 31'

Boring/Well: BH-8
Project Number: 1746
Client: Pogo Producing Company
Site Location: Pogo/E.C. Hill A, B and C Tank Battery
Location: Lea County, New Mexico
Total Depth 31 feet
Date Installed: 5/17/2004

DEPTH (Ft)	OVM (ppm)	SAMPLE DESCRIPTION
5-6	2	white and tan, caliche, dense
10-11	2	white, caliche, becoming sandy with depth, siltly sand
20-21	1	tan, fine grain sand, trace caliche and some lenses of cemented sandstone
30-31	1	tan, fine grain sand, with lenses of cemented sandstone
		Total Depth - 31'

Boring/Well: BH-9
Project Number: 1746
Client: Pogo Producing Company
Site Location: Pogo/E.C. Hill A, B and C Tank Battery
Location: Lea County, New Mexico
Total Depth 31 feet
Date Installed: 9/9/2004

DEPTH (Ft)	OVM (ppm)	SAMPLE DESCRIPTION
10-11	1	white, caliche, trace of silty sandy
20-21	0	tan, fine grain sand, trace caliche and some lenses of cemented sandstone
30-31	0	tan, fine grain sand, with lenses of cemented sandstone
		Total Depth - 31'

depth (ft) - below excavation bottom

Boring/Well: BH-10
Project Number: 1746
Client: Pogo Producing Company
Site Location: Pogo/E.C. Hill A, B and C Tank Battery
Location: Lea County, New Mexico
Total Depth 31 feet
Date Installed: 9/9/2004

DEPTH (Ft)	OVM (ppm)	SAMPLE DESCRIPTION
10-11	0	white, caliche, trace of silty sandy
20-21	0	tan, fine grain sand, trace caliche and some lenses of cemented sandstone
30-31	1	tan, fine grain sand, with lenses of cemented sandstone
		Total Depth - 31'

Boring/Well: BH-11 (MW-1)
Project Number: 1746
Client: Pogo Producing Company
Site Location: Pogo/E.C. Hill A, B and C Tank Battery
Location: Lea County, New Mexico
Total Depth 135 feet
Date Installed: 9/8/2004

DEPTH (Ft)	OVM (ppm)	SAMPLE DESCRIPTION
0-10	-	white, caliche, dense
10-12	1	white, caliche, becoming sandy with depth, siltly sand
15-16	-	tan, fine grain sand, some lenses of white caliche
20-25	-	tan, fine grain sand, some lenses of cemented sandstone
25-30	-	tan, fine grain sand, some lenses of cemented sandstone
30-32	0	tan, fine grain sand, with lenses of cemented sandstone
32-40	-	tan, fine grain sand, with lenses of cemented sandstone
40-42	1	tan, very fine grain sand, with lenses of cemented sandstone
42-50	-	tan, very fine grain sand, with lenses of cemented sandstone
50-52	2	tan, very fine grain sand, with lenses of cemented sandstone
52-60	-	tan, very fine grain sand, trace lenses of cemented sandstone
60-62	3	tan, very fine grain sand, trace lenses of cemented sandstone
62-70	-	tan, very fine grain sand, trace lenses of cemented sandstone
70-75	-	tan, very fine grain sand, loose, clean
75-80	-	tan, very fine grain sand, loose, clean
80-85	-	tan, very fine grain sand, loose, clean
85-86	-	tan, very fine grain sand, loose, clean, becoming damp
86-95	-	tan, very fine grain sand, loose, clean, trace of cemented sandstone
95-100	-	tan, very fine grain sand, loose, clean
100-105	-	tan, very fine grain sand, loose, clean, trace of cemented sandstone
105-110	-	tan, very fine grain sand, loose, clean
110-115	-	tan, very fine grain sand and white caliche/sandstone layer dense
		Total Depth - 115'

APPENDIX B

Borehole
Analytical Results

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

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

Project: Pogo/ E.C. Hill A & B TB
Project Number: 1746
Location: Lea County, NM

Lab Order Number: 4I14004

Report Date: 09/21/04

Highlander Environmental Corp.	Project: Pogo/ E.C. Hill A & B TB	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 1746	**Reported:**
Midland TX, 79705	Project Manager: Ike Tavarez	09/21/04 12:43

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1 (40-41')	4I14004-01	Soil	09/08/04 00:00	09/13/04 17:00
MW-1 (60-61')	4I14004-02	Soil	09/08/04 00:00	09/13/04 17:00
BH-9 (10-11'), BEB	4I14004-03	Soil	09/09/04 00:00	09/13/04 17:00
BH-9 (20-21'), BEB	4I14004-04	Soil	09/09/04 00:00	09/13/04 17:00
BH-9 (30-31'), BEB	4I14004-05	Soil	09/09/04 00:00	09/13/04 17:00
BH-10 (10-11'), BS	4I14004-06	Soil	09/09/04 00:00	09/13/04 17:00
BH-10 (20-21'), BS	4I14004-07	Soil	09/09/04 00:00	09/13/04 17:00
BH-10 (30-31'), BS	4I14004-08	Soil	09/09/04 00:00	09/13/04 17:00

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (40-41') (4I14004-01) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EI41404	09/14/04	09/17/04	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*93.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*71.0 %*	*70-130*		"	"	"	"	
MW-1 (60-61') (4I14004-02) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EI41404	09/14/04	09/17/04	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*88.2 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*72.2 %*	*70-130*		"	"	"	"	
BH-9 (10-11'), BEB (4I14004-03) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EI41404	09/14/04	09/17/04	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*82.8 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*71.0 %*	*70-130*		"	"	"	"	
BH-9 (20-21'), BEB (4I14004-04) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EI41404	09/14/04	09/17/04	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*84.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*72.0 %*	*70-130*		"	"	"	"	
BH-9 (30-31'), BEB (4I14004-05) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EI41404	09/14/04	09/17/04	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*85.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*75.8 %*	*70-130*		"	"	"	"	

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BH-10 (10-11'), BS (4I14004-06) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EI41404	09/14/04	09/17/04	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*87.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*73.0 %*	*70-130*		"	"	"	"	
BH-10 (20-21'), BS (4I14004-07) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EI41404	09/14/04	09/17/04	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*85.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*74.6 %*	*70-130*		"	"	"	"	
BH-10 (30-31'), BS (4I14004-08) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EI41404	09/14/04	09/17/04	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*81.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*80.0 %*	*70-130*		"	"	"	"	

General Chemistry Parameters by EPA / Standard Methods
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (40-41') (4I14004-01) Soil									
% Solids	96.0		%	1	EI41601	09/14/04	09/14/04	% calculation	
MW-1 (60-61') (4I14004-02) Soil									
% Solids	83.0		%	1	EI41601	09/14/04	09/14/04	% calculation	
BH-9 (10-11'), BEB (4I14004-03) Soil									
% Solids	93.0		%	1	EI41601	09/14/04	09/14/04	% calculation	
BH-9 (20-21'), BEB (4I14004-04) Soil									
% Solids	97.0		%	1	EI41601	09/14/04	09/14/04	% calculation	
BH-9 (30-31'), BEB (4I14004-05) Soil									
% Solids	96.0		%	1	EI41601	09/14/04	09/14/04	% calculation	
BH-10 (10-11'), BS (4I14004-06) Soil									
% Solids	91.0		%	1	EI41601	09/14/04	09/14/04	% calculation	
BH-10 (20-21'), BS (4I14004-07) Soil									
% Solids	95.0		%	1	EI41601	09/14/04	09/14/04	% calculation	
BH-10 (30-31'), BS (4I14004-08) Soil									
% Solids	98.0		%	1	EI41601	09/14/04	09/14/04	% calculation	

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI41404 - Solvent Extraction (GC)										
Blank (EI41404-BLK1)				Prepared: 09/14/04 Analyzed: 09/16/04						
Gasoline Range Organics C6-C12	ND	10.0	mg/kg wet							
Diesel Range Organics >C12-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
Surrogate: 1-Chlorooctane	*39.6*		*mg/kg*	*50.0*		*79.2*	*70-130*			
Surrogate: 1-Chlorooctadecane	*36.4*		*"*	*50.0*		*72.8*	*70-130*			
Blank (EI41404-BLK2)				Prepared: 09/14/04 Analyzed: 09/17/04						
Gasoline Range Organics C6-C12	ND	10.0	mg/kg wet							
Diesel Range Organics >C12-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
Surrogate: 1-Chlorooctane	*41.9*		*mg/kg*	*50.0*		*83.8*	*70-130*			
Surrogate: 1-Chlorooctadecane	*36.0*		*"*	*50.0*		*72.0*	*70-130*			
LCS (EI41404-BS1)				Prepared: 09/14/04 Analyzed: 09/16/04						
Gasoline Range Organics C6-C12	414	10.0	mg/kg wet	500		82.8	75-125			
Diesel Range Organics >C12-C35	469	10.0	"	500		93.8	75-125			
Total Hydrocarbon C6-C35	883	10.0	"	1000		88.3	75-125			
Surrogate: 1-Chlorooctane	*40.7*		*mg/kg*	*50.0*		*81.4*	*70-130*			
Surrogate: 1-Chlorooctadecane	*40.1*		*"*	*50.0*		*80.2*	*70-130*			
LCS (EI41404-BS2)				Prepared: 09/14/04 Analyzed: 09/17/04						
Gasoline Range Organics C6-C12	465	10.0	mg/kg wet	500		93.0	75-125			
Diesel Range Organics >C12-C35	496	10.0	"	500		99.2	75-125			
Total Hydrocarbon C6-C35	961	10.0	"	1000		96.1	75-125			
Surrogate: 1-Chlorooctane	*43.2*		*mg/kg*	*50.0*		*86.4*	*70-130*			
Surrogate: 1-Chlorooctadecane	*39.1*		*"*	*50.0*		*78.2*	*70-130*			
Calibration Check (EI41404-CCV1)				Prepared: 09/14/04 Analyzed: 09/16/04						
Gasoline Range Organics C6-C12	440		mg/kg	500		88.0	80-120			
Diesel Range Organics >C12-C35	584		"	500		117	80-120			
Total Hydrocarbon C6-C35	1020		"	1000		102	80-120			
Surrogate: 1-Chlorooctane	*52.6*		*"*	*50.0*		*105*	*70-130*			
Surrogate: 1-Chlorooctadecane	*61.3*		*"*	*50.0*		*123*	*70-130*			

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI41404 - Solvent Extraction (GC)										
Calibration Check (EI41404-CCV2)				Prepared: 09/14/04 Analyzed: 09/17/04						
Gasoline Range Organics C6-C12	438		mg/kg	500		87.6	80-120			
Diesel Range Organics >C12-C35	520		"	500		104	80-120			
Total Hydrocarbon C6-C35	958		"	1000		95.8	80-120			
Surrogate: 1-Chlorooctane	*51.3*		*"*	*50.0*		*103*	*70-130*			
Surrogate: 1-Chlorooctadecane	*38.8*		*"*	*50.0*		*77.6*	*70-130*			
Matrix Spike (EI41404-MS1)	**Source: 4I14003-12**			Prepared: 09/14/04 Analyzed: 09/17/04						
Gasoline Range Organics C6-C12	572	10.0	mg/kg dry	617	11.8	90.8	75-125			
Diesel Range Organics >C12-C35	773	10.0	"	617	53.9	117	75-125			
Total Hydrocarbon C6-C35	1350	10.0	"	1230	65.7	104	75-125			
Surrogate: 1-Chlorooctane	*56.7*		*mg/kg*	*50.0*		*113*	*70-130*			
Surrogate: 1-Chlorooctadecane	*56.2*		*"*	*50.0*		*112*	*70-130*			
Matrix Spike (EI41404-MS2)	**Source: 4I14004-06**			Prepared: 09/14/04 Analyzed: 09/17/04						
Gasoline Range Organics C6-C12	533	10.0	mg/kg dry	549	ND	97.1	75-125			
Diesel Range Organics >C12-C35	616	10.0	"	549	ND	112	75-125			
Total Hydrocarbon C6-C35	1150	10.0	"	1100	ND	105	75-125			
Surrogate: 1-Chlorooctane	*56.4*		*mg/kg*	*50.0*		*113*	*70-130*			
Surrogate: 1-Chlorooctadecane	*41.1*		*"*	*50.0*		*82.2*	*70-130*			
Matrix Spike Dup (EI41404-MSD1)	**Source: 4I14003-12**			Prepared: 09/14/04 Analyzed: 09/17/04						
Gasoline Range Organics C6-C12	661	10.0	mg/kg dry	617	11.8	105	75-125	14.4	20	
Diesel Range Organics >C12-C35	757	10.0	"	617	53.9	114	75-125	2.09	20	
Total Hydrocarbon C6-C35	1420	10.0	"	1230	65.7	110	75-125	5.05	20	
Surrogate: 1-Chlorooctane	*57.3*		*mg/kg*	*50.0*		*115*	*70-130*			
Surrogate: 1-Chlorooctadecane	*56.7*		*"*	*50.0*		*113*	*70-130*			
Matrix Spike Dup (EI41404-MSD2)	**Source: 4I14004-06**			Prepared: 09/14/04 Analyzed: 09/17/04						
Gasoline Range Organics C6-C12	507	10.0	mg/kg dry	549	ND	92.3	75-125	5.00	20	
Diesel Range Organics >C12-C35	609	10.0	"	549	ND	111	75-125	1.14	20	
Total Hydrocarbon C6-C35	1120	10.0	"	1100	ND	102	75-125	2.64	20	
Surrogate: 1-Chlorooctane	*54.0*		*mg/kg*	*50.0*		*108*	*70-130*			
Surrogate: 1-Chlorooctadecane	*36.9*		*"*	*50.0*		*73.8*	*70-130*			

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI41601 - General Preparation (Prep)										
Blank (EI41601-BLK1)				Prepared & Analyzed: 09/14/04						
% Solids	100		%							
Duplicate (EI41601-DUP1)		**Source: 4I13002-25**		Prepared & Analyzed: 09/14/04						
% Solids	89.0		%		89.0			0.00	20	

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 9-21-04

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
James L. Hawkins, Chemist/Geologist
Sandra Biezugbe, Lab Tech.

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

Client: Highlander

Date/Time: 9/13/04 17:00

Order #: 4I14004

Initials: CDK

Sample Receipt Checklist

Temperature of container/cooler?	(Yes)	No	6.0 C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	Yes	No	(Not present)
Custody Seals intact on sample bottles?	Yes	No	(Not present)
Chain of custody present?	(Yes)	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of custody agrees with sample label(s)	(Yes)	No	
Container labels legible and intact?	(Yes)	No	
Sample Matrix and properties same as on chain of custody?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
Samples properly preserved?	(Yes)	No	
Sample bottles intact?	(Yes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
Sufficient sample amount for indicated test?	(Yes)	No	
All samples received within sufficient hold time?	(Yes)	No	
VOC samples have zero headspace?	(Yes)	No	Not Applicable

Other observations:

extra sample MW-1 (85') Cuttings not on COC

Variance Documentation:

Contact Person: - Ike Tavarez Date/Time: 09-14-04 @ 1045 Contacted by: Jeanne McMurrey

Regarding:

extra Sample

Corrective Action Taken:

Client said to add sample to COC - hold analysis JMM 9-14-4

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

425-3878
(432) 682-4559 Fax (432) 682-3946

PAGE: 1 OF: 1

CLIENT NAME: Pogo Producing Co. SITE MANAGER: IKE Tavarez

PROJECT NO.: 1746 PROJECT NAME: Pogo/E.C. Hill A&B TR. Lea County NM.

LAB I.D. NUMBER 4I14004	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
-01	9/8/04		S		/	MW-1 (40-41')	1				/	
-02	9/8/04		S		/	MW-1 (60-61')	1				/	
-03	9/9/04		S		/	BH-9 (10-11'), BEB	1				/	
-04			S		/	BH-9 (20-21'), BEB	1				/	
-05			S		/	BH-9 (30-31'), BEB	1				/	
-06			S		/	BH-10 (10-11'), BS	1				/	
-07			S		/	BH-10 (20-21'), BS	1				/	
-08			S		/	BH-10 (30-31'), BS	1				/	
-09	9-8-4		S		1	MW-1 (85') Cuttings (HOLD)						

ANALYSIS REQUEST (Circle or Specify Method No.)

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

RELINQUISHED BY: (Signature) Date: 9/13/04 Time: 5:00pm
RECEIVED BY: (Signature) Date: Time:

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

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

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

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

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

RECEIVED BY: (Signature) Caley Reine
DATE: 9/13/04 TIME: 17:00

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

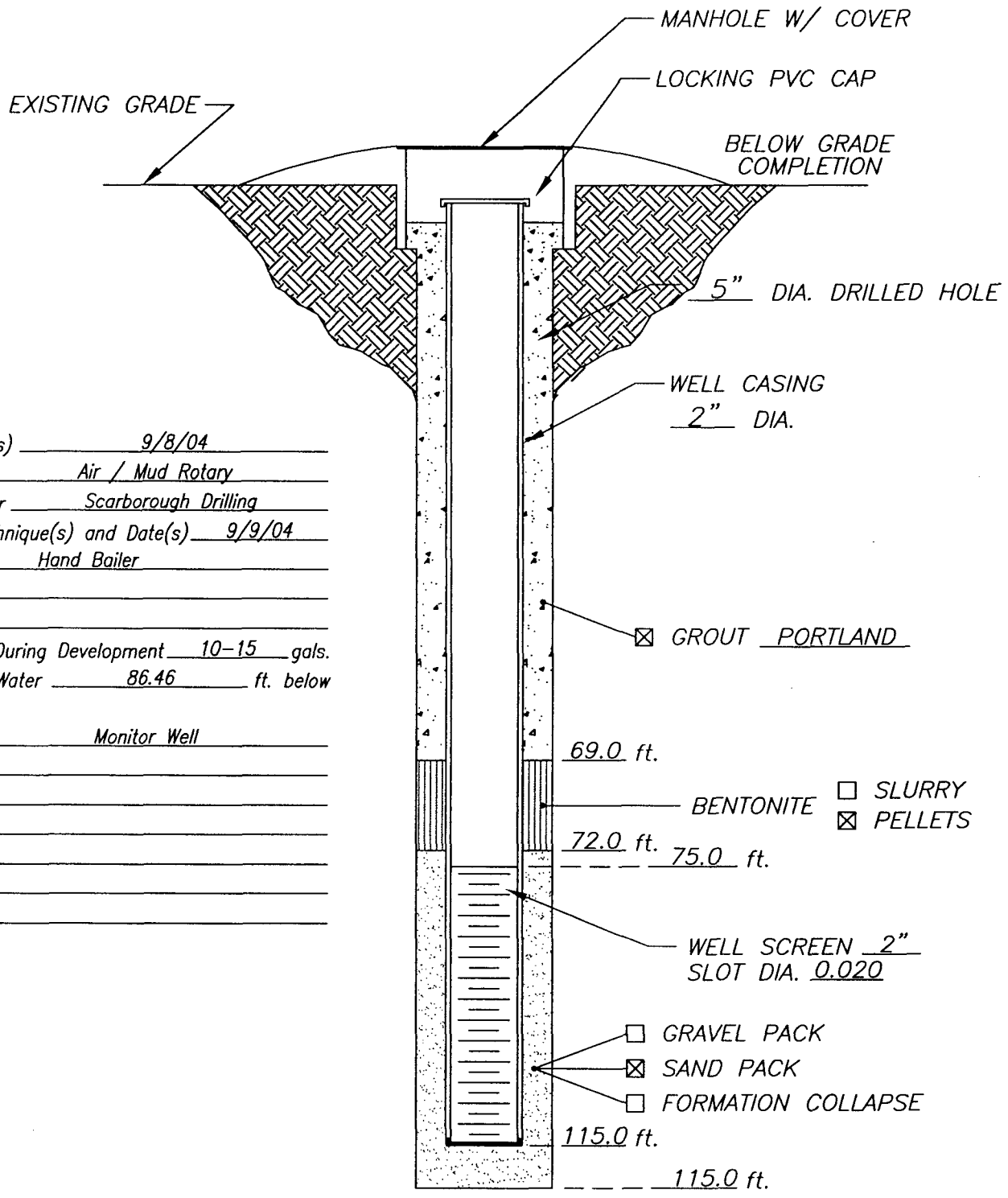
REMARKS: Run (1) BTEX per MW + BH location (402.9 lass) on highlight TPH 6.0°C

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

APPENDIX C

Monitor Well Completion

WELL CONSTRUCTION LOG



Installation Date(s) 9/8/04
Drilling Method Air / Mud Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s) 9/9/04
Hand Bailer

Water Removed During Development 10–15 gals.
Static Depth to Water 86.46 ft. below Ground Level
Well Purpose Monitor Well

Remarks

DATE: 9/8/04	CLIENT: POGO PRODUCING COMPANY	WELL NO.
Highlander Environmental	PROJECT: E. C. HILL A, B & C TB	MW–1 (BH–11)
	LOCATION: Lea County, New Mexico	

APPENDIX D

Monitor Well
Analytical Results

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

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

Project: Pogo/ E.c. Hill A & B
Project Number: 1746
Location: Lea County, NM

Lab Order Number: 4I21001

Report Date: 09/27/04

Highlander Environmental Corp.	Project: Pogo/ E.c. Hill A & B	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 1746	**Reported:**
Midland TX, 79705	Project Manager: Ike Tavarez	09/27/04 11:54

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	4121001-01	Water	09/17/04 11:40	09/20/04 17:05

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Highlander Environmental Corp.	Project: Pogo/ E.c. Hill A & B	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 1746	**Reported:**
Midland TX, 79705	Project Manager: Ike Tavarez	09/27/04 11:38

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (4I21001-01) Water									
Benzene	**0.0385**	0.00100	mg/L	1	EI42405	09/22/04	09/22/04	EPA 8021B	
Toluene	**0.0146**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.00694**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.0201**	0.00100	"	"	"	"	"	"	
Xylene (o)	**0.0140**	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*114 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*82.5 %*	*80-120*		"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Highlander Environmental Corp.	Project: Pogo/ E.c. Hill A & B	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 1746	**Reported:**
Midland TX, 79705	Project Manager: Ike Tavarez	09/27/04 11:38

General Chemistry Parameters by EPA / Standard Methods
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (4I21001-01) Water									
Chloride	**195**	5.00	mg/L	1	EI42704	09/24/04	09/24/04	EPA 325.3M	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI42405 - EPA 5030C (GC)										
Blank (EI42405-BLK1)				Prepared & Analyzed: 09/22/04						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*20.6*		*ug/l*	*20.0*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*16.5*		"	*20.0*		*82.5*	*80-120*			
LCS (EI42405-BS1)				Prepared & Analyzed: 09/22/04						
Benzene	83.2		ug/l	100		83.2	80-120			
Toluene	91.1		"	100		91.1	80-120			
Ethylbenzene	88.3		"	100		88.3	80-120			
Xylene (p/m)	187		"	200		93.5	80-120			
Xylene (o)	87.3		"	100		87.3	80-120			
Surrogate: a,a,a-Trifluorotoluene	*18.9*		"	*20.0*		*94.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*21.4*		"	*20.0*		*107*	*80-120*			
LCS Dup (EI42405-BSD1)				Prepared & Analyzed: 09/22/04						
Benzene	83.9		ug/l	100		83.9	80-120	0.838	20	
Toluene	92.0		"	100		92.0	80-120	0.983	20	
Ethylbenzene	88.8		"	100		88.8	80-120	0.565	20	
Xylene (p/m)	189		"	200		94.5	80-120	1.06	20	
Xylene (o)	94.2		"	100		94.2	80-120	7.60	20	
Surrogate: a,a,a-Trifluorotoluene	*19.7*		"	*20.0*		*98.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*21.2*		"	*20.0*		*106*	*80-120*			
Calibration Check (EI42405-CCV1)				Prepared & Analyzed: 09/22/04						
Benzene	82.0		ug/l	100		82.0	80-120			
Toluene	90.3		"	100		90.3	80-120			
Ethylbenzene	83.9		"	100		83.9	80-120			
Xylene (p/m)	182		"	200		91.0	80-120			
Xylene (o)	86.6		"	100		86.6	80-120			
Surrogate: a,a,a-Trifluorotoluene	*18.3*		"	*20.0*		*91.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*18.4*		"	*20.0*		*92.0*	*80-120*			

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI42405 - EPA 5030C (GC)										
Duplicate (EI42405-DUP1)	**Source: 4I21001-01**		Prepared & Analyzed: 09/22/04							
Benzene	0.0377	0.00100	mg/L		0.0385			2.10	20	
Toluene	0.0146	0.00100	"		0.0146			0.00	20	
Ethylbenzene	0.00738	0.00100	"		0.00694			6.15	20	
Xylene (p/m)	0.0212	0.00100	"		0.0201			5.33	20	
Xylene (o)	0.0144	0.00100	"		0.0140			2.82	20	
Surrogate: a,a,a-Trifluorotoluene	*28.1*		*ug/l*	*20.0*		*140*	*80-120*			*S-04*
Surrogate: 4-Bromofluorobenzene	*19.2*		*"*	*20.0*		*96.0*	*80-120*			

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI42704 - General Preparation (WetChem)										
Blank (EI42704-BLK1)				Prepared & Analyzed: 09/24/04						
Chloride	ND	5.00	mg/L							
Matrix Spike (EI42704-MS1)		**Source: 4I20003-04**		Prepared & Analyzed: 09/24/04						
Chloride	1040	5.00	mg/L	500	550	98.0	90-110			
Matrix Spike Dup (EI42704-MSD1)		**Source: 4I20003-04**		Prepared & Analyzed: 09/24/04						
Chloride	1050	5.00	mg/L	500	550	100	90-110	0.957	20	
Reference (EI42704-SRM1)				Prepared & Analyzed: 09/24/04						
Chloride	4960		mg/L	5000		99.2	80-120			

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K. Tuttle Date: 9-27-04

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
James L. Hawkins, Chemist/Geologist
Sandra Biezugbe, Lab Tech.

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

Client: Highlander

Date/Time: 9-20-04 1705

Order #: 4I21001

Initials: MT

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	2.0 °C
Shipping container/cooler in good condition?	Yes	No	
Custody Seals intact on shipping container/cooler?	Yes	No	Not present
Custody Seals intact on sample bottles?	Yes	No	Not present
Chain of custody present?	Yes	No	
Sample Instructions complete on Chain of Custody?	Yes	No	
Chain of Custody signed when relinquished and received?	Yes	No	
Chain of custody agrees with sample label(s)	Yes	No	
Container labels legible and intact?	Yes	No	
Sample Matrix and properties same as on chain of custody?	Yes	No	
Samples in proper container/bottle?	Yes	No	
Samples properly preserved?	Yes	No	
Sample bottles intact?	Yes	No	
Preservations documented on Chain of Custody?	Yes	No	
Containers documented on Chain of Custody?	Yes	No	
Sufficient sample amount for indicated test?	Yes	No	
All samples received within sufficient hold time?	Yes	No	
VOC samples have zero headspace?	Yes	No	Not Applicable

Other observations:

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Variance Documentation:

Contact Person: -_____ Date/Time: _____ Contacted by: _____

Regarding:

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Corrective Action Taken:

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Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(432) 682-4559 Fax (432) 682-3946

PAGE: OF:

CLIENT NAME: Pogo Producing Co. SITE MANAGER: IKE Tavarez

PROJECT NO.: 1746 PROJECT NAME: Pogo / E.C. Hill A & B, Lea County, NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	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)	Chlorides
412001																														
-01	9/17/04	11:40	W		✓	MW-1	3		/		-		X																	X

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Date: 9/20/04 Time: 5:05 RECEIVED BY: (Signature) Date: Time:

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

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

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

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

RECEIVING LABORATORY: ECT
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature) Patrick Tuel
DATE: 9-20-04 TIME: 1705

HIGHLANDER CONTACT PERSON: IKE Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: Rec 2.0°C

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

REMARKS: 2-VOA's w HCL
1-250ml HDPE

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

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Ike Tavarez

Highlander Environmental Corp.

1910 N. Big Spring St.

Midland, TX 79705

Project: Pogo/ E.C. Hill A, B & C TB

Project Number: 1746

Location: Lea Co., NM

Lab Order Number: 4J15004

Report Date: 10/20/04

Highlander Environmental Corp.	Project: Pogo/ E.C. Hill A, B & C TB	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 1746	**Reported:**
Midland TX, 79705	Project Manager: Ike Tavarez	10/20/04 18:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	4J15004-01	Water	10/12/04 00:00	10/14/04 17:10

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (4J15004-01) Water									
Benzene	**0.111**	0.00100	mg/L	1	EJ42007	10/19/04	10/19/04	EPA 8021B	
Toluene	**0.0197**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.0166**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.0451**	0.00100	"	"	"	"	"	"	
Xylene (o)	**0.0248**	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*228 %*	*80-120*		"	"	"	"	*S-04*
Surrogate: 4-Bromofluorobenzene		*116 %*	*80-120*		"	"	"	"	

General Chemistry Parameters by EPA / Standard Methods
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (4J15004-01) Water									
Chloride	**133**	5.00	mg/L	1	EJ41822	10/18/04	10/18/04	EPA 325.3M	

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ42007 - EPA 5030C (GC)										
Blank (EJ42007-BLK1)				Prepared & Analyzed: 10/19/04						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*23.7*		*ug/l*	*20.0*		*118*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*19.8*		"	*20.0*		*99.0*	*80-120*			
LCS (EJ42007-BS1)				Prepared & Analyzed: 10/19/04						
Benzene	93.4		ug/l	100		93.4	80-120			
Toluene	107		"	100		107	80-120			
Ethylbenzene	106		"	100		106	80-120			
Xylene (p/m)	225		"	200		112	80-120			
Xylene (o)	101		"	100		101	80-120			
Surrogate: a,a,a-Trifluorotoluene	*23.8*		*"*	*20.0*		*119*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*22.3*		*"*	*20.0*		*112*	*80-120*			
LCS Dup (EJ42007-BSD1)				Prepared & Analyzed: 10/19/04						
Benzene	91.8		ug/l	100		91.8	80-120	1.73	20	
Toluene	106		"	100		106	80-120	0.939	20	
Ethylbenzene	101		"	100		101	80-120	4.83	20	
Xylene (p/m)	216		"	200		108	80-120	3.64	20	
Xylene (o)	99.1		"	100		99.1	80-120	1.90	20	
Surrogate: a,a,a-Trifluorotoluene	*23.5*		*"*	*20.0*		*118*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*17.4*		*"*	*20.0*		*87.0*	*80-120*			
Calibration Check (EJ42007-CCV1)				Prepared & Analyzed: 10/19/04						
Benzene	90.2		ug/l	100		90.2	80-120			
Toluene	101		"	100		101	80-120			
Ethylbenzene	96.6		"	100		96.6	80-120			
Xylene (p/m)	208		"	200		104	80-120			
Xylene (o)	105		"	100		105	80-120			
Surrogate: a,a,a-Trifluorotoluene	*23.3*		*"*	*20.0*		*116*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*21.5*		*"*	*20.0*		*108*	*80-120*			

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ42007 - EPA 5030C (GC)										
Duplicate (EJ42007-DUP1)		**Source: 4J15004-01**		Prepared: 10/19/04		Analyzed: 10/20/04				
Benzene	0.121	0.00100	mg/L		0.111			8.62	20	
Toluene	0.0238	0.00100	"		0.0197			18.9	20	
Ethylbenzene	0.0191	0.00100	"		0.0166			14.0	20	
Xylene (p/m)	0.0509	0.00100	"		0.0451			12.1	20	
Xylene (o)	0.0277	0.00100	"		0.0248			11.0	20	
Surrogate: a,a,a-Trifluorotoluene	*42.9*		*ug/l*	*20.0*		*214*	*80-120*			*S-04*
Surrogate: 4-Bromofluorobenzene	*21.1*		*"*	*20.0*		*106*	*80-120*			
Matrix Spike (EJ42007-MS1)		**Source: 4J15011-01**		Prepared: 10/19/04		Analyzed: 10/20/04				
Benzene	92.0		ug/l	100	ND	92.0	80-120			
Toluene	103		"	100	ND	103	80-120			
Ethylbenzene	99.7		"	100	ND	99.7	80-120			
Xylene (p/m)	212		"	200	ND	106	80-120			
Xylene (o)	105		"	100	ND	105	80-120			
Surrogate: 4-Bromofluorobenzene	*21.8*		*"*	*20.0*		*109*	*80-120*			

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ41822 - General Preparation (WetChem)										
Blank (EJ41822-BLK1)				Prepared & Analyzed: 10/18/04						
Chloride	ND	5.00	mg/L							
Matrix Spike (EJ41822-MS1)		**Source: 4J11006-01**		Prepared & Analyzed: 10/18/04						
Chloride	922	5.00	mg/L	500	425	99.4	80-120			
Matrix Spike Dup (EJ41822-MSD1)		**Source: 4J11006-01**		Prepared & Analyzed: 10/18/04						
Chloride	913	5.00	mg/L	500	425	97.6	80-120	0.981	20	
Reference (EJ41822-SRM1)				Prepared & Analyzed: 10/18/04						
Chloride	4960		mg/L	5000		99.2	80-120			

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 10-21-04

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
James L. Hawkins, Chemist/Geologist
Sandra Biezugbe, Lab Tech.

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

Client: Highlander Env.

Date/Time: 10-15-04 @ 0930

Order #: 4J15004

Initials: JMM

Sample Receipt Checklist

Temperature of container/cooler?	(Yes)	No	3.0 C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	Yes	No	(Not present)
Custody Seals intact on sample bottles?	Yes	No	(Not present)
Chain of custody present?	(Yes)	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of custody agrees with sample label(s)	(Yes)	No	
Container labels legible and intact?	(Yes)	No	
Sample Matrix and properties same as on chain of custody?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
Samples properly preserved?	(Yes)	No	
Sample bottles intact?	(Yes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
Sufficient sample amount for indicated test?	(Yes)	No	
All samples received within sufficient hold time?	(Yes)	No	
VOC samples have zero headspace?	(Yes)	No	Not Applicable

Other observations:

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Variance Documentation:

Contact Person: - _____ Date/Time: _____ Contacted by: _____

Regarding:

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Corrective Action Taken:

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Analysis Request and Chain of Custody Record

PAGE: 1 OF: 1

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 Fax (432) 682-3946

CLIENT NAME: Pogo Producing Co.
SITE MANAGER: Ike Tavarez
PROJECT NO.: 1746
PROJECT NAME: Pogo / E.C. Hill A,B:C TB.
Lea County, NM.

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER 4J15004	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	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
-01	10/12/04		W		✓	MW-1	3				/		X																	✓

RELINQUISHED BY: (Signature) [signature] Date: 10/14/04 Time: 5:10 pm
RECEIVED BY: (Signature) Date: Time:

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

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

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

RECEIVED BY: (Signature) Rolando K Juni
DATE: 10-14-04 TIME: 1710

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

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

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: 2-VOA's w/HCl
1-L HDPE Rec. 3.0°C

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