

1R - 440

**GENERAL
CORRESPONDENCE**

YEAR(S):

2005 - 2006



IR 0440

Highlander Environmental Corp.

Midland, Texas

May 23, 2006

Mr. Glenn von Gonten
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

2006 MAY 25 PM 1:23

Re: Notification and Work Plan for the Placement of Additional Monitor Wells at 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.

Dear Mr. von Gonten:

Highlander Environmental Corp. (Highlander) submitted a 2005 annual report for the E.C. Hill "A, B and C" Tank Battery in Lea County, New Mexico, dated December 21, 2005. It was proposed in the annual report that a water well inventory be performed and that two additional monitor wells be installed down-gradient of the existing monitor wells. This letter report serves as an official work plan for implementation of the monitor well installation. It is anticipated that the monitor wells will be installed within the next 30-45 days, depending on drilling rig availability. As is required, the NMOCD will be notified in advance of the commencement of drilling. The Site is shown on Figures 1 and 2. The work plan is detailed below.

Work Plan

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 delineate the groundwater plume, Highlander Environmental Corp. will supervise the installation of two (2) additional monitor wells down-gradient (southeast) of MW-1. The well locations will be determined in the field, sited to avoid obvious impediments (i.e. gravel pit, pipelines, etc.) 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 analysis.

The wells will be drilled using air/water rotary drilling techniques, and constructed according to EPA and NMOCD standards, using two (2) inch diameter schedule 40 PVC threaded casing and factory slotted screen. The monitor wells will be installed to a total depth of approximately 100' below surface. To ensure proper screening above the groundwater, a total of twenty (20) feet of screen will be placed in each well. This will allow approximately 15 feet of screen below the water table and 5 feet above.

The well screen will be surrounded with a graded silica sand to a depth approximately 3 feet above the screen. A layer of bentonite pellets, approximately 3 feet thick will be placed in the borehole above the sand. The remainder of the borehole will be filled with cement and bentonite grout to about one (1) foot below ground. The wells will either be completed with steel manholes or with locking steel protectors. All well locations contained a concrete pad measuring approximately 3 feet by 3 feet.

Following installation, the wells 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 wells will be placed in a 55-gallon drum and retained at the Site until disposal can be arranged.

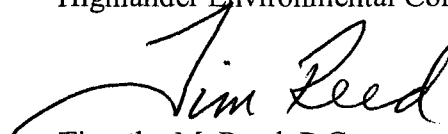
The wells will be inspected for the presence of phase-separated hydrocarbons (PSH) and, if present, a sample will be collected and analyzed by gas chromatography (GC) to determine composition and origin. Once inspected, the wells will be properly purged and sampled with clean, dedicated, polyethylene bailers and disposable line. The groundwater samples 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. The additional wells will be incorporated into the current quarterly sampling program.

Soil and Groundwater Remediation System

Once the new monitor well data has been obtained and evaluated, a work plan will be prepared and submitted to the NMOCD to address, both impacted groundwater and residual BTEX impact to soils in the lower vadose zone

If you have any question or comments concerning the assessment or the activities performed at the Site, please call me at (432) 682-4559.

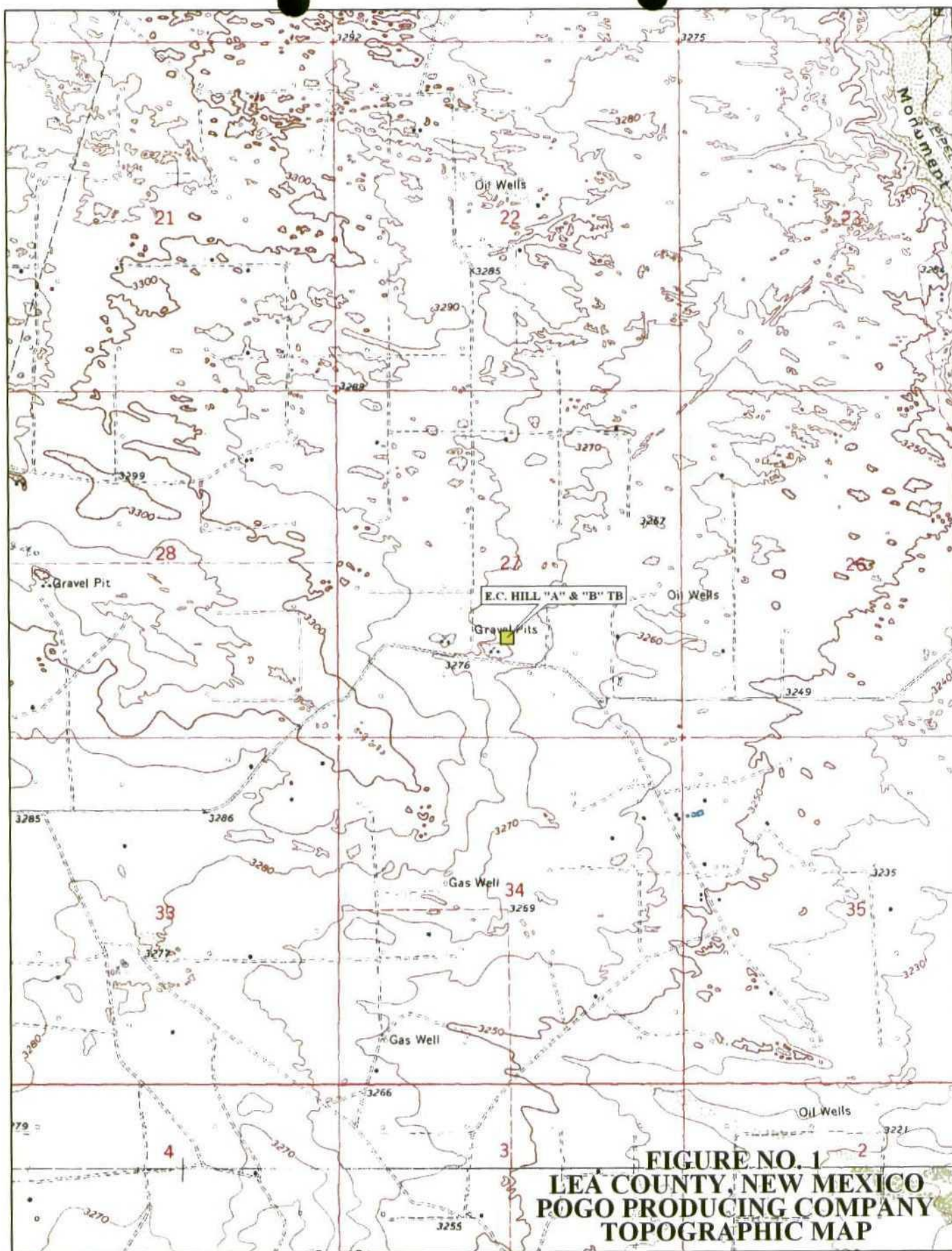
Respectfully submitted,
Highlander Environmental Corp.



Timothy M. Reed, P.G.
Vice President

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




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Scale 1 : 24,000
1" = 2000 ft



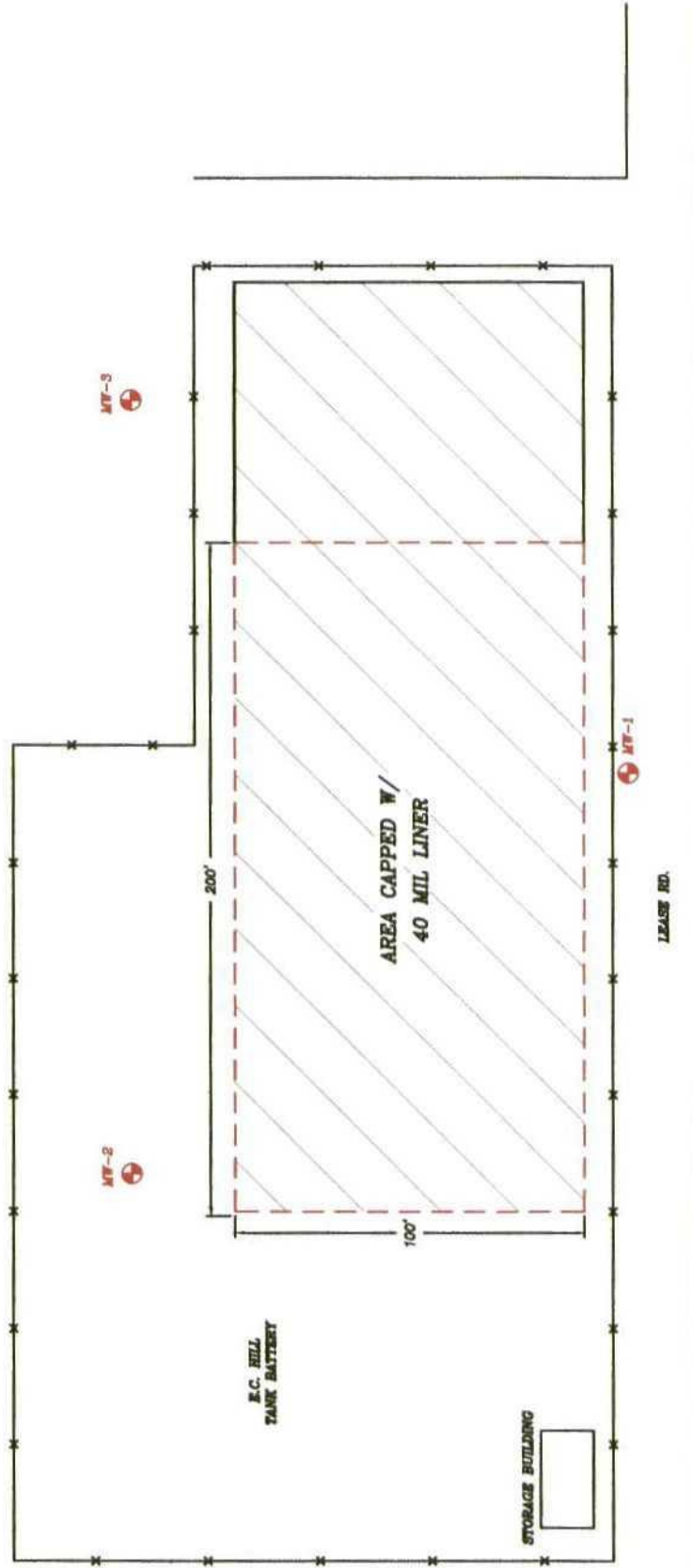


FIGURE NO. 2

LEA COUNTY, NEW MEXICO
POGO PRODUCING COMPANY
E.C. HILL "A" "B" & "C" TB MONITOR WELL & CAPPED AREA
HIGHLANDER ENVIRONMENTAL CORP. MIDLAND, TEXAS

DATE: 8/30/05
DWG. BY: JJ
FILE: C:\POGO\1746\ 1611-1-2 PG 2

NOT TO SCALE

WELL NO.	NORTHING (Y)	EASTING (X)	ELEVATION TOC
MW-1	464,731.6	865,569.3	3,874.53
MW-2	464,970.8	865,461.9	3,874.99
MW-3	464,572.2	865,687.1	3,876.48

- 40 MIL LINER CAP PERIMETER (AREA 100' X 180')
- ⊕ MONITOR WELL LOCATIONS
- EXCAVATED AREA

Price, Wayne, EMNRD

From: Price, Wayne, EMNRD
Sent: Thursday, May 25, 2006 12:45 PM
To: Tim Reed (treed@hec-enviro.com)
Cc: VonGonten, Glenn, EMNRD; Johnson, Larry, EMNRD
Subject: Pogp EC Hill A,B, and C Tank Battery 27-23S-37E Lea Cty.

OCD is in receipt of the Work Plan dated May, 23 2006 and hereby approves of the plan.

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

Wayne Price
Oil Conservation Div.
1220 S. Saint Francis
Santa Fe New Mexico 87505

phone: 505-476-3490
fax: 505-476-3462

5/25/2006



NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON

Governor

Joanna Prukop

Cabinet Secretary

Mark E. Fesmire, P.E.

Director

Oil Conservation Division

August 15, 2005

Mr. Patrick L. Ellis
Pogo Producing Company
P.O. Box 10340
Midland, TX 10340

**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
1R0440**

Dear Mr. Ellis:

The New Mexico Oil Conservation Division (OCD) has reviewed Pogo Producing Company's work plan submitted February 8, 2005 on its behalf by Highlander Environmental Corp. OCD has also reviewed Pogo's February 8, 2005 *Notification of Groundwater Impact* and its July 11, 2005 Work Plan Addendum. Pogo has proposed to backfill and cap all soils in areas in which the Total Petroleum Hydrocarbon (TPH) concentrations in the remaining soil exceed 1000 mg/kg with a 40 mil liner and to conduct a subsurface ground water investigation program by installing and sampling two additional monitor wells. Pogo has also proposed to install and operate a limited SVE system. OCD understands that Pogo has already installed the two additional monitor wells and should by now have determined the ground water flow gradient.

OCD generally agrees with Pogo's approach, but as we discussed with Mr. Reed, OCD does have several concerns which must be addressed. OCD conditionally approves Pogo's proposed capping and ground water investigation work plan with the following conditions:

1. Pogo must first better delineate the area to be capped by installing additional boreholes between MW-3, MW-2, and BH-8, including the area north of the Sid Richardson pipeline. Pogo depicts a new proposed soil boring location in Figures 6 and 7 in its July 11, 2005 "Addendum" but does not specifically discuss this new soil boring. Figure 6 depicts the "area of concern in cap footprint" and Figure 7 depicts the "elevated BTEX in subsurface soils" as well as the locations of the two new monitor wells. However, Pogo has not provided any justification for its interpretation of the area to be capped and these figures differ significantly from OCD's interpretation. The appropriate standard for capping is for Pogo to define a cap footprint beneath

which TPH and/or BTEX contamination exceeds OCD's screening standards. To meet this standard Pogo must revise Figures 6 and 7 to include isoconcentration contour maps that depict the maximum concentration of the TPH and BTEX using all available information. Based on the new information and Pogo's subsequent interpretation, OCD will review Pogo's proposed cap footprint. Pogo must not proceed with any final capping activities until after receiving OCD's final approval.

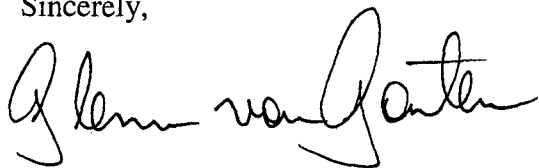
2. Pogo installed a 40 foot screen in monitor well MW-1. OCD reminds Pogo to follow OCD's 1993 guidance in which 15 foot screens are specified. In all future phases of its investigation, Pogo must follow OCD's 1993 guidance.
3. Pogo must dispose of all development and purge water appropriately at an OCD approved facility.
4. Pogo must provide OCD with an interim report by September 2, 2005, in which it provides the data obtained during the installation of the two additional monitor wells. Pogo must also propose additional monitor well locations that will allow it to delineate any ground water contamination beneath the site.

Please be advised that the OCD's approval of Pogo's ground water investigation and cap work plan does not limit Pogo to the approved tasks if the program fails to adequately delineate or remediate contamination related to Pogo's activities, or if contamination exists which is outside the scope of the current investigation. In addition, OCD's approval does not relieve Pogo of responsibility for compliance with any other federal, state or local laws and regulations.

Finally, please provide copies of the work plan and its addendum and the February 8, 2005 notification of ground water impact to Mr. Paul Sheeley of OCD's Hobbs District Office. Please be sure to copy Mr. Sheeley on all future correspondence on Case 1R0440.

If you have any questions or comments, please contact me at (505) 476-3488.

Sincerely,



Glenn von Gonten
Senior Hydrologist
Environmental Bureau

xc: Paul Sheeley, OCD Hobbs District Office
Timothy M. Reed, Highlander Environmental Corp.

VonGonten, Glenn, EMNRD

From: Patrick Ellis [EllisP@pogoproducing.com]
To: VonGonten, Glenn, EMNRD
Cc: 'Riggs, Don'; Tim Reed; Ike Tavarez
Subject:
Attachments:

Sent: Fri 7/1/2005 7:51 AM

Mr. Glenn Vongonten,

Thank you for your call yesterday, concerning our environmental remedial project on the E.C. Hill "A, B and C" Tank Battery. As per your request, I authorize Highlander Environmental Corp. to act on our behalf concerning technical aspects of the project. Please feel free to contact Tim Reed or Ike Tavarez at (432) 682-4559. Thank you for your help concerning this matter.

Patrick L. Ellis

Pogo Producing Company

Division Environmental Safety & Health Supervisor

Office (432) 685-8148

Cell (432) 770-0763

Fax (432) 685-8150

300 N MARLENFELD
STE 600
MIDLAND, TX 79701
PO BOX 10340



1R 0440

Highlander Environmental Corp.

Midland, Texas

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: **NOTIFICATION OF GROUNDWATER IMPACT
POGO PRODUCING COMPANY (ARCH PETROLEUM)
FORMER E. C. HILL "A, B AND C" TANK BATTERY
UNIT 'O', SEC. 27, T23S, R37E**

Mr. Anderson:

Pogo Producing Company (Pogo) takes this opportunity to notify the Director of the NMOCD, Environmental Bureau of groundwater impact in accordance with NM Rule 116. The remediation of this site may fall under NM Rule 19 procedures.

The following work at this former tank battery facility was performed in accordance with the NMOCD-approved Investigation Work Plan submitted by Highlander Environmental Corp. (Highlander) of Midland, Texas. The delineation of the installation of soil borings and one monitor well (MW-1) was initiated on 9/8/2004 where groundwater was encountered at 86 feet below ground surface. The 2-inch monitoring well was installed to a total depth of 115 feet. The well was sampled pursuant to NMOCD guidelines by Highlander on 9/17/2004 and 10/12/2004. The laboratory results indicate the ground water exceeded the New Mexico Water Quality Control Commission (WQCC) for benzene. Highlander will continue to sample the well quarterly in 2005.

Pogo Producing Company proposes to install additional monitor wells to determine Site gradient. The work plan addressing the soils and the groundwater is presented in the attached report.

Please accept this notification for the above-referenced site. Should you have any questions or concerns regarding this site, please do not hesitate to contact me.

Respectfully submitted,
HIGHLANDER ENVIRONMENTAL CORP.

Ike Tavarez
Project Manager, Senior Geologist

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

432-425-3878 *cell*

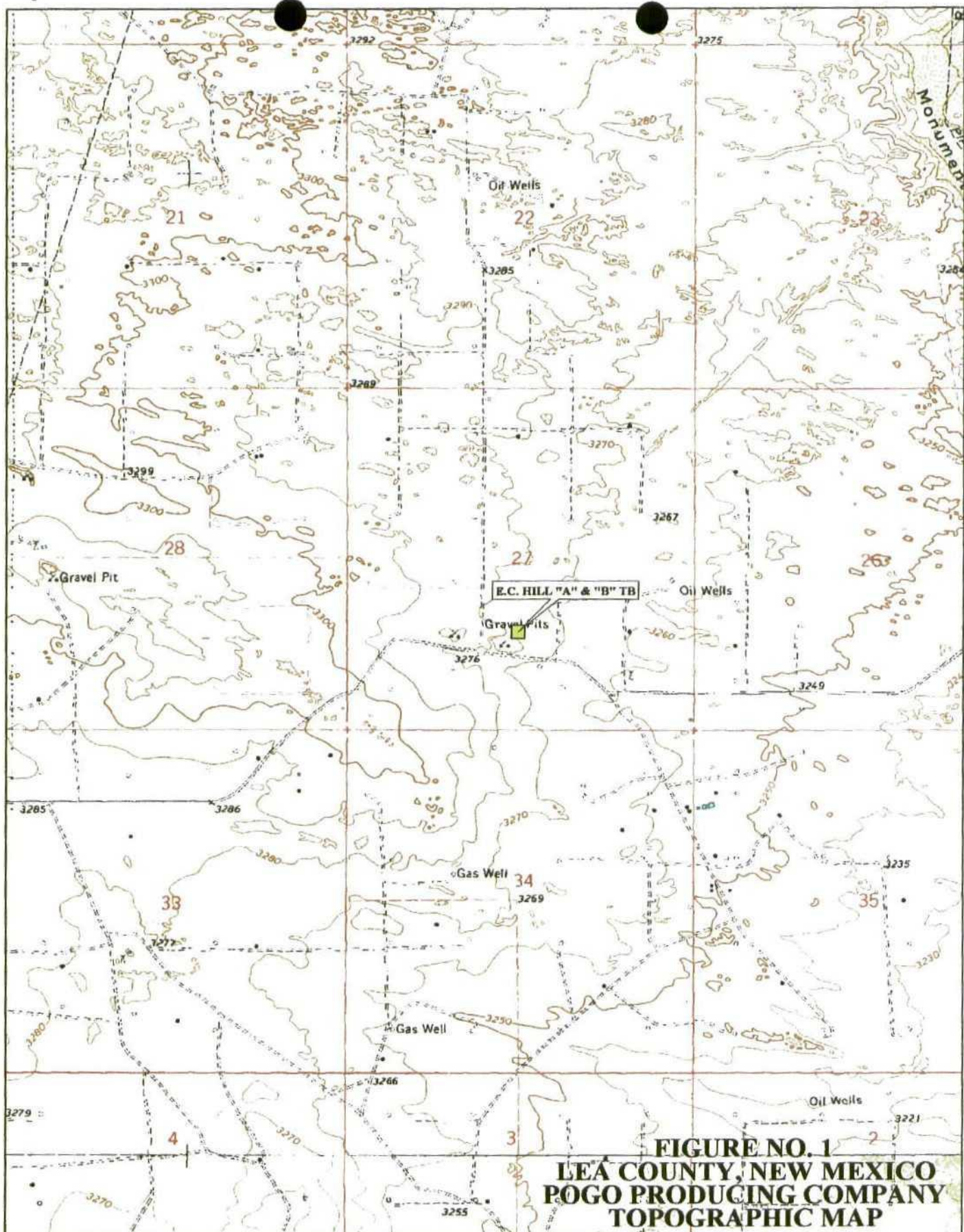
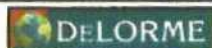
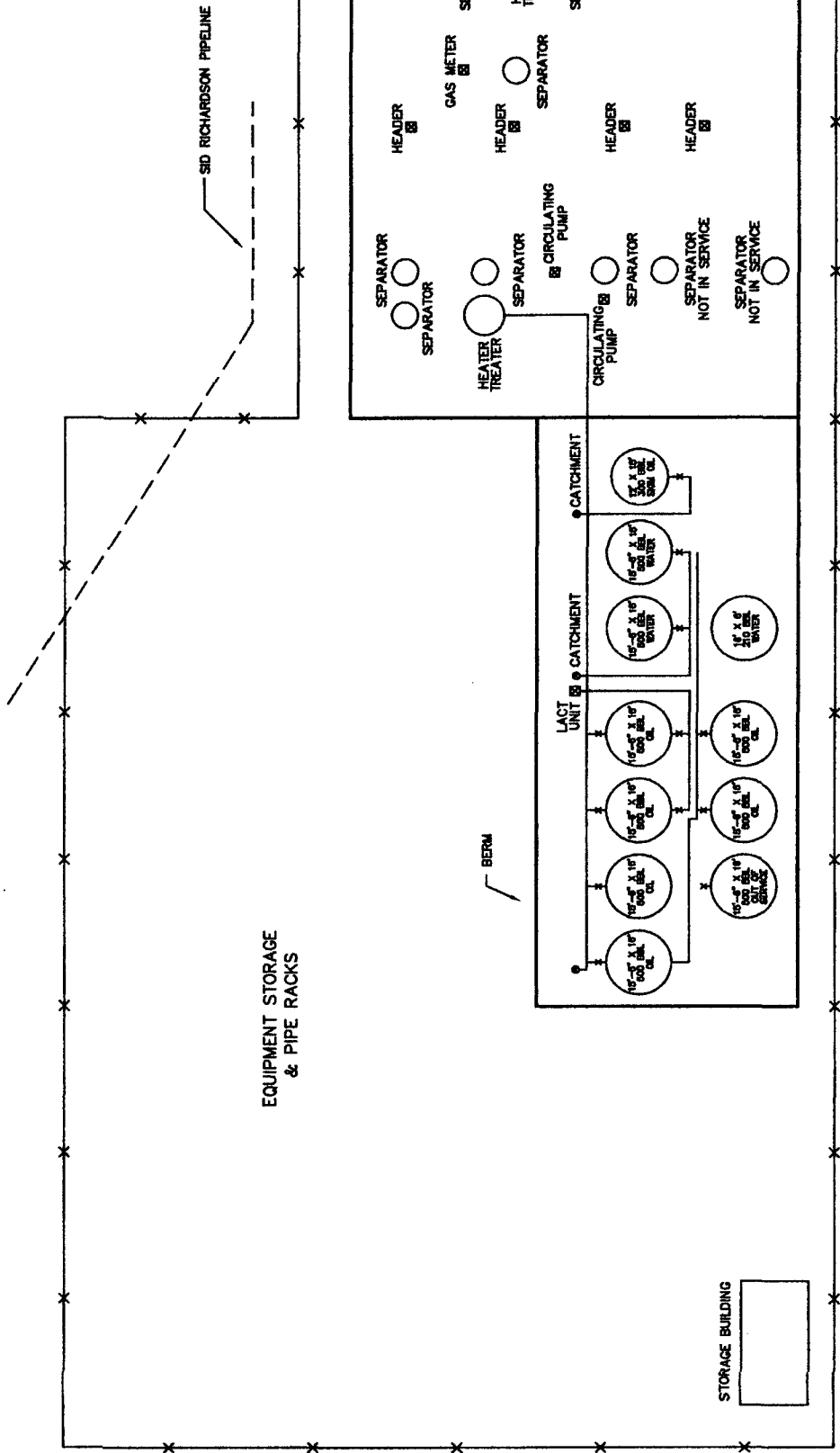


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
POGO PRODUCING COMPANY
TOPOGRAPHIC MAP



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LEASE RD.

FIGURE NO. 2

LEA COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

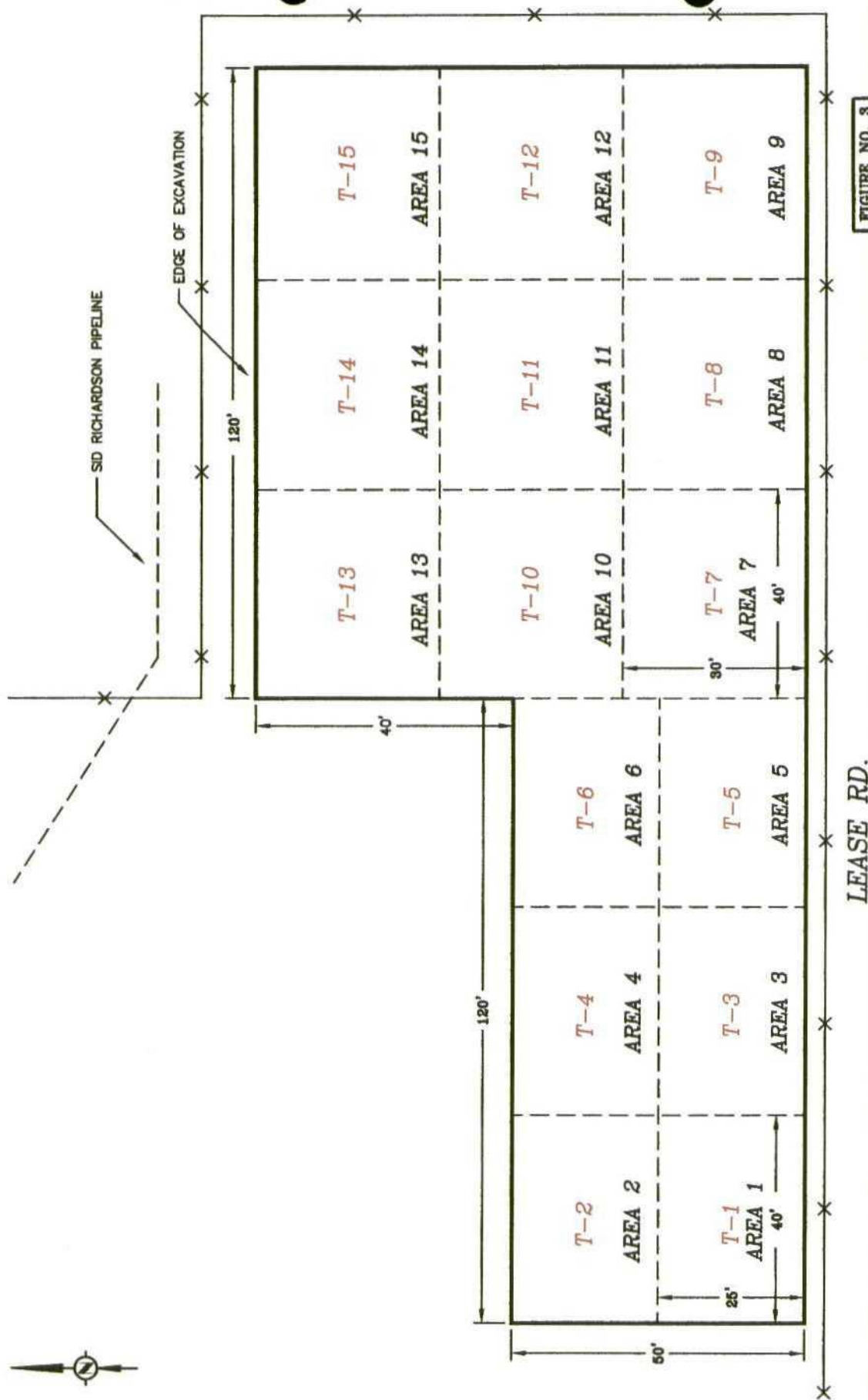
E.C. HILL "A" "B" & "C" TB

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE:	2/9/05
DWG. BY:	JJ
FILE:	ENVIRONMENTAL
NO.	144A
REV.	144A-1

NOT TO SCALE

☐ EXCAVATED AREA



LEASE RD.

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:
050001744
REL. 4-8 NO. 3

— EDGE OF EXCAVATED AREA
T-1 TRENCH LOCATIONS

NOT TO SCALE

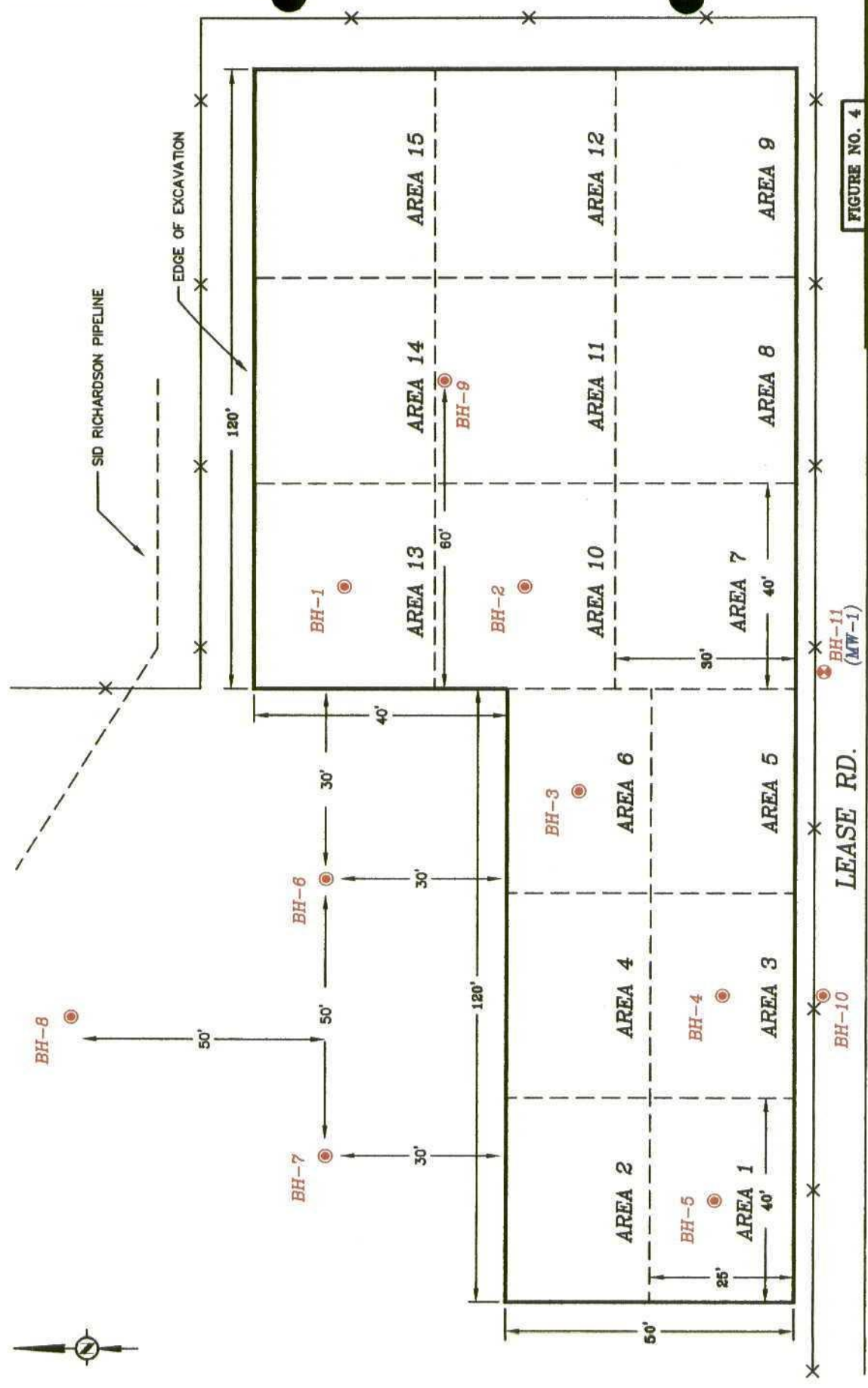


FIGURE NO. 4

LEA COUNTY, NEW MEXICO

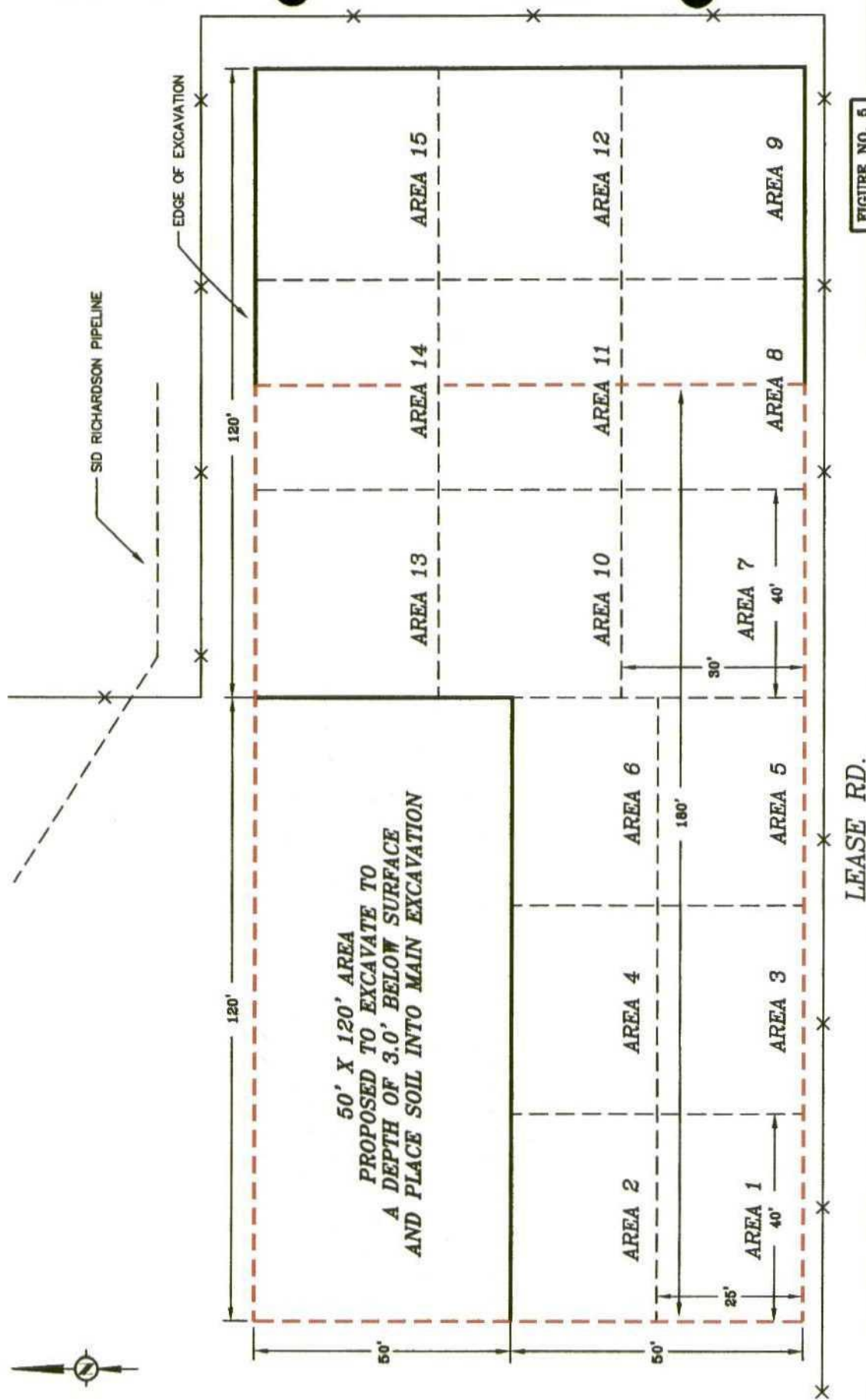
POGO PRODUCING COMPANY

E.C. HILL "A" "B" & "C" TB
BOREHOLES & MONITOR WELL

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE	2/9/05
DWG. BY	JJ
FILE	05-001746
WELL-11	FIG. 4

NOT TO SCALE



LEA COUNTY, NEW MEXICO

POGO PRODUCING COMPANY

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

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE:
2/9/05

DWG. BY:
JJ

FILE:
C:\POGO\1744\
16L-3-01-05

--- PROPOSED PERIMETER TO CAP (AREA 100' X 180')

NOT TO SCALE

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)	C6-C-12	TPH (mg/kg) C12-C35	Total	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (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					
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	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	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	0.0616	0.0705	0.4776	744
		20-21	340	-	-	-	-	-	-	723
		30-31	39	36.8	386	423	-	-	-	304

(-) Not Analyzed

**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)	Ethylbenzene (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)	Ethylbenzene (mg/l)	Xylene (mg/l)	Chloride (mg/l)
0.01	0.75	0.75	0.62	250