



Highlander Environmental Corp.

Midland, Texas

April 4, 2007



Mr. Larry Johnson
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Assessment and Closure Report for the Pogo Producing Company, Livingston Ridge 19 #1, Unit D, Section 19, Township 22 South, Range 32 East, Tank Battery Release, Lea County, New Mexico.

Dear Mr. Johnson:

Highlander Environmental Corp. (Highlander) was contacted by Pogo Producing Company (Pogo) to assess a spill from the Livingston Ridge 19 #1 Tank Battery, located in Unit D, Section 19, Township 22 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32° 22' 55.9", W 103° 43' 18.5". According to the State of New Mexico C-141 Initial Report, approximately 90 barrels (bbls) of oil/produced water were released when storage tank overflowed on October 11, 2006. Of the 90 bbls released, 75 bbls were recovered. The State of New Mexico C-141 (Initial and Final) are included in Appendix C. The Site is shown on Figure 1.

Groundwater and Regulatory

The New Mexico State Engineer's Office database showed one well located in Section 19, Township 22 South, Range 32 East with a reported depth of 280 feet below ground surface (bgs). The USGS database showed a well in Section 14 with a reported water depth of 382 feet bgs. Based on the relative site elevation, the depth to groundwater for the Site is greater than 200 feet bgs. The New Mexico State Engineer and USGS water well reports are shown in Appendix A.

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene

(collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Assessment and Results

On October 13, 2006, Highlander personnel inspected and sampled the spill area which is located within the diked berm. The spill area measured approximately 30' x 60' and 40' x 30'. A total of five (5) auger holes (AH-1 through AH-5) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Of the samples collected, the TPH concentrations only exceeded the RRAL in AH-1 to a depth of 1 foot, AH-2 to a depth of 2.5 feet and AH-5 to a depth of 1 foot. All three of the samples selected for BTEX were below the RRAL. The chloride concentrations ranged from 21.3 mg/kg (AH-3 at 1-1.5') to 10,200 mg/kg (AH-2 at 0-0.1') with the chlorides delineated in each of the auger holes to a maximum depth of 1 to 2.5 feet below ground surface (bgs). Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. The auger hole locations are shown on Figure 2. The results of the sampling are summarized in Table 1.

In December 2006, Lays Construction of Hobbs, New Mexico was onsite to remove two feet of soil in the vicinity of AH-2 and 6 inches of soil adjacent to AH-1 and AH-5. The soils were excavated and stockpiled onsite awaiting transportation for disposal to Sundance in Eunice, New Mexico. The area adjacent to AH-2 was backfilled with one foot of sand covered with one foot of caliche, while the area adjacent to AH-1 and AH-5 was backfilled with pea gravel.

On March 9, 2007, Highlander was onsite to resample the previously impacted areas adjacent to auger holes AH-1, AH-2, and AH-5. Auger holes to depths of 1 foot, 2.5 feet and 1 foot were installed at AH-1, AH-2, and AH-5, respectively. The samples were collected and submitted for analysis of TPH. Analytical results indicated each of the samples were below the respective RRAL. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. The results of the sampling are summarized in Table 2.

Conclusions

The impacted area was confined to a 30' x 60' and 40' x 30' area within the bermed dike. The first 2.0 feet of soils were excavated and stockpiled onsite adjacent to AH-2, while the first six inches were removed in AH-1 and AH-5. No remaining TPH concentrations currently exceed the RRAL. Although not resampled, chloride residuals may remain at 2.5 feet bgs at AH-2. However, based on the depth to groundwater and the results of the assessment, the residual chloride concentrations do not appear to be an imminent threat to groundwater.



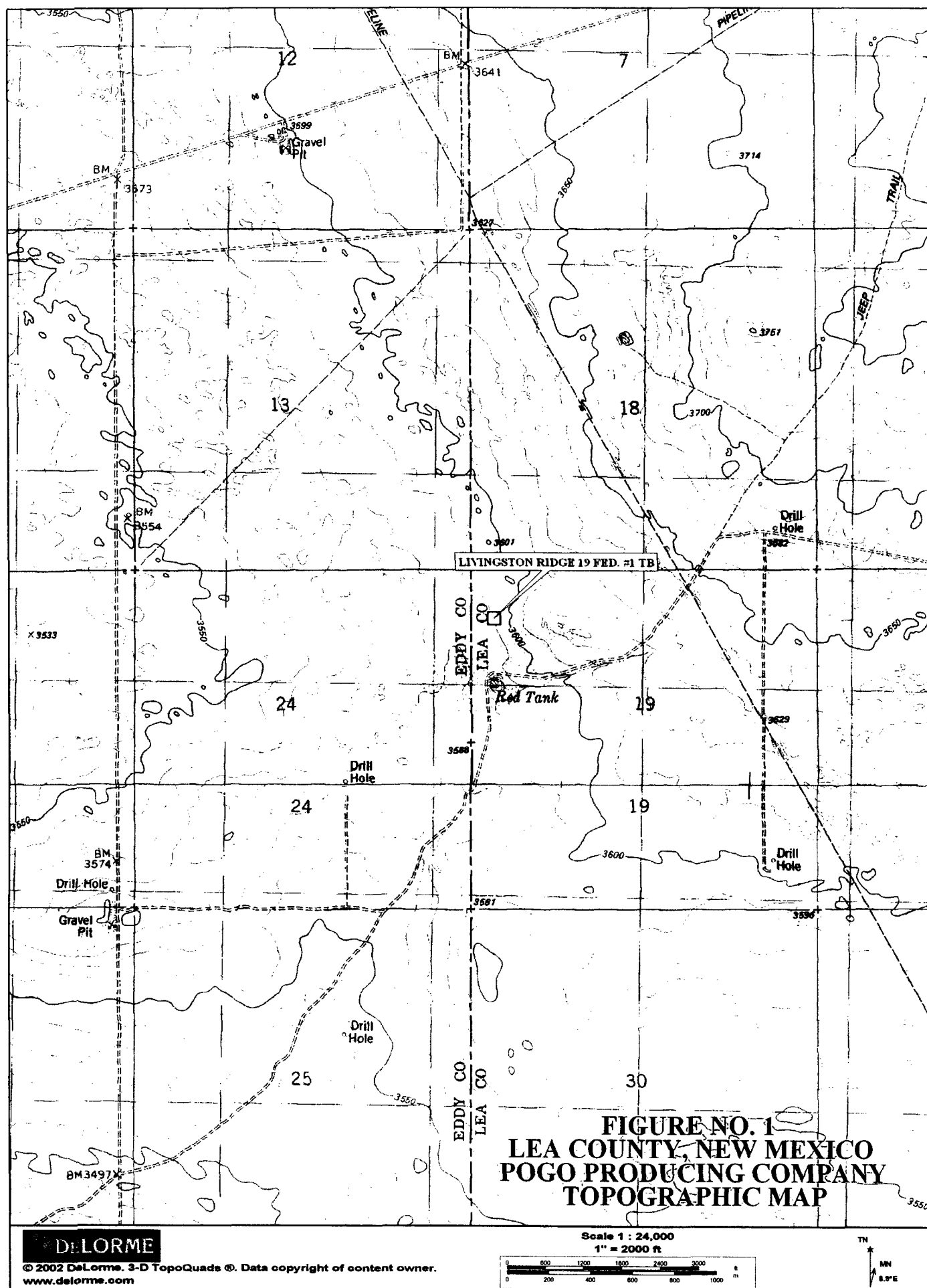
Based upon the results of the assessment work performed at this site, Pogo requests closure of this Site. If you require any additional information or have any questions or comments concerning the assessment/closure report, please call at (432) 682-4559.

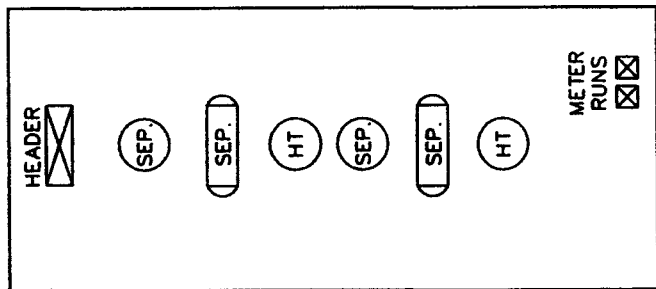
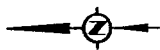
Respectfully submitted,
Highlander Environmental Corp.

Jeffrey Kindley, P.G.
Senior Environmental Geologist

cc: Pat Ellis – Pogo Producing Company
Don Riggs – Pogo Producing Company







WELL
●

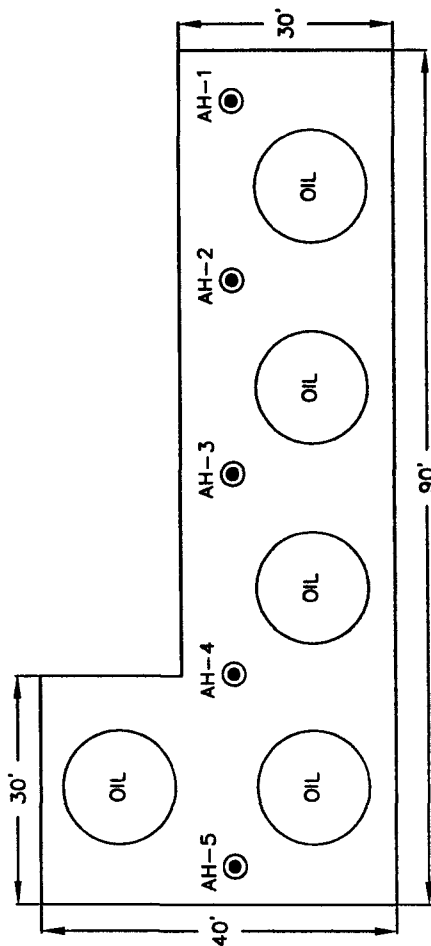


FIGURE NO. 2

LEA COUNTY, NEW MEXICO

POGO PRODUCING COMPANY
LIVINGSTON RIDGE 19 FED #1 TB

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE:
1/2/07

Drawn By:
JJ

FILE:
C:\Users\JJ\Documents
Livingston Ridge

SPILL AREA
SAMPLE LOCATIONS

NOT TO SCALE

Table 1
Pogo Producing Company
Livingston Ridge #19-1
Lea County, New Mexico

Well	Date	Interval	814	5,110	177	6,144	-	-	-	-	-	519
AH-1	10/13/06	0-1.0'	<10.0	10.7	<10.0	10.7	-	-	-	-	-	117
AH-1	10/13/06	1-1.5'	6,520	9,370	204	10,149	7.70	52.1	27.4	101.7	10,200	
AH-2	10/13/06	0-1.0'	13,600	19,800	992	25,746	28.4	118	50.8	191.5	7,980	
AH-2	10/13/06	1-1.5'	12,200	16,800	935	20,900	29.0	104	37.3	136.8	6,380	
AH-2	10/13/06	2-2.5'	<10.0	19.6	<10.0	19.6	-	-	-	-	4,790	
AH-2	10/13/06	3-3.5'	<10.0	<10.0	<10.0	<10.0	-	-	-	-	42.5	
AH-2	10/13/06	4-4.5'	158	1,140	97.6	1,400	-	-	-	-	191	
AH-3	10/13/06	0-1.0'	<10.0	15.8	<10.0	15.8	-	-	-	-	21.3	
AH-3	10/13/06	1-1.5'	353	2,000	145	2,500	-	-	-	-	319	
AH-4	10/13/06	0-1.0'	<10.0	11.6	<10.0	11.6	-	-	-	-	128	
AH-4	10/13/06	1-1.5'	1,800	3,150	187	5,140	-	-	-	-	702	
AH-5	10/13/06	0-1.0'	<10.0	18.8	<10.0	18.8	-	-	-	-	53.2	
AH-5	10/13/06	1-1.5'										

(-) Not Analyzed
 Depths (ft) - Below excavation bottom

Table 2
Pogo Producing Company
Livingston Ridge #19-1
Lea County, New Mexico

Well	Date	Interval	283	2,570	166	3,020	-	-	-	-	-
AH-1	03/09/07	0-1.0'	283	2,570	166	3,020	-	-	-	-	-
AH-2	03/09/07	2-2.5'	252	912	97.6	1,260	-	-	-	-	-
AH-5	03/09/07	0-1.0'	87	339	52	478	-	-	-	-	-

(-) Not Analyzed

Depths (ft) - Below excavation bottom

Water Well Data
Average Depth to Groundwater (ft)
Pogo - Livingston Ridge19#1, Lea County, New Mexico

21 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
184					
18	17	16	15	14	13
		630			
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

21 South			32 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

21 South			33 East		
6	5	4	3	2	1
				279	
				107	
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
		179			
31	32	33	34	35	36

22 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
		448			
19	20	21	22	23	24
	47				
30	29	28	27	26	25
	413	444			
31	32	33	34	35	36

22 South			32 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
				382	
				350	
19 (S)	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

22 South			33 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
					391
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

23 South			31 East		
6	5	4	3	2	1
85	354				
7	8	9	10	11	12
140					
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

23 South			32 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
		400			
30	29	28	27	26	25
31	32	33	34	35	36

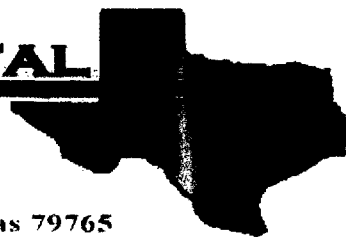
23 South			33 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)
 Geology and Groundwater Resources of Eddy County, NM (Report 3)

E **NVIRONMENTAL** **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/ Livingston Ridge 19 Fed #1

Project Number: 2776

Location: Lea County, NM

Lab Order Number: 6J13023

Report Date: 10/23/06

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavaréz

Fax: (432) 682-3946

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AH-1 0-1.0'	6J13023-01	Soil	10/13/06 00:00	10-13-2006 16:20
AH-1 1-1.5'	6J13023-02	Soil	10/13/06 00:00	10-13-2006 16:20
AH-2 0-1.0'	6J13023-03	Soil	10/13/06 00:00	10-13-2006 16:20
AH-2 1-1.5'	6J13023-04	Soil	10/13/06 00:00	10-13-2006 16:20
AH-2 2-2.5'	6J13023-05	Soil	10/13/06 00:00	10-13-2006 16:20
AH-2 3-3.5'	6J13023-06	Soil	10/13/06 00:00	10-13-2006 16:20
AH-2 4-4.5'	6J13023-07	Soil	10/13/06 00:00	10-13-2006 16:20
AH-3 0-1.0'	6J13023-08	Soil	10/13/06 00:00	10-13-2006 16:20
AH-3 1-1.5'	6J13023-09	Soil	10/13/06 00:00	10-13-2006 16:20
AH-4 0-1.0'	6J13023-10	Soil	10/13/06 00:00	10-13-2006 16:20
AH-4 1-1.5'	6J13023-11	Soil	10/13/06 00:00	10-13-2006 16:20
AH-5 0-1.0'	6J13023-12	Soil	10/13/06 00:00	10-13-2006 16:20
AH-5 1-1.5'	6J13023-13	Soil	10/13/06 00:00	10-13-2006 16:20

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Organics by GC
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-1 0-1.0' (6J13023-01) Soil									
Carbon Ranges C6-C12	814	10.0	mg/kg dry	1	EJ61503	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	5110	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	177	10.0	"	"	"	"	"	"	
Total Hydrocarbons	6100	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		113 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		85.0 %	70-130		"	"	"	"	
AH-1 1-1.5' (6J13023-02) Soil									
Carbon Ranges C6-C12	ND	10.0	mg/kg dry	1	EJ61503	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	10.7	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbons	10.7	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		101 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		90.2 %	70-130		"	"	"	"	
AH-2 0-1.0' (6J13023-03) Soil									
Benzene	7.70	0.200	mg/kg dry	200	EJ61815	10/19/06	10/20/06	EPA 8021B	
Toluene	52.1	0.200	"	"	"	"	"	"	
Ethylbenzene	27.4	0.200	"	"	"	"	"	"	
Xylene (p/m)	70.2	0.200	"	"	"	"	"	"	
Xylene (o)	31.5	0.200	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		465 %	80-120		"	"	"	"	S-04
Surrogate: 4-Bromofluorobenzene		178 %	80-120		"	"	"	"	S-04
Carbon Ranges C6-C12	6520	10.0	mg/kg dry	1	EJ61504	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	9370	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	204	10.0	"	"	"	"	"	"	
Total Hydrocarbons	16100	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		197 %	70-130		"	"	"	"	S-04
Surrogate: 1-Chlorooctadecane		210 %	70-130		"	"	"	"	S-04

Environmental Lab of Texas

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

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1910 N. Big Spring St.
Midland TX, 79705

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

Organics by GC
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-2 1-1.5' (6J13023-04) Soil									
Benzene	28.4	0.500	mg/kg dry	500	EJ61815	10/19/06	10/20/06	EPA 8021B	
Toluene	118	0.500	"	"	"	"	"	"	
Ethylbenzene	50.8	0.500	"	"	"	"	"	"	
Xylene (p/m)	132	0.500	"	"	"	"	"	"	
Xylene (o)	59.5	0.500	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		760 %	80-120		"	"	"	"	S-04
Surrogate: 4-Bromofluorobenzene		186 %	80-120		"	"	"	"	S-04
Carbon Ranges C6-C12	13600	50.0	mg/kg dry	5	EJ61504	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	19800	50.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	992	50.0	"	"	"	"	"	"	
Total Hydrocarbons	34400	50.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		63.6 %	70-130		"	"	"	"	S-06
Surrogate: 1-Chlorooctadecane		13.0 %	70-130		"	"	"	"	S-06
AH-2 2-2.5' (6J13023-05) Soil									
Benzene	29.0	0.500	mg/kg dry	500	EJ61815	10/19/06	10/20/06	EPA 8021B	
Toluene	104	0.500	"	"	"	"	"	"	
Ethylbenzene	37.3	0.500	"	"	"	"	"	"	
Xylene (p/m)	99.0	0.500	"	"	"	"	"	"	
Xylene (o)	37.8	0.500	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		800 %	80-120		"	"	"	"	S-04
Surrogate: 4-Bromofluorobenzene		124 %	80-120		"	"	"	"	S-04
Carbon Ranges C6-C12	12200	50.0	mg/kg dry	5	EJ61504	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	16800	50.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	935	50.0	"	"	"	"	"	"	
Total Hydrocarbons	29900	50.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		56.8 %	70-130		"	"	"	"	S-06
Surrogate: 1-Chlorooctadecane		11.1 %	70-130		"	"	"	"	S-06
AH-2 3-3.5' (6J13023-06) Soil									
Carbon Ranges C6-C12	ND	10.0	mg/kg dry	1	EJ61504	10/15/06	10/17/06	EPA 8015M	
Carbon Ranges C12-C28	19.6	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbons	19.6	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		95.2 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		84.0 %	70-130		"	"	"	"	

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1910 N. Big Spring St.
Midland TX, 79705

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

Organics by GC
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-2 4-4.5' (6J13023-07) Soil									
Carbon Ranges C6-C12	ND	10.0	mg/kg dry	1	EJ61504	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	J [9.71]	10.0	"	"	"	"	"	"	J
Carbon Ranges C28-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbons	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		97.2 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		87.0 %	70-130		"	"	"	"	
AH-3 0-1.0' (6J13023-08) Soil									
Carbon Ranges C6-C12	158	10.0	mg/kg dry	1	EJ61504	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	1140	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	97.6	10.0	"	"	"	"	"	"	
Total Hydrocarbons	1400	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		109 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		108 %	70-130		"	"	"	"	
AH-3 1-1.5' (6J13023-09) Soil									
Carbon Ranges C6-C12	ND	10.0	mg/kg dry	1	EJ61504	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	15.8	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbons	15.8	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		101 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		90.0 %	70-130		"	"	"	"	
AH-4 0-1.0' (6J13023-10) Soil									
Carbon Ranges C6-C12	353	10.0	mg/kg dry	1	EJ61504	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	2000	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	145	10.0	"	"	"	"	"	"	
Total Hydrocarbons	2500	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		111 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		116 %	70-130		"	"	"	"	

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Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

Organics by GC
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-4 1-1.5' (6J13023-11) Soil									
Carbon Ranges C6-C12	ND	10.0	mg/kg dry	1	EJ61504	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	11.6	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbons	11.6	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		96.2 %		70-130	"	"	"	"	
Surrogate: 1-Chlorooctadecane		84.8 %		70-130	"	"	"	"	
AH-5 0-1.0' (6J13023-12) Soil									
Carbon Ranges C6-C12	1800	10.0	mg/kg dry	1	EJ61504	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	3150	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	187	10.0	"	"	"	"	"	"	
Total Hydrocarbons	5140	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		120 %		70-130	"	"	"	"	
Surrogate: 1-Chlorooctadecane		89.2 %		70-130	"	"	"	"	
AH-5 1-1.5' (6J13023-13) Soil									
Carbon Ranges C6-C12	ND	10.0	mg/kg dry	1	EJ61504	10/15/06	10/16/06	EPA 8015M	
Carbon Ranges C12-C28	18.8	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbons	18.8	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		94.2 %		70-130	"	"	"	"	
Surrogate: 1-Chlorooctadecane		85.0 %		70-130	"	"	"	"	

Environmental Lab of Texas

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-1 0-1.0' (6J13023-01) Soil									
Chloride	510	20.0	mg/kg Wet	2	EJ61410	10/14/06	10/21/06	SW 846 9253	
% Moisture	3.7	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	
AH-1 1-1.5' (6J13023-02) Soil									
Chloride	117	20.0	mg/kg Wet	2	EJ61410	10/14/06	10/21/06	SW 846 9253	
% Moisture	4.2	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	
AH-2 0-1.0' (6J13023-03) Soil									
Chloride	10200	20.0	mg/kg Wet	2	EJ61415	10/14/06	10/15/06	SW 846 9253	
% Moisture	11.2	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	
AH-2 1-1.5' (6J13023-04) Soil									
Chloride	7980	20.0	mg/kg Wet	2	EJ61415	10/14/06	10/15/06	SW 846 9253	
% Moisture	7.4	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	
AH-2 2-2.5' (6J13023-05) Soil									
Chloride	6380	20.0	mg/kg Wet	2	EJ61415	10/14/06	10/15/06	SW 846 9253	
% Moisture	6.1	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	
AH-2 3-3.5' (6J13023-06) Soil									
Chloride	4790	20.0	mg/kg Wet	2	EJ61415	10/14/06	10/15/06	SW 846 9253	
% Moisture	6.4	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	
AH-2 4-4.5' (6J13023-07) Soil									
Chloride	42.5	20.0	mg/kg Wet	2	EJ61415	10/14/06	10/15/06	SW 846 9253	
% Moisture	7.2	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	
AH-3 0-1.0' (6J13023-08) Soil									
Chloride	191	20.0	mg/kg Wet	2	EJ61415	10/14/06	10/15/06	SW 846 9253	
% Moisture	12.3	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	

Environmental Lab of Texas

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-3 1-1.5' (6J13023-09) Soil									
Chloride	21.3	20.0	mg/kg Wet	2	EJ61415	10/14/06	10/15/06	SW 846 9253	
% Moisture	4.4	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	
AH-4 0-1.0' (6J13023-10) Soil									
Chloride	319	20.0	mg/kg Wet	2	EJ61415	10/14/06	10/15/06	SW 846 9253	
% Moisture	13.2	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	
AH-4 1-1.5' (6J13023-11) Soil									
Chloride	128	20.0	mg/kg Wet	2	EJ61415	10/14/06	10/15/06	SW 846 9253	
% Moisture	3.5	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	
AH-5 0-1.0' (6J13023-12) Soil									
Chloride	702	20.0	mg/kg Wet	2	EJ61415	10/14/06	10/15/06	SW 846 9253	
% Moisture	15.2	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	
AH-5 1-1.5' (6J13023-13) Soil									
Chloride	53.2	20.0	mg/kg Wet	2	EJ61415	10/14/06	10/15/06	SW 846 9253	
% Moisture	5.4	0.1	%	1	EJ61601	10/13/06	10/16/06	% calculation	

Environmental Lab of Texas

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

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
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Batch EJ61503 - Solvent Extraction (GC)

Blank (EJ61503-BLK1)

Prepared: 10/15/06 Analyzed: 10/16/06

Carbon Ranges C6-C12	ND	10.0	mg/kg wet							
Carbon Ranges C12-C28	ND	10.0	"							
Carbon Ranges C28-C35	ND	10.0	"							
Total Hydrocarbons	ND	10.0	"							
Surrogate: 1-Chlorooctane	47.4		mg/kg	50.0		94.8	70-130			
Surrogate: 1-Chlorooctadecane	42.9		"	50.0		85.8	70-130			

LCS (EJ61503-BS1)

Prepared: 10/15/06 Analyzed: 10/16/06

Carbon Ranges C6-C12	487	10.0	mg/kg wet	500		97.4	75-125			
Carbon Ranges C12-C28	477	10.0	"	500		95.4	75-125			
Carbon Ranges C28-C35	ND	10.0	"	0.00			75-125			
Total Hydrocarbons	964	10.0	"	1000		96.4	75-125			
Surrogate: 1-Chlorooctane	58.6		mg/kg	50.0		117	70-130			
Surrogate: 1-Chlorooctadecane	44.4		"	50.0		88.8	70-130			

Calibration Check (EJ61503-CCV1)

Prepared: 10/15/06 Analyzed: 10/16/06

Carbon Ranges C6-C12	201		mg/kg	250		80.4	80-120			
Carbon Ranges C12-C28	240		"	250		96.0	80-120			
Total Hydrocarbons	441		"	500		88.2	80-120			
Surrogate: 1-Chlorooctane	53.2		"	50.0		106	70-130			
Surrogate: 1-Chlorooctadecane	40.4		"	50.0		80.8	70-130			

Matrix Spike (EJ61503-MS1)

Source: 6J13019-08

Prepared: 10/15/06 Analyzed: 10/16/06

Carbon Ranges C6-C12	574	10.0	mg/kg dry	575	ND	99.8	75-125			
Carbon Ranges C12-C28	572	10.0	"	575	ND	99.5	75-125			
Carbon Ranges C28-C35	ND	10.0	"	0.00	ND		75-125			
Total Hydrocarbons	1150	10.0	"	1150	ND	100	75-125			
Surrogate: 1-Chlorooctane	59.5		mg/kg	50.0		119	70-130			
Surrogate: 1-Chlorooctadecane	43.7		"	50.0		87.4	70-130			

Environmental Lab of Texas

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

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
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Batch EJ61503 - Solvent Extraction (GC)

Matrix Spike Dup (EJ61503-MSD1)

Source: 6J13019-08

Prepared: 10/15/06 Analyzed: 10/16/06

Carbon Ranges C6-C12	554	10.0	mg/kg dry	575	ND	96.3	75-125	3.55	20	
Carbon Ranges C12-C28	535	10.0	"	575	ND	93.0	75-125	6.68	20	
Carbon Ranges C28-C35	ND	10.0	"	0.00	ND		75-125		20	
Total Hydrocarbons	1090	10.0	"	1150	ND	94.8	75-125	5.36	20	
Surrogate: 1-Chlorooctane	58.3		mg/kg	50.0		117	70-130			
Surrogate: 1-Chlorooctadecane	43.7		"	50.0		87.4	70-130			

Batch EJ61504 - Solvent Extraction (GC)

Blank (EJ61504-BLK1)

Prepared: 10/15/06 Analyzed: 10/16/06

Carbon Ranges C6-C12	ND	10.0	mg/kg wet							
Carbon Ranges C12-C28	ND	10.0	"							
Carbon Ranges C28-C35	ND	10.0	"							
Total Hydrocarbons	ND	10.0	"							
Surrogate: 1-Chlorooctane	49.5		mg/kg	50.0		99.0	70-130			
Surrogate: 1-Chlorooctadecane	44.7		"	50.0		89.4	70-130			

LCS (EJ61504-BS1)

Prepared: 10/15/06 Analyzed: 10/16/06

Carbon Ranges C6-C12	491	10.0	mg/kg wet	500		98.2	75-125			
Carbon Ranges C12-C28	483	10.0	"	500		96.6	75-125			
Carbon Ranges C28-C35	ND	10.0	"	0.00			75-125			
Total Hydrocarbons	974	10.0	"	1000		97.4	75-125			
Surrogate: 1-Chlorooctane	58.7		mg/kg	50.0		117	70-130			
Surrogate: 1-Chlorooctadecane	46.5		"	50.0		93.0	70-130			

Calibration Check (EJ61504-CCV1)

Prepared: 10/15/06 Analyzed: 10/17/06

Carbon Ranges C6-C12	207		mg/kg	250		82.8	80-120			
Carbon Ranges C12-C28	257		"	250		103	80-120			
Total Hydrocarbons	464		"	500		92.8	80-120			
Surrogate: 1-Chlorooctane	49.0		"	50.0		98.0	70-130			
Surrogate: 1-Chlorooctadecane	41.0		"	50.0		82.0	70-130			

Environmental Lab of Texas

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

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
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Batch EJ61504 - Solvent Extraction (GC)

Matrix Spike (EJ61504-MS1)		Source: 6J14001-02		Prepared: 10/15/06		Analyzed: 10/16/06	
Carbon Ranges C6-C12	562	10.0	mg/kg dry	588	ND	95.6	75-125
Carbon Ranges C12-C28	565	10.0	"	588	8.71	94.6	75-125
Carbon Ranges C28-C35	ND	10.0	"	0.00	ND		75-125
Total Hydrocarbons	1130	10.0	"	1180	ND	95.8	75-125
Surrogate: 1-Chlorooctane	59.3		mg/kg	50.0		119	70-130
Surrogate: 1-Chlorooctadecane	44.5		"	50.0		89.0	70-130

Matrix Spike Dup (EJ61504-MSD1)	Source: 6J14001-02			Prepared: 10/15/06 Analyzed: 10/16/06					
Carbon Ranges C6-C12	552	10.0	mg/kg dry	588	ND	93.9	75-125	1.80	20
Carbon Ranges C12-C28	538	10.0	"	588	8.71	90.0	75-125	4.90	20
Carbon Ranges C28-C35	ND	10.0	"	0.00	ND		75-125		20
Total Hydrocarbons	1090	10.0	"	1180	ND	92.4	75-125	3.60	20
Surrogate: 1-Chlorooctane	57.8		mg/kg	50.0		116	70-130		
Surrogate: 1-Chlorooctadecane	43.8		"	50.0		87.6	70-130		

Batch EJ61815 - EPA 5030C (GC)

Blank (EJ61815-BLK1)				Prepared & Analyzed: 10/18/06	
Benzene	ND	0.0250	mg/kg wet		
Toluene	ND	0.0250	"		
Ethylbenzene	ND	0.0250	"		
Xylene (p/m)	ND	0.0250	"		
Xylene (o)	ND	0.0250	"		
Surrogate: a,a,a-Trifluorotoluene	32.7		ug/kg	40.0	81.8 80-120
Surrogate: 4-Bromofluorobenzene	34.2		"	40.0	85.5 80-120

LCS (EJ61815-BS1)				Prepared & Analyzed: 10/18/06	
Benzene	1.24	0.0250	mg/kg wet	1.25	99.2 80-120
Toluene	1.14	0.0250	"	1.25	91.2 80-120
Ethylbenzene	1.30	0.0250	"	1.25	104 80-120
Xylene (p/m)	2.25	0.0250	"	2.50	90.0 80-120
Xylene (o)	1.00	0.0250	"	1.25	80.0 80-120
Surrogate: a,a,a-Trifluorotoluene	32.6		ug/kg	40.0	81.5 80-120
Surrogate: 4-Bromofluorobenzene	41.2		"	40.0	103 80-120

Environmental Lab of Texas

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

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
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Batch EJ61815 - EPA 5030C (GC)

Calibration Check (EJ61815-CCV1)

Prepared: 10/18/06 Analyzed: 10/20/06

Benzene	50.5		ug/kg	50.0		101	80-120			
Toluene	44.3		"	50.0		88.6	80-120			
Ethylbenzene	41.0		"	50.0		82.0	80-120			
Xylene (p/m)	81.2		"	100		81.2	80-120			
Xylene (o)	40.5		"	50.0		81.0	80-120			
Surrogate: a,a,a-Trifluorotoluene	38.1		"	40.0		95.2	80-120			
Surrogate: 4-Bromofluorobenzene	35.6		"	40.0		89.0	80-120			

Matrix Spike (EJ61815-MS1)

Source: 6J18008-05

Prepared: 10/18/06 Analyzed: 10/20/06

Benzene	1.17	0.0250	mg/kg dry	1.37	ND	85.4	80-120			
Toluene	1.11	0.0250	"	1.37	ND	81.0	80-120			
Ethylbenzene	1.20	0.0250	"	1.37	ND	87.6	80-120			
Xylene (p/m)	2.24	0.0250	"	2.74	ND	81.8	80-120			
Xylene (o)	1.14	0.0250	"	1.37	ND	83.2	80-120			
Surrogate: a,a,a-Trifluorotoluene	34.1		ug/kg	40.0		85.2	80-120			
Surrogate: 4-Bromofluorobenzene	33.7		"	40.0		84.2	80-120			

Matrix Spike Dup (EJ61815-MSD1)

Source: 6J18008-05

Prepared: 10/18/06 Analyzed: 10/20/06

Benzene	1.26	0.0250	mg/kg dry	1.37	ND	92.0	80-120	7.44	20	
Toluene	1.17	0.0250	"	1.37	ND	85.4	80-120	5.29	20	
Ethylbenzene	1.37	0.0250	"	1.37	ND	100	80-120	13.2	20	
Xylene (p/m)	2.40	0.0250	"	2.74	ND	87.6	80-120	6.85	20	
Xylene (o)	1.16	0.0250	"	1.37	ND	84.7	80-120	1.79	20	
Surrogate: a,a,a-Trifluorotoluene	33.2		ug/kg	40.0		83.0	80-120			
Surrogate: 4-Bromofluorobenzene	38.8		"	40.0		97.0	80-120			

Environmental Lab of Texas

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavaréz

Fax: (432) 682-3946

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 EJ61410 - Water Extraction										
Blank (EJ61410-BLK1)				Prepared: 10/14/06 Analyzed: 10/21/06						
Chloride	ND	20.0	mg/kg Wet							
LCS (EJ61410-BS1)				Prepared: 10/14/06 Analyzed: 10/21/06						
Chloride	93.6	5.00	mg/kg Wet	100		93.6	80-120			
Matrix Spike (EJ61410-MS1)				Source: 6J13013-03 Prepared: 10/14/06 Analyzed: 10/21/06						
Chloride	521	20.0	mg/kg Wet	500	0.00	104	80-120			
Matrix Spike Dup (EJ61410-MSD1)				Source: 6J13013-03 Prepared: 10/14/06 Analyzed: 10/21/06						
Chloride	532	20.0	mg/kg Wet	500	0.00	106	80-120	2.09	20	
Reference (EJ61410-SRM1)				Prepared: 10/14/06 Analyzed: 10/21/06						
Chloride	51.0		mg/kg	50.0		102	80-120			
Batch EJ61415 - Water Extraction										
Blank (EJ61415-BLK1)				Prepared: 10/14/06 Analyzed: 10/15/06						
Chloride	ND	10.0	mg/kg Wet							
LCS (EJ61415-BS1)				Prepared: 10/14/06 Analyzed: 10/15/06						
Chloride	92.5	5.00	mg/kg Wet	100		92.5	80-120			
Matrix Spike (EJ61415-MS1)				Source: 6J13023-03 Prepared: 10/14/06 Analyzed: 10/15/06						
Chloride	10700	20.0	mg/kg Wet	500	10200	100	80-120			
Matrix Spike Dup (EJ61415-MSD1)				Source: 6J13023-03 Prepared: 10/14/06 Analyzed: 10/15/06						
Chloride	10700	20.0	mg/kg Wet	500	10200	100	80-120	0.00	20	

Environmental Lab of Texas

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavaréz

Fax: (432) 682-3946

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 EJ61415 - Water Extraction										
Reference (EJ61415-SRM1)				Prepared: 10/14/06 Analyzed: 10/15/06						
Chloride	51.0		mg/kg	50.0		102	80-120			
Batch EJ61601 - General Preparation (Prep)										
Blank (EJ61601-BLK1)				Prepared: 10/13/06 Analyzed: 10/16/06						
% Solids	100		%							
Duplicate (EJ61601-DUP1)				Source: 6J13004-01		Prepared: 10/13/06 Analyzed: 10/16/06				
% Solids	74.4		%		74.5			0.134	20	
Duplicate (EJ61601-DUP2)				Source: 6J13017-06		Prepared: 10/13/06 Analyzed: 10/16/06				
% Solids	90.4		%		89.9			0.555	20	
Duplicate (EJ61601-DUP3)				Source: 6J13021-05		Prepared: 10/13/06 Analyzed: 10/16/06				
% Solids	89.8		%		90.8			1.11	20	
Duplicate (EJ61601-DUP4)				Source: 6J14001-02		Prepared: 10/13/06 Analyzed: 10/16/06				
% Solids	85.1		%		85.1			0.00	20	

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

Notes and Definitions

S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.

S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

J Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).

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:

10/23/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer

Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

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If you have received this material in error, please notify us immediately at 432-563-1800.

Environmental Lab of Texas

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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

CLIENT NAME: **P060**

SITE MANAGER: **Ike Tavares**

PRESERVATIVE METHOD

PROJECT NAME:

2776 P060/Livingston Ridge 14 Federal #1

Lea County, NM

SAMPLE IDENTIFICATION

MATRIX

COMP

GRAB

DATE

TIME

LAB I.D. NUMBER

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Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Highlander
 Date/ Time: 10/13/06 4:20
 Lab ID #: 10513023
 Initials: OK

Sample Receipt Checklist

				Client Initials
#1 Temperature of container/ cooler?	Yes	No	3.0 °C	
#2 Shipping container in good condition?	<u>Yes</u>	No		
#3 Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
#4 Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
#5 Chain of Custody present?	<u>Yes</u>	No		
#6 Sample instructions complete of Chain of Custody?	<u>Yes</u>	No		
#7 Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No		
#8 Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No	ID written on Cont./ Lid	
#9 Container label(s) legible and intact?	<u>Yes</u>	No	Not Applicable	
#10 Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No		
#11 Containers supplied by ELOT?	<u>Yes</u>	No		
#12 Samples in proper container/ bottle?	<u>Yes</u>	No	See Below	
#13 Samples properly preserved?	<u>Yes</u>	No	See Below	
#14 Sample bottles intact?	<u>Yes</u>	No		
#15 Preservations documented on Chain of Custody?	<u>Yes</u>	No		
#16 Containers documented on Chain of Custody?	<u>Yes</u>	No		
#17 Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No	See Below	
#18 All samples received within sufficient hold time?	<u>Yes</u>	No	See Below	
#19 VOC samples have zero headspace?	<u>Yes</u>	No	Not Applicable	

Variance Documentation

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

Regarding: _____

Corrective Action Taken:

- Check all that Apply:
- ☐ See attached e-mail/ fax
 - ☐ Client understands and would like to proceed with analysis
 - ☐ Cooling process had begun shortly after sampling event

E **NVIRONMENTAL** **LAB OF**



12600 West I-20 East - Odessa, Texas 79765

A Xenco Laboratories Company

Analytical Report

Prepared for:

Ike Tavarez

Highlander Environmental Corp.

1910 N. Big Spring St.

Midland, TX 79705

Project: Pogo/ Livingston Ridge 19 Fed #1

Project Number: 2776

Location: Lea County, New Mexico

Lab Order Number: 7C12005

Report Date: 03/15/07

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavaréz

Fax: (432) 682-3946

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Area of AH-1 (0-1.0') Bottom	7C12005-01	Soil	03/09/07 00:00	03-12-2007 14:23
Area of AH-2 (2'-2.5') Bottom	7C12005-02	Soil	03/09/07 00:00	03-12-2007 14:23
Area of AH-5 (0-1.0') Bottom	7C12005-03	Soil	03/09/07 00:00	03-12-2007 14:23

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

Organics by GC
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Area of AH-1 (0-1.0') Bottom (7C12005-01) Soil									
Carbon Ranges C6-C12	283	10.0	mg/kg dry	1	EC71203	03/12/07	03/13/07	EPA 8015M	
Carbon Ranges C12-C28	2570	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	166	10.0	"	"	"	"	"	"	
Total Hydrocarbons	3020	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		92.0 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		133 %	70-130		"	"	"	"	S-04
Area of AH-2 (2'-2.5') Bottom (7C12005-02) Soil									
Carbon Ranges C6-C12	252	10.0	mg/kg dry	1	EC71203	03/12/07	03/13/07	EPA 8015M	
Carbon Ranges C12-C28	912	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	97.6	10.0	"	"	"	"	"	"	
Total Hydrocarbons	1260	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		95.6 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		111 %	70-130		"	"	"	"	
Area of AH-5 (0-1.0') Bottom (7C12005-03) Soil									
Carbon Ranges C6-C12	87.0	10.0	mg/kg dry	1	EC71203	03/12/07	03/13/07	EPA 8015M	
Carbon Ranges C12-C28	339	10.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	52.1	10.0	"	"	"	"	"	"	
Total Hydrocarbons	478	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		96.4 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		107 %	70-130		"	"	"	"	

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavaréz

Fax: (432) 682-3946

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Area of AH-1 (0-1.0') Bottom (7C12005-01) Soil									
% Moisture	8.5	0.1	%	1	EC71306	03/12/07	03/13/07	% calculation	
Area of AH-2 (2'-2.5') Bottom (7C12005-02) Soil									
% Moisture	6.2	0.1	%	1	EC71306	03/12/07	03/13/07	% calculation	
Area of AH-5 (0-1.0') Bottom (7C12005-03) Soil									
% Moisture	9.6	0.1	%	1	EC71306	03/12/07	03/13/07	% calculation	

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

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 EC71203 - Solvent Extraction (GC)										
Blank (EC71203-BLK1)			Prepared & Analyzed: 03/12/07							
Carbon Ranges C6-C12	ND	10.0	mg/kg wet							
Carbon Ranges C12-C28	ND	10.0	"							
Carbon Ranges C28-C35	ND	10.0	"							
Total Hydrocarbons	ND	10.0	"							
Surrogate: 1-Chlorooctane	54.6		mg/kg	50.0		109	70-130			
Surrogate: 1-Chlorooctadecane	64.9		"	50.0		130	70-130			
LCS (EC71203-BS1)			Prepared & Analyzed: 03/12/07							
Carbon Ranges C6-C12	588	10.0	mg/kg wet	500		118	75-125			
Carbon Ranges C12-C28	480	10.0	"	500		96.0	75-125			
Carbon Ranges C28-C35	ND	10.0	"	0.00			75-125			
Total Hydrocarbons	1070	10.0	"	1000		107	75-125			
Surrogate: 1-Chlorooctane	58.9		mg/kg	50.0		118	70-130			
Surrogate: 1-Chlorooctadecane	64.2		"	50.0		128	70-130			
Calibration Check (EC71203-CCV1)			Prepared: 03/12/07 Analyzed: 03/13/07							
Carbon Ranges C6-C12	216		mg/kg	250		86.4	80-120			
Carbon Ranges C12-C28	235		"	250		94.0	80-120			
Total Hydrocarbons	450		"	500		90.0	80-120			
Surrogate: 1-Chlorooctane	54.1		"	50.0		108	70-130			
Surrogate: 1-Chlorooctadecane	53.0		"	50.0		106	70-130			
Matrix Spike (EC71203-MS1)			Source: 7C09017-01	Prepared: 03/12/07 Analyzed: 03/13/07						
Carbon Ranges C6-C12	878	10.0	mg/kg dry	669	184	104	75-125			
Carbon Ranges C12-C28	961	10.0	"	669	419	81.0	75-125			
Carbon Ranges C28-C35	ND	10.0	"	0.00	38.6		75-125			
Total Hydrocarbons	1840	10.0	"	1340	642	89.4	75-125			
Surrogate: 1-Chlorooctane	61.7		mg/kg	50.0		123	70-130			
Surrogate: 1-Chlorooctadecane	55.5		"	50.0		111	70-130			

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

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 EC71203 - Solvent Extraction (GC)										
Matrix Spike Dup (EC71203-MSD1)		Source: 7C09017-01		Prepared: 03/12/07 Analyzed: 03/13/07						
Carbon Ranges C6-C12	867	10.0	mg/kg dry	669	184	102	75-125	1.94	20	
Carbon Ranges C12-C28	971	10.0	"	669	419	82.5	75-125	1.83	20	
Carbon Ranges C28-C35	ND	10.0	"	0.00	38.6		75-125		20	
Total Hydrocarbons	1840	10.0	"	1340	642	89.4	75-125	0.00	20	
Surrogate: 1-Chlorooctane	58.6		mg/kg	50.0		117	70-130			
Surrogate: 1-Chlorooctadecane	52.7		"	50.0		105	70-130			

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavaréz

Fax: (432) 682-3946

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
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Batch EC71306 - General Preparation (Prep)

Blank (EC71306-BLK1)

Prepared: 03/12/07 Analyzed: 03/13/07

% Solids 100 %

Duplicate (EC71306-DUP1)

Source: 7C09017-01

Prepared: 03/12/07 Analyzed: 03/13/07

% Solids 74.3 % 74.7 0.537 20

Duplicate (EC71306-DUP2)

Source: 7C12005-01

Prepared: 03/12/07 Analyzed: 03/13/07

% Solids 92.7 % 91.5 1.30 20

Environmental Lab of Texas

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

Project: Pogo/ Livingston Ridge 19 Fed #1
Project Number: 2776
Project Manager: Ike Tavarez

Fax: (432) 682-3946

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:



Date:

3/15/2007

Brent Barron, Laboratory Director/Corp. Technical Director
Celey D. Keene, Org. Tech Director
Raland K. Tuttle, Laboratory Consultant

James Mathis, QA/QC Officer
Jeanne Mc Murrey, Inorg. Tech Director

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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

CLIENT NAME: **P060** PROJECT NAME: **P060/Livingston Ridge 19 Feb #1 TB**
 SITE MANAGER: **Ike Tavaroz** PRESERVATIVE METHOD: **None**

LAB I.D. NUMBER: **003** DATE: **3/9/07** TIME: **5** MATRIX: **GRAB** SAMPLE IDENTIFICATION: **Area of AH-1 (0-1.0') Bottom**

LAB I.D. NUMBER: **002** DATE: **3/9/07** TIME: **5** MATRIX: **GRAB** SAMPLE IDENTIFICATION: **Area of AH-2 (2'-2.5') Bottom**

LAB I.D. NUMBER: **003** DATE: **3/9/07** TIME: **5** MATRIX: **GRAB** SAMPLE IDENTIFICATION: **Area of AH-5 (0-1.0') Bottom**

LAB I.D. NUMBER: **004** DATE: **3/9/07** TIME: **5** MATRIX: **GRAB** SAMPLE IDENTIFICATION: **Area of AH-5 (0-1.0') Bottom**

LAB I.D. NUMBER: **005** DATE: **3/9/07** TIME: **5** MATRIX: **GRAB** SAMPLE IDENTIFICATION: **Area of AH-5 (0-1.0') Bottom**

LAB I.D. NUMBER: **006** DATE: **3/9/07** TIME: **5** MATRIX: **GRAB** SAMPLE IDENTIFICATION: **Area of AH-5 (0-1.0') Bottom**

LAB I.D. NUMBER: **007** DATE: **3/9/07** TIME: **5** MATRIX: **GRAB** SAMPLE IDENTIFICATION: **Area of AH-5 (0-1.0') Bottom**

PAGE: **1** OF: **1**

ANALYSIS REQUEST

(Circle or Specify Method No.)

GC/MS Vol. 8240/8260/824
GC/MS Semi Vol. 8270/826
PCB's 8080/808
Fest. 806/808
BOD, TSS, pH, TDS, Chloride
Gamma Spec.
Alpha Beta (Air)
PLM (Asbestos)

GC/MS Vol. 8240/8260/824
GC/MS Semi Vol. 8270/826
PCB's 8080/808
Fest. 806/808
BOD, TSS, pH, TDS, Chloride
Gamma Spec.
Alpha Beta (Air)
PLM (Asbestos)

GC/MS Vol. 8240/8260/824
GC/MS Semi Vol. 8270/826
PCB's 8080/808
Fest. 806/808
BOD, TSS, pH, TDS, Chloride
Gamma Spec.
Alpha Beta (Air)
PLM (Asbestos)

GC/MS Vol. 8240/8260/824
GC/MS Semi Vol. 8270/826
PCB's 8080/808
Fest. 806/808
BOD, TSS, pH, TDS, Chloride
Gamma Spec.
Alpha Beta (Air)
PLM (Asbestos)

GC/MS Vol. 8240/8260/824
GC/MS Semi Vol. 8270/826
PCB's 8080/808
Fest. 806/808
BOD, TSS, pH, TDS, Chloride
Gamma Spec.
Alpha Beta (Air)
PLM (Asbestos)

RECEIVED BY: (Signature) **[Signature]** DATE: **3/12/07** TIME: **13:33**

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RECEIVED BY: (Signature) **[Signature]** DATE: **3/12/07** TIME: **13:33**

RECEIVED BY: (Signature) **[Signature]** DATE: **3/12/07** TIME: **13:33**

RECEIVING LABORATORY: **ELI** ADDRESS: **1910 N. Big Spring St.** CITY: **Midland** STATE: **TX** ZIP: **79705**
 CONTACT: **[Signature]** PHONE: **[Number]** DATE: **3/12/07** TIME: **14:23**
 SAMPLE CONDITION WHEN RECEIVED: **3°C** REMARKS: **402 flars**

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

Client: Highlander
Date/ Time: 3/12/07 1423
Lab ID #: 7C12005
Initials: DM

Sample Receipt Checklist

Client Initials

#1	Temperature of container/ cooler?	<u>Yes</u>	No	<u>3.0</u> °C	
#2	Shipping container in good condition?	<u>Yes</u>	No		
#3	Custody Seals intact on shipping container/ cooler?	<u>Yes</u>	No	<u>Not Present</u>	
#4	Custody Seals intact on sample bottles/ container?	<u>Yes</u>	No	<u>Not Present</u>	
#5	Chain of Custody present?	<u>Yes</u>	No		
#6	Sample instructions complete of Chain of Custody?	<u>Yes</u>	No		
#7	Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No		
#8	Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	<u>Yes</u>	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No		
#11	Containers supplied by ELOT?	<u>Yes</u>	No		
#12	Samples in proper container/ bottle?	<u>Yes</u>	No	See Below	
#13	Samples properly preserved?	<u>Yes</u>	No	See Below	
#14	Sample bottles intact?	<u>Yes</u>	No		
#15	Preservations documented on Chain of Custody?	<u>Yes</u>	No		
#16	Containers documented on Chain of Custody?	<u>Yes</u>	No		
#17	Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No	See Below	
#18	All samples received within sufficient hold time?	<u>Yes</u>	No	See Below	
#19	Subcontract of sample(s)?	<u>Yes</u>	No	<u>Not Applicable</u>	
#20	VOC samples have zero headspace?	<u>Yes</u>	No	Not Applicable	

Variance Documentation

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

Regarding: _____

Corrective Action Taken: _____

- Check all that Apply:
- ☐ See attached e-mail/ fax
 - ☐ Client understands and would like to proceed with analysis
 - ☐ Cooling process had begun shortly after sampling event

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company <i>Pogo Producing Co.</i>	Contact <i>Pat Ellis</i>
Address <i>P.O. Box 10340 Midland, TX 79702</i>	Telephone No. <i>(432) 685-8100</i>
Facility Name <i>Livingston Ridge 19 #1</i>	Facility Type <i>BTRY</i>
Surface Owner <i>BLM</i>	Mineral Owner <i>BLM</i>
Lease No. <i>NM-90587</i>	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
<i>D</i>	<i>19</i>	<i>22S</i>	<i>32E</i>	<i>660</i>	<i>N L</i>	<i>330</i>	<i>W L</i>	<i>Lea</i>

Latitude _____ Longitude _____

NATURE OF RELEASE

Type of Release <i>oil + water</i>	Volume of Release <i>90 BALS</i>	Volume Recovered <i>75 BALS</i>
Source of Release <i>TANK</i>	Date and Hour of Occurrence	Date and Hour of Discovery <i>11:45 AM</i>
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? <i>LARRY JOHNSON voice mail</i>	<i>10-11-06</i>
By Whom? <i>PATRICK ELLIS</i>	Date and Hour <i>10:00 AM 10-12-06</i>	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

NONE

Describe Cause of Problem and Remedial Action Taken.*

Contract roustabout crew repaired connection and failed to return switch back to operating mode. Tanks overflowed into pad area.

Describe Area Affected and Cleanup Action Taken.* *All fluids were contained within the fire walls. Free fluids were removed by vacuum truck and Highlander Environmental was contacted to evaluate + remediate spill area.*

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

OIL CONSERVATION DIVISION

Signature: <i>Patrick L. Ellis</i>	Approved by District Supervisor:	
Printed Name: <i>PATRICK L. ELLIS</i>	Approval Date:	Expiration Date:
Title: <i>EHS Supervisor</i>	Conditions of Approval:	
E-mail Address: <i>ellis p@pogoproducing.com</i>	Attached <input type="checkbox"/>	
Date: <i>10-13-06</i> Phone: <i>685-8148</i>		

* Attach Additional Sheets If Necessary

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State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised June 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company: Pogo Producing Company	Contact: Pat Ellis
Address: P.O. Box 10340 Midland, Texas 79702	Telephone No. (432) 685-8100
Facility Name: Livingston Ridge 19 #1	Facility Type: Battery

Surface Owner BLM	Mineral Owner BLM	Lease No. NM-90587
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LOCATION OF RELEASE

Unit Letter D	Section\ 19	Township 22S	Range 32E	Feet from the 660'	North/South Line North	Feet from the 330'	East/West Line West	County Lea
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Latitude _____ Longitude _____

NATURE OF RELEASE

Type of Release Oil/Water	Volume of Release 90 BBLs	Volume Recovered 75 bbls
Source of Release Tank	Date and Hour of Occurrence Unknown	Date and Hour of Discovery 10-11-06 @ 11:40 AM NM Time
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Larry Johnson (Voice Mail)	
By Whom? Patrick Ellis	Date and Hour 10-12-06 10:00AM	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Contract roustabout crew, repaired connection and failed to return switch back to operating mode. Tank overflowed onto pad area.

Describe Area Affected and Cleanup Action Taken.*
All fluids were contained within firewall. Free fluids were removed by vacuum truck and Highlander Environmental was onsite to assess impact. Site soils were excavated, resampled, and found to be below NMOCD standards.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: <i>Patrick L. Ellis</i>		OIL CONSERVATION DIVISION	
Printed Name: Patrick L. Ellis		Approved by District Supervisor: <i>[Signature]</i>	
Title: Environmental Health and Safety Supervisor		Approval Date: 6-14-07	Expiration Date: _____
E-mail Address: ellisp@pogoproducing.com		Conditions of Approval:	Attached <input type="checkbox"/>
Date: 4/5/07 Phone: (432) 685-8148			

* Attach Additional Sheets If Necessary

~~RP-1130~~
RP# 1086