CLOSURE REPORT

ANTELOPE RIDGE UNIT #5-2

NMOCD REF: 1RP #1280
EPI REF: #160073

UL-L (NW¼ OF THE SW¼) OF SECTION 33 T23S R34E

~20 MILES NORTHWEST OF JAL

LEA COUNTY, NEW MEXICO

LATITUDE: N 32° 15' 36.66" LONGITUDE: W 103° 28' 49.19"

APRIL 2007

PREPARED BY:

ENVIRONMENTAL PLUS, INC.
2100 AVENUE O
EUNICE, NEW MEXICO 88231

PREPARED FOR:

Chesapeake

RP# 1280

Facility - fPAC0714433821
Incident - nPAC0714433918
Application - pPAC0714434011

Distribution List

Closure Report

Antelope Ridge Unit #5-2

NMOCD Ref: 1RP #1280

EPI Ref. #160073

Name	Title	Company or Agency	Mailing Address	e-mail
Chris Williams	District I Supervisor	New Mexico Oil Conservation Division – Hobbs	1625 French Drive Hobbs, NM 88240	chris.williams@state.nm.us
Bradley Blevins	Field Supervisor	Chesapeake Operating, Inc.	P.O. Box 190 Hobbs, NM 88240-0190	bblevins@chkenergy.com
Harlan Brown	Senior Environmental Representative	Chesapeake Energy	6100 N. Western Avenue Oklahoma City, OK 73118	hbrown@chkenergy.com
Jim Keller	Land Owner	- -	2811 County Road 460 Oakley, KS 67748	- -
File	- -	Environmental Plus, Inc.	P.O. Box 1558 Eunice, NM 88231-1558	dduncan@envplus.net

STANDARD OF CARE

Closure Report

Antelope Ridge Unit #5-2

NMOCD Ref: 1RP #1280

EPI Ref. #160073

The information provided in this report was collected consistent with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993), the NMOCD Unlined Surface Impoundment Closure Guidelines (February, 1993) and Environmental Plus, Inc. (EPI) Standard Operating Procedures and Quality Assurance/Quality Control Plan. The conclusions are based on field observations and laboratory analytical reports as presented in the report. Recommendations follow NMOCD guidance and represent the professional opinions of EPI staff. These opinions were derived using currently accepted geologic, hydrogeologic and engineering practices at this time and location. The report was prepared or reviewed by a certified or registered professional with a background in engineering, environmental and/or natural sciences.

Prepared by:

Brandon Farrar
Environmental Consultant

5/6/07
Date

Reviewed by:

David P. Duncan
Civil Engineer

5/06/07
Date

Table of Contents

1.0 PROJECT SYNOPSIS

Site Specific:

- ***Company Name:*** Chesapeake Operating, Inc.
- ***Facility Name:*** Antelope Ridge Unit #5-2
- ***Project Reference:*** NMOCD Ref. 1RP #1280; EPI Ref.#160073
- ***Company Contacts:*** Bradley Blevins
- ***Site Location:*** WGS84 N32° 15' 36.66"; W103° 28' 49.19"
- ***Legal Description:*** Unit Letter-L, (NW¼ of the SW¼), Section 33, T 23S, R 34E
- ***General Location:*** Approximately 20-miles northwest of Jal, New Mexico
- ***Elevation:*** 3,524-ft amsl
- ***Depth to Ground Water:*** approximately 475-ft bgs
- ***Land Ownership:*** Jim Keller
- ***EPI Personnel:*** Project Consultant – Iain Olness
  Site Foreman – Kirt Tyree

Release Specific:

- ***Product Released:*** Petroleum and/or production fluids
- ***Volume Released:*** ~ 10 bbls ***Volume Recovered:*** ~ 6 bbls
- ***Time of Occurrence:*** Unknown ***Time of Discovery:*** 1 October 2006 @ 1900 hrs
- ***Release Source:*** Tank Battery
- ***Initial Surface Area Affected:*** ~ 11,000 ft^2

Remediation Specific:

- ***Final Vertical extent of contamination:*** 2-ft. bgs
- ***Water wells within 1,000-ft:*** 0
- ***Private domestic water sources within 200-ft:*** 0
- ***Surface water bodies within 1,000-ft:*** 0
- ***NMOCD Site Ranking Index:*** 0 points
- ***Remedial goals for Soil:*** TPH – 5,000 mg/Kg; BTEX – 50 mg/Kg; Benzene – 10 mg/Kg
- ***RCRA Waste Classification:*** Exempt
- ***Remediation Option Selected:*** a) Total Petroleum Hydrocarbon (TPH) impacted soil was excavated to approximately 2-ft bgs and transported to Sundance Services for disposal; b) laboratory analyses confirmed removal of most hydrocarbon impacted soil from excavation areas; c) isolation of residual hydrocarbon impacted soil blended with existing soil; d) backfilled excavation with clean soil purchased from an off-site source; e) contoured disturbed area to provide natural drainage; and f) will seed entire disturbed area with a blend preferred by the land owner.
- ***Treatment/Disposal Facility:*** Sundance Services – Hobbs, New Mexico
- ***Volume disposed:*** approximately 120 yds^3
- ***Project Completion Date:*** October 20, 2006

2.0 SITE AND RELEASE INFORMATION

2.1 Describe the land use and pertinent geographic features within 1,000 feet of the site.
Land surrounding the area is pastureland and utilized for livestock grazing.

2.2 Identify and describe the source or suspected source(s) of the release.
Various sources associated with a tank battery facility

2.3 What is the volume of the release? (if known): Approximately 10 ***barrels of*** Petroleum and/or production fluids

2.4 What is the volume recovered? (if any): Approximately 6 ***barrels of*** Petroleum and/or production fluids

2.5 When did the release occur? (if known): Unknown

2.6 Geological Description
The United States Geological Survey (USGS) Ground-Water Report 6, *"Geology and Ground-water Conditions in Southern Lea County, New Mexico," A. Nicholson and A. Clebsch, 1961*, describes the near surface geology of southern Lea County as "an intergrade of the Quaternary Alluvium (QA) sediments (i.e., fine to medium sand, with the mostly eroded Cenozoic Ogallala (CO) formation). Typically, the QA and CO formations in the area are capped by a thick interbed of caliche and generally overlain by sandy soil."

The release site is located in the Eunice Plain physiographic subdivision, described by Nicholson & Clebsch as an area "underlain by a hard caliche surface and is almost entirely covered by reddish-brown dune sand". The thickness of the sand cover ranges from 2 to 5 feet in most areas to as much as 20-30 feet in drift areas.

2.7 Ecological Description
Vegetation in the High Plains consists primarily of short prairie grasses interspersed with Honey Mesquite (*Prosopis glandulosa*), annual and perennial forbs. Mammals represented, include Orrd's and Merriam's Kangaroo Rats, Deer Mouse, White Throated Wood Rat, Cottontail Rabbit, Black Tailed Jackrabbit, Mule Deer, Bobcat, Red Fox and Coyote. Reptiles, amphibians, and birds are numerous and typical of area. A survey of *Listed, Threatened*, or *Endangered* species was not conducted.

2.8 Area Groundwater
The unconfined groundwater aquifer at this site is projected to be approximately 475-ft bgs based on water depth data obtained from the New Mexico State Engineers Office and United States Geological Survey data base (reference *Table 1*).

2.9 Area Water Wells
No public water supply wells exist within a 1,000-foot radius of the release site. In addition, there are no private, domestic fresh water wells or springs used by less than five households for domestic or stock watering purposes located within a 200-foot radius of the release site (reference *Table 1* and *Figure 2*).

2.10 Area Surface Water Features
No surface water features exist within a 1,000 foot radius of the release site (reference *Figure 2*).

3.0 NMOCD SITE RANKING

Contaminant delineation and remedial work done at this site indicate chemical parameters of the soil and physical parameters of the groundwater were characterized consistent with the characterization and remediation/abatement goals and objectives set forth in the following New Mexico Oil Conservation Division (NMOCD) publications:

- ***Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993)***
- ***Unlined Surface Impoundment Closure Guidelines (February, 1993)***
- ***Pit and Below-Grade Tank Guidelines (November, 2004)***

Acceptable thresholds for contaminants/constituents of concern (CoC) were determined based on the NMOCD Ranking Criteria as follows:

- *Depth to Groundwater (i.e., distance from the lower most acceptable concentration to ground-water);*
- *Wellhead Protection Area (i.e., distance from fresh water supply wells);*
- *Distance to Surface Water Body (i.e., horizontal distance to all down gradient surface water bodies).*

Based on the proximity of the site to protectable area water wells, surface water bodies, and depth to groundwater from the lower most contamination, the NMOCD ranking score for the site is zero (0) points with the soil remedial goals highlighted in the Site Ranking table presented below:

1. GROUNDWATER	2. WELLHEAD PROTECTION AREA	3. DISTANCE TO SURFACE WATER
Depth to GW <50 feet: 20 points	If <1,000' from water source, or <200' from private domestic water source: ***20 points***	**<200 horizontal feet: *0 points***
Depth to GW 50 to 99 feet: ***10 points***		200-1,000 horizontal feet: ***10 points***
Depth to GW >100 feet: 0 points	**If >1,000' from water source, or >200' from private domestic water source: *0 points***	**>1,000 horizontal feet: *0 points***
Site Rank (1+2+3) = 0 +0 + 0 = 0 points		

Total Site Ranking Score and Acceptable Remedial Goal Concentrations			
Ranking Score	**20 or >**	**10**	**0**
Benzene[1]	**10 ppm**	**10 ppm**	**10 ppm**
BTEX[1]	**50 ppm**	**50 ppm**	**50 ppm**
TPH	**100 ppm**	**1,000 ppm**	**5,000 ppm**

[1] A field soil vapor headspace measurement of 100 ppm can be substituted in lieu of laboratory analyses for benzene and BTEX.

4.0 EXCAVATED SOIL INFORMATION

4.1 Was soil excavated for off-site treatment or disposal? ☒ *Yes* ☐ *No*

Date excavated: October 11, 2006

Total volume removed: ~ 120 yds^3

4.2 Indicated soil treatment type:

- ☒ ***Disposal***
- ☐ ***Land Treatement***
- ☐ ***Composting/Biopiling***
- ☐ ***Other*** ( )

Name and location of treatment/disposal facility:
Sundance Services – Hobbs, New Mexico

5.0 SAMPLING INFORMATION

5.1 Briefly describe the field screening methods used to distinguish contaminated from uncontaminated soil.

Organic Vapor Concentrations – A portion of each soil sample collected was inserted into a self-sealing polyethylene bag to allow volatilization of organic vapors. After the samples equilibrated to ~70° F, they were analyzed for organic vapors utilizing a MiniRae® Photoionization Detector (PID) equipped with a 10.6 electron volt (eV) lamp.

Chloride Concentrations – A La Motte Chloride Test Kit was utilized for field analyses of chloride concentration.

5.2 Briefly describe the soil analytical sampling and handling procedures used. .

Upon collection of each soil sample, a portion was immediately placed in a laboratory provided container, labeled and set on ice for transport to an independent laboratory for quantification of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and total xylenes (BTEX), sulfates and/or chloride concentrations. The remaining portion of each sample was utilized to conduct field analyses.

5.3 Discuss sample locations and provide rationale for their locations.

On October 4, 2006 three (3) soil samples were taken from various locals throughout the release area to delineate vertical extent of hydrocarbon impacted soil (reference *Figure 4*).

On October 6, 2006 two (2) soil samples were taken from various locals throughout the release area to delineate vertical extent of hydrocarbon impacted soil (reference *Figure 4*).

On October 11, 2006 three (3) soil samples were collected from various locals throughout the release are to delineate vertical extent of hydrocarbon impacted soil (reference *Figure 4*).

On October 13, 2006, three (3) soil samples were taken from stockpiled material to determine extent of hydrocarbon contaminated soil.

Soil sample locations were chosen to provide the best representative example of soil throughout the release area.

6.0 ANALYTICAL RESULTS

6.1 Describe the vertical and horizontal extent and magnitude of soil contamination.

Laboratory analyses of soil samples collected on October 4, 2006 indicated BTEX concentrations were ND at or above laboratory MDL. TPH concentrations were detected, however below remedial threshold goals (reference *Table 2*).

Laboratory analyses of soil samples collected on October 6, 2006 indicated BTEX and TPH concentrations were below remedial threshold goals (reference *Table 2*).

Laboratory analyses of soil samples collected on October 11, 2006 indicated BTEX and TPH concentrations were below remedial threshold goals (reference *Table 2*).

Laboratory analyses of soil samples collected on October 13, 2006 indicated BTEX concentrations were detectable, however below remedial threshold goals. TPH concentrations ranging from 1,012 mg/Kg (East Stockpile) to 1,180 mg/Kg (East + West Stockpile) were below remedial threshold goals (reference *Table 2*).

6.2 Is surface soil contamination present at the site (i.e., soil in the uppermost two feet that is visibly stained, contaminated at greater than 10 ppm (PID) or hydrocarbon saturated)?

☐ *yes* ☒ *no*

If yes, attach a site map identifying extent(s) of surface soil contamination.

7.0 DISCUSSION

7.1 ***Discuss the risks associated with the remaining soil contamination:***

Based on depth to groundwater (~ 475-ft bgs), TPH residual concentrations remaining in-situ should not be capable of impacting groundwater.

7.2 ***Discuss the risks associated with the impacted groundwater:*** NA

7.3 ***Discuss other concerns not mentioned above:*** NA

8.0 CONCLUSIONS AND RECOMMENDATIONS

8.1 ***Recommendation for the site:***

- ☒ ***Site Closure***
- ☐ ***Additional Groundwater Monitoring***
- ☐ ***Corrective Action***

8.2 ***Base the recommendation above on Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993). Describe below how you applied the policy to support your recommendation. If closure is recommended, please summarize significant site investigative events and describe how site specific risk issues have been adequately addressed or minimized to acceptable low risk levels.***

Total Petroleum Hydrocarbon (TPH) impacted soil was excavated approximately 2-ft bgs and transported to Sundance Services for disposal. Laboratory analyses confirmed removal of hydrocarbon impacted soil above NMOCD remedial threshold goals from the excavated area. Excavation area was backfilled with approximately 24 yds^3 of caliche and 96 yds^3 of top soil.

8.3 ***If additional groundwater monitoring is recommended, indicate the proposed monitoring schedule and frequency. Conduct quarterly monitoring until the NMOCD responds to this report.*** Not applicable

8.4 ***If corrective action is recommended, provide a conceptual approach.*** Not Applicable

FIGURES

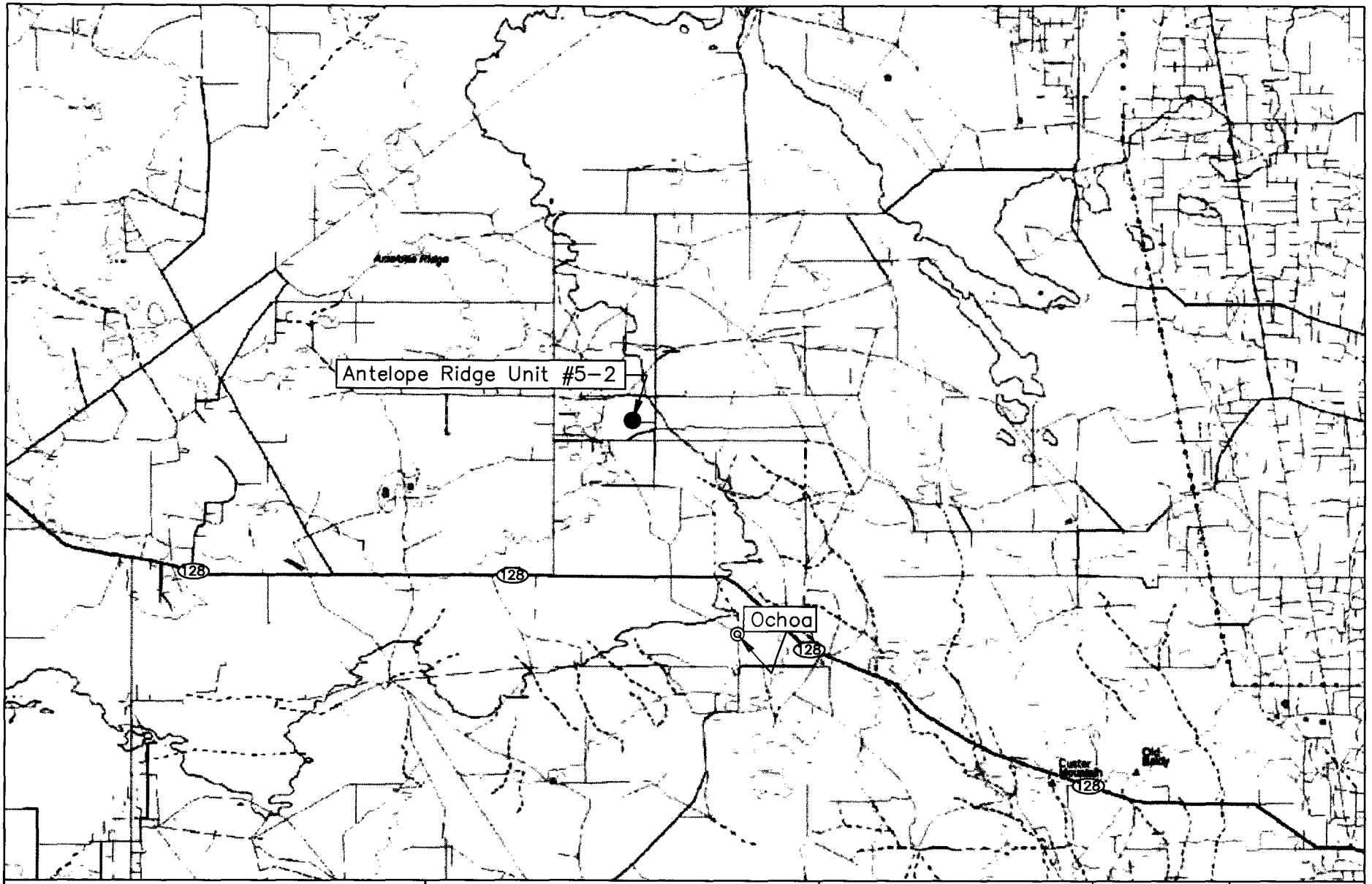


Figure 1 Area Map Chesapeake Energy Antelope Ridge Unit #5-2	Lea County, New Mexico NW 1/4 of the SW 1/4, Sec. 33, T23S, R34E N 32° 15' 36.66" W 103° 28' 49.19" Elevation: 3,524 feet amsl	DWG By: Daniel Dominguez October 2006	REVISED:
			SHEET 1 of 1

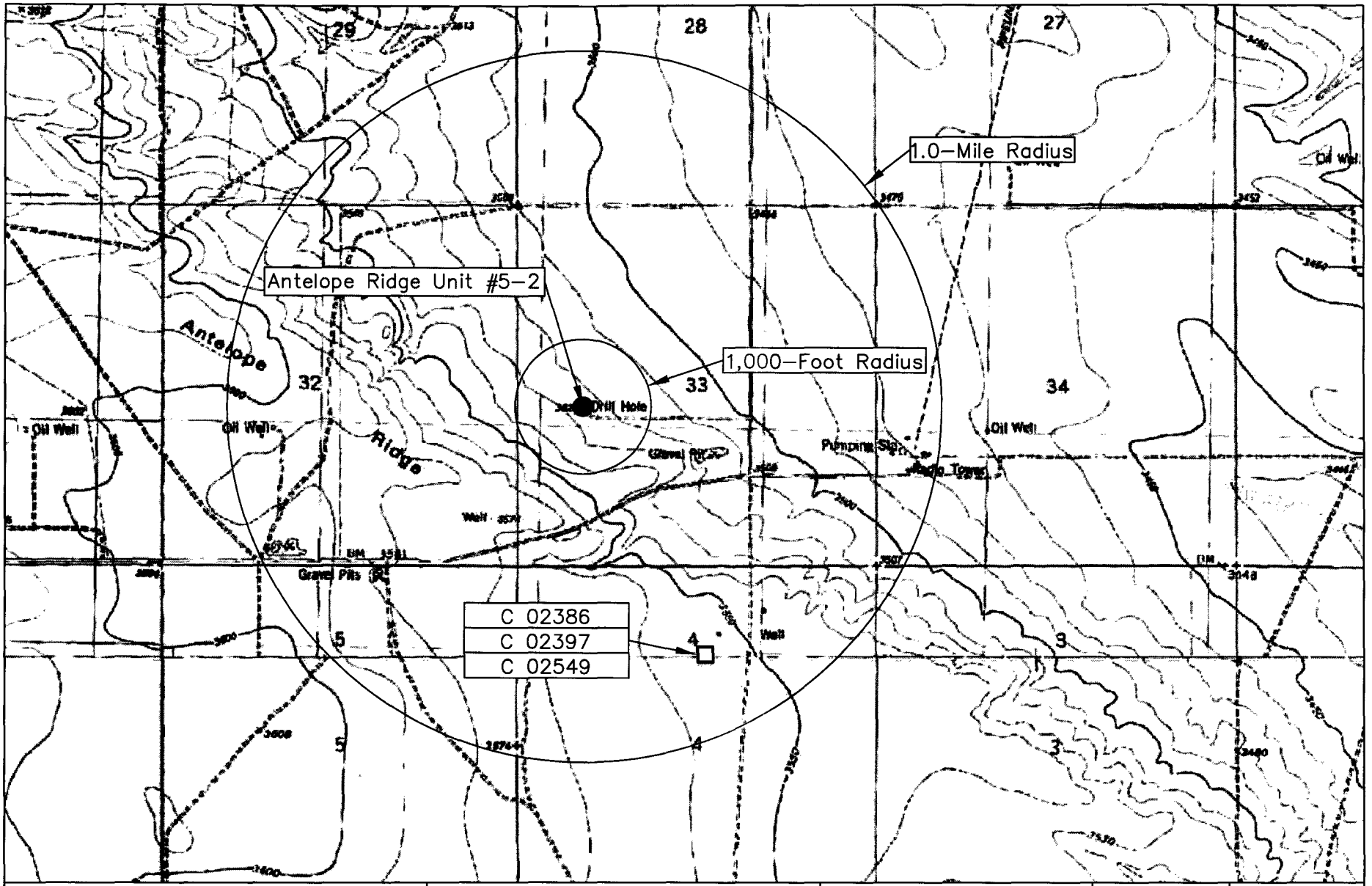


Figure 2
Site Location Map
Chesapeake Energy
Antelope Rdige Unit #5–2

Lea County, New Mexico
NW 1/4 of the SW 1/4, Sec. 33, T23S, R34E
N 32° 15' 36.66" W 103° 28' 49.19"
Elevation: 3,524 feet amsl

DWG By: Daniel Dominguez
October 2006

REVISED:

0 2,000 4,000
Feet

SHEET
1 of 1

N

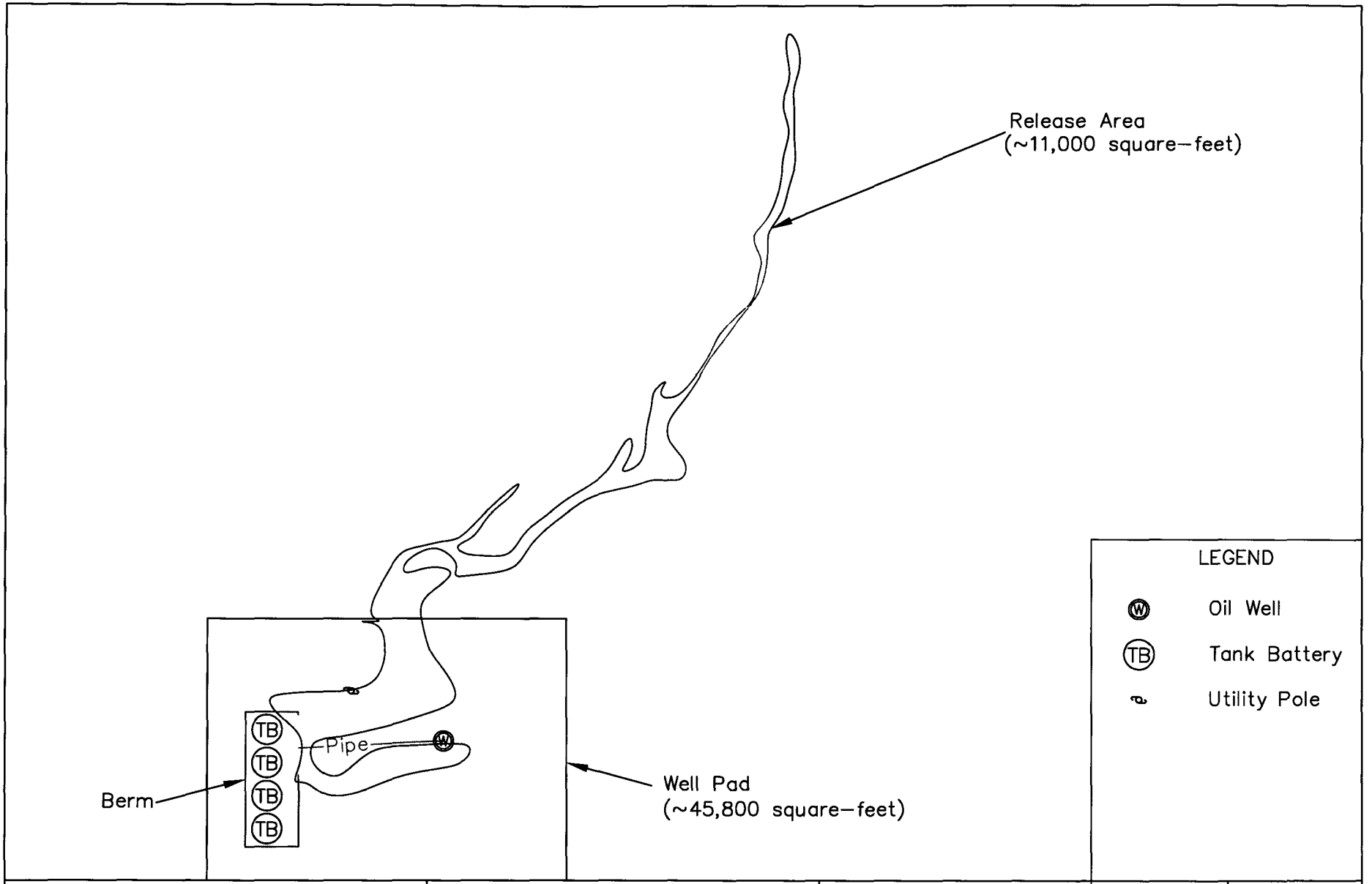


Figure 3
Site Map
Chesapeake Energy
Antelpoe Ridge Unit #5-2

Lea County, New Mexico
NW 1/4 of the SW 1/4, Sec. 33, T23S, R34E
N 32° 15' 36.66" W 103° 28' 49.19"
Elevation: 3,524 feet amsl

DWG By: Daniel Dominguez
October 2006

REVISED:

SHEET
1 of 1

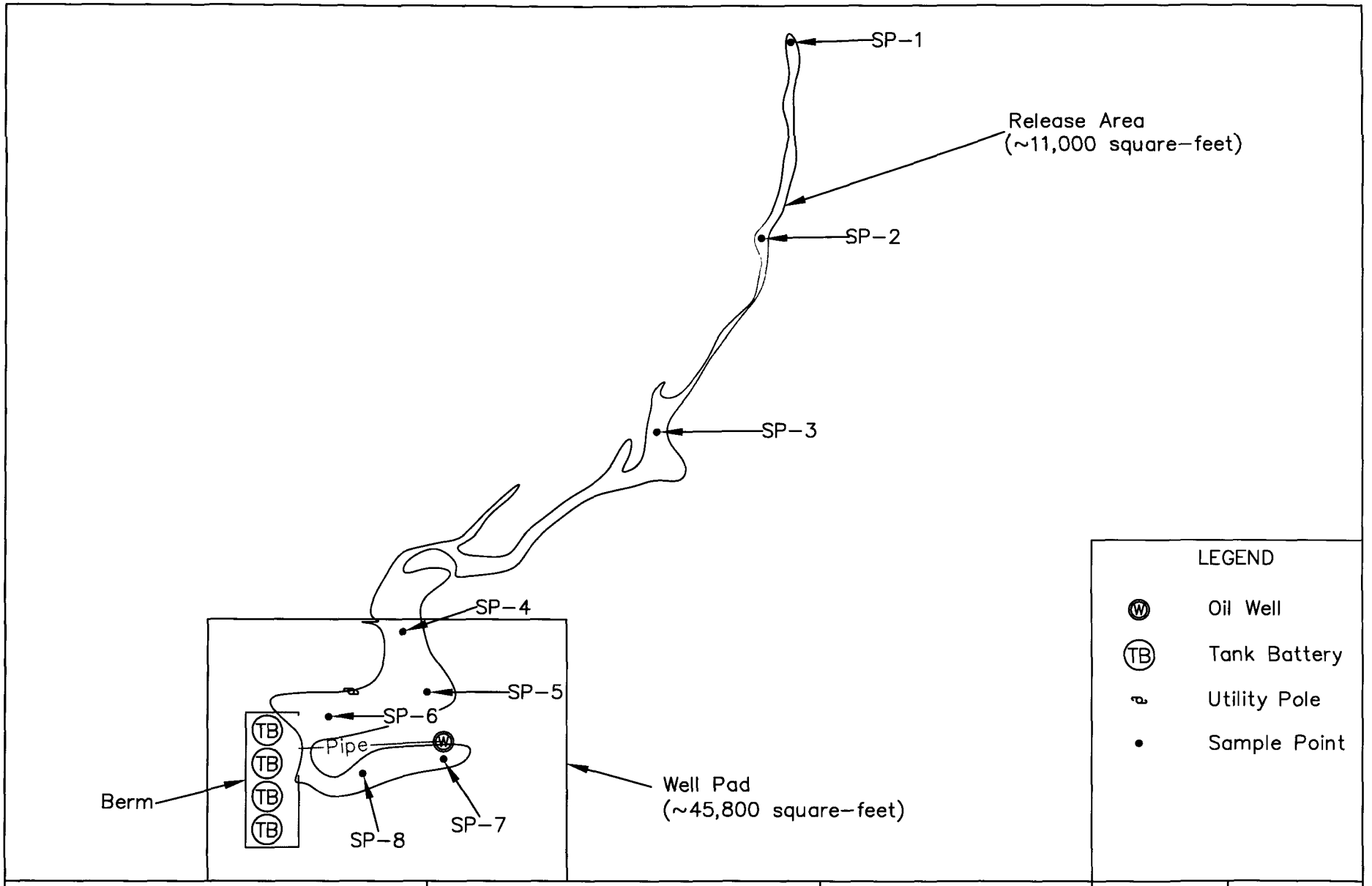


Figure 4
Sample Location Map
Chesapeake Energy
Antelpoe Ridge Unit #5-2

Lea County, New Mexico
NW 1/4 of the SW 1/4, Sec. 33, T23S, R34E
N 32° 15' 36.66" W 103° 28' 49.19"
Elevation: 3,524 feet amsl

DWG By: Daniel Dominguez
October 2006

REVISED:

0 90 180
Feet

SHEET
1 of 1

N

TABLES

TABLE 1

Well Data

Chesapeake Energy - Antelope Ridge Unit #5-2 (Ref. # 160073)

Well Number	Diversion[A]	Owner	Use	Twsp	Rng	Sec q q q	Latitude	Longitude	Date Measured	Surface Elevation[B]	Depth to Water (ft bgs)
C 02386	3	RUBERT MADERA	DOM	24S	34E	04 2 1 4	N32° 15' 0.43"	W103° 28' 28.06"	31-Jan-60	3,555	475
C 02397	30	BERT MADERA	COM	24S	34E	04 2 1 4	N32° 15' 0.43"	W103° 28' 28.06"	31-Jan-60	3,555	475
C 02397	3	BERT MADERA	MUL	24S	34E	04 2 1 4	N32° 15' 0.43"	W103° 28' 28.06"	31-Jan-60	3,555	475

[B] = Elevation interpolated from USGS topographical map based on referenced location.
COM = Commercial
MUL = 72-12-1 Multiple domestic households
DOM = 72-12-1 Domestic
quarters are 1=NW, 2=NE, 3=SW, 4=SE; quarters are biggest to smallest
Shaded area indicates wells not shown in Figure 2

TABLE 2

Summary of Excavation Soil Sample Field Analyses and Laboratory Analytical Results

Chesapeake Operating - Antelope Ridge #5-2 (NMOCD Ref: 1RP #1280; EPI Ref: #160073)

Sample I.D.	Depth (feet)	Soil Status	Sample Date	PID Reading (ppm)	Field Chloride (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	TPH (mg/Kg)
SP-1 (1')	1	In situ	4-Oct-06	13.6	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0
SP-2 (1')	1	In situ	4-Oct-06	21.8	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	52.4	52.4
SP-3 (1')	1	In situ	4-Oct-06	62.4	400	<.005	<.005	<0.005	<0.015	<0.030	<10.0	13.3	13.3
SP-4 (1')	1	In situ	6-Oct-06	15.4	360	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0
SP-5 (1')	1	In situ	6-Oct-06	14.8	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0
SP-6 (2')	2	In situ	11-Oct-06	38.4	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0
SP-7 (1')	1	In situ	11-Oct-06	33.6	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0
SP-8 (1')	1	In situ	11-Oct-06	28.8	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0
East Stockpile (ESP)	--	--	13-Oct-06	--	--	<0.005	0.036	0.109	1.29	1.44	72.4	940	1,012
West Stockpile (WSP)	--	--	13-Oct-06	--	--	<0.005	0.010	0.017	0.857	0.884	51.3	1,070	1,121
East +West Stockpile (ESP+WSP)	--	--	13-Oct-06	--	--	<0.005	0.043	0.049	1.42	1.51	70.0	1,110	1,180
NMOCD Remedial Thresholds				100[3]		10				50			5,000

[1] Bolded values are in excess of the NMOCD Remediation Thresholds

[2] - -: Not Analyzed

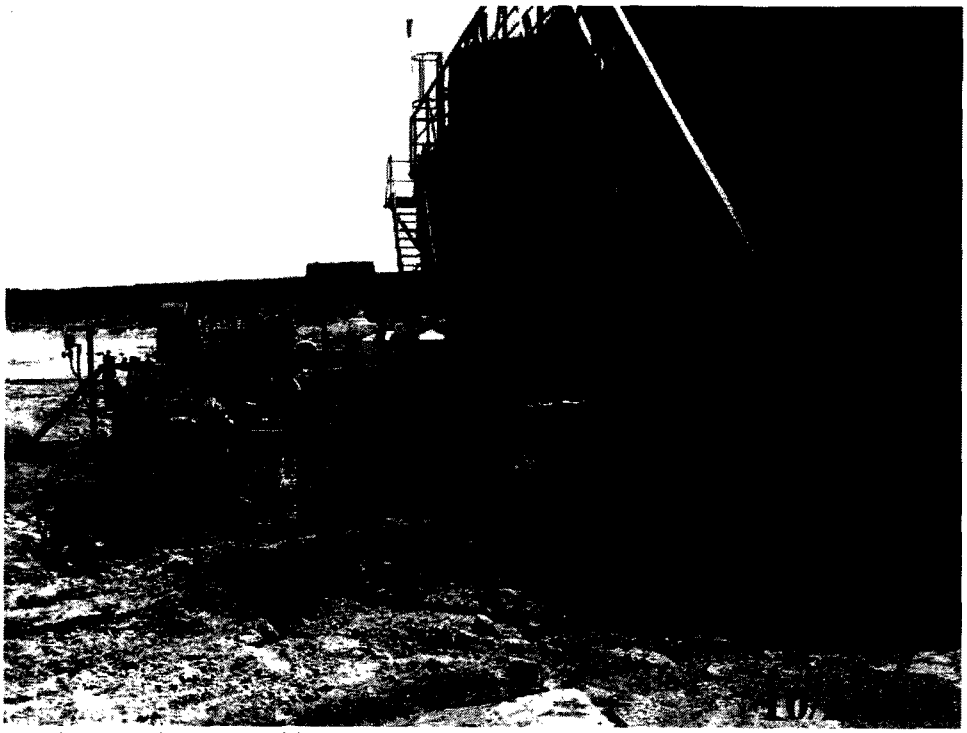
[3] In lieu of laboratory analyes of benzene, toluene, ethylbenzene and total xylenes.

APPENDICES

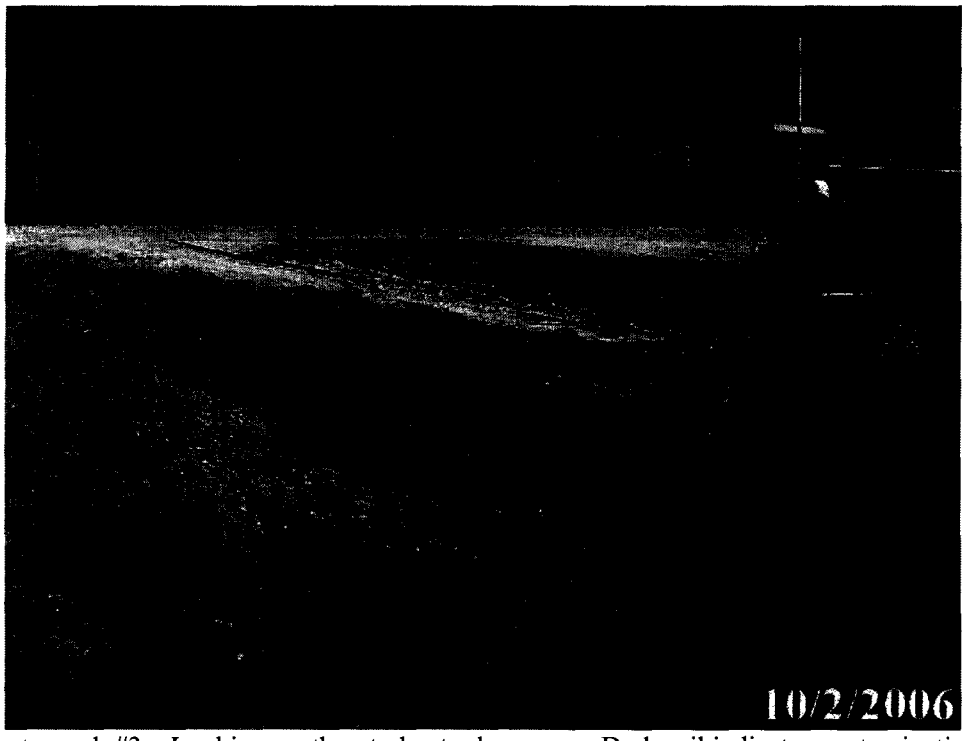
APPENDIX I

PROJECT PHOTOGRAPHS

Photograph #1 – Lease sign.



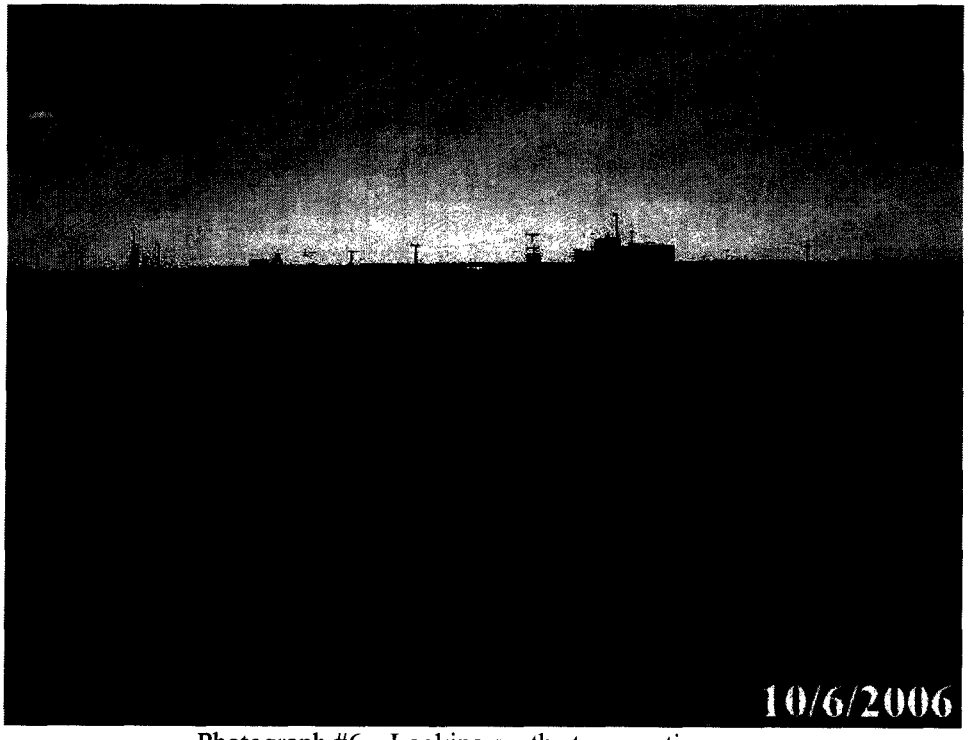
Photograph #2 – Looking south at the release area and tank battery with berm.



Photograph #3 – Looking southeasterly at release area. Dark soil indicates contamination.

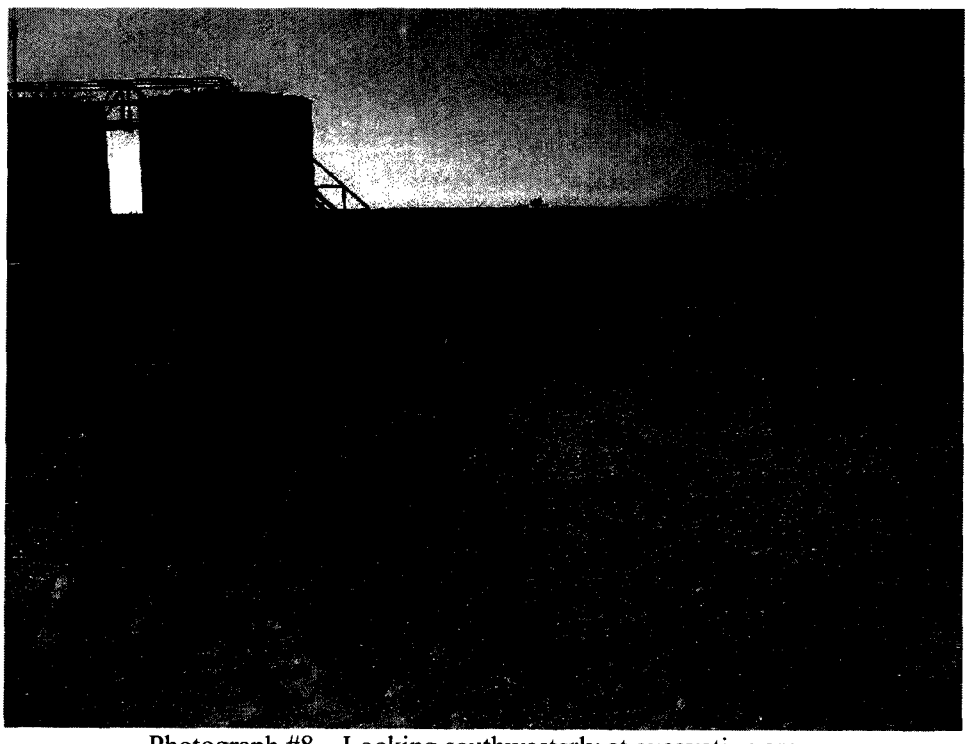
Photograph #4 – Looking north at release area. Dark soil indicates contamination.

Photograph #5 – Looking north at excavation area.

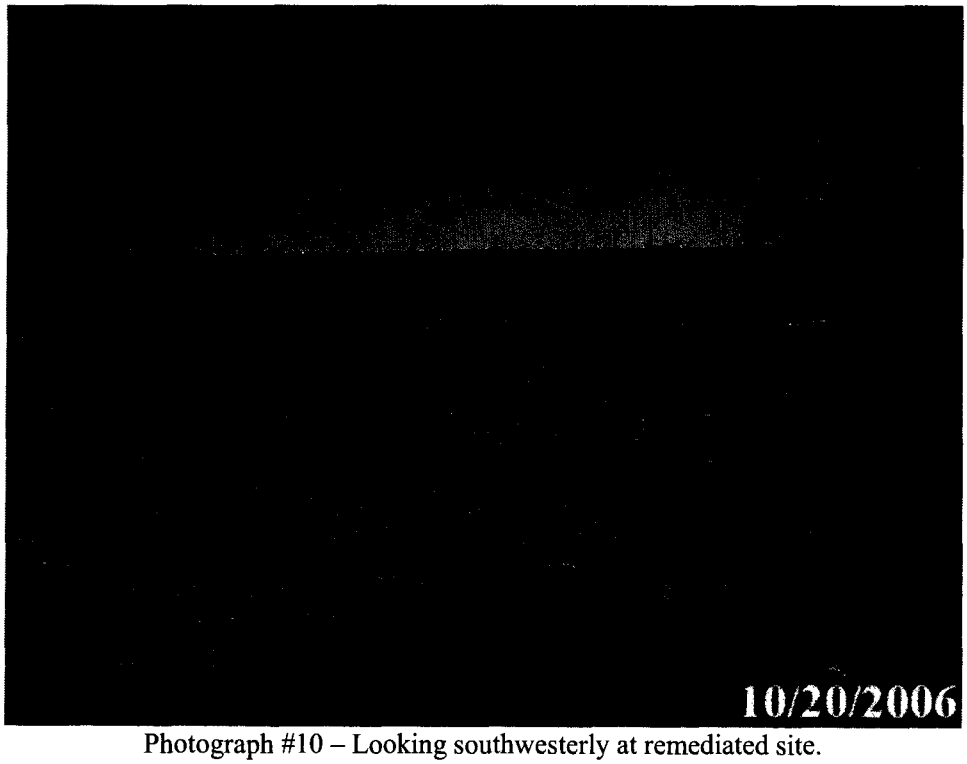


Photograph #6 – Looking south at excavation area.

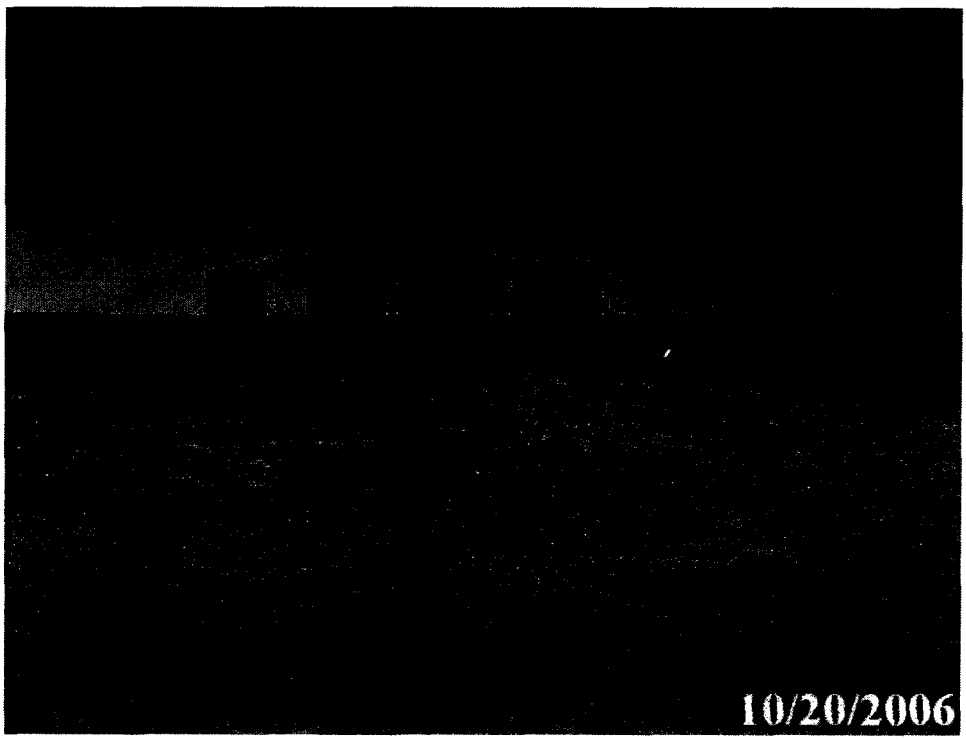
Photograph #7 – Looking southwesterly at excavation area.


Photograph #8 – Looking southwesterly at excavation area.

Photograph #9 – Looking easterly at excavation area.



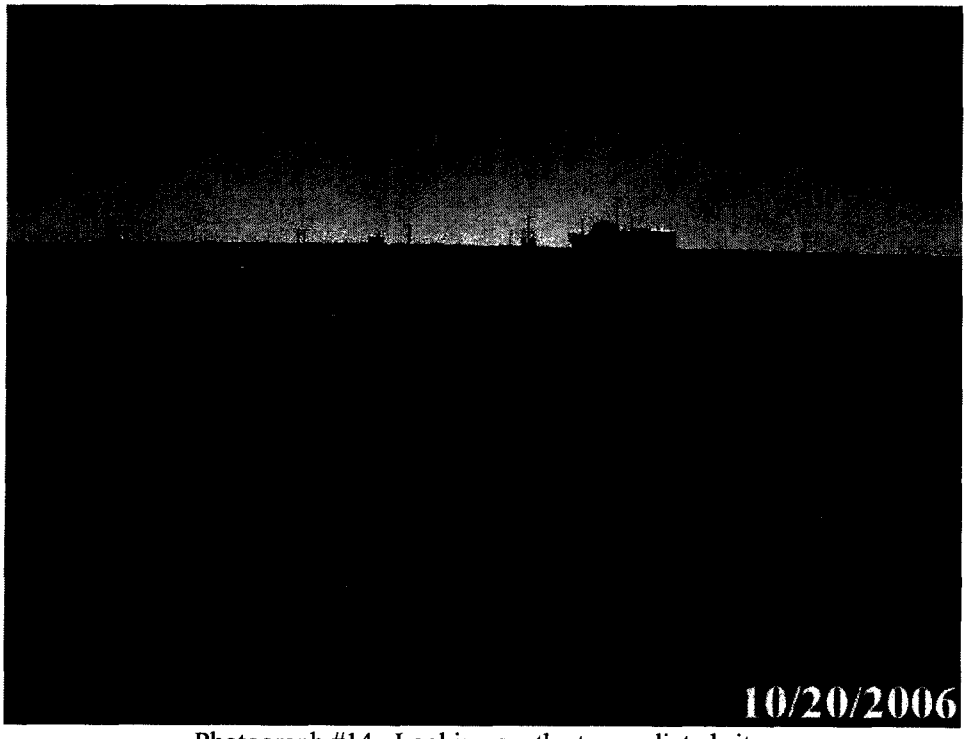
Photograph #10 – Looking southwesterly at remediated site.



Photograph #11 – Looking west at remediated site.


Photograph #12 – Looking north at remediated site.

Photograph #13 – Looking northeasterly at remediated site.



Photograph #14– Looking south at remediated site.

APPENDIX II

LABORATORY ANALYICAL REPORTS
CHAIN-OF-CUSTODY FORMS

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: DAVID P. DUNCAN
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 10/11/06
Reporting Date: 10/17/06
Project Owner: CHESAPEAKE OPERATING (160073)
Project Name: ANTELOPE RIDGE #5-2 SWD
Project Location: UL-L SECT. 33, T 23 S, R 34 E

Sampling Date: 10/04/06
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: NF
Analyzed By: BC

LAB NO.	SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE:		10/14/06	10/14/06	10/14/06	10/14/06	10/14/06	10/14/06
H11646-1	SP-1 (1')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H11646-2	SP-2 (1')	<10.0	52.4	<0.005	<0.005	<0.005	<0.015
H11646-3	SP-3 (1')	<10.0	13.3	<0.005	<0.005	<0.005	<0.015
H11646-4	SP-4 (1')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H11646-5	SP-5 (1')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H11646-6	SP-6 (2')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H11646-7	SP-7 (1')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H11646-8	SP-8 (1')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
Quality Control		784	744	0.105	0.100	0.102	0.294
True Value QC		800	800	0.100	0.100	0.100	0.300
% Recovery		98.0	93.0	105	100	102	98.1
Relative Percent Difference		0.1	6.4	1.2	6.1	3.0	3.0

METHODS: TPH GRO & DRO - EPA SW-846 8015 M; BTEX - SW-846 8260.

Burgess J. A. Cooke, Ph. D.

10/17/06
Date

H11646

Environmental Plus, Inc.

2100 Avenue O, Eunice, NM 88231 *P.O. Box 1558, Eunice, NM 88231*
(505) 394-3481 FAX: (505) 394-2601

Chain of Custody Form

LAB: Cardinal

Company Name	Environmental Plus, Inc.
EPI Project Manager	David P. Duncan
Mailing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	505-394-3481 / 505-394-2601
Client Company	Chesapeake Operating
Facility Name	Antelope Ridge #5-2 SWD
Location	UL-L, Sect. 33, T 23 S, R 34 E
Project Reference	160073
EPI Sampler Name	Danny Deaton

BILL TO

Attn: David P. Duncan
P.O. Box 1558
Eunice, NM 88231

ANALYSIS REQUEST

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	MATRIX: WASTEWATER	MATRIX: SOIL	MATRIX: CRUDE OIL	MATRIX: SLUDGE	MATRIX: OTHER:	PRESERV.: ACID/BASE	PRESERV.: ICE/COOL	PRESERV.: OTHER	SAMPLING: DATE	SAMPLING: TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^=$)	pH	TCLP	OTHER >>>	PAH			
H11646 - 1	SP-1 (1')	G	1			X					X		04-Oct-06	11:10	X	X									
- 2	SP-2 (1')	G	1			X					X		04-Oct-06	11:13	X	X									
- 3	SP-3 (1')	G	1			X					X		04-Oct-06	11:16	X	X									
- 4	SP-4 (1')	G	1			X					X		06-Oct-06	14:00	X	X									
- 5	SB-5 (1')	G	1			X					X		06-Oct-06	14:15	X	X									
- 6	SB-6 (2')	G	1			X					X		11-Oct-06	8:10	X	X									
- 7	SB-7 (1')	G	1			X					X		11-Oct-06	8:13	X	X									
- 8	SB-8 (1')	G	1			X					X		11-Oct-06	8:15	X	X									

Sampler Relinquished: Danny Deaton	Date 10-11-06 Time 1605	Received By: David Duncan	E-mail results to: dduncan@envplus.net
Relinquished by: David Duncan	Date 10/11/06 Time 4:45pm	Received By: (lab staff) Nick Tullos	E-mail results to David P. Duncan at dduncan@envplus.net or via Fax at (505) 394-2601
Delivered by:	Sample Cool & Intact (Yes) No	Checked By:	

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: DAVID P. DUNCAN
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 10/13/06
Reporting Date: 10/17/06
Project Owner: CHESAPEAKE OPERATING (160073)
Project Name: ANTELOPE RIDGE #5-2
Project Location: UL-L, SECT. 33, T 23 S, R 34 E

Sampling Date: 10/13/06
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: BC

LAB NO.	SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE:		10/14/06	10/14/06	10/16/06	10/16/06	10/16/06	10/16/06
H11661-1	EAST STOCKPILE (ESP)	72.4	940	<0.005	0.036	0.109	1.29
H11661-2	WEST STOCKPILE (WSP)	51.3	1070	<0.005	0.010	0.017	0.857
H11661-3	EAST+WEST STOCKPILE (E+WSP)	70.0	1110	<0.005	0.043	0.049	1.42
Quality Control		784	744	0.100	0.101	0.102	0.294
True Value QC		800	800	0.100	0.100	0.100	0.300
% Recovery		98.0	93.0	100.0	101	102	98.0
Relative Percent Difference		0.1	6.4	4.0	1.0	0.3	0.1

METHODS: TPH GRO & DRO - EPA SW-846 8015 M; BTEX - SW-846 8260.

Burgess J. A. Cooke, Ph. D.

10/17/06
Date

H11661

Environmental Plus, Inc.

2100 Avenue O, Eunice, NM 88231 P.O. Box 1558, Eunice, NM 88231
(505) 394-3481 FAX: (505) 394-2601

Chain of Custody Form

LAB: Cardinal

Company Name	Environmental Plus, Inc.
EPI Project Manager	David P. Duncan
Mailing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	505-394-3481 / 505-394-2601
Client Company	Chesapeake Operating
Facility Name	Antelope Ridge #5-2
Location	UL-L, Sect. 33, T 23 S, R 34 E
Project Reference	160073
EPI Sampler Name	Danny Deaton

Bill To

Attn: David P. Duncan
P.O. Box 1558
Eunice, NM 88231

ANALYSIS REQUEST

LAB I.D.		SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE	ICE/COOL	OTHER	SAMPLING: DATE	TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^{=}$)	pH	TCLP	OTHER >>>	PAH			
H11661-1	1	East Stockpile (ESP)	C	1			X					X		13-Oct-06	14:20	X	X								
-2	2	West Stockpile (WSP)	C	1			X					X		13-Oct-06	14:25	X	X								
-3	3	East + West Stockpile (E+WSP)	C	1			X					X		13-Oct-06	14:30	X	X								
	4																								
	5																								
	6																								
	7																								
	8																								

Sampler Relinquished: Danny Deaton — Date: 4:20 P — Time: 10-13-06
Received By:
Relinquished by: — Date: — Time:
Received By: (lab staff) Burgess J. Cook
Delivered by:
Sample Cool & Intact: (Yes) No
Checked By:

E-mail results to: dduncan@envplus.net

RUSH ORDER: E-mail results to David P. Duncan at dduncan@envplus.net or via Fax at (505) 394-2601

APPENDIX III

SITE INFORMATION AND METRICS FORM
INITIAL NMOCD FORM C-141
FINAL NMOCD FORM C-141

Chesapeake Information and Metrics	**Incident Date:** Unknown	**NMOCD Notified:** 2 October 2006

Site: Antelope Ridge Unit #5-2	**Assigned Site Reference :** #160073
Company: Chesapeake Energy	
Street Address: 1616 West Bender	
Mailing Address: P.O. Box 190	
City, State, Zip: Hobbs, New Mexico 88240	
Representative: Bradley Blevins	
Representative Telephone: (505) 391-1462 ext. 6224	
Telephone:	
Fluid volume released (bbls): 10 bbls	**Recovered (bbls):** 6 bbls
>25 bbls: Notify NMOCD verbally within 24 hrs and submit form C-141 within 15 days. (Also applies to unauthorized releases >500 mcf Natural Gas)	
5-25 bbls: Submit form C-141 within 15 days (Also applies to unauthorized releases of 50-500 mcf Natural Gas)	
Leak, Spill, or Pit (LSP) Name: Antelope Ridge Unit #5-2	
Source of contamination:	
Land Owner, i.e., BLM, ST, Fee, Other: Jim Keller	
LSP Dimensions: 550 feet by 20 feet	
LSP Area: ~11,000 ft^2	
Location of Reference Point (RP):	
Location distance and direction from RP:	
Latitude: N 32° 15' 36.66"	
Longitude: W 103° 28' 49.19"	
Elevation above mean sea level: 3,524 feet	
Feet from North Section Line:	
Feet from West Section Line:	
Location- Unit or ¼¼: NW¼ of the SW¼	**Unit Letter:** L
Location- Section: 33	
Location- Township: T23S	
Location- Range: R34E	
Surface water body within 1000 ' radius of site: none	
Domestic water wells within 1000' radius of site: none	
Agricultural water wells within 1000' radius of site: none	
Public water supply wells within 1000' radius of site: none	
Depth from land surface to groundwater (DG): ~475 feet	
Depth of contamination (DC): unknown	
Depth to groundwater (DG – DC = DtGW): ~475 feet	

1. Groundwater	2. Wellhead Protection Area	3. Distance to Surface Water Body
If Depth to GW <50 feet: *20 points*	If <1000' from water source, or;<200' from private domestic water source: *20 points*	<200 horizontal feet: *20 points*
If Depth to GW 50 to 99 feet: *10 points*		200-1000 horizontal feet: *10 points*
If Depth to GW >100 feet: *0 points*	If >1000' from water source, or; >200' from private domestic water source: *0 points*	>1000 horizontal feet: *0 points*

Site Rank (1+2+3) = 0+0+0=0

Total Site Ranking Score and Acceptable Concentrations

Parameter	>19	10-19	0-9
Benzene[1]	10 ppm	10 ppm	10 ppm
BTEX[1]	50 ppm	50 ppm	50 ppm
TPH	100 ppm	1,000 ppm	5,000 ppm

[1]100 ppm field VOC headspace measurement may be substituted for lab analysis

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: Chesapeake Energy	**Contact:** Bradley Blevins
Address: P.O. Box 190, Hobbs, NM 88240	**Telephone No.:** (505) 391-1462 ext. 6224
Facility Name: Antelope Ridge Unit #5-2	**Facility Type:** Tank Battery

Surface Owner: Jim Keller	**Mineral Owner:**	**Lease No.:**

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	33	23S	34E	2,310	S	990	W	Lea

Latitude: N 32° 15' 36.66" **Longitude:** W 103° 28' 49.19"

NATURE OF RELEASE

Type of Release: Petroleum and/or production fluids	**Volume of Release:** 10 bbls	**Volume Recovered:** 6 bbls
Source of Release: Tank Battery	**Date and Hour of Occurrence:** Unknown	**Date and Hour of Discovery:** 1 October 2006 @ 1900 hrs
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	**If YES, To Whom?** Pat Caperton	
By Whom? Bradley Blevins	**Date and Hour:** 2 October 2006 @ 1100 hrs	
Was a Watercourse Reached? ☐ Yes ☒ No	**If YES, Volume Impacting the Watercourse:** Not Applicable	

Depth to water: ~475 ft

If a Watercourse was Impacted, Describe Fully.* Not Applicable

Describe Cause of Problem and Remedial Action Taken.* The release is due to a tank battery overflow.

Describe Area Affected and Cleanup Action Taken.* Approximately 11,000 square-feet of surface area were impacted by the release. Impacted soil above NMOCD remedial threshold goals within the tank battery area will be excavated and disposed. Clean soil will be imported and blended with existing soil in compliance with NMOCD remedial threshold goals. Impacted soil in the pasture will be completely excavated and disposed. Clean topsoil will be imported for backfill material.

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: Bradley Blevins	OIL CONSERVATION DIVISION **Approved by District Supervisor:**	
Printed Name: Bradley Blevins		
Title: Field Supervisor	**Approval Date:**	**Expiration Date:**
E-mail Address: bblevins@chkenergy.com	**Conditions of Approval:**	**Attached** ☐
Date: 5-22-07 **Phone:** (505) 391-1462 ext. 6224		

*** Attach Additional Sheets If Necessary**

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
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State of New Mexico
Energy Minerals and Natural Resources

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1220 South St. Francis Dr.
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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: Chesapeake Energy	**Contact:** Bradley Blevins
Address: P.O. Box 190, Hobbs, NM 88240	**Telephone No.:** (505) 391-1462 ext. 6224
Facility Name: Antelope Ridge Unit #5-2	**Facility Type:** Tank Battery

Surface Owner: Jim Keller	**Mineral Owner:**	**Lease No.:**

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	33	23S	34E	2,310	S	990	W	Lea

Latitude: N 32° 15' 36.66" **Longitude:** W 103° 28' 49.19"

RP 1280

NATURE OF RELEASE

Type of Release: Petroleum and/or production fluids	**Volume of Release:** 10 bbls	**Volume Recovered:** 6 bbls
Source of Release: Tank Battery	**Date and Hour of Occurrence:** Unknown	**Date and Hour of Discovery:** 1 October 2006 @ 1900 hrs
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	**If YES, To Whom?** Pat Caperton	
By Whom? Bradley Blevins	**Date and Hour:** 2 October 2006 @ 1100 hrs	
Was a Watercourse Reached? ☐ Yes ☒ No	**If YES, Volume Impacting the Watercourse:** Not Applicable	

Depth to water: ~475 ft

If a Watercourse was Impacted, Describe Fully.* Not Applicable

Describe Cause of Problem and Remedial Action Taken.* The release is due to a tank battery overflow.

Describe Area Affected and Cleanup Action Taken.* Approximately 11,000 square-feet of surface area were impacted by the release a) Hydrocarbon impacted soil was excavated approximately 2-ft bgs and transported to Sundance Services for disposal; b) laboratory analyses confirmed removal of hydrocarbon impacted soil above NMOCD remedial threshold goals from excavation area; c) backfilled excavation with clean soil purchased from an off-site source; d) contoured disturbed area to provide natural drainage; and e) entire disturbed area will be seeded with a blend preferred by the land owner.

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: Bradley Blevins	OIL CONSERVATION DIVISION
Printed Name: Bradley Blevins	**Approved by District Supervisor:** Environmental Geologist
Title: Field Supervisor	**Approval Date:** 5.23.07 **Expiration Date:** —
E-mail Address: bblevins@chkenergy.com	**Conditions of Approval:** — **Attached** ☐
Date: 5-22-07 **Phone:** (505) 391-1462 ext. 6224	

*** Attach Additional Sheets If Necessary**