3.2.06 WTR 31' WILL CLEAN OUT 'HOT SPOTS' - INSTALL BARRIER JG

Chesapeake

SITE CHARACTERIZATION

BARBER-ADKINS NO. 8-2 DRILLING PIT

REF: 160015

UL-L (NW¼ OF THE SW¼) OF SECTION 8, T20S, R37E

~13.5 MILES SOUTHWEST OF HOBBS

LEA COUNTY, NEW MEXICO

LATITUDE: N 32° 35' 05.0" LONGITUDE: W 103° 16' 49.5"

DECEMBER 2005

Prepared By:

Environmental Plus, Inc.
2100 Avenue O
P.O. Box 1558
Eunice, NM 88231
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dduncan@envplus.net

application of PAC0606154880

Distribution List

Site Characterization Report

Barber-Adkins No. 8-2

Ref. #160015

Name	Title	Company or Agency	Mailing Address	e-mail
Larry Johnson	Environmental Engineer	New Mexico Oil Conservation Division-Hobbs	1625 N. French Drive Hobbs, NM 88240	lwjohnson@state.nm.us
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Jace Marshall	Safety and Environmental Representative	Chesapeake Energy	6100 N. Western Avenue Oklahoma City, OK 73118	jmarshall2@chkenergy.com
Curtis Blake	Superintendent	Chesapeake Operating, Inc.	P.O. Box 190 Hobbs, New Mexico 88240-0190	cblake@chkenergy.com
Jimmie T. Cooper	Property Owner	--	P.O. Box 55 Monument, New Mexico 88265	(505) 397-2045 (Home Phone) (505) 369-7108 (Mobile)
File	--	Environmental Plus, Inc.	2100 Avenue O P.O. Box 1558 Eunice, NM 88231	dduncan@envplus.net

STANDARD OF CARE

Site Characterization

Barber-Adkins #8-2 Drilling Pit
Ref. #160015

The information provided in this report was collected consistent with the New Mexico Oil Conversation 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 EPI professional with a background in engineering, environmental and/or natural sciences.

This report was prepared by:

David P. Duncan
Civil Engineer

Date

This report was reviewed by:

Iain A. Olness, P.G.
Hydrogeologist

Date

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TABLES

APPENDICES

1.0 Summary

On June 29, 2005, Chesapeake Operating, Inc. retained Environmental Plus, Inc. (EPI) to conduct drill pit closure work consistent with NMOCD Pit and Below-Grade Tank Guidelines (November, 2004) on the Barber-Adkins No. 8-2 drilling pit. The site is located in Lea County, New Mexico in the NW ¼ of the SW ¼ of Section 08, Township 20 South, Range 37 East. More specifically, the site is located approximately 14.0 miles southwest of Hobbs, New Mexico on property owned by Mr. Jimmy Cooper (reference *Figure 1 & 2*).

EPI performed GPS surveying, photography and characterization of the site on June 29, 2005. Form C-103 was submitted to the New Mexico Oil Conservation Division (NMOCD) on October 18, 2005 documenting the site and proposed operations. The drilling pit surface area was approximately 9,340 square feet (ft^2) with a depth of ±6-feet below ground surface (bgs) (reference *Figure 3*).

From October 18 through October 26, 2005, EPI personnel excavated and transported approximately 2,530 cubic yards (yd^3) of material from the drill pit to Sundance Services, Inc. of Eunice, New Mexico for disposal. On October 26, 2005 grab samples were collected from thirteen (13) sample points (SP) excavated beneath the pit floor (reference *Figure 4*). Each sample was analyzed in the field for the presence of organic vapors and chloride concentrations utilizing a MiniRae® photoionozation detector (PID) equipped with a 9.8 electronvolt (eV) lamp and a LaMotte Chloride Test Kit, respectively. Field analytical results for organic vapor concentrations ranged from 2.2 parts per million (ppm) to 43.0 ppm while chloride concentrations ranged from 200 mg/Kg to 3,360 mg/Kg (reference *Table 1*).

On November 16, 2005, nine (9) grab samples were collected from the bottom and eight (8) from the side walls of the excavated drill pit (reference *Figure 5*). A portion of each sample was placed in laboratory provided containers and immediately put on ice for transport to Environmental Lab of Texas, Odessa, Texas, for quantification of total petroleum hydrocarbon (TPH), sulfate, chloride, benzene, toluene, ethylbenzene and total xylene concentrations (reference *Appendix I*). The remaining portion of each sample was analyzed in the field for the presence of organic vapor and chloride concentrations utilizing a MiniRae® PID equipped with a 9.8 eV lamp and a LaMotte Chloride Test Kit, respectively. Field analytical results indicated organic vapor concentrations ranged from 0.5 ppm to 7.3 ppm while chloride concentrations ranged from 240 mg/Kg to >8,000 mg/Kg (reference *Table 1*).

2.0 Site Description

2.1 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 drill pit 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 2-5 feet in most areas to as much as 20-30 feet in drift areas.

2.2 Ecological Description

The area is typically of the Upper Chihuahuan Desert Biome consisting primarily of sandy soil covered with short semi-arid grasses, interspersed with Honey Mesquite and 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 the area. A survey of Listed, Threatened or Endangered species was not conducted.

2.3 Area Groundwater

The unconfined groundwater aquifer at this site is projected to be <50-ft bgs based on water depth data obtained from the New Mexico State Engineers Office and the United States Geological Survey data base. No groundwater was encountered during excavation of the drilling mud or from the soil sample points dug in the bottom of the drill pit. Groundwater gradient in this area is generally to the west-southwest.

2.4 Area Water Wells

There are no water supply wells located within a 1,000- foot radius of the release site (reference *Figure 2*).

2.5 Area Surface Water Features

There are no surface water bodies 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 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);*** and
- ***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 20 points with the soil remedial goals highlighted in the Site Ranking table presented below:

1. Ground Water	**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: *20 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) = 20 + 0 + 0 = 20 points		

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

4.0 Subsurface Soil Investigation

Excavation of pit contents commenced on October 18, 2005 and continued through October 26, 2005. Approximately 2,530 cubic yards of drilling mud were excavated and disposed at Sundance Services, Inc., of Eunice, New Mexico.

On October 26, 2005, thirteen (13) grab samples were collected from sample points at various locations in the drill pit bottom (reference *Figure 4*). A portion of each randomly selected sample was tested for organic vapors utilizing a MiniRae ® photoionozation detector (PID) equipped with a 9.8 electron-volt (eV) lamp. Field analytical results indicated organic vapor concentrations ranged from 2.2 parts per million (ppm) to 43.0 ppm. The remaining portion was analyzed in the field for chloride concentrations utilizing a LaMotte Chloride Test Kit. Field analyses indicated chloride concentrations ranged from 200 mg/Kg to 3,360 mg/Kg (reference *Table 1*).

On November 16, 2005, nine (9) grab samples were collected from the bottom and eight (8) from the side walls of the drill pit excavation. A portion of each sample was placed in laboratory provided containers and immediately put on ice for transport to Environmental Lab of Texas, Odessa, Texas, for quantification of total petroleum hydrocarbon (TPH), sulfate, chloride, benzene, toluene, ethylbenzene and total xylene concentrations (reference *Appendix I*). The remaining portion of each sample was analyzed in the field for the presence of organic vapors utilizing a MiniRae® PID equipped with a 9.8 eV lamp. Field analytical results indicated organic vapor concentrations ranging from 0.05 ppm to 7.3 ppm. Chloride was analyzed utilizing a LaMotte Chloride Test Kit. Field analytical results indicated chloride concentrations ranged form 240 mg/Kg to >8,000 mg/Kg (reference *Table 1*).

5.0 Groundwater Investigation

The projected depth to groundwater at this site is <50-ft bgs based on data noted above in Section 2.3, *Area Groundwater*. Most of the soil impacted above the NMOCD remedial thresholds for TPH constituents have been removed from the pit and disposed at Sundance Services, Inc., of Eunice, New Mexico.

6.0 Remediation Process

Excavation of the drilling pit contents commenced on October 18, 2005 and continued through October 26, 2005. Approximately 2,530 cubic yards of drilling mud were disposed at Sundance Services, Inc., of Eunice, New Mexico.

FIGURES

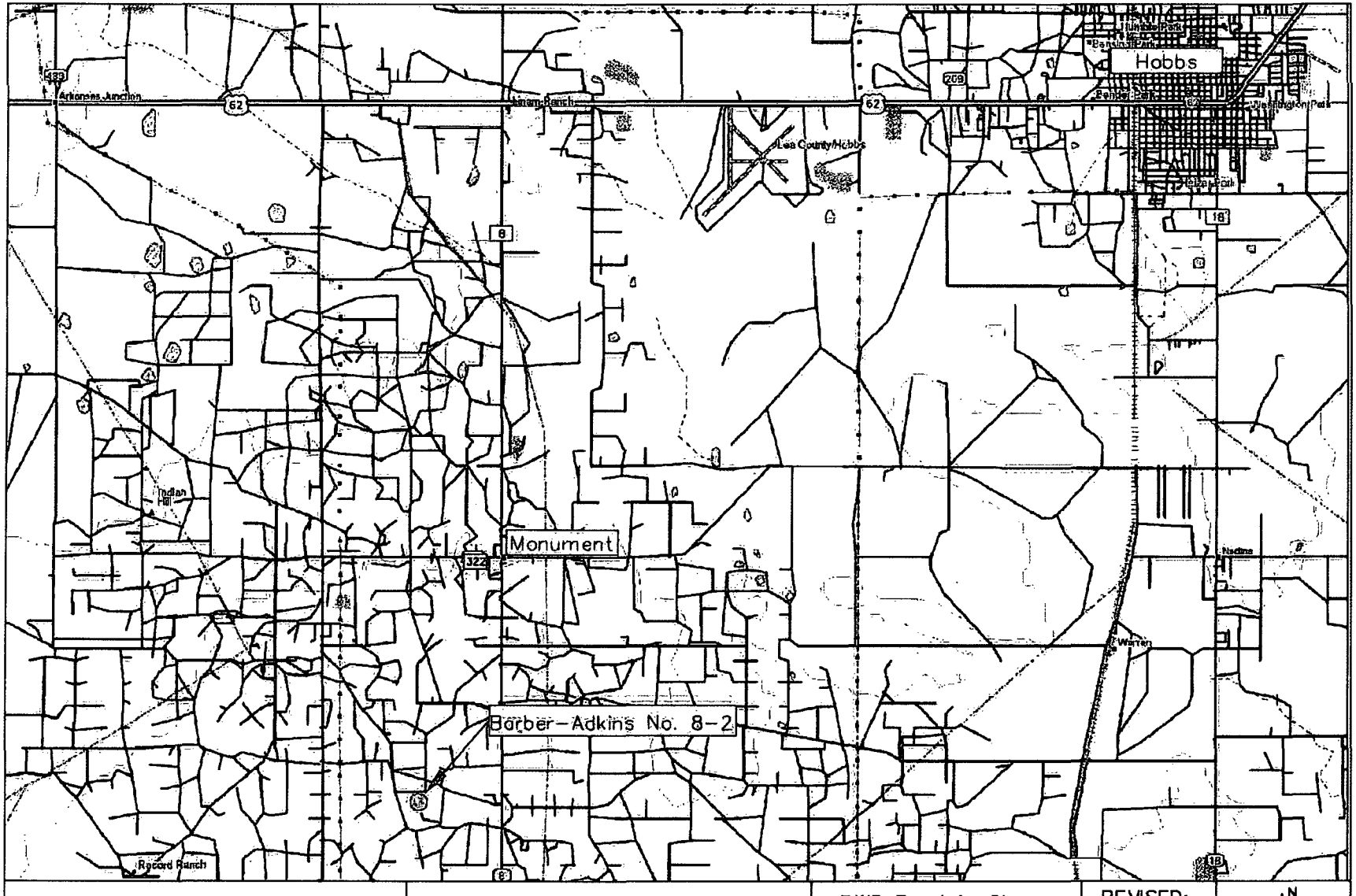
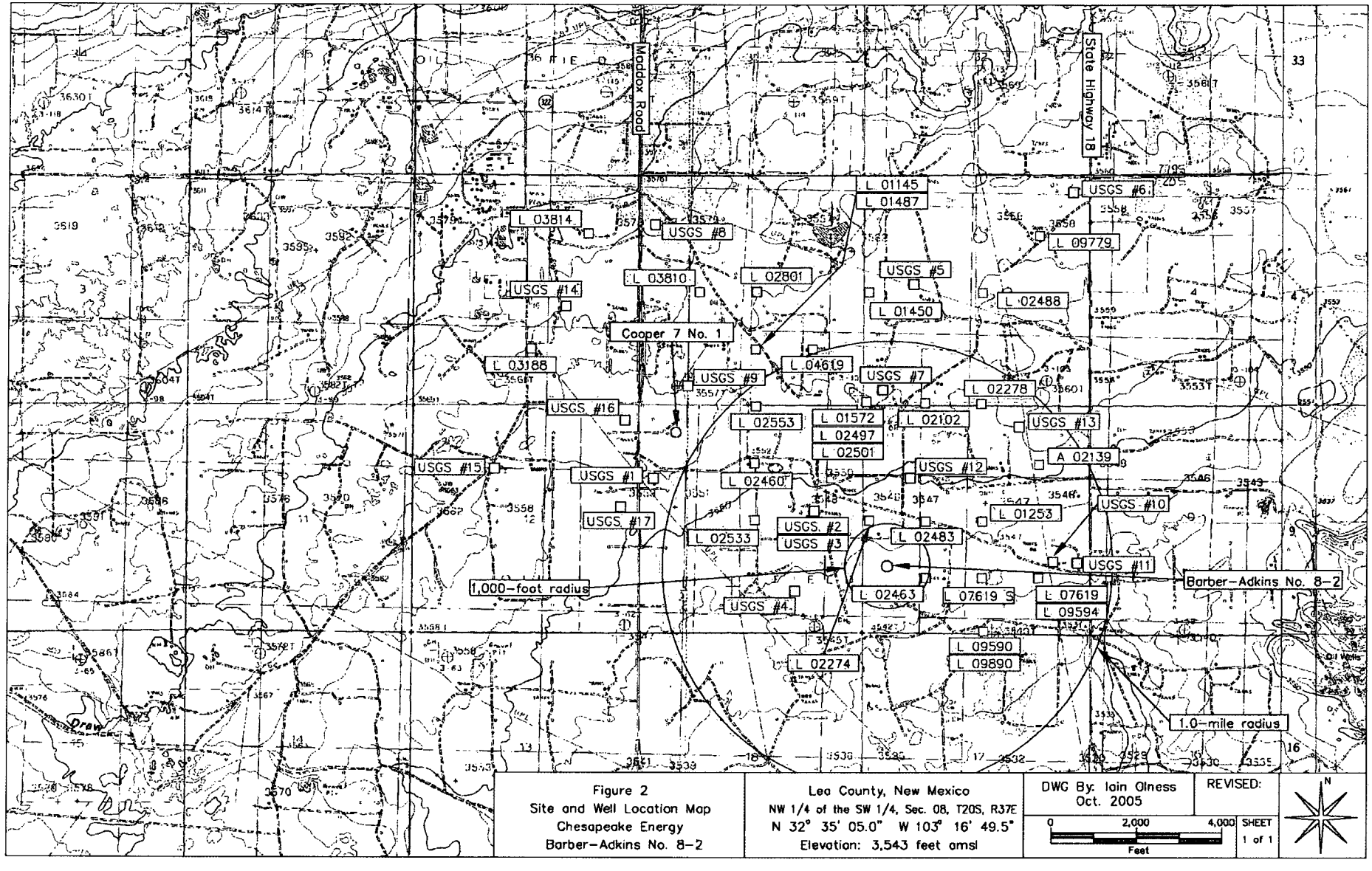


Figure 1 Area Map Chesapeake Energy Barber–Adkins No. 8–2	Lea County, New Mexico NW 1/4 of the SW 1/4, Sec. 08, T20S, R37E N 32° 35' 05.0" W 103° 16' 49.5" Elevation: 3,543 feet amsl	DWG By: Iain Olness October 2005	REVISED:	N
		0 1.5 3.0 Miles	SHEET 1 of 1	


Maddox Road
State Highway 18
L 01145
L 01487
USGS #6
L 03814
USGS #8
L 09779
USGS #5
L 03810
L 02801
USGS #14
L 02488
L 01450
Cooper 7 No. 1
L 03188
L 04619
USGS #9
USGS #7
L 02278
USGS #16
L 02553
L 01572
L 02497
L 02501
L 02102
USGS #13
A 02139
USGS #15
USGS #1
L 02460
USGS #12
USGS #10
L 01253
USGS #17
USGS #2
USGS #3
L 02533
L 02483
USGS #11
Barber-Adkins No. 8-2
1,000-foot radius
USGS #4
L 02463
L 07619 S
L 07619
L 09594
L 09590
L 09890
L 02274
1.0-mile radius
Draw
Figure 2
Site and Well Location Map
Chesapeake Energy
Barber-Adkins No. 8-2
Lea County, New Mexico
NW 1/4 of the SW 1/4, Sec. 08, T20S, R37E
N 32° 35' 05.0" W 103° 16' 49.5"
Elevation: 3,543 feet amsl
DWG By: Iain Olness
Oct. 2005
REVISED:
0
2,000
4,000
Feet
SHEET
1 of 1
N

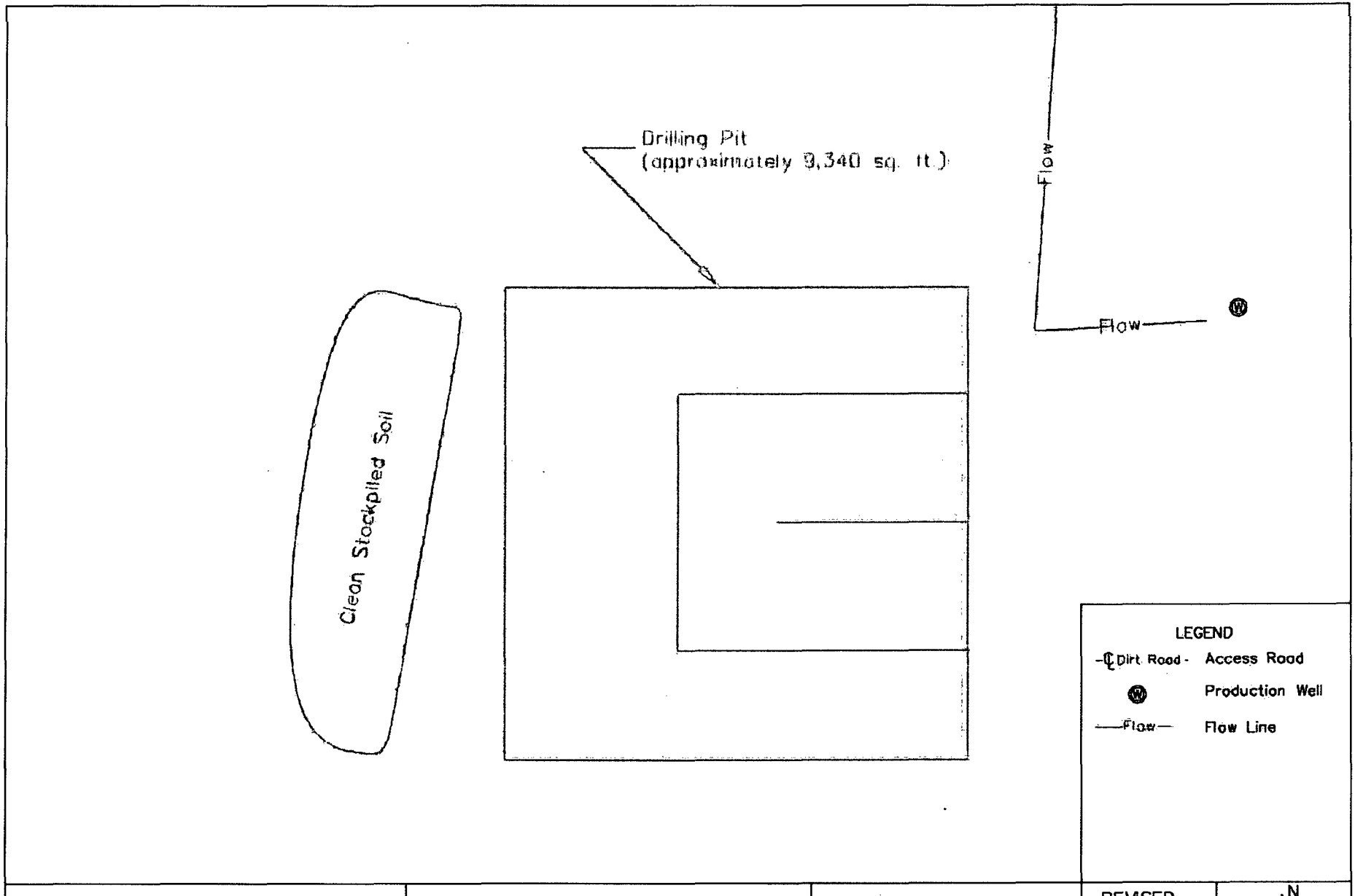


Figure 3 Site Map Chesapeake Energy Barber–Adkins No. 8–2	Lea County, New Mexico NW 1/4 of the SW 1/4, Sec. 08, T20S, R37E N 32° 35' 05.0" W 103° 16' 49.5" Elevation: 3,543 feet amsl	DWG By: Iain Olness October 2005	REVISED:	N
			SHEET 1 of 1	

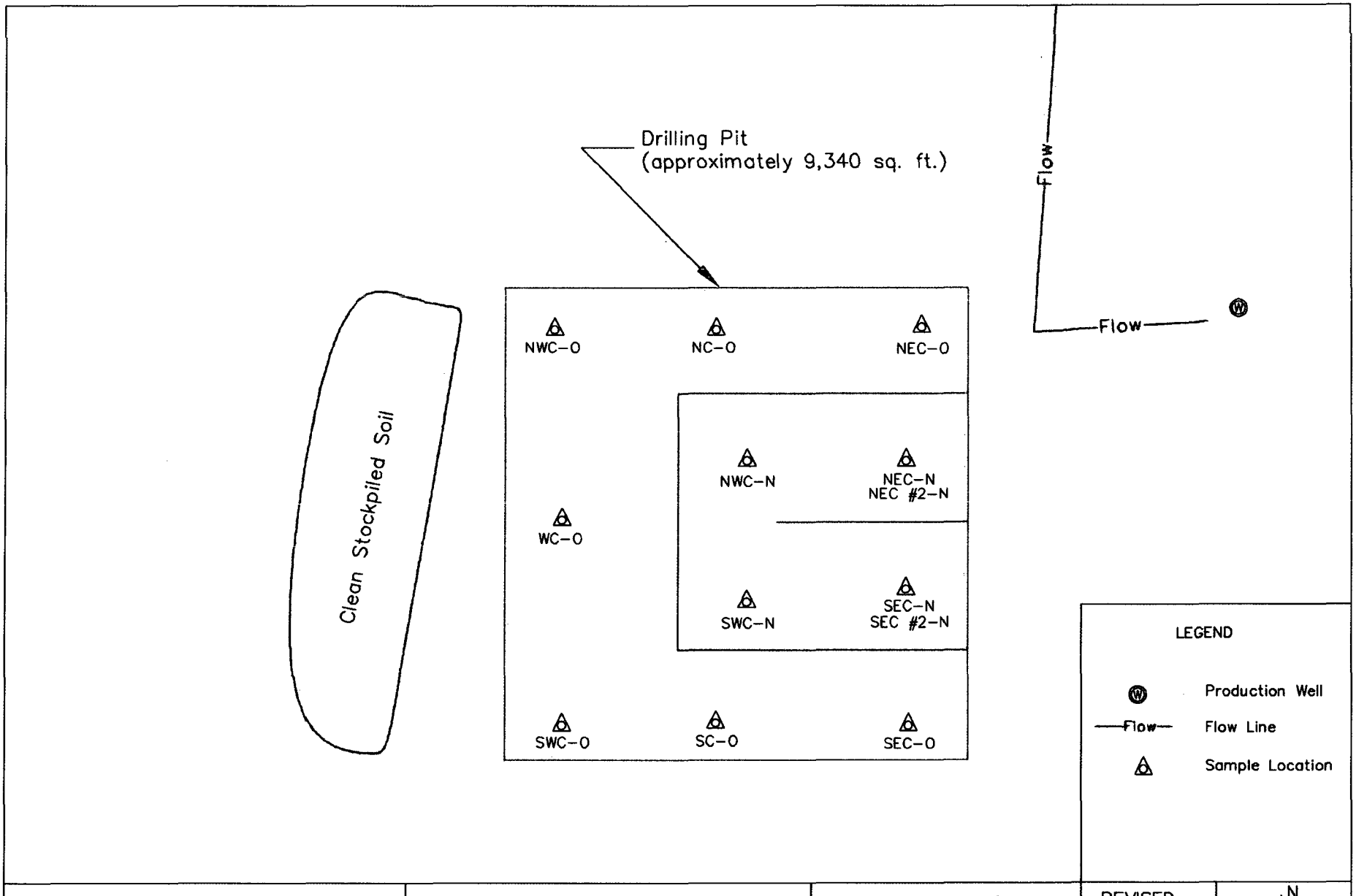


Figure 4 Sample Location Map 10-26-05 Chesapeake Energy Barber-Adkins No. 8-2	Lea County, New Mexico NW 1/4 of the SW 1/4, Sec. 08, T20S, R37E N 32° 35' 05.0" W 103° 16' 49.5" Elevation: 3,543 feet amsl	DWG By: Iain Olness October 2005	REVISED: Nov 2005	N
		0 30 60 Feet	SHEET 1 of 1	

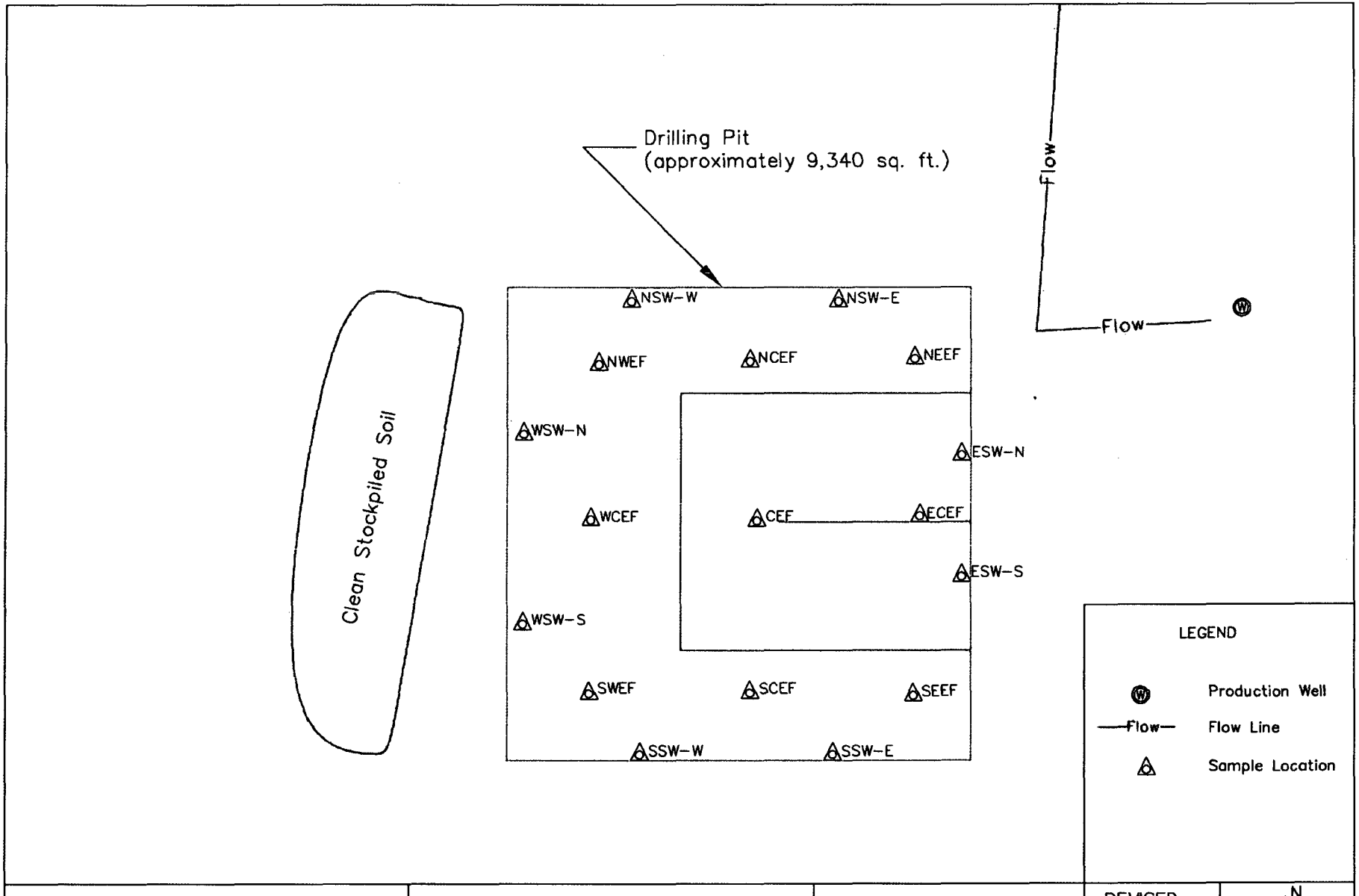


Figure 5 Sample Location Map 11-16-05 Chesapeake Energy Barber-Adkins No. 8-2	Lea County, New Mexico NW 1/4 of the SW 1/4, Sec. 08, T20S, R37E N 32° 35' 05.0" W 103° 16' 49.5" Elevation: 3,543 feet amsl	DWG By: Iain Olness October 2005	REVISED: Nov 2005	SHEET 1 of 1

TABLES

TABLE 1

Summary of Soil Sample Laboratory Analytical Results

Chesapeake Energy - Barber-Adkins No. 8-2 (Ref.# 160015)

Sample I.D.	Depth (feet)	SampleDate	PID Field Analysis (ppm)	Field Chloride Analyses (mg/Kg)	Benzene (mg/Kg)	Toulene (mg/Kg)	Ethylben-zene (mg/Kg)	Xylene (p/m) (mg/Kg)	Xylene (o) (mg/Kg)	Total BTEX (mg/Kg)	TPH (as Diesel) (mg/Kg)	TPH (as gasoline) (mg/Kg)	Total TPH (mg/Kg)	Sulfates ($SO_4^=$) (mg/Kg)	Chloride (mg/Kg)
NEC-O	6	26-Oct-05	18.0	3,360	--	--	--	--	--	--	--	--	--	--	--
NC-O	6	26-Oct-05	16.5	1,600	--	--	--	--	--	--	--	--	--	--	--
NWC-O	6	26-Oct-05	7.0	6,800	--	--	--	--	--	--	--	--	--	--	--
WC-O	6	26-Oct-05	18.7	400	--	--	--	--	--	--	--	--	--	--	--
SWC-O	6	26-Oct-05	21.2	200	--	--	--	--	--	--	--	--	--	--	--
SC-O	6	26-Oct-05	22.5	1,200	--	--	--	--	--	--	--	--	--	--	--
SWC-O	6	26-Oct-05	14.3	200	--	--	--	--	--	--	--	--	--	--	--
NWC-N	6	26-Oct-05	17.4	400	--	--	--	--	--	--	--	--	--	--	--
NEC-N	6	26-Oct-05	13.1	--	--	--	--	--	--	--	--	--	--	--	--
SEC-N	6	26-Oct-05	43.0	--	--	--	--	--	--	--	--	--	--	--	--
SWC-N	6	26-Oct-05	36.4	400	--	--	--	--	--	--	--	--	--	--	--
NEC-#2N	6	26-Oct-05	14.2	7,000	--	--	--	--	--	--	--	--	--	--	--
SEC-#2N	6	26-Oct-05	2.2	400	--	--	--	--	--	--	--	--	--	--	--
SWEF	6"	16-Nov-05	7.3	2,080	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	371	22.8	**394**	522	**3,210**
WCEF	6"	16-Nov-05	1.8	2,080	--	--	--	--	--	--	<10.0	<10.0	<10.0	197	**1,930**
NWEF	6"	16-Nov-05	0.9	4,000	--	--	--	--	--	--	<10.0	<10.0	<10.0	526	**3,640**
NCEF	6"	16-Nov-05	0.8	>8,000	--	--	--	--	--	--	<10.0	<10.0	<10.0	**888**	**10,700**
NEEF	6"	16-Nov-05	0.8	240	--	--	--	--	--	--	<10.0	<10.0	<10.0	94.4	106
SEEF	6"	16-Nov-05	1.7	2,080	--	--	--	--	--	--	501	30.4	**531**	461	**2,230**
SCEF	6"	16-Nov-05	2.3	1,840	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	132	14.9	**147**	165	**1,700**
CEF	6"	16-Nov-05	0.7	1,520	--	--	--	--	--	--	<10.0	<10.0	<10.0	103	**1,300**
ECEF	6"	16-Nov-05	0.9	>8,000	--	--	--	--	--	--	<10.0	<10.0	<10.0	**2,080**	**35,100**
ESW-N	3'	16-Nov-05	0.5	3,040	--	--	--	--	--	--	<10.0	<10.0	<10.0	163	**2,680**
ESW-S	3'	16-Nov-05	1.0	240	--	--	--	--	--	--	<10.0	<10.0	<10.0	50.7	77.4
SSW-E	3'	16-Nov-05	0.9	240	--	--	--	--	--	--	<10.0	<10.0	<10.0	28.7	12.4
SSW-W	3'	16-Nov-05	0.6	880	--	--	--	--	--	--	<10.0	<10.0	<10.0	134	**1,120**
WSW-S	3'	16-Nov-05	0.8	1,200	--	--	--	--	--	--	<10.0	<10.0	<10.0	66	**1,310**
WSW-N	3'	16-Nov-05	0.7	>8,000	--	--	--	--	--	--	<10.0	<10.0	<10.0	**911**	**13,300**
NSW-W	3'	16-Nov-05	1.1	480	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<10.0	<10.0	<10.0	79.9	**278**
NSW-E	3'	16-Nov-05	0.7	240	--	--	--	--	--	--	<10.0	<10.0	<10.0	30.3	63.1
NMOCD Remedial Thresholds					**10**					**50**			**100**	**600** [3]	**250** [2]

Bolded *values are in excess of NMOCD Remediation Thresholds*

[1] *Estimated concentration;analyte dectected below method detection limits*

[2] *Chloride residuals may not be capable of impacting local groundwater above the NMWQCC standards of 250 mg/L.*

[3] *Sulfate ($SO_4^=$) residuals may not be capable of impacting local groundwater above the NMWQCC standards of 600 mg/L*

-- Not Analyzed

TABLE 2

Well Data

Chesapeake Energy Barber-Adkins No. 8-2 (Ref. #160015)

Well Number	Diversion[A]	Owner	Use	Twsp	Rng	Sec q q q	Latitude	Longitude	Date Measured	Well Depth (ft bgs)	Depth to Water (ft bgs)
L 02460	3	Moran Drilling Co.	PRO	20 S	37 E	07 2 1	N 32° 35' 28.41"	W 103° 17' 25.25"	09-Jan-54	82	38
L 02533	0	Moran Drilling Co.	PRO	20 S	37 E	07 2 3	N 32° 35' 15.33"	W 103° 17' 25.23"	24-Apr-54	82	34
USGS #1				20 S	37 E	07 1 3 1			10-Apr-68		27.04
USGS #2				20 S	37 E	07 2 4 3			29-Jan-91		25.06
USGS #3				20 S	37 E	07 2 4 3			29-Mar-54		26.37
USGS #4				20 S	37 E	07 4 3 2			10-Apr-68		26.44
L 01450	3	Ohio Oil Co.	PRO	20 S	37 E	05 1 3	N 32° 36' 7.65"	W 103° 16' 54.36"			
L 01572	3	Exploration Drilling Co.	PRO	20 S	37 E	05 3 3 1	N 32° 35' 41.47"	W 103° 16' 54.37"	16-Sep-52	70	
L 02102	3	E. F. Moran, Inc.	PRO	20 S	37 E	05 3 4	N 32° 35' 41.43"	W 103° 16' 38.9"	20-Mar-53	70	46
L 02278	3	Laughlin Estate	DOM	20 S	37 E	05 4 3	N 32° 35' 41.39"	W 103° 16' 23.43"	01-Feb-61	65	37
L 02488	3	The Texas Co.	PRO	20 S	37 E	05 2 3	N 32° 36' 7.57"	W 103° 16' 23.45"	03-Feb-54	63	32
L 02497	3	Amerada Petroleum Corp.	PRO	20 S	37 E	05 3 3 3	N 32° 35' 41.47"	W 103° 16' 54.37"	10-Mar-54		35
L 02501	3	Amerada Petroleum Corp.	PRO	20 S	37 E	05 3 3 3	N 32° 35' 41.47"	W 103° 16' 54.37"			
L 09779	3	Dolores Nash Davis	DOM	20 S	37 E	05 2 2 2	N 32° 36' 20.62"	W 103° 16' 8.01"	15-Jan-85	50	40
USGS #5				20 S	37 E	05 1 3 4			14-Mar-06		30.75
USGS #6				20 S	37 E	05 2 2 2			30-Jan-76		26.82
USGS #7				20 S	37 E	05 3 3 3			10-Apr-68		30.2
L 01145	3	Gulf Oil Corporation	PRO	20 S	37 E	06 4 1 4	N 32° 35' 54.6"	W 103° 17' 25.25"	01-May-37	75	35
L 01487	3	Gulf Oil Corporation	PRO	20 S	37 E	06 4 1 4	N 32° 35' 54.6"	W 103° 17' 25.25"			
L 02553	3	Gulf Oil Corporation	PRO	20 S	37 E	06 4 3 4	N 32° 35' 41.49"	W 103° 17' 25.26"	13-May-54	85	40
L 02801	3	Amerada Petroleum Corp.	PRO	20 S	37 E	06 2 3 3	N 32° 36' 7.7"	W 103° 17' 25.24"			
L 03810	3	The Texas Co.	PRO	20 S	37 E	06 1 4 4	N 32° 36' 7.72"	W 103° 17' 40.67"	09-Mar-58	86	37
L 04619	3	Gulf Oil Corporation	PRO	20 S	37 E	06 4 2 3	N 32° 35' 54.58"	W 103° 17' 9.81"	29-Mar-61	86	36
USGS #8				20 S	37 E	06 1 1 3			12-Feb-81		22.94
USGS #9				20 S	37 E	06 3 3 4			23-Jan-96		28.81
L 01253	3	Gulf Oil Corporation	PRO	20 S	37 E	08 2 3 1	N 32° 35' 15.21"	W 103° 16' 23.42"			
A 02139	3	Gackle Drilling Co.	PRO	20 S	37 E	08 2 2 2	N 32° 35' 28.26"	W 103° 16' 7.95"	19-Mar-53	80	38
L 02274	3	Sinclair Oil & Gas Co.	PRO	20 S	37 E	08 1 3	N 32° 35' 15.28"	W 103° 16' 54.35"	05-Jul-53	70	38
L 02463	3	Amerada Petroleum Corp.	PRO	20 S	37 E	08 3 2 1	N 32° 35' 2.16"	W 103° 16' 38.87"	22-Jan-54	86	30
L 02483	3	Moran Drilling Co.	PRO	20 S	37 E	08 1 4 4	N 32° 35' 15.25"	W 103° 16' 38.88"	16-Feb-54	84	34
L 07619	15.57	Jim Cooper	IRR	20 S	37 E	08 4 2 2	N 32° 35' 2.08"	W 103° 16' 7.95"			
L 07619 S		Jim Cooper	IRR	20 S	37 E	08 4 1 1	N 32° 35' 2.12"	W 103° 16' 23.41"			
L 09590	3	Jimmy Cooper	DOM	20 S	37 E	08 4	N 32° 34' 49.04"	W 103° 16' 23.41"	03-Dec-84	70	35
L 09594	0	Jimmy Cooper	DOM	20 S	37 E	08 4 2	N 32° 35' 2.08"	W 103° 16' 7.95"			
L 09890	0	Jimmy Cooper	EXP	20 S	37 E	08 4	N 32° 34' 49.04"	W 103° 16' 23.41"	03-Dec-84	70	35

TABLE 2

Well Data

Chesapeake Energy Barber-Adkins No. 8-2 (Ref. #160015)

Well Number	Diversion[A]	Owner	Use	Twsp	Rng	Sec q q q	Latitude	Longitude	Date Measured	Well Depth (ft bgs)	Depth to Water (ft bgs)
USGS #10				20 S	37 E	08 4 2 3			04-Feb-76		19.86
USGS #11				20 S	37 E	08 4 2 4			03-Mar-66		40.43
USGS #12				20 S	37 E	17 1 3 2			23-Jan-96		26.6
USGS #13				20 S	37 E	18 2 1 2			29-Jan-91		27.28
L 03188	3	Amerada Petroleum Corp.	PRO	20 S	36 E	01 4 1 2	N 32° 35' 54.66"	W 103° 18' 26.59"			
L 03814	3	W. C. Byrd	DOM	20 S	36 E	01 2 2 2	N 32° 36' 20.84"	W 103° 18' 11.05"	04-Sep-58	60	40
USGS #14				20 S	36 E	01 4 1 2			11-Apr-68		26.28
USGS #15				20 S	36 E	12 1 4 1			11-Apr-68		29.65R
									27-Jan-71		28.25
USGS #16				20 S	36 E	12 2 2 2			08-Sep-67		27.72
USGS #17				20 S	36 E	12 2 4 4			01-Mar-61		25.65

* = Data obtained from the New Mexico Office of the State Engineer Website (http://iwaters.ose.state.nm.us:7001/iWATERS/wr_RegisServlet1) and a USGS Database on file at EPI's Office. Well locations shown on Figure 2

[A] = in acre feet per annum

PRO = 72-12-1 Prospecting or Development of a Natural Resource

IRR = Irrigation

DOM = Domestic

EXP = Exploration

quarters are 1=NW, 2=NE, 3=SW, 4=SE; quarters are biggest to smallest

APPENDIX I

LABORATORY ANALYTICAL REPORTS
AND
CHAIN-OF-CUSTODY FORM

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Iain Olness

Environmental Plus, Incorporated

P.O. Box 1558

Eunice, NM 88231

Project: Chesapeake/ Barber Adkins 8-2

Project Number: 160015

Location: UL-L, Sect. 08, T 20 S, R 37 E

Lab Order Number: 5K17011

Report Date: 11/28/05

Environmental Plus, Incorporated	Project: Chesapeake/ Barber Adkins 8-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160015	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	11/28/05 08:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SWEF (6 inch)	5K17011-01	Soil	11/16/05 07:00	11/17/05 13:50
WCEF (6 inch)	5K17011-02	Soil	11/16/05 07:10	11/17/05 13:50
NWEF (6 inch)	5K17011-03	Soil	11/16/05 07:20	11/17/05 13:50
NCEF (6 inch)	5K17011-04	Soil	11/16/05 07:30	11/17/05 13:50
NEEF (6 inch)	5K17011-05	Soil	11/16/05 07:40	11/17/05 13:50
SEEF (6 inch)	5K17011-06	Soil	11/16/05 07:50	11/17/05 13:50
SCEF (6 inch)	5K17011-07	Soil	11/16/05 08:00	11/17/05 13:50
CEF (6 inch)	5K17011-08	Soil	11/16/05 08:10	11/17/05 13:50
ECEF (6 inch)	5K17011-09	Soil	11/16/05 08:20	11/17/05 13:50
ESW-N (3')	5K17011-10	Soil	11/16/05 08:30	11/17/05 13:50
ESW-S (3')	5K17011-11	Soil	11/16/05 08:40	11/17/05 13:50
SSW-E (3')	5K17011-12	Soil	11/16/05 08:50	11/17/05 13:50
SSW-W (3')	5K17011-13	Soil	11/16/05 09:00	11/17/05 13:50
WSW-W (3')	5K17011-14	Soil	11/16/05 09:10	11/17/05 13:50
WSW-N (3')	5K17011-15	Soil	11/16/05 09:20	11/17/05 13:50
NSW-W (3')	5K17011-16	Soil	11/16/05 09:30	11/17/05 13:50
NSW-E (3')	5K17011-17	Soil	11/16/05 09:40	11/17/05 13:50

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Environmental Plus, Incorporated	Project: Chesapeake/ Barber Adkins 8-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160015	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	11/28/05 08:23

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SWEF (6 inch) (5K17011-01) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EK51813	11/18/05	11/18/05	EPA 8021B	
Toluene	ND	0.0250	"	"	"	"	"	"	
Ethylbenzene	ND	0.0250	"	"	"	"	"	"	
Xylene (p/m)	ND	0.0250	"	"	"	"	"	"	
Xylene (o)	ND	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*105 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*107 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	**22.8**	10.0	"	1	EK51815	11/18/05	11/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	**371**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**394**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*95.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*104 %*	*70-130*		"	"	"	"	
WCEF (6 inch) (5K17011-02) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*103 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*71.8 %*	*70-130*		"	"	"	"	
NWEF (6 inch) (5K17011-03) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*92.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*82.4 %*	*70-130*		"	"	"	"	
NCEF (6 inch) (5K17011-04) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*88.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*74.2 %*	*70-130*		"	"	"	"	

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Environmental Plus, Incorporated	Project: Chesapeake/ Barber Adkins 8-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160015	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	11/28/05 08:23

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
NEEF (6 inch) (5K17011-05) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*83.2 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*70.2 %*	*70-130*		"	"	"	"	
SEEF (6 inch) (5K17011-06) Soil									
Gasoline Range Organics C6-C12	**30.4**	10.0	mg/kg dry	1	EK51815	11/18/05	11/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	**501**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**531**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*107 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*128 %*	*70-130*		"	"	"	"	
SCEF (6 inch) (5K17011-07) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EK51813	11/18/05	11/18/05	EPA 8021B	
Toluene	ND	0.0250	"	"	"	"	"	"	
Ethylbenzene	ND	0.0250	"	"	"	"	"	"	
Xylene (p/m)	ND	0.0250	"	"	"	"	"	"	
Xylene (o)	ND	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*96.8 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*99.0 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	**14.9**	10.0	"	1	EK51815	11/18/05	11/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	**132**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**147**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*89.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*87.4 %*	*70-130*		"	"	"	"	
CEF (6 inch) (5K17011-08) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*82.2 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*82.6 %*	*70-130*		"	"	"	"	

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Environmental Plus, Incorporated	Project: Chesapeake/ Barber Adkins 8-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160015	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	11/28/05 08:23

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
ECEF (6 inch) (5K17011-09) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*82.2 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*70.6 %*	*70-130*		"	"	"	"	
ESW-N (3') (5K17011-10) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*87.8 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*79.8 %*	*70-130*		"	"	"	"	
ESW-S (3') (5K17011-11) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*83.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*73.0 %*	*70-130*		"	"	"	"	
SSW-E (3') (5K17011-12) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/19/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*87.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*71.6 %*	*70-130*		"	"	"	"	
SSW-W (3') (5K17011-13) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/19/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*84.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*75.0 %*	*70-130*		"	"	"	"	

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Environmental Plus, Incorporated	Project: Chesapeake/ Barber Adkins 8-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160015	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	11/28/05 08:23

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WSW-W (3') (5K17011-14) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/19/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*92.2 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*75.2 %*	*70-130*		"	"	"	"	
WSW-N (3') (5K17011-15) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/19/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*81.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*70.8 %*	*70-130*		"	"	"	"	
NSW-W (3') (5K17011-16) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EK51813	11/18/05	11/18/05	EPA 8021B	
Toluene	ND	0.0250	"	"	"	"	"	"	
Ethylbenzene	ND	0.0250	"	"	"	"	"	"	
Xylene (p/m)	ND	0.0250	"	"	"	"	"	"	
Xylene (o)	ND	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*97.4 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	"	1	EK51815	11/18/05	11/19/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*72.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*73.4 %*	*70-130*		"	"	"	"	
NSW-E (3') (5K17011-17) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EK51815	11/18/05	11/19/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*91.2 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*76.4 %*	*70-130*		"	"	"	"	

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Environmental Plus, Incorporated	Project: Chesapeake/ Barber Adkins 8-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160015	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	11/28/05 08:23

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SWEF (6 inch) (5K17011-01) Soil									
Chloride	**3210**	50.0	mg/kg	100	EK52111	11/18/05	11/21/05	EPA 300.0	
% Moisture	**4.9**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**522**	50.0	mg/kg	100	EK52111	11/18/05	11/21/05	EPA 300.0	
WCEF (6 inch) (5K17011-02) Soil									
Chloride	**1930**	25.0	mg/kg	50	EK52111	11/18/05	11/21/05	EPA 300.0	
% Moisture	**6.4**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**197**	25.0	mg/kg	50	EK52111	11/18/05	11/21/05	EPA 300.0	
NWEF (6 inch) (5K17011-03) Soil									
Chloride	**3640**	50.0	mg/kg	100	EK52111	11/18/05	11/21/05	EPA 300.0	
% Moisture	**7.8**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**526**	50.0	mg/kg	100	EK52111	11/18/05	11/21/05	EPA 300.0	
NCEF (6 inch) (5K17011-04) Soil									
Chloride	**10700**	200	mg/kg	400	EK52111	11/18/05	11/21/05	EPA 300.0	
% Moisture	**7.2**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**888**	200	mg/kg	400	EK52111	11/18/05	11/21/05	EPA 300.0	
NEEF (6 inch) (5K17011-05) Soil									
Chloride	**106**	5.00	mg/kg	10	EK52111	11/18/05	11/21/05	EPA 300.0	
% Moisture	**1.5**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**94.4**	5.00	mg/kg	10	EK52111	11/18/05	11/21/05	EPA 300.0	
SEEF (6 inch) (5K17011-06) Soil									
Chloride	**2230**	50.0	mg/kg	100	EK52111	11/18/05	11/21/05	EPA 300.0	
% Moisture	**2.3**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**461**	50.0	mg/kg	100	EK52111	11/18/05	11/21/05	EPA 300.0	
SCEF (6 inch) (5K17011-07) Soil									
Chloride	**1700**	25.0	mg/kg	50	EK52111	11/18/05	11/21/05	EPA 300.0	
% Moisture	**2.6**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**165**	25.0	mg/kg	50	EK52111	11/18/05	11/21/05	EPA 300.0	

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Environmental Plus, Incorporated	Project: Chesapeake/ Barber Adkins 8-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160015	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	11/28/05 08:23

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
CEF (6 inch) (5K17011-08) Soil									
Chloride	**1300**	20.0	mg/kg	40	EK52111	11/18/05	11/21/05	EPA 300.0	
% Moisture	**0.4**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**103**	20.0	mg/kg	40	EK52111	11/18/05	11/21/05	EPA 300.0	
ECEF (6 inch) (5K17011-09) Soil									
Chloride	**35100**	500	mg/kg	1000	EK52111	11/18/05	11/21/05	EPA 300.0	
% Moisture	**10.7**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**2080**	500	mg/kg	1000	EK52111	11/18/05	11/21/05	EPA 300.0	
ESW-N (3') (5K17011-10) Soil									
Chloride	**2680**	50.0	mg/kg	100	EK52112	11/18/05	11/21/05	EPA 300.0	
% Moisture	**4.5**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**163**	50.0	mg/kg	100	EK52112	11/18/05	11/21/05	EPA 300.0	
ESW-S (3') (5K17011-11) Soil									
Chloride	**77.4**	5.00	mg/kg	10	EK52112	11/18/05	11/21/05	EPA 300.0	
% Moisture	**13.7**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**50.7**	5.00	mg/kg	10	EK52112	11/18/05	11/21/05	EPA 300.0	
SSW-E (3') (5K17011-12) Soil									
Chloride	**12.4**	5.00	mg/kg	10	EK52112	11/18/05	11/21/05	EPA 300.0	
% Moisture	**7.8**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**28.7**	5.00	mg/kg	10	EK52112	11/18/05	11/21/05	EPA 300.0	
SSW-W (3') (5K17011-13) Soil									
Chloride	**1120**	20.0	mg/kg	40	EK52112	11/18/05	11/21/05	EPA 300.0	
% Moisture	**13.3**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**134**	20.0	mg/kg	40	EK52112	11/18/05	11/21/05	EPA 300.0	
WSW-W (3') (5K17011-14) Soil									
Chloride	**1310**	20.0	mg/kg	40	EK52112	11/18/05	11/21/05	EPA 300.0	
% Moisture	**8.6**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**66.0**	20.0	mg/kg	40	EK52112	11/18/05	11/21/05	EPA 300.0	

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Environmental Plus, Incorporated	Project: Chesapeake/ Barber Adkins 8-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160015	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	11/28/05 08:23

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WSW-N (3') (5K17011-15) Soil									
Chloride	**13300**	200	mg/kg	400	EK52112	11/18/05	11/21/05	EPA 300.0	
% Moisture	**9.0**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**911**	200	mg/kg	400	EK52112	11/18/05	11/21/05	EPA 300.0	
NSW-W (3') (5K17011-16) Soil									
Chloride	**278**	10.0	mg/kg	20	EK52112	11/18/05	11/21/05	EPA 300.0	
% Moisture	**7.3**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**79.9**	10.0	mg/kg	20	EK52112	11/18/05	11/21/05	EPA 300.0	
NSW-E (3') (5K17011-17) Soil									
Chloride	**63.1**	5.00	mg/kg	10	EK52112	11/18/05	11/21/05	EPA 300.0	
% Moisture	**4.2**	0.1	%	1	EK51804	11/17/05	11/18/05	% calculation	
Sulfate	**30.3**	5.00	mg/kg	10	EK52112	11/18/05	11/21/05	EPA 300.0	

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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 EK51813 - EPA 5030C (GC)										
Blank (EK51813-BLK1)				Prepared & Analyzed: 11/18/05						
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	*0.0414*		"	*0.0400*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*0.0431*		"	*0.0400*		*108*	*80-120*			
LCS (EK51813-BS1)				Prepared & Analyzed: 11/18/05						
Benzene	0.0553	0.00100	mg/kg wet	0.0500		111	80-120			
Toluene	0.0600	0.00100	"	0.0500		120	80-120			
Ethylbenzene	0.0578	0.00100	"	0.0500		116	80-120			
Xylene (p/m)	0.105	0.00100	"	0.100		105	80-120			
Xylene (o)	0.0568	0.00100	"	0.0500		114	80-120			
Surrogate: a,a,a-Trifluorotoluene	*0.0441*		"	*0.0400*		*110*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*0.0357*		"	*0.0400*		*89.2*	*80-120*			
Calibration Check (EK51813-CCV1)				Prepared & Analyzed: 11/18/05						
Benzene	52.6		ug/kg	50.0		105	80-120			
Toluene	55.6		"	50.0		111	80-120			
Ethylbenzene	52.2		"	50.0		104	80-120			
Xylene (p/m)	95.0		"	100		95.0	80-120			
Xylene (o)	51.3		"	50.0		103	80-120			
Surrogate: a,a,a-Trifluorotoluene	*0.0468*		*mg/kg wet*	*0.0400*		*117*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*0.0347*		"	*0.0400*		*86.8*	*80-120*			
Matrix Spike (EK51813-MS1)	**Source: 5K17010-06**			Prepared & Analyzed: 11/18/05						
Benzene	1.39	0.0250	mg/kg dry	1.34	ND	104	80-120			
Toluene	1.42	0.0250	"	1.34	ND	106	80-120			
Ethylbenzene	1.34	0.0250	"	1.34	ND	100	80-120			
Xylene (p/m)	2.50	0.0250	"	2.67	ND	93.6	80-120			
Xylene (o)	1.34	0.0250	"	1.34	ND	100	80-120			
Surrogate: a,a,a-Trifluorotoluene	*0.0492*		"	*0.0427*		*115*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*0.0344*		"	*0.0427*		*80.6*	*80-120*			

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK51813 - EPA 5030C (GC)										
Matrix Spike Dup (EK51813-MSD1)	**Source: 5K17010-06**			Prepared & Analyzed: 11/18/05						
Benzene	1.43	0.0250	mg/kg dry	1.34	ND	107	80-120	2.84	20	
Toluene	1.54	0.0250	"	1.34	ND	115	80-120	8.14	20	
Ethylbenzene	1.57	0.0250	"	1.34	ND	117	80-120	15.7	20	
Xylene (p/m)	2.87	0.0250	"	2.67	ND	107	80-120	13.4	20	
Xylene (o)	1.55	0.0250	"	1.34	ND	116	80-120	14.8	20	
Surrogate: a,a,a-Trifluorotoluene	*0.0500*		"	*0.0427*		*117*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*0.0496*		"	*0.0427*		*116*	*80-120*			
Batch EK51815 - Solvent Extraction (GC)										
Blank (EK51815-BLK1)				Prepared & Analyzed: 11/18/05						
Gasoline Range Organics C6-C12	ND	10.0	mg/kg wet							
Diesel Range Organics >C12-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
Surrogate: 1-Chlorooctane	*40.1*		*mg/kg*	*50.0*		*80.2*	*70-130*			
Surrogate: 1-Chlorooctadecane	*35.7*		"	*50.0*		*71.4*	*70-130*			
LCS (EK51815-BS1)				Prepared & Analyzed: 11/18/05						
Gasoline Range Organics C6-C12	394	10.0	mg/kg wet	500		78.8	75-125			
Diesel Range Organics >C12-C35	558	10.0	"	500		112	75-125			
Total Hydrocarbon C6-C35	952	10.0	"	1000		95.2	75-125			
Surrogate: 1-Chlorooctane	*53.1*		*mg/kg*	*50.0*		*106*	*70-130*			
Surrogate: 1-Chlorooctadecane	*48.0*		"	*50.0*		*96.0*	*70-130*			
Calibration Check (EK51815-CCV1)				Prepared: 11/18/05 Analyzed: 11/19/05						
Gasoline Range Organics C6-C12	431		mg/kg	500		86.2	80-120			
Diesel Range Organics >C12-C35	584		"	500		117	80-120			
Total Hydrocarbon C6-C35	1020		"	1000		102	80-120			
Surrogate: 1-Chlorooctane	*47.6*		"	*50.0*		*95.2*	*70-130*			
Surrogate: 1-Chlorooctadecane	*64.4*		"	*50.0*		*129*	*70-130*			

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK51815 - Solvent Extraction (GC)										
Matrix Spike (EK51815-MS1)	**Source: 5K17011-01**			Prepared & Analyzed: 11/18/05						
Gasoline Range Organics C6-C12	455	10.0	mg/kg dry	526	22.8	82.2	75-125			
Diesel Range Organics >C12-C35	852	10.0	"	526	371	91.4	75-125			
Total Hydrocarbon C6-C35	1310	10.0	"	1050	394	87.2	75-125			
Surrogate: 1-Chlorooctane	*54.4*		*mg/kg*	*50.0*		*109*	*70-130*			
Surrogate: 1-Chlorooctadecane	*56.4*		"	*50.0*		*113*	*70-130*			
Matrix Spike Dup (EK51815-MSD1)	**Source: 5K17011-01**			Prepared & Analyzed: 11/18/05						
Gasoline Range Organics C6-C12	444	10.0	mg/kg dry	526	22.8	80.1	75-125	2.45	20	
Diesel Range Organics >C12-C35	853	10.0	"	526	371	91.6	75-125	0.117	20	
Total Hydrocarbon C6-C35	1300	10.0	"	1050	394	86.3	75-125	0.766	20	
Surrogate: 1-Chlorooctane	*55.5*		*mg/kg*	*50.0*		*111*	*70-130*			
Surrogate: 1-Chlorooctadecane	*56.9*		"	*50.0*		*114*	*70-130*			

Environmental Plus, Incorporated	Project: Chesapeake/ Barber Adkins 8-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160015	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	11/28/05 08:23

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 EK51804 - General Preparation (Prep)										
Blank (EK51804-BLK1)				Prepared: 11/17/05 Analyzed: 11/18/05						
% Solids	100		%							
Duplicate (EK51804-DUP1)	Source: 5K17002-01			Prepared: 11/17/05 Analyzed: 11/18/05						
% Solids	90.2		%		90.2			0.00	20	
Batch EK52111 - Water Extraction										
Blank (EK52111-BLK1)				Prepared: 11/18/05 Analyzed: 11/21/05						
Chloride	ND	0.500	mg/kg							
Sulfate	ND	0.500	"							
LCS (EK52111-BS1)				Prepared: 11/18/05 Analyzed: 11/21/05						
Sulfate	8.69		mg/L	10.0		86.9	80-120			
Chloride	8.42		"	10.0		84.2	80-120			
Calibration Check (EK52111-CCV1)				Prepared: 11/18/05 Analyzed: 11/21/05						
Chloride	8.73		mg/L	10.0		87.3	80-120			
Sulfate	9.03		"	10.0		90.3	80-120			
Duplicate (EK52111-DUP1)	Source: 5K17004-01			Prepared: 11/18/05 Analyzed: 11/21/05						
Chloride	311	20.0	mg/kg		311			0.00	20	
Sulfate	1750	20.0	"		1740			0.573	20	
Batch EK52112 - Water Extraction										
Blank (EK52112-BLK1)				Prepared: 11/18/05 Analyzed: 11/21/05						
Chloride	ND	0.500	mg/kg							
Sulfate	ND	0.500	"							

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Environmental Plus, Incorporated	Project: Chesapeake/ Barber Adkins S-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160015	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	11/28/05 08:23

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 EK52112 - Water Extraction										
LCS (EK52112-BS1)				Prepared: 11/18/05 Analyzed: 11/21/05						
Sulfate	8.74		mg/L	10.0		87.4	80-120			
Chloride	8.57		"	10.0		85.7	80-120			
Calibration Check (EK52112-CCV1)				Prepared: 11/18/05 Analyzed: 11/21/05						
Sulfate	8.80		mg/L	10.0		88.0	80-120			
Chloride	8.59		"	10.0		85.9	80-120			
Duplicate (EK52112-DUP1)	**Source: 5K17011-10**			Prepared: 11/18/05 Analyzed: 11/21/05						
Sulfate	152	50.0	mg/kg		163			6.98	20	
Chloride	2770	50.0	"		2680			3.30	20	

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

Environmental Plus, Incorporated	Project: Chesapeake/ Barber Adkins 8-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160015	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	11/28/05 08:23

Notes and Definitions

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

Report Approved By: Raland K Tuttle Date: 11/28/2005

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.

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

Company Name	Environmental Plus, Inc.
EPI Project Manager	Iain Olness
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 Energy
Facility Name	Barber Adkins 8-2
Location	UL-L, Sect. 08, T 20 S, R 37 E
Project Reference	160015
EPI Sampler Name	George Blackburn

Bill To

Attn: Iain Olness
P.O. Box 1558
Eunice, NM 88231

LAB I.D. 5K17011	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	ANALYSIS REQUEST: BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^=$)	pH	TCLP	OTHER >>>	PAH
-01	SWEF (6")	G	1			1					X		16-Nov-05	7:00	X	X	X	X				
-02	WCEF (6")	G	1			1					X		16-Nov-05	7:10		X	X	X				
-03	NWEF (6")	G	1			1					X		16-Nov-05	7:20		X	X	X				
-04	NCEF (6")	G	1			1					X		16-Nov-05	7:30		X	X	X				
-05	NEEF (6")	G	1			1					X		16-Nov-05	7:40		X	X	X				
-06	SEEF (6")	G	1			1					X		16-Nov-05	7:50		X	X	X				
-07	SCEF (6")	G	1			1					X		16-Nov-05	8:00	X	X	X	X				
-08	CEF (6")	G	1			1					X		16-Nov-05	8:10		X	X	X				
-09	ECEF (6")	G	1			1					X		16-Nov-05	8:20		X	X	X				
-10	ESW-N (3')	G	1			1					X		16-Nov-05	8:30		X	X	X				

Sampler Relinquished: Iain Olness	Date: 11/17/05 Time: 1045	Received By: Jason Boone	E-mail results to: iolness@envplus.net
Relinquished by: Jason Boone	Date: 11-17-05 Time: 1350	Received By: (lab staff) Kalandk [illegible]	NOTES: Labels w/ Seals
Delivered by:	Sample Cool & Intact -3.0 °C Yes No	Checked By:	

Environmental Plus, Inc.

Chain of Custody Form

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

Company Name	Environmental Plus, Inc.
EPI Project Manager	Iain Olness
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 Energy
Facility Name	Barber Adkins 8-2
Location	UL-L, Sect. 08, T 20 S, R 37 E
Project Reference	160015
EPI Sampler Name	George Blackburn

Bill To

Attn: Iain Olness
P.O. Box 1558
Eunice, NM 88231

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
5K17011																						
-11	ESW-S (3')	G	1			1					X		16-Nov-05	8:40		X	X	X				
-12	SSW-E (3')	G	1			1					X		16-Nov-05	8:50		X	X	X				
-13	SSW-W (3')	G	1			1					X		16-Nov-05	9:00		X	X	X				
-14	WSW-S (3')	G	1			1					X		16-Nov-05	9:10		X	X	X				
-15	WSW-N (3')	G	1			1					X		16-Nov-05	9:20		X	X	X				
-16	NSW-W (3')	G	1			1					X		16-Nov-05	9:30	X	X	X	X				
-17	NSW-E (3')	G	1			1					X		16-Nov-05	9:40		X	X	X				
8																						
9																						
10																						

Sampler Relinquished: Iain Olness	Date: 11/17/05 Time: 1045	Received By: Aaron Boone	E-mail results to: iolness@envplus.net
Relinquished by: Aaron Boone	Date: 11-17-05 Time: 1350	Received By: (lab staff) Rolando Tuo	NOTES: Labels w/ seals
Delivered by:	Sample Cool & Intact (Yes) No: 3.0	Checked By:	

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

Client: EPI

Date/Time: 11-17-05 @ 1350

Order #: 5K17011

Initials: JMM

Sample Receipt Checklist

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

Other observations:

Variance Documentation:

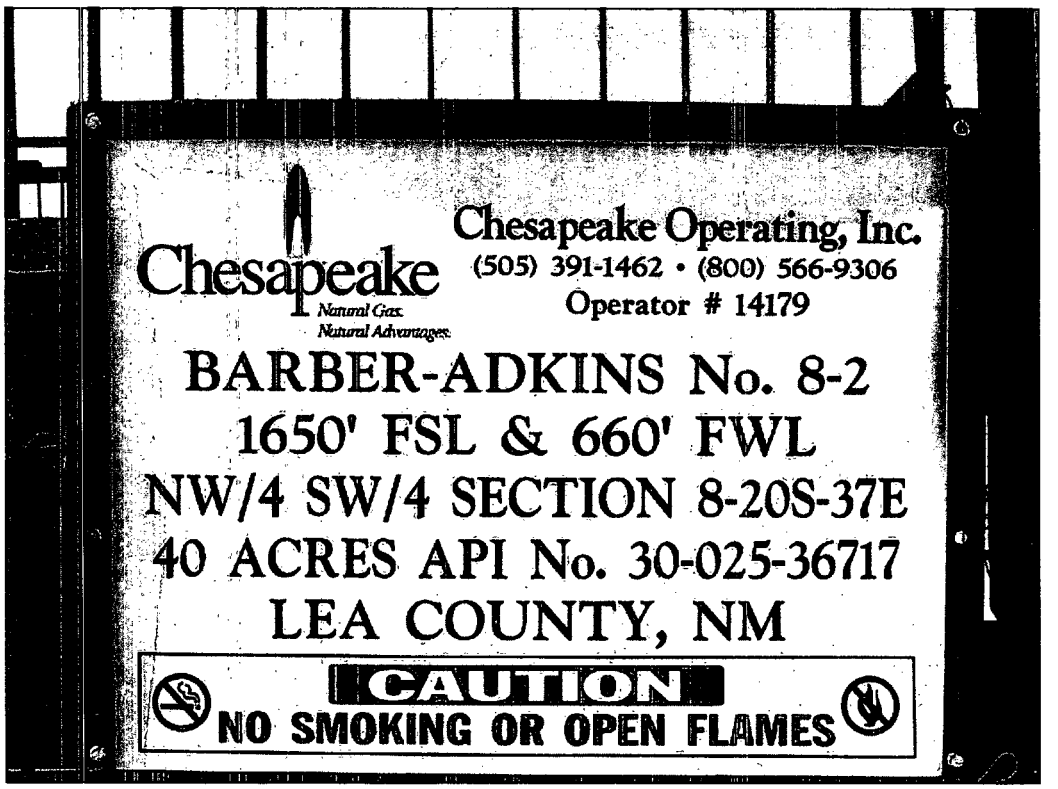
Contact Person: - Date/Time: Contacted by:

Regarding:

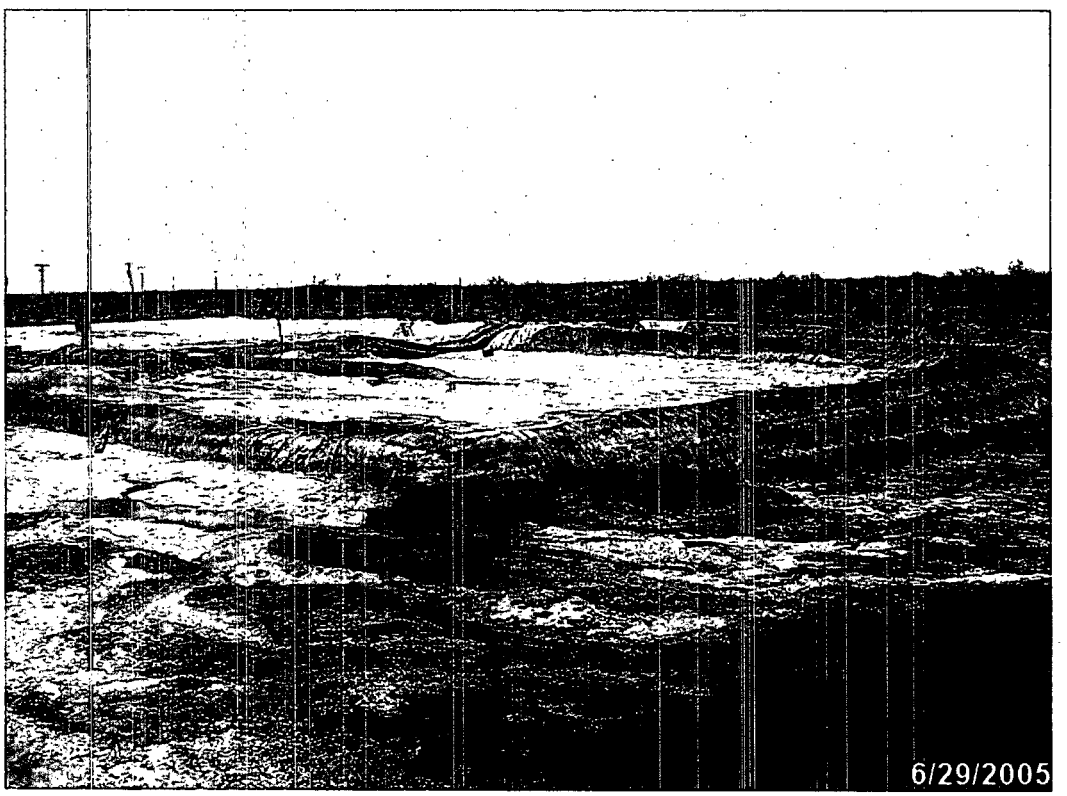
Corrective Action Taken:

APPENDIX II

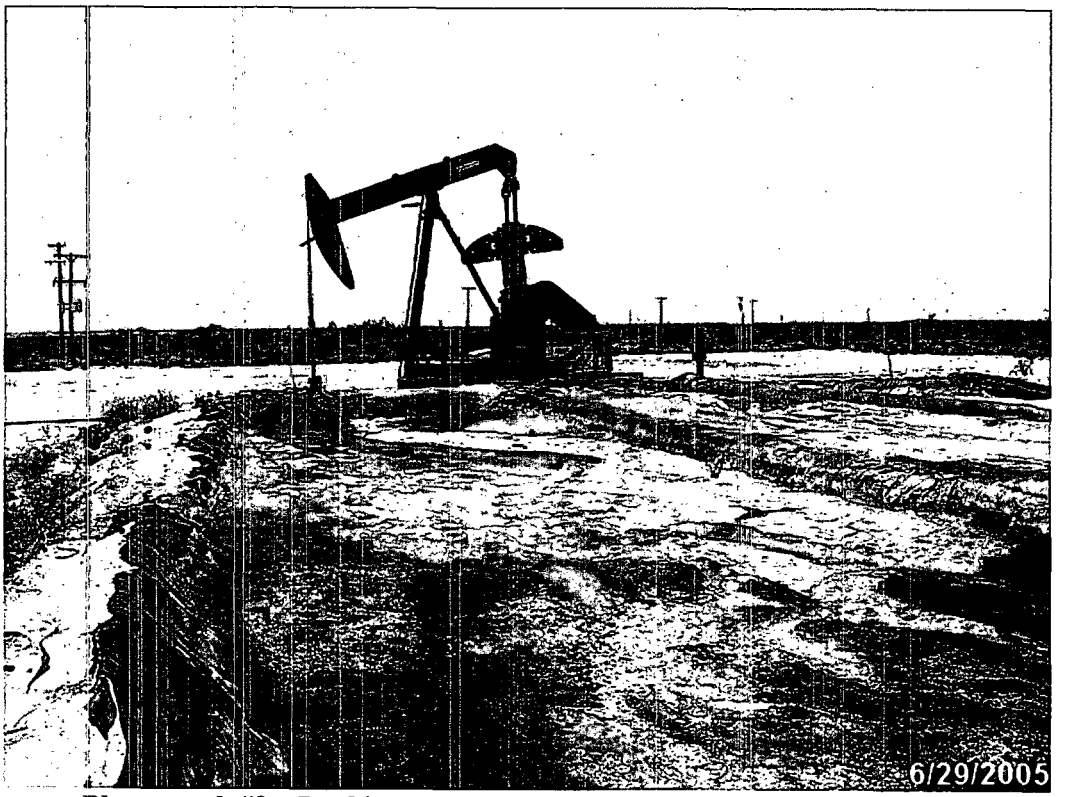
PROJECT PHOTOGRAPHS



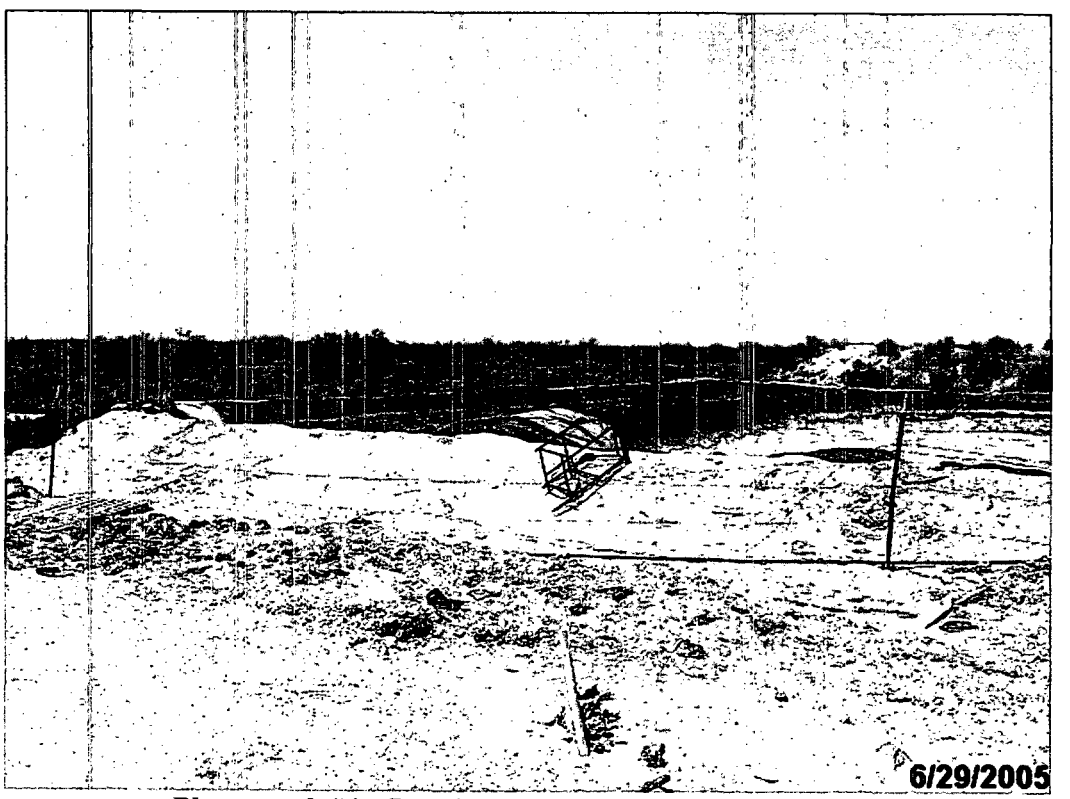
Photograph #1- Lease Sign



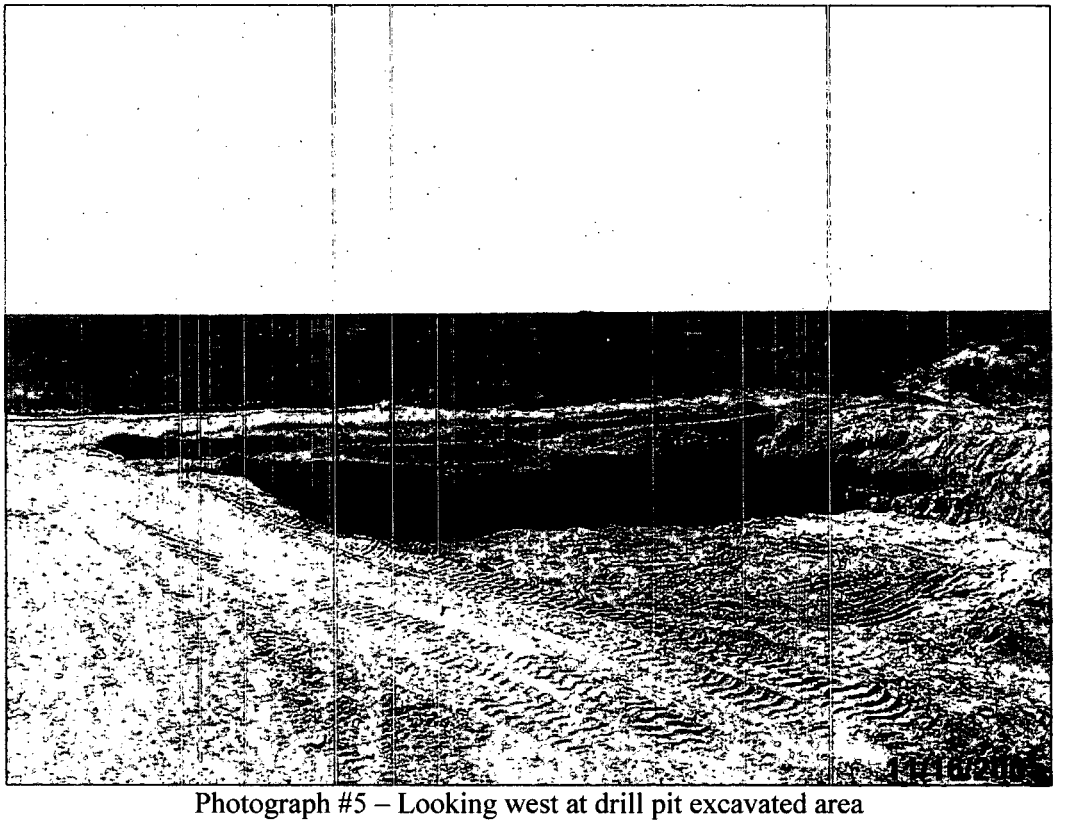
Photograph #2 – Looking southwesterly at drill pit and liner



Photograph #3 – Looking east at original pit, liner and production well

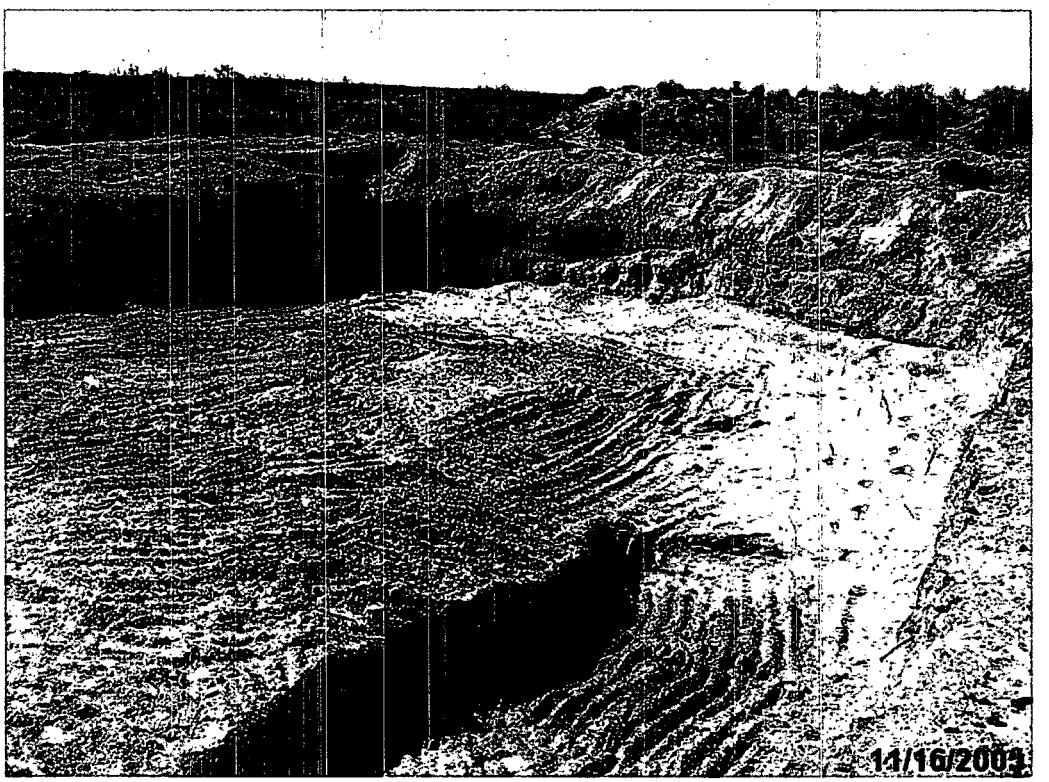


Photograph #4 – Looking westerly at pit, berm and liner



Photograph #5 – Looking west at drill pit excavated area

Photograph No. 6- Looking west at bermed drill pit excavated area



Photograph # 7- Looking west at divider side walls and pit excavation area

Photograph # 8- Looking southwesterly at pit excavation and side wall

APPENDIX III

INFORMATIONAL COPY OF THE NMOCD C-103 FORM

Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Ave., Artesia, NM 88210
District III
1000 Rio Brazos Rd., 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-103
May 27, 2004

	WELL API NO.: 30-025-36717
	5. Indicate Type of Lease STATE ☐ FEE ☒
	6. State Oil & Gas Lease No.:
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)	**7. Lease Name or Unit Agreement Name:** Barber-Adkins No. 8-2
1. Type of Well: Oil Well ☐ **Gas Well** ☒ **Other** ____	**8. Well Number:** No. 8-2
2. Name of Operator: Chesapeake Operating, Inc.	**9. OGRID Number:**
3. Address of Operator: 5014 Carlsbad Highway Hobbs, NM 88240	**10. Pool name or Wildcat**
4. Well Location **Unit Letter:** L: 1,650 **feet from the** South **line and** 660 **feet from the** West **line** **Section:** 8 **Township:** 20 South **Range** 37 East **NMPM** ____ **County** Lea	
[redacted]	**11. Elevation** ***(Show whether DR, RKB, RT, GR, etc.)*** 3,543 feet above mean sea level
Pit or Below-grade Tank Application ☐ **or Closure** ☒	
Pit type: Drilling **Depth to Groundwater:** <50 feet **Distance from nearest fresh water well:** > 1,000 feet **Distance from nearest surface water:** > 1,000 feet	
Pit Liner Thickness: 20 - mil **Below-Grade Tank: Volume:** ____ **bbls; Construction Material:** ____	

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
OTHER: ____ ☐		OTHER: Pit Closure ☒	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Chesapeake Operating, Inc. (Chesapeake) is conducting the pit closure according to NMOCD guidelines. As the depth to groundwater is < 50 feet below ground surface (bgs), Chesapeake is removing all contents from the pit and disposing of them at Sundance Services, Inc. In addition, a minimum of six (6) inches of soil from beneath the liner will also be excavated. Upon the removal of all the pit contents, including the liner, samples will be collected to verify removal of soil impacted above NMOCD remedial guidelines. Upon receipt of analytical results indicating the successful removal of all soil impacted above NMOCD remedial guidelines, the pit will be backfilled with clean soil purchased from the land owner and contoured to allow natural drainage and the site seeded with a seed blend approved by the land owner. Should analytical results indicate soil impacted above NMOCD remedial guidelines remains in the floor of the pit, a Delineation/Remediation Plan will be developed and submitted to the NMOCD.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☒, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

SIGNATURE _____ **TITLE** Field Technician **DATE** ____

Type or print name: Bradley Blevins **E-mail address:** bblevins@chkenergy.com **Telephone No.:** (505) 391-1462 ext. 24

For State Use Only

APPROVED BY: _____ **TITLE** _____ **DATE** _____

Conditions of Approval (if any):