CLOSURE REPORT

RUTH 20-2 RELEASE SITE
1RP #752
EPI REF: 160011

UL-D (NW¼ OF THE NW¼) OF SECTION 20, T16S, R36E

~2.4 MILES SOUTHWEST OF LOVINGTON

LEA COUNTY, NEW MEXICO

LATITUDE: N 32° 54' 48.03" LONGITUDE: W 103° 22' 57.43"

AUGUST 2006

PREPARED BY:

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

PREPARED FOR:

Chesapeake

Site Characterization

Ruth 20-2 Release Site

Ref. #160011

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Standard of Care

Site Characterization

Ruth 20-2 Release Site

Ref: 160011

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 the 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 arrived at with 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 the natural sciences.

This report was prepared by:

Jason Stegemoller — August 4, 2006

Jason Stegemoller, M.S. — Date

Environmental Scientist

This report was reviewed by:

Iain A Olness — 4 August 2006

Iain A. Olness, P.G. — Date

Technical Manager

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1.0 Summary

On June 3, 2005, a release of approximately 500 gallons of diesel fuel from a vandalized fuel line supplying a generator. Chesapeake Operating, Inc. (Chesapeake) immediately retained Environmental Plus, Inc. (EPI) to conduct emergency response measures at the release site. EPI personnel mobilized June 4, 2005, to excavate and stockpile diesel saturated soil on plastic as well as perform GPS surveying, photography and characterization of the site. Upon completion of initial excavation activities, three composite samples were collected from the base of the excavation and submitted to an independent laboratory for quantification of total petroleum hydrocarbons (TPH) and benzene, ethylbenzene, toluene and total xylenes (BTEX constituents). Analytical results for these samples indicated TPH concentrations ranging from 3,440 parts per million (ppm) to 8,790 ppm with an average concentration of 5,350 ppm remaining in the excavation. In addition, reported BTEX constituent concentrations ranged from 0.887 ppm to 3.11 ppm with an average concentration of 1.64 ppm (reference *Table 1*). The release entailed an area of approximately 3,150-square feet (ft^2) (reference *Figure 3*). The site is located approximately 2.4 miles southwest of Lovington, Lea County, New Mexico (reference *Figure 1*).

On June 8, 2005, EPI personnel initiated remediation activities. Excavation of hydrocarbon impacted soil continued until field analyses indicated remedial concentrations had been achieved. Field analyses were conducted utilizing a MiniRae photoionization detector (PID) equipped with a 9.7 electron volt lamp. Field analyses indicated organic vapor concentrations ranged from 10.1 ppm to 73.5 ppm, with an average concentration of 33.5 ppm. Confirmatory soil samples were collected from the excavation, placed in a laboratory provided container and submitted for quantification of TPH and BTEX constituents.

Analytical results indicated TPH concentrations were in excess of the NMOCD remedial threshold of 100 mg/Kg. On July 25, 2005, excavation activities resumed concentrating in the areas analytical results indicated contaminant levels were in excess of the NMOCD remedial thresholds. Excavation activities continued until soil sample field analyses indicated organic vapor concentrations were below remedial thresholds.

On July 11, 2005, a series of eleven soil samples were collected from the excavation floor at approximately 1-foot below ground surface (bgs) (reference *Figure 4*). A portion of each sample was placed in a laboratory provided container and set on ice for transport to an independent laboratory for quantification of TPH and BTEX constituent concentrations. The remaining portion of each sample was analyzed in the field for the presence of organic vapors. Field analytical data indicated organic vapor concentrations ranged from 0.7 to 73.5 ppm (reference *Table 1*).

Laboratory analytical data indicated BTEX constituent concentrations were non-detectable (ND) at or above laboratory method detection limits in sample locations SP-1 through 11. TPH concentrations were reported to range from ND to 3,410 mg/Kg (reference *Table 1*).

Based on analytical data, excavation activities resumed in the areas where soil samples SP-5, 6, 9, 10 and 11 were collected (reference *Figure 4*). Upon confirmation via field analyses that impacted soil had been removed, soil samples were collected on July 26, 2005 from the excavation floor at these five locations. A portion of each sample was placed in a laboratory provided container and submitted to an independent laboratory for quantification of TPH and BTEX constituent concentrations. The remaining portion of each sample was analyzed in the field for the presence of organic vapors. Field analytical data indicated organic vapor concentrations ranged from 0.6 to 3.0 ppm (reference *Table 1*).

Laboratory analytical data indicated BTEX constituent concentrations were ND at or above laboratory MDL. TPH concentrations in soil sample SP-5, 10 and 11 at 2-feet bgs were ND at or above laboratory MDL. Reported TPH concentrations in SP-6 were 138 mg/Kg and in SP-9 were 276 mg/Kg, in excess of the NMOCD remedial threshold of 100 mg/Kg (reference *Table 1* and *Figure 4*). The northern portion of the release site was backfilled after receipt of verbal approval from the NMOCD.

After further remedial excavation in the southern portion of the release site, a series of five soil samples (SP-12 through 16) were collected on September 6, 2005 from the excavation. A portion of each sample was placed in a laboratory provided container and submitted for laboratory quantification of TPH and BTEX constituent concentrations. The remaining portion of each sample was analyzed in the field for the presence of organic vapor concentrations. Field analyses indicated organic vapor concentrations ranged from 1.7 to 8.1 ppm (reference *Table 1*).

Laboratory analytical data indicated BTEX constituent concentrations were ND at or above laboratory MDL. Reported TPH concentrations were reported to range from ND to 24.5 mg/Kg, below the NMOCD remedial threshold of 100 mg/Kg (reference *Table 1*).

Approximately 340 cubic yards of hydrocarbon impacted soil was excavated and transported to Artesia Aeration for treatment. An equivalent amount of clean soil obtained from an off-site source was utilized to backfill the excavation.

This release site is located in Unit Letter D, (NW¼ of the NW¼), Section 20, T16S, R36E, N32° 54' 48.033" and W103° 22' 57.430". The site is approximately 2.4-miles southwest of Lovington, New Mexico on property owned by the State of New Mexico (reference *Figures 1* through *3*).

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 release site is located in the High Plains physiographic subdivision, described by Nicholson & Clebsch as "a flat, gently sloping plain, treeless and marred only by slight undulations and covered with short prairie grass."

2.2 Ecological Description

The area is typical 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 ~71-ft bgs based on water depth data obtained from the New Mexico State Engineers Office and the United States

Geological Survey data base. Groundwater was encountered at approximately 72-ft bgs during the advancement of a soil boring advanced during delineation activities of the adjacent Ruth 20-2 drilling pit on October 19, 2005.

2.4 Area Water Wells

There are two water supply wells (L 00209C and USGS #1) located within a 1,000 foot radius of the release site (reference *Figure 2* and *Table 3*).

2.5 Area Surface Water Features

There are no surface water bodies within a 1,000-foot radius of the release site.

3.0 NMOCD Site Ranking

Contaminant delineation and remedial work done at this site indicate that the chemical parameters of the soil and the 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);*** and
- ***Unlined Surface Impoundment Closure Guidelines (February 1993)***

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 the 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 30 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***

Total Site Ranking Score and Acceptable Remedial Goal Concentrations			
Parameter	**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 may be substituted for a laboratory analysis of the benzene and BTEX concentration limits.

4.0 Subsurface Soil Investigation

On June 8, 2005, 5-point composite soil samples were collected from the release area after diesel saturated soil had been excavated. Soil samples were placed in a laboratory provided container and submitted for laboratory quantification of TPH and BTEX constituent concentrations. Laboratory analytical data indicated TPH concentrations ranged from 3,440 to 8,970 mg/Kg, in excess of the NMOCD remedial threshold of 100 mg/Kg. BTEX concentrations ranged from 0.921 to 3.11 mg/Kg, below the NMOCD remedial threshold of 50 mg/Kg (reference *Table 1*).

On July 11, 2005, a series of 11 soil samples were collected after remedial excavation of hydrocarbon impacted soil to approximately 1-foot bgs. Upon collection, a portion of each sample was placed in a laboratory provided container and set on ice for transport to an independent laboratory for quantification of TPH and BTEX constituent concentrations. The remaining portion of each sample was analyzed in the field for the presence of organic vapors. Field analyses indicated organic vapor concentrations ranged from 10.1 to 73.5 mg/Kg. Laboratory analytical results indicated BTEX constituent concentrations were ND at or above laboratory MDL in SP-1 through 11. Reported TPH concentrations in SP-1 and SP-7 were ND at or above laboratory MDL. TPH concentrations in all other sample locations (i.e., SP-2, 3, 4, 5, 6, 8, 9, 10 and 11) ranged from 90.4 to 3,410 mg/Kg (reference *Table 1* and *Figure 4*).

On July 26, 2005, soil samples were collected after further excavation in the area of SP-5, 6, 9, 10 and 11. A portion of each sample was placed in a laboratory provided container and submitted to an independent laboratory for quantification of TPH and BTEX constituent concentrations. The remaining portion of each sample was analyzed in the field for the presence of organic vapors. Field analyses indicated organic vapor concentrations ranged from 0.5 to 3.0 ppm. Laboratory analytical data indicated BTEX concentrations were ND at or above laboratory MDL. Reported TPH concentrations ranged from ND to 276 mg/Kg (reference *Table 1* and *Figure 4*).

On September 6, 2005, soil samples SP-12 through 16 were collected from the excavation. A portion of each sample was placed in a laboratory provided container and submitted to an independent laboratory for quantification of TPH and BTEX constituent concentrations. The remaining portion of each sample was analyzed in the field for the presence of organic vapors. Field analyses indicated organic vapor concentrations ranged from 1.7 to 8.1 ppm. Laboratory analytical data indicated BTEX constituent concentrations were ND at or above laboratory MDL. Reported TPH concentrations were ND at or above laboratory MDL, with the exception of sample SP-12. Reported TPH concentrations in SP-12 were 24.5 mg/Kg, below the NMOCD remedial threshold of 100 mg/Kg (reference *Table 1* and *Figure 4*).

5.0 Groundwater Investigation

Groundwater was encountered at approximately 72-ft bgs during the advancement of a soil boring (BH-1) advanced during delineation activities of the adjacent Ruth 20-2 drilling pit on October 19, 2005 (reference *Appendix III*).

Confirmatory laboratory analytical results for soil samples SP-1, 4, 5, 7, 10, 11, 12, 13, 14, 15 and 16 indicated that TPH and BTEX constituents were non-detectable at or above laboratory MDL, with the exception of SP-12. Analytical data from SP-4 indicated TPH was 24.5 mg/Kg, below the NMOCD remedial threshold of 100 mg/Kg (reference *Table 1* and *Appendix I*).

6.0 Conclusions

The release of approximately 500 gallons of diesel fuel was entirely upon the caliche pad. Approximately 340 cubic yards of hydrocarbon-impacted soil was excavated and transported to

Artesia Aeration for treatment. An equivalent amount of clean soil was transported from an off-site source and utilized to backfill the excavation. The excavation was backfilled with clean soil and graded to allow natural drainage. The final extent of excavated area comprised approximately 3,130-square feet to a maximum depth of 6-feet bgs. Laboratory analytical results indicated BTEX constituent concentrations were ND at or above laboratory MDL. Reported TPH concentrations were below the NMOCD remedial threshold of 100 mg/Kg (reference *Table 1*).

7.0 Recommendations

Based on field and laboratory analytical results indicating NMOCD remedial thresholds have been achieved it is recommended the site be closed and "no further action" be required. EPI, on behalf of Chesapeake Energy, request the NMOCD issue a site closure letter. The caliche pad will remain until the well/pumping unit is decommissioned.

FIGURES

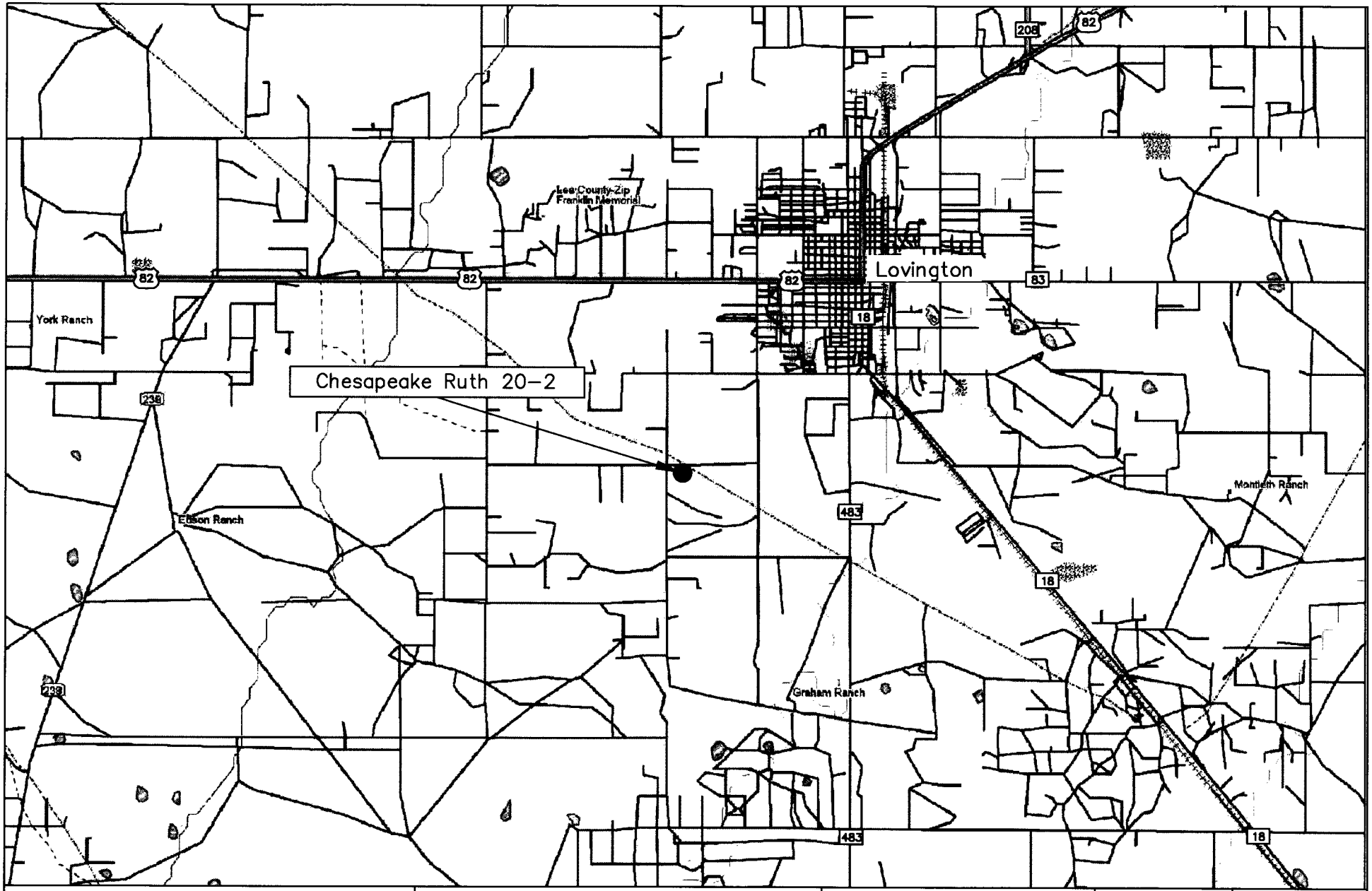

Figure 1 Site and Well Location Map Chesapeake Energy Ruth 20–2	Eddy County, New Mexico NE 1/4 of the NE 1/4, Sec. 03, T23S, R28E N 32° 20' 25.3" W 104° 04' 2.37" Elevation: 3,938 feet amsl	DWG By: Iain Olness June 2005	REVISED:
		0 1.5 3.0 Miles	SHEET 1 of 1
			N

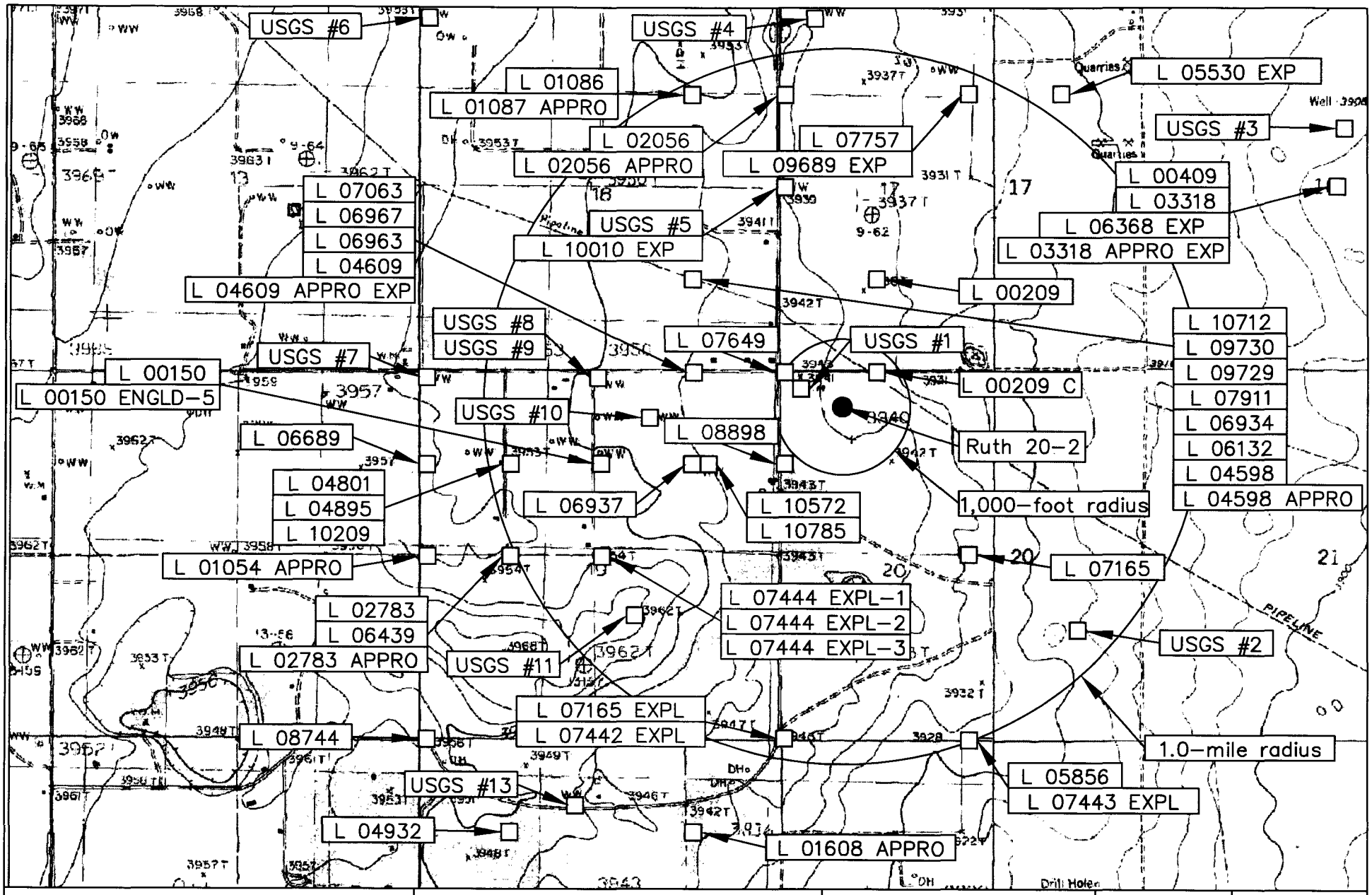

Figure 2 Site and Well Location Map Chesapeake Energy Ruth 20-2	Eddy County, New Mexico NW 1/4 of the NW 1/4, Sec. 20, T16S, R36E N 32° 54' 48.0" W 103° 22' 57.4" Elevation: 3,938 feet amsl	DWG By: Cody Fisher June 2005	REVISED: SHEET 1 of 1

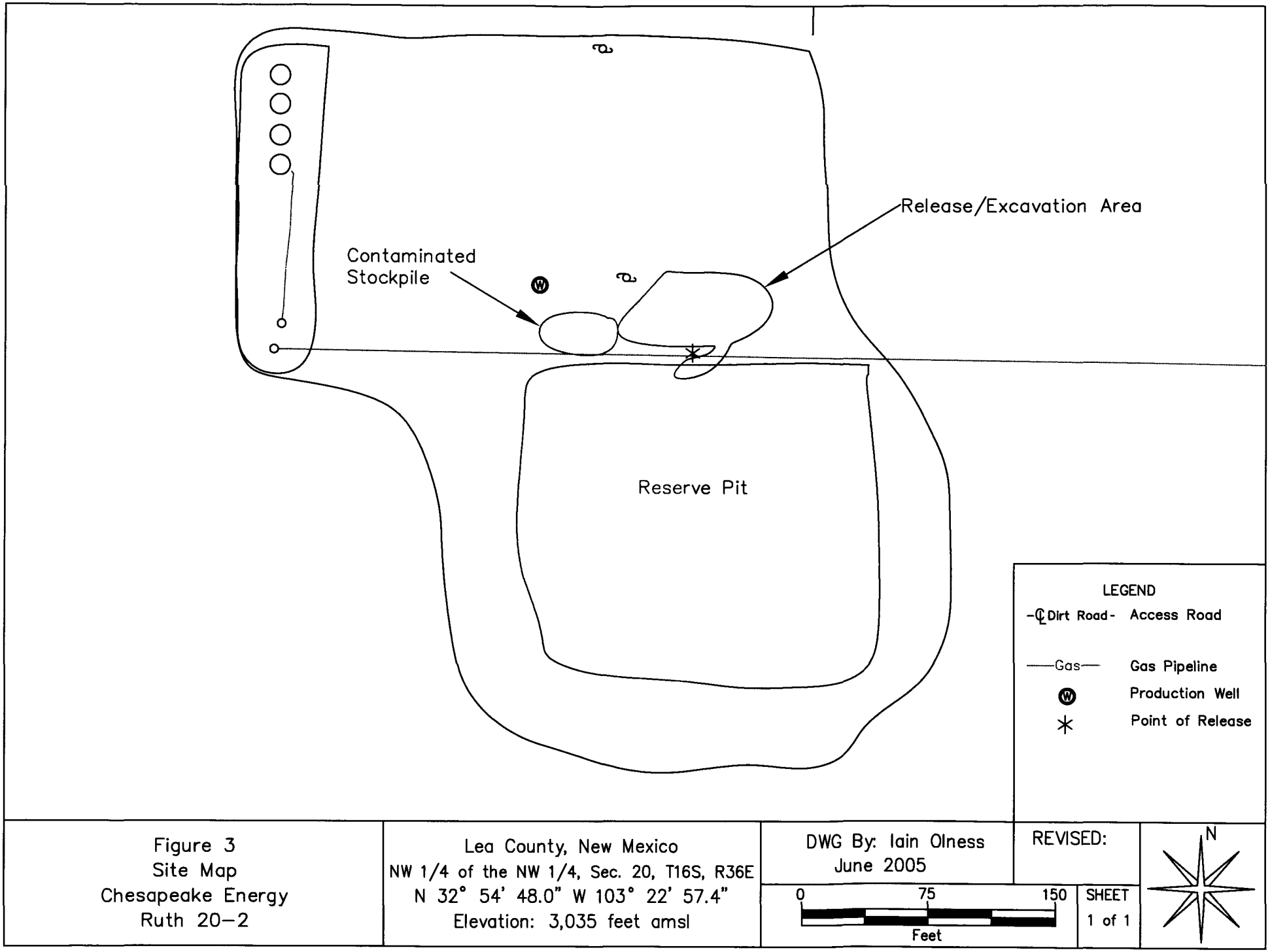

Figure 3 Site Map Chesapeake Energy Ruth 20–2	Lea County, New Mexico NW 1/4 of the NW 1/4, Sec. 20, T16S, R36E N 32° 54' 48.0" W 103° 22' 57.4" Elevation: 3,035 feet amsl	DWG By: Iain Olness June 2005	REVISED:	SHEET 1 of 1

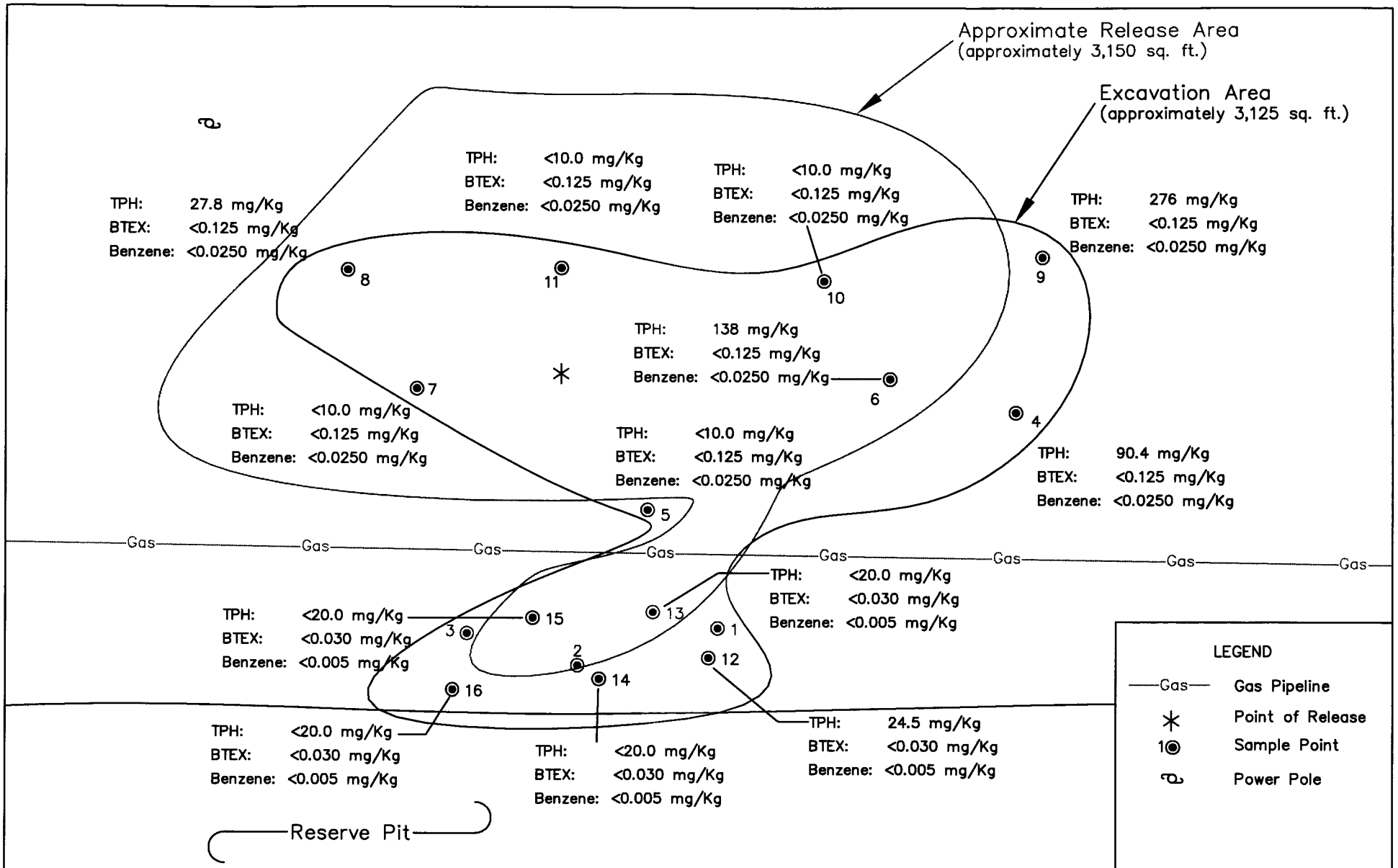

Figure 4
Excavation and Final
Sample Location Map
Chesapeake Energy
Ruth 20–2

Lea County, New Mexico
NW 1/4 of the NW 1/4, Sec. 20, T16S, R36E
N 32 54' 48.0" W 103° 22' 57.4"
Elevation: 3,035 feet amsl

DWG By: Iain Olness
August 2005

REVISED:
JCS, Dec. 05

SHEET
1 of 1

TABLES

TABLE 1

Summary of Excavation Analytical Results

Chesapeake Energy Ruth 20-2 Release Site (Ref.# 160011)

Sample ID	Depth (feet)	Sample Date	Soil Status	PID Reading (ppm)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	TPH (as gasoline) (mg/Kg)	TPH (as diesel) (mg/Kg)	Total TPH (mg/Kg)
Ruth 20-2 S. Flowpath	Comp	08-Jun-05	Excavated	NA	<0.0250	0.0711	0.510	2.53	3.11	1,590	7,200	**8,790**
Ruth 20-2 W. Half Pooling Area	Comp	08-Jun-05	Excavated	NA	<0.0250	0.0683	0.134	0.685	0.887	507	3,300	**3,810**
Ruth 20-2 E. Half Pooling Area	Comp	08-Jun-05	Excavated	NA	<0.0250	0.0518	0.0877	0.781	0.921	470	2,970	**3,440**
SP-1	1	11-Jul-05	Excavated	23.5	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
SP-2	1	11-Jul-05	Excavated	10.1	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	14.7	846	**861**
SP-3	1	11-Jul-05	Excavated	10.4	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	108	**108**
SP-4	1	11-Jul-05	In Situ	24.1	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	90.4	90.4
SP-5	1	11-Jul-05	Excavated	38.9	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	169	**169**
	2	26-Jul-05	In Situ	0.7	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
SP-6	1	11-Jul-05	Excavated	41.4	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	30.9	724	**755**
	6	26-Jul-05	In Situ	0.9	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	138	**138**
SP-7	1	11-Jul-05	In Situ	25.0	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
SP-8	1	11-Jul-05	In Situ	39.6	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	27.8	27.8
SP-9	1	11-Jul-05	Excavated	46.2	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	16.9	315	**332**
	6	26-Jul-05	In Situ	3.0	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	12.4	264	**276**

TABLE 1

Summary of Excavation Analytical Results

Chesapeake Energy Ruth 20-2 Release Site (Ref.# 160011)

Sample ID	Depth (feet)	Sample Date	Soil Status	PID Reading (ppm)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	TPH (as gasoline) (mg/Kg)	TPH (as diesel) (mg/Kg)	Total TPH (mg/Kg)
SP-10	1	11-Jul-05	Excavated	73.5	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	166	3,240	**3,410**
	2	26-Jul-05	In Situ	0.5	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
SP-11	1	11-Jul-05	Excavated	31.6	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	213	**213**
	2	26-Jul-05	In Situ	0.6	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
SP-12	3	06-Sep-05	In Situ	1.7	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	24.5	24.5
SP-13	6	06-Sep-05	In Situ	7.0	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0
SP-14	3	06-Sep-05	In Situ	8.1	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0
SP-15	6	06-Sep-05	In Situ	6.6	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0
SP-16	3	06-Sep-05	In Situ	6.7	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0
NMOCD Remedial Thresholds				**100**	**10**				**50**			**100**

[1] ***Bolded*** *values are in excess of NMOCD Remediation Thresholds*
[2] *NA=Not Applicable*
[3] *Chloride and sulfate residuals may not be capable of impacting local groundwater above the NMWQCC standards of 250 mg/L and 650 mg/L, respectively.*

TABLE 2

Well Data

Chesapeake Energy Ruth 20-2 (Ref. #160011)

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 03318 APPRO EXP		T. M. Blackmon		16 S	36 E	16 2 3 1	N 32° 55' 19.33"	W 103° 21' 33.28"			
L 04487 APPRO	3	Kenneth Cox	DOM	16 S	36 E	16 2 2 2	N 32° 55' 32.49"	W 103° 21' 17.73"	01-Jun-60	110	82
L 04437	3	Roy Boland	DOM	16 S	36 E	17 3	N 32° 54' 52.96"	W 103° 23' 6.65"	30-May-60	120	95
L 04437 APPRO		Roy Boland		16 S	36 E	17 3	N 32° 54' 52.96"	W 103° 23' 6.65"	30-May-60	120	95

TABLE 2

Well Data

Chesapeake Energy Ruth 20-2 (Ref. #160011)

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 03966	3	Robert Ralph Sims	DOM	16 S	36 E	21 2 4 4	N 32° 54' 26.96"	W 103° 21' 17.68"	18-Aug-58	95	60
L 03966 APPRO				16 S	36 E	21 2 2 4	N 32° 54' 40.06"	W 103° 21' 17.68"	18-Aug-58	95	60
L 05269	3	Ralph E. Collins	DOM	16 S	36 E	21 2 2 4	N 32° 54' 40.06"	W 103° 21' 17.68"	19-Oct-63	110	90
USGS #12				16 S	36 E	21 2 3 2			01-Feb-96		66.58
L 06334	0	Marcum Drilling Company	PRO	16 S	36 E	30 3 1 1	N 32° 53' 21.38"	W 103° 24' 7.28"	02-Jun-68	135	75
L 06334 (E) 1	0	Humble Oil & Refining Co.	PRO	16 S	36 E	30 3 1 1	N 32° 53' 21.38"	W 103° 24' 7.28"			

* = Data obtained from the New Mexico Office of the State Engineer Website (http://iwaters.ose.state.nm.us:7001/iWATERS/wr_RegisServlet1)
Well locations shown on Figure 2
[A] = in acre feet per annum
IND = Industrial
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 Energy/ Ruth 20-2

Project Number: None Given

Location: UL-D, Sect.20. T 16 S, R 36 E

Lab Order Number: 5F13020

Report Date: 06/17/05

Environmental Plus, Incorporated	Project: Chesapeake Energy/ Ruth 20-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: None Given	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	06/17/05 17:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Ruth 20-2 S. Flowpath	5F13020-01	Soil	06/08/05 12:30	06/13/05 15:30
Ruth 20-2 W. Half Pooling Area	5F13020-02	Soil	06/08/05 14:10	06/13/05 15:30
Ruth 20-2 E. Half Pooling Area	5F13020-03	Soil	06/08/05 14:15	06/13/05 15:30

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

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 Energy/ Ruth 20-2

Project Number: None Given

Location: UL-D, Sect.20. T 16 S, R 36 E

Lab Order Number: 5F13020

Report Date: 06/17/05

Environmental Plus, Incorporated	Project: Chesapeake Energy/ Ruth 20-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: None Given	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	06/17/05 17:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Ruth 20-2 S. Flowpath	5F13020-01	Soil	06/08/05 12:30	06/13/05 15:30
Ruth 20-2 W. Half Pooling Area	5F13020-02	Soil	06/08/05 14:10	06/13/05 15:30
Ruth 20-2 E. Half Pooling Area	5F13020-03	Soil	06/08/05 14:15	06/13/05 15:30

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Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Ruth 20-2 S. Flowpath (5F13020-01) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EF51404	06/14/05	06/14/05	EPA 8021B	
Toluene	**0.0711**	0.0250	"	"	"	"	"	"	
Ethylbenzene	**0.510**	0.0250	"	"	"	"	"	"	
Xylene (p/m)	**1.54**	0.0250	"	"	"	"	"	"	
Xylene (o)	**0.993**	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*85.0 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*90.5 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	**1590**	10.0	mg/kg dry	1	EF51310	06/14/05	06/14/05	EPA 8015M	
Diesel Range Organics >C12-C35	**7200**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**8790**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*126 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*138 %*	*70-130*		"	"	"	"	*S-04*
Ruth 20-2 W. Half Pooling Area (5F13020-02) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EF51404	06/14/05	06/14/05	EPA 8021B	
Toluene	**0.0683**	0.0250	"	"	"	"	"	"	
Ethylbenzene	**0.134**	0.0250	"	"	"	"	"	"	
Xylene (p/m)	**0.491**	0.0250	"	"	"	"	"	"	
Xylene (o)	**0.194**	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*81.7 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	**507**	10.0	mg/kg dry	1	EF51310	06/14/05	06/14/05	EPA 8015M	
Diesel Range Organics >C12-C35	**3300**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**3810**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*114 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*158 %*	*70-130*		"	"	"	"	*S-04*
Ruth 20-2 E. Half Pooling Area (5F13020-03) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EF51404	06/14/05	06/14/05	EPA 8021B	
Toluene	**0.0518**	0.0250	"	"	"	"	"	"	
Ethylbenzene	**0.0877**	0.0250	"	"	"	"	"	"	
Xylene (p/m)	**0.488**	0.0250	"	"	"	"	"	"	
Xylene (o)	**0.293**	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*83.2 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*113 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	**470**	10.0	mg/kg dry	1	EF51310	06/14/05	06/14/05	EPA 8015M	
Diesel Range Organics >C12-C35	**2970**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**3440**	10.0	"	"	"	"	"	"	

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

Environmental Plus, Incorporated	Project: Chesapeake Energy/ Ruth 20-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: None Given	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	06/17/05 17:01

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Ruth 20-2 E. Half Pooling Area (5F13020-03) Soil									
Surrogate: 1-Chlorooctane		*111 %*	*70-130*		*EF51310*	*06/14/05*	*06/14/05*	*EPA 8015M*	
Surrogate: 1-Chlorooctadecane		*157 %*	*70-130*		*"*	*"*	*"*	*"*	*S-04*

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Environmental Plus, Incorporated	Project: Chesapeake Energy/ Ruth 20-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: None Given	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	06/17/05 17:01

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Ruth 20-2 S. Flowpath (5F13020-01) Soil									
% Moisture	**18.8**	0.1	%	1	EF51401	06/13/05	06/14/05	% calculation	
Ruth 20-2 W. Half Pooling Area (5F13020-02) Soil									
% Moisture	**7.0**	0.1	%	1	EF51401	06/13/05	06/14/05	% calculation	
Ruth 20-2 E. Half Pooling Area (5F13020-03) Soil									
% Moisture	**7.6**	0.1	%	1	EF51401	06/13/05	06/14/05	% calculation	

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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 EF51310 - Solvent Extraction (GC)										
Blank (EF51310-BLK1)				Prepared: 06/13/05 Analyzed: 06/14/05						
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	*35.1*		*mg/kg*	*50.0*		*70.2*	*70-130*			
Surrogate: 1-Chlorooctadecane	*39.3*		*"*	*50.0*		*78.6*	*70-130*			
LCS (EF51310-BS1)				Prepared: 06/13/05 Analyzed: 06/14/05						
Gasoline Range Organics C6-C12	392	10.0	mg/kg wet	500		78.4	75-125			
Diesel Range Organics >C12-C35	440	10.0	"	500		88.0	75-125			
Total Hydrocarbon C6-C35	832	10.0	"	1000		83.2	75-125			
Surrogate: 1-Chlorooctane	*41.3*		*mg/kg*	*50.0*		*82.6*	*70-130*			
Surrogate: 1-Chlorooctadecane	*41.4*		*"*	*50.0*		*82.8*	*70-130*			
Calibration Check (EF51310-CCV1)				Prepared: 06/13/05 Analyzed: 06/14/05						
Gasoline Range Organics C6-C12	521		mg/kg	500		104	80-120			
Diesel Range Organics >C12-C35	538		"	500		108	80-120			
Total Hydrocarbon C6-C35	1060		"	1000		106	80-120			
Surrogate: 1-Chlorooctane	*49.7*		*"*	*50.0*		*99.4*	*70-130*			
Surrogate: 1-Chlorooctadecane	*57.1*		*"*	*50.0*		*114*	*70-130*			
Matrix Spike (EF51310-MS1)	**Source: 5F13016-01**			Prepared: 06/13/05 Analyzed: 06/14/05						
Gasoline Range Organics C6-C12	509	10.0	mg/kg dry	506	ND	101	75-125			
Diesel Range Organics >C12-C35	565	10.0	"	506	23.8	107	75-125			
Total Hydrocarbon C6-C35	1070	10.0	"	1010	23.8	104	75-125			
Surrogate: 1-Chlorooctane	*63.3*		*mg/kg*	*50.0*		*127*	*70-130*			
Surrogate: 1-Chlorooctadecane	*63.7*		*"*	*50.0*		*127*	*70-130*			
Matrix Spike Dup (EF51310-MSD1)	**Source: 5F13016-01**			Prepared: 06/13/05 Analyzed: 06/14/05						
Gasoline Range Organics C6-C12	508	10.0	mg/kg dry	506	ND	100	75-125	0.197	20	
Diesel Range Organics >C12-C35	582	10.0	"	506	23.8	110	75-125	2.96	20	
Total Hydrocarbon C6-C35	1090	10.0	"	1010	23.8	106	75-125	1.85	20	
Surrogate: 1-Chlorooctane	*59.0*		*mg/kg*	*50.0*		*118*	*70-130*			
Surrogate: 1-Chlorooctadecane	*63.5*		*"*	*50.0*		*127*	*70-130*			

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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 EF51404 - EPA 5030C (GC)										
Blank (EF51404-BLK1)				Prepared & Analyzed: 06/14/05						
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	*81.3*		*ug/kg*	*100*		*81.3*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*98.7*		"	*100*		*98.7*	*80-120*			
LCS (EF51404-BS1)				Prepared & Analyzed: 06/14/05						
Benzene	103		ug/kg	100		103	80-120			
Toluene	90.4		"	100		90.4	80-120			
Ethylbenzene	90.9		"	100		90.9	80-120			
Xylene (p/m)	205		"	200		102	80-120			
Xylene (o)	93.6		"	100		93.6	80-120			
Surrogate: a,a,a-Trifluorotoluene	*111*		"	*100*		*111*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*113*		"	*100*		*113*	*80-120*			
Calibration Check (EF51404-CCV1)				Prepared & Analyzed: 06/14/05						
Benzene	104		ug/kg	100		104	80-120			
Toluene	87.9		"	100		87.9	80-120			
Ethylbenzene	84.1		"	100		84.1	80-120			
Xylene (p/m)	186		"	200		93.0	80-120			
Xylene (o)	84.4		"	100		84.4	80-120			
Surrogate: a,a,a-Trifluorotoluene	*109*		"	*100*		*109*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*119*		"	*100*		*119*	*80-120*			
Matrix Spike (EF51404-MS1)	**Source: 5F13010-01**			Prepared & Analyzed: 06/14/05						
Benzene	91.0		ug/kg	100	ND	91.0	80-120			
Toluene	84.0		"	100	ND	84.0	80-120			
Ethylbenzene	82.8		"	100	ND	82.8	80-120			
Xylene (p/m)	170		"	200	ND	85.0	80-120			
Xylene (o)	82.4		"	100	ND	82.4	80-120			
Surrogate: a,a,a-Trifluorotoluene	*84.8*		"	*100*		*84.8*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*112*		"	*100*		*112*	*80-120*			

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

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 EF51404 - EPA 5030C (GC)										
Matrix Spike Dup (EF51404-MSD1)	**Source: 5F13010-01**			Prepared & Analyzed: 06/14/05						
Benzene	98.0		ug/kg	100	ND	98.0	80-120	7.41	20	
Toluene	88.9		"	100	ND	88.9	80-120	5.67	20	
Ethylbenzene	90.0		"	100	ND	90.0	80-120	8.33	20	
Xylene (p/m)	201		"	200	ND	100	80-120	16.2	20	
Xylene (o)	93.1		"	100	ND	93.1	80-120	12.2	20	
Surrogate: a,a,a-Trifluorotoluene	*97.3*		"	*100*		*97.3*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*119*		"	*100*		*119*	*80-120*			

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

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 EF51401 - General Preparation (Prep)										
Blank (EF51401-BLK1)				Prepared: 06/13/05 Analyzed: 06/14/05						
% Moisture	ND	0.1	%							
Duplicate (EF51401-DUP1)		**Source: 5F13001-01**		Prepared: 06/13/05 Analyzed: 06/14/05						
% Moisture	7.1	0.1	%		6.9			2.86	20	

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

Notes and Definitions

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

Report Approved By: Raland K Tuttle Date: 6/17/2005

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.

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

Environmental Lab of Texas

Chain of Custody Form

12600 West I-20 East, Odessa, TX 79765
432-563-1800 FAX: 432-563-1713

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 Corporation
Facility Name	Ruth 20-2
Location	UL-D, Sect. 20. T 16 S, R 36 E
Project Reference	160011
EPI Sampler Name	Felix Hernandez

Bill To

Attn: Iain Olness
PO Box 1558,
Eunice, NM 88231

ANALYSIS REQUEST

LAB I.D. 6713020		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^{-2})	pH	TCLP	OTHER >>>	PAH				
-01	1	Ruth 20-2 S. Flowpath	C				X					X		8-Jun	12:30	X	X									
-02	2	Ruth 20-2 W. Half Pooling Area	C				X					X		8-Jun	14:10	X	X									
-03	3	Ruth 20-2 E. Half Pooling Area	C				X					X		8-Jun	14:15	X	X									
	4																									
	5																									
	6																									
	7																									
	8																									
	9																									
	10																									

Sampler Relinquished: Iain Olness — Date: 13 June 05 — Time: 1405
Received By: Jonon Boone

Relinquished by: Jonon Boone — Date: 13 June 05 — Time: 1405
Received By: (lab staff) Cecil Villa — 6/13/05 15:30

Delivered by:

Sample Cool & Intact: (Yes) No

Checked By:

E-mail results to: iolness@hotmail.com

REMARKS:

402 jar w/ labels/seals

10.5°C

Environmental Lab of Texas

Variance / Corrective Action Report – Sample Log-In

Client: EPI

Date/Time: 6/13/05 8:30

Order #: 5F13020

Initials: CR

Sample Receipt Checklist

	Yes	No	
Temperature of container/cooler?			10.5 C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	Yes	No	~~Not present~~
Custody Seals intact on sample bottles?	(Yes)	No	Not present
Chain of custody present?	(Yes)	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of custody agrees with sample label(s)	(Yes)	No	
Container labels legible and intact?	(Yes)	No	
Sample Matrix and properties same as on chain of custody?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
Samples properly preserved?	(Yes)	No	
Sample bottles intact?	(Yes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
Sufficient sample amount for indicated test?	(Yes)	No	
All samples received within sufficient hold time?	(Yes)	No	
VOC samples have zero headspace?	(Yes)	No	Not Applicable

Other observations:

Variance Documentation:

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

Regarding:

Corrective Action Taken:

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 Energy/ Ruth 20-2

Project Number: 160011

Location: UL-D, Sect. 20. T 16 S, R 36 E

Lab Order Number: 5G12007

Report Date: 07/14/05

Environmental Plus, Incorporated	Project: Chesapeake Energy/ Ruth 20-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160011	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	07/14/05 17:07

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SP-1	5G12007-01	Soil	07/11/05 11:45	07/12/05 15:00
SP-2	5G12007-02	Soil	07/11/05 11:55	07/12/05 15:00
SP-3	5G12007-03	Soil	07/11/05 11:59	07/12/05 15:00
SP-4	5G12007-04	Soil	07/11/05 12:15	07/12/05 15:00
SP-5	5G12007-05	Soil	07/11/05 12:20	07/12/05 15:00
SP-6	5G12007-06	Soil	07/11/05 12:24	07/12/05 15:00
SP-7	5G12007-07	Soil	07/11/05 12:30	07/12/05 15:00
SP-8	5G12007-08	Soil	07/11/05 12:35	07/12/05 15:00
SP-9	5G12007-09	Soil	07/11/05 12:42	07/12/05 15:00
SP-10	5G12007-10	Soil	07/11/05 12:50	07/12/05 15:00
SP-11	5G12007-11	Soil	07/11/05 12:55	07/12/05 15:00

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Environmental Plus, Incorporated	Project: Chesapeake Energy/ Ruth 20-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160011	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	07/14/05 17:07

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SP-1 (5G12007-01) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG51303	07/12/05	07/13/05	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		*97.0 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*103 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EG51207	07/12/05	07/12/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*83.8 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*85.2 %*	*70-130*		"	"	"	"	
SP-2 (5G12007-02) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG51305	07/13/05	07/14/05	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		*99.7 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*106 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	**14.7**	10.0	mg/kg dry	1	EG51207	07/12/05	07/12/05	EPA 8015M	
Diesel Range Organics >C12-C35	**846**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**861**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*78.0 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*92.4 %*	*70-130*		"	"	"	"	
SP-3 (5G12007-03) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG51305	07/13/05	07/13/05	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		*92.1 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*105 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EG51207	07/12/05	07/12/05	EPA 8015M	
Diesel Range Organics >C12-C35	**108**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**108**	10.0	"	"	"	"	"	"	

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Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SP-3 (5G12007-03) Soil									
Surrogate: 1-Chlorooctane		*78.6 %*	*70-130*		*EG51207*	*07/12/05*	*07/12/05*	*EPA 8015M*	
Surrogate: 1-Chlorooctadecane		*77.4 %*	*70-130*		"	"	"	"	
SP-4 (5G12007-04) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG51305	07/13/05	07/13/05	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		*95.7 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*120 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EG51207	07/12/05	07/12/05	EPA 8015M	
Diesel Range Organics >C12-C35	**90.4**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**90.4**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*76.8 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*78.2 %*	*70-130*		"	"	"	"	
SP-5 (5G12007-05) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG51305	07/13/05	07/13/05	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		*84.9 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.3 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EG51207	07/12/05	07/12/05	EPA 8015M	
Diesel Range Organics >C12-C35	**169**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**169**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*79.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*82.6 %*	*70-130*		"	"	"	"	

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Organics by GC

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Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SP-6 (5G12007-06) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG51305	07/13/05	07/13/05	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		*90.2 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	**30.9**	10.0	mg/kg dry	1	EG51207	07/12/05	07/12/05	EPA 8015M	
Diesel Range Organics >C12-C35	**724**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**755**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*77.8 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*88.2 %*	*70-130*		"	"	"	"	
SP-7 (5G12007-07) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG51305	07/13/05	07/13/05	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		*89.6 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*109 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EG51223	07/12/05	07/13/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*81.2 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*80.6 %*	*70-130*		"	"	"	"	
SP-8 (5G12007-08) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG51305	07/13/05	07/13/05	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		*90.9 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*100 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EG51223	07/12/05	07/13/05	EPA 8015M	
Diesel Range Organics >C12-C35	**27.8**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**27.8**	10.0	"	"	"	"	"	"	

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Organics by GC

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Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SP-8 (5G12007-08) Soil									
Surrogate: 1-Chlorooctane		*80.2 %*	*70-130*		*EG51223*	*07/12/05*	*07/13/05*	*EPA 8015M*	
Surrogate: 1-Chlorooctadecane		*83.4 %*	*70-130*		"	"	"	"	
SP-9 (5G12007-09) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG51305	07/13/05	07/13/05	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		*85.4 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*115 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	**16.9**	10.0	mg/kg dry	1	EG51223	07/12/05	07/13/05	EPA 8015M	
Diesel Range Organics >C12-C35	**315**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**332**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*76.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*81.8 %*	*70-130*		"	"	"	"	
SP-10 (5G12007-10) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG51305	07/13/05	07/13/05	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		*95.4 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*106 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	**166**	10.0	mg/kg dry	1	EG51223	07/12/05	07/13/05	EPA 8015M	
Diesel Range Organics >C12-C35	**3240**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**3410**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*76.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*83.8 %*	*70-130*		"	"	"	"	

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Environmental Plus, Incorporated	Project: Chesapeake Energy/ Ruth 20-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160011	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	07/14/05 17:07

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SP-11 (5G12007-11) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG51305	07/13/05	07/13/05	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		*98.6 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*115 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EG51223	07/12/05	07/13/05	EPA 8015M	
Diesel Range Organics >C12-C35	**213**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**213**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*75.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*78.8 %*	*70-130*		"	"	"	"	

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General Chemistry Parameters by EPA / Standard Methods

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Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SP-1 (5G12007-01) Soil									
% Moisture	**12.0**	0.1	%	1	EG51301	07/12/05	07/13/05	% calculation	
SP-2 (5G12007-02) Soil									
% Moisture	**9.7**	0.1	%	1	EG51301	07/12/05	07/13/05	% calculation	
SP-3 (5G12007-03) Soil									
% Moisture	**10.2**	0.1	%	1	EG51301	07/12/05	07/13/05	% calculation	
SP-4 (5G12007-04) Soil									
% Moisture	**2.4**	0.1	%	1	EG51301	07/12/05	07/13/05	% calculation	
SP-5 (5G12007-05) Soil									
% Moisture	**3.1**	0.1	%	1	EG51301	07/12/05	07/13/05	% calculation	
SP-6 (5G12007-06) Soil									
% Moisture	**2.3**	0.1	%	1	EG51301	07/12/05	07/13/05	% calculation	
SP-7 (5G12007-07) Soil									
% Moisture	**2.4**	0.1	%	1	EG51301	07/12/05	07/13/05	% calculation	
SP-8 (5G12007-08) Soil									
% Moisture	**1.3**	0.1	%	1	EG51301	07/12/05	07/13/05	% calculation	
SP-9 (5G12007-09) Soil									
% Moisture	**5.1**	0.1	%	1	EG51301	07/12/05	07/13/05	% calculation	
SP-10 (5G12007-10) Soil									
% Moisture	**2.5**	0.1	%	1	EG51301	07/12/05	07/13/05	% calculation	
SP-11 (5G12007-11) Soil									
% Moisture	**3.5**	0.1	%	1	EG51301	07/12/05	07/13/05	% calculation	

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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 EG51207 - Solvent Extraction (GC)										
Blank (EG51207-BLK1)				Prepared & Analyzed: 07/12/05						
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	*37.4*		*mg/kg*	*50.0*		*74.8*	*70-130*			
Surrogate: 1-Chlorooctadecane	*35.8*		*"*	*50.0*		*71.6*	*70-130*			
LCS (EG51207-BS1)				Prepared & Analyzed: 07/12/05						
Gasoline Range Organics C6-C12	457	10.0	mg/kg wet	500		91.4	75-125			
Diesel Range Organics >C12-C35	487	10.0	"	500		97.4	75-125			
Total Hydrocarbon C6-C35	944	10.0	"	1000		94.4	75-125			
Surrogate: 1-Chlorooctane	*37.0*		*mg/kg*	*50.0*		*74.0*	*70-130*			
Surrogate: 1-Chlorooctadecane	*35.5*		*"*	*50.0*		*71.0*	*70-130*			
Calibration Check (EG51207-CCV1)				Prepared & Analyzed: 07/12/05						
Gasoline Range Organics C6-C12	570		mg/kg	500		114	80-120			
Diesel Range Organics >C12-C35	571		"	500		114	80-120			
Total Hydrocarbon C6-C35	1140		"	1000		114	80-120			
Surrogate: 1-Chlorooctane	*49.7*		*"*	*50.0*		*99.4*	*70-130*			
Surrogate: 1-Chlorooctadecane	*41.2*		*"*	*50.0*		*82.4*	*70-130*			
Matrix Spike (EG51207-MS1)	**Source: 5G12001-01**			Prepared & Analyzed: 07/12/05						
Gasoline Range Organics C6-C12	572	10.0	mg/kg dry	506	ND	113	75-125			
Diesel Range Organics >C12-C35	597	10.0	"	506	49.8	108	75-125			
Total Hydrocarbon C6-C35	1170	10.0	"	1010	49.8	111	75-125			
Surrogate: 1-Chlorooctane	*48.9*		*mg/kg*	*50.0*		*97.8*	*70-130*			
Surrogate: 1-Chlorooctadecane	*40.9*		*"*	*50.0*		*81.8*	*70-130*			
Matrix Spike Dup (EG51207-MSD1)	**Source: 5G12001-01**			Prepared & Analyzed: 07/12/05						
Gasoline Range Organics C6-C12	525	10.0	mg/kg dry	506	ND	104	75-125	8.57	20	
Diesel Range Organics >C12-C35	585	10.0	"	506	49.8	106	75-125	2.03	20	
Total Hydrocarbon C6-C35	1110	10.0	"	1010	49.8	105	75-125	5.26	20	
Surrogate: 1-Chlorooctane	*47.8*		*mg/kg*	*50.0*		*95.6*	*70-130*			
Surrogate: 1-Chlorooctadecane	*40.3*		*"*	*50.0*		*80.6*	*70-130*			

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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 EG51223 - Solvent Extraction (GC)										
Blank (EG51223-BLK1)				Prepared: 07/12/05 Analyzed: 07/13/05						
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	*35.6*		*mg/kg*	*50.0*		*71.2*	*70-130*			
Surrogate: 1-Chlorooctadecane	*35.1*		*"*	*50.0*		*70.2*	*70-130*			
LCS (EG51223-BS1)				Prepared: 07/12/05 Analyzed: 07/13/05						
Gasoline Range Organics C6-C12	514	10.0	mg/kg wet	500		103	75-125			
Diesel Range Organics >C12-C35	587	10.0	"	500		117	75-125			
Total Hydrocarbon C6-C35	1100	10.0	"	1000		110	75-125			
Surrogate: 1-Chlorooctane	*50.7*		*mg/kg*	*50.0*		*101*	*70-130*			
Surrogate: 1-Chlorooctadecane	*42.5*		*"*	*50.0*		*85.0*	*70-130*			
Calibration Check (EG51223-CCV1)				Prepared: 07/12/05 Analyzed: 07/13/05						
Gasoline Range Organics C6-C12	564		mg/kg	500		113	80-120			
Diesel Range Organics >C12-C35	602		"	500		120	80-120			
Total Hydrocarbon C6-C35	1170		"	1000		117	80-120			
Surrogate: 1-Chlorooctane	*50.2*		*"*	*50.0*		*100*	*70-130*			
Surrogate: 1-Chlorooctadecane	*39.7*		*"*	*50.0*		*79.4*	*70-130*			
Matrix Spike (EG51223-MS1)	**Source: 5G12007-07**			Prepared: 07/12/05 Analyzed: 07/13/05						
Gasoline Range Organics C6-C12	543	10.0	mg/kg dry	512	ND	106	75-125			
Diesel Range Organics >C12-C35	613	10.0	"	512	ND	120	75-125			
Total Hydrocarbon C6-C35	1160	10.0	"	1020	ND	114	75-125			
Surrogate: 1-Chlorooctane	*56.4*		*mg/kg*	*50.0*		*113*	*70-130*			
Surrogate: 1-Chlorooctadecane	*47.0*		*"*	*50.0*		*94.0*	*70-130*			
Matrix Spike Dup (EG51223-MSD1)	**Source: 5G12007-07**			Prepared: 07/12/05 Analyzed: 07/13/05						
Gasoline Range Organics C6-C12	583	10.0	mg/kg dry	512	ND	114	75-125	7.10	20	
Diesel Range Organics >C12-C35	606	10.0	"	512	ND	118	75-125	1.15	20	
Total Hydrocarbon C6-C35	1190	10.0	"	1020	ND	117	75-125	2.55	20	
Surrogate: 1-Chlorooctane	*55.5*		*mg/kg*	*50.0*		*111*	*70-130*			
Surrogate: 1-Chlorooctadecane	*46.1*		*"*	*50.0*		*92.2*	*70-130*			

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Organics by GC - Quality Control

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EG51303 - EPA 5030C (GC)										
Blank (EG51303-BLK1)				Prepared: 07/12/05 Analyzed: 07/13/05						
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	*97.0*		*ug/kg*	*100*		*97.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*83.2*		*"*	*100*		*83.2*	*80-120*			
LCS (EG51303-BS1)				Prepared: 07/12/05 Analyzed: 07/13/05						
Benzene	103		ug/kg	100		103	80-120			
Toluene	107		"	100		107	80-120			
Ethylbenzene	118		"	100		118	80-120			
Xylene (p/m)	211		"	200		106	80-120			
Xylene (o)	110		"	100		110	80-120			
Surrogate: a,a,a-Trifluorotoluene	*100*		*"*	*100*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*114*		*"*	*100*		*114*	*80-120*			
Calibration Check (EG51303-CCV1)				Prepared: 07/12/05 Analyzed: 07/13/05						
Benzene	119		ug/kg	100		119	80-120			
Toluene	115		"	100		115	80-120			
Ethylbenzene	109		"	100		109	80-120			
Xylene (p/m)	194		"	200		97.0	80-120			
Xylene (o)	117		"	100		117	80-120			
Surrogate: a,a,a-Trifluorotoluene	*93.8*		*"*	*100*		*93.8*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*102*		*"*	*100*		*102*	*80-120*			
Matrix Spike (EG51303-MS1)	**Source: 5G11013-01**			Prepared: 07/12/05 Analyzed: 07/13/05						
Benzene	2940		ug/kg	2500	ND	118	80-120			
Toluene	2990		"	2500	ND	120	80-120			
Ethylbenzene	2890		"	2500	ND	116	80-120			
Xylene (p/m)	5160		"	5000	49.6	102	80-120			
Xylene (o)	2920		"	2500	ND	117	80-120			
Surrogate: a,a,a-Trifluorotoluene	*96.2*		*"*	*100*		*96.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*116*		*"*	*100*		*116*	*80-120*			

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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 EG51303 - EPA 5030C (GC)										
Matrix Spike Dup (EG51303-MSD1)	**Source: 5G11013-01**			Prepared: 07/12/05 Analyzed: 07/13/05						
Benzene	2890		ug/kg	2500	ND	116	80-120	1.71	20	
Toluene	2960		"	2500	ND	118	80-120	1.68	20	
Ethylbenzene	2900		"	2500	ND	116	80-120	0.00	20	
Xylene (p/m)	5200		"	5000	49.6	103	80-120	0.976	20	
Xylene (o)	2880		"	2500	ND	115	80-120	1.72	20	
Surrogate: a,a,a-Trifluorotoluene	*91.4*		*"*	*100*		*91.4*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*119*		*"*	*100*		*119*	*80-120*			
Batch EG51305 - EPA 5030C (GC)										
Blank (EG51305-BLK1)				Prepared & Analyzed: 07/13/05						
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	*87.2*		*ug/kg*	*100*		*87.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*111*		*"*	*100*		*111*	*80-120*			
LCS (EG51305-BS1)				Prepared & Analyzed: 07/13/05						
Benzene	114		ug/kg	100		114	80-120			
Toluene	115		"	100		115	80-120			
Ethylbenzene	113		"	100		113	80-120			
Xylene (p/m)	202		"	200		101	80-120			
Xylene (o)	120		"	100		120	80-120			
Surrogate: a,a,a-Trifluorotoluene	*87.6*		*"*	*100*		*87.6*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*112*		*"*	*100*		*112*	*80-120*			

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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 EG51305 - EPA 5030C (GC)										
Calibration Check (EG51305-CCV1)				Prepared: 07/13/05 Analyzed: 07/14/05						
Benzene	109		ug/kg	100		109	80-120			
Toluene	114		"	100		114	80-120			
Ethylbenzene	111		"	100		111	80-120			
Xylene (p/m)	202		"	200		101	80-120			
Xylene (o)	119		"	100		119	80-120			
Surrogate: a,a,a-Trifluorotoluene	*87.8*		"	*100*		*87.8*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*105*		"	*100*		*105*	*80-120*			
Matrix Spike (EG51305-MS1)	**Source: 5G12007-02**			Prepared: 07/13/05 Analyzed: 07/14/05						
Benzene	116		ug/kg	100	ND	116	80-120			
Toluene	118		"	100	ND	118	80-120			
Ethylbenzene	119		"	100	ND	119	80-120			
Xylene (p/m)	230		"	200	ND	115	80-120			
Xylene (o)	117		"	100	ND	117	80-120			
Surrogate: a,a,a-Trifluorotoluene	*102*		"	*100*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*110*		"	*100*		*110*	*80-120*			
Matrix Spike Dup (EG51305-MSD1)	**Source: 5G12007-02**			Prepared: 07/13/05 Analyzed: 07/14/05						
Benzene	111		ug/kg	100	ND	111	80-120	4.41	20	
Toluene	117		"	100	ND	117	80-120	0.851	20	
Ethylbenzene	113		"	100	ND	113	80-120	5.17	20	
Xylene (p/m)	207		"	200	ND	104	80-120	10.0	20	
Xylene (o)	118		"	100	ND	118	80-120	0.851	20	
Surrogate: a,a,a-Trifluorotoluene	*85.3*		"	*100*		*85.3*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*106*		"	*100*		*106*	*80-120*			

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

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 EG51301 - General Preparation (Prep)										
Blank (EG51301-BLK1)				Prepared: 07/12/05 Analyzed: 07/13/05						
% Moisture	ND	0.1	%							
Duplicate (EG51301-DUP1)	**Source: 5G11013-01**			Prepared: 07/12/05 Analyzed: 07/13/05						
% Moisture	5.2	0.1	%		4.4			16.7	20	

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

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: 7/14/2005

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.

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

Environmental Lab of Texas

Chain of Custody Form

12600 West I-20 East, Odessa, TX 79765
432-563-1800 FAX: 432-563-1713

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 Corporation
Facility Name	Ruth 20-2
Location	UL-D, Sect. 20. T 16 S, R 36 E
Project Reference	160011
EPI Sampler Name	Roger Boone

Bill To

Attn: Iain Olness
PO Box 1558
Eunice, NM 88231

LAB I.D. 8/1/2007	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 1	SP-1	G	1			X					X		11-Jul-05	11:45	X	X						
02 2	SP-2	G	1			X					X		11-Jul-05	11:55	X	X						
03 3	SP-3	G	1			X					X		11-Jul-05	11:59	X	X						
04 4	SP-4	G	1			X					X		11-Jul-05	12:15	X	X						
05 5	SP-5	G	1			X					X		11-Jul-05	12:20	X	X						
06 6	SP-6	G	1			X					X		11-Jul-05	12:24	X	X						
07 7	SP-7	G	1			X					X		11-Jul-05	12:30	X	X						
08 8	SP-8	G	1			X					X		11-Jul-05	12:35	X	X						
09 9	SP-9	G	1			X					X		11-Jul-05	12:42	X	X						
10 10	SP-10	G	1			X					X		11-Jul-05	12:50	X	X						

Sampler Relinquished: Roger Boone — Date 7-12 — Time 9:00 — Received By: Iain Olness

Relinquished by: Iain Olness — Date 12July05 — Time 11:45 — Received By: (lab staff) Jason Boone

Delivered by: Jason Boone — Sample Cool & Intact: (Yes) No — Checked By:

E-mail results to: iolness@hotmail.com

REMARKS: 4oz jar

7/12/05 15:00 Carni Kelly ELOT

4.5°C labels/seal

Environmental Lab of Texas

Chain of Custody Form

12600 West I-20 East, Odessa, TX 79765
432-563-1800 FAX: 432-563-1713

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 Corporation
Facility Name	Ruth 20-2
Location	UL-D, Sect. 20. T 16 S, R 36 E
Project Reference	160011
EPI Sampler Name	Roger Boone

Bill To

Attn: Iain Olness
PO 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	ANALYSIS REQUEST: BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^{=}$)	pH	TCLP	OTHER >>>	PAH			
1	SP-11	G	1			X					X		11-Jul-05	12:55	X	X									
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									

5/9/2007

Sampler Relinquished: Roger Boone	Date 7-12 Time 8:00	Received By: Iain Olness	E-mail results to: iolness@hotmail.com
Relinquished by: Iain Olness	Date 7-12-05 Time 11:45	Received By: (lab staff) Aaron Boone	REMARKS:
Delivered by: Aaron Boone	Sample Cool & Intact Yes / No	Checked By:	

7/12/05 15:00 Carrie Kelly ELOT 4.5°C labels/seal

Environmental Lab of Texas

Variance / Corrective Action Report – Sample Log-In

Client: EPI

Date/Time: 7/12/05 15:00

Order #: 5G12007

Initials: CK

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	4.5 C
Shipping container/cooler in good condition?	Yes	No	none
Custody Seals intact on shipping container/cooler?	Yes	No	Not present
Custody Seals intact on sample bottles?	Yes	No	Not present
Chain of custody present?	Yes	No	
Sample Instructions complete on Chain of Custody?	Yes	No	
Chain of Custody signed when relinquished and received?	Yes	No	
Chain of custody agrees with sample label(s)	Yes	No	
Container labels legible and intact?	Yes	No	
Sample Matrix and properties same as on chain of custody?	Yes	No	
Samples in proper container/bottle?	Yes	No	
Samples properly preserved?	Yes	No	
Sample bottles intact?	Yes	No	
Preservations documented on Chain of Custody?	Yes	No	
Containers documented on Chain of Custody?	Yes	No	
Sufficient sample amount for indicated test?	Yes	No	
All samples received within sufficient hold time?	Yes	No	
VOC samples have zero headspace?	Yes	No	Not Applicable

Other observations:

Variance Documentation:

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

Regarding:

Corrective Action Taken:

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 Energy/ Ruth 20-2

Project Number: 160011

Location: None Given

Lab Order Number: 5G27011

Report Date: 08/01/05

Environmental Plus, Incorporated	Project: Chesapeake Energy/ Ruth 20-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160011	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	08/01/05 10:10

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SP 5	5G27011-01	Soil	07/26/05 08:16	07/27/05 11:05
SP 11	5G27011-02	Soil	07/26/05 08:17	07/27/05 11:05
SP 10	5G27011-03	Soil	07/26/05 08:18	07/27/05 11:05
SP 6	5G27011-04	Soil	07/26/05 08:19	07/27/05 11:05
SP 9	5G27011-05	Soil	07/26/05 08:20	07/27/05 11:05

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Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SP 5 (5G27011-01) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG52814	07/28/05	07/28/05	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		*102 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*87.8 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EG52708	07/27/05	07/28/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*79.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*102 %*	*70-130*		"	"	"	"	
SP 11 (5G27011-02) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG52814	07/28/05	07/28/05	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		*101 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*87.9 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EG52708	07/27/05	07/28/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*80.2 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*104 %*	*70-130*		"	"	"	"	
SP 10 (5G27011-03) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG52814	07/28/05	07/28/05	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		*94.2 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.4 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EG52708	07/27/05	07/28/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	

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Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SP 10 (5G27011-03) Soil									
Surrogate: 1-Chlorooctane		*81.4 %*	*70-130*		*EG52708*	*07/27/05*	*07/28/05*	*EPA 8015M*	
Surrogate: 1-Chlorooctadecane		*106 %*	*70-130*		"	"	"	"	
SP 6 (5G27011-04) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG52814	07/28/05	07/28/05	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		*95.0 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*84.5 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EG52708	07/27/05	07/28/05	EPA 8015M	
Diesel Range Organics >C12-C35	**138**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**138**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*80.0 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*111 %*	*70-130*		"	"	"	"	
SP 9 (5G27011-05) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EG52814	07/28/05	07/28/05	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		*87.3 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*81.9 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	**12.4**	10.0	mg/kg dry	1	EG52708	07/27/05	07/28/05	EPA 8015M	
Diesel Range Organics >C12-C35	**264**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**276**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*74.8 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*113 %*	*70-130*		"	"	"	"	

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

Environmental Plus, Incorporated	Project: Chesapeake Energy/ Ruth 20-2	Fax: 505-394-2601
P.O. Box 1558	Project Number: 160011	**Reported:**
Eunice NM, 88231	Project Manager: Iain Olness	08/01/05 10:10

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SP 5 (5G27011-01) Soil									
% Moisture	**7.1**	0.1	%	1	EG52809	07/27/05	07/28/05	% calculation	
SP 11 (5G27011-02) Soil									
% Moisture	**7.4**	0.1	%	1	EG52809	07/27/05	07/28/05	% calculation	
SP 10 (5G27011-03) Soil									
% Moisture	**4.4**	0.1	%	1	EG52809	07/27/05	07/28/05	% calculation	
SP 6 (5G27011-04) Soil									
% Moisture	**3.5**	0.1	%	1	EG52809	07/27/05	07/28/05	% calculation	
SP 9 (5G27011-05) Soil									
% Moisture	**2.5**	0.1	%	1	EG52809	07/27/05	07/28/05	% calculation	

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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 EG52708 - Solvent Extraction (GC)										
Blank (EG52708-BLK1)				Prepared: 07/27/05 Analyzed: 07/28/05						
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	*40.9*		*mg/kg*	*50.0*		*81.8*	*70-130*			
Surrogate: 1-Chlorooctadecane	*49.4*		*"*	*50.0*		*98.8*	*70-130*			
LCS (EG52708-BS1)				Prepared: 07/27/05 Analyzed: 07/28/05						
Gasoline Range Organics C6-C12	415	10.0	mg/kg wet	500		83.0	75-125			
Diesel Range Organics >C12-C35	458	10.0	"	500		91.6	75-125			
Total Hydrocarbon C6-C35	873	10.0	"	1000		87.3	75-125			
Surrogate: 1-Chlorooctane	*41.1*		*mg/kg*	*50.0*		*82.2*	*70-130*			
Surrogate: 1-Chlorooctadecane	*51.7*		*"*	*50.0*		*103*	*70-130*			
Calibration Check (EG52708-CCV1)				Prepared: 07/27/05 Analyzed: 07/28/05						
Gasoline Range Organics C6-C12	415		mg/kg	500		83.0	80-120			
Diesel Range Organics >C12-C35	482		"	500		96.4	80-120			
Total Hydrocarbon C6-C35	897		"	1000		89.7	80-120			
Surrogate: 1-Chlorooctane	*43.3*		*"*	*50.0*		*86.6*	*0-200*			
Surrogate: 1-Chlorooctadecane	*59.2*		*"*	*50.0*		*118*	*0-200*			
Matrix Spike (EG52708-MS1)	**Source: 5G27009-04**			Prepared: 07/27/05 Analyzed: 07/28/05						
Gasoline Range Organics C6-C12	412	10.0	mg/kg dry	505	ND	81.6	75-125			
Diesel Range Organics >C12-C35	458	10.0	"	505	ND	90.7	75-125			
Total Hydrocarbon C6-C35	870	10.0	"	1010	ND	86.1	75-125			
Surrogate: 1-Chlorooctane	*41.7*		*mg/kg*	*50.0*		*83.4*	*70-130*			
Surrogate: 1-Chlorooctadecane	*54.2*		*"*	*50.0*		*108*	*70-130*			
Matrix Spike Dup (EG52708-MSD1)	**Source: 5G27009-04**			Prepared: 07/27/05 Analyzed: 07/28/05						
Gasoline Range Organics C6-C12	402	10.0	mg/kg dry	505	ND	79.6	75-125	2.46	20	
Diesel Range Organics >C12-C35	465	10.0	"	505	ND	92.1	75-125	1.52	20	
Total Hydrocarbon C6-C35	867	10.0	"	1010	ND	85.8	75-125	0.345	20	
Surrogate: 1-Chlorooctane	*41.8*		*mg/kg*	*50.0*		*83.6*	*70-130*			
Surrogate: 1-Chlorooctadecane	*54.0*		*"*	*50.0*		*108*	*70-130*			

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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 EG52814 - EPA 5030C (GC)										
Blank (EG52814-BLK1)				Prepared & Analyzed: 07/28/05						
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	*86.3*		*ug/kg*	*100*		*86.3*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*85.7*		*"*	*100*		*85.7*	*80-120*			
LCS (EG52814-BS1)				Prepared & Analyzed: 07/28/05						
Benzene	91.3		ug/kg	100		91.3	80-120			
Toluene	98.8		"	100		98.8	80-120			
Ethylbenzene	112		"	100		112	80-120			
Xylene (p/m)	220		"	200		110	80-120			
Xylene (o)	107		"	100		107	80-120			
Surrogate: a,a,a-Trifluorotoluene	*88.2*		*"*	*100*		*88.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*96.2*		*"*	*100*		*96.2*	*80-120*			
Calibration Check (EG52814-CCV1)				Prepared: 07/28/05 Analyzed: 07/29/05						
Benzene	118		ug/kg	100		118	80-120			
Toluene	120		"	100		120	80-120			
Ethylbenzene	113		"	100		113	80-120			
Xylene (p/m)	224		"	200		112	80-120			
Xylene (o)	101		"	100		101	80-120			
Surrogate: a,a,a-Trifluorotoluene	*104*		*"*	*100*		*104*	*0-200*			
Surrogate: 4-Bromofluorobenzene	*93.0*		*"*	*100*		*93.0*	*0-200*			
Matrix Spike (EG52814-MS1)	**Source: 5G28005-04**			Prepared & Analyzed: 07/28/05						
Benzene	115		ug/kg	100	ND	115	80-120			
Toluene	119		"	100	ND	119	80-120			
Ethylbenzene	116		"	100	ND	116	80-120			
Xylene (p/m)	228		"	200	ND	114	80-120			
Xylene (o)	112		"	100	ND	112	80-120			
Surrogate: a,a,a-Trifluorotoluene	*102*		*"*	*100*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*102*		*"*	*100*		*102*	*80-120*			

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

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 EG52814 - EPA 5030C (GC)										
Matrix Spike Dup (EG52814-MSD1)	**Source: 5G28005-04**		Prepared & Analyzed: 07/28/05							
Benzene	109		ug/kg	100	ND	109	80-120	5.36	20	
Toluene	114		"	100	ND	114	80-120	4.29	20	
Ethylbenzene	119		"	100	ND	119	80-120	2.55	20	
Xylene (p/m)	237		"	200	ND	118	80-120	3.45	20	
Xylene (o)	111		"	100	ND	111	80-120	0.897	20	
Surrogate: a,a,a-Trifluorotoluene	*92.6*		*"*	*100*		*92.6*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*98.2*		*"*	*100*		*98.2*	*80-120*			

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

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 EG52809 - General Preparation (Prep)										
Blank (EG52809-BLK1)				Prepared: 07/27/05 Analyzed: 07/28/05						
% Moisture	ND	0.1	%							
Duplicate (EG52809-DUP1)	**Source: 5G20024-03**			Prepared: 07/27/05 Analyzed: 07/28/05						
% Moisture	19.1	0.1	%		19.3			1.04	20	

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

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: 8/1/2005

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.

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

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

RP1

Environmental Lab of Texas, Inc.
12600 West I-20 East Phone: 915-563-1800
Odessa Texas 79763 Fax: 915-563-1713

Project Manager: Iain Olness
Company Name: Chesapeake
Company Address:
City/State/Zip:
Sampler Signature: John Robinson

Project Name: Ruth 20-2 160011
Project #: # 160011
Project Loc:
PO#:

	Lab #	Sample ID	Date Sampled	Time Sampled	No. of Containers	ICE	HNO	HCl	NaOH	HSO	None	Other (Specify)	Water	Sludge	Soil	Other (Specify)	Analyze For: TCLP / TOTAL — TDS/CL/SAR/EC	TPH 418.1	TPH TX 1006Exceaded	TPH 8015M GRO/DRO	Metals	Volatiles	Semivolatiles	BTEX 8021B/5030	Reactivity	Corrosivity	Ignitiability	Chlorides	Sulfates		RUSH TAT	Standard TAT
01	160011	SP5	7/26/2005	8:16	1	X									X					X				X								
02		SP 11	7/26/2005	8:17	1	X									X					X				X								
03		SP10	7/26/2005	8:18	1	X									X					X				X								
04		SP 6	7/26/2005	8:19	1	X									X					X				X								
05		SP 9	7/26/2005	8:20	1	X									X					X				X								

Special Instructions

FAX RESULTS TO Iain Olness ASAP

Sample Containers Intact? (Y) N
Temperature Upon Request
Laboratory Comments: 4.5

Relinquished:	Date	Time	Received by:	Date	Time
John Robinson	7-27	7:30	Aaron Boone	7.27	7:30
Aaron Boone	7-27	11:05	Carrie Kelly	7/27/05	11:05

4oz labels

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

Client: EDI

Date/Time: 7/27/05 11:05

Order #: 5G27011

Initials: CK CK

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	1.5 C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	Yes	No	(Not present)
Custody Seals intact on sample bottles?	Yes	No	(Not present)
Chain of custody present?	(Yes)	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of custody agrees with sample label(s)	(Yes)	No	
Container labels legible and intact?	(Yes)	No	
Sample Matrix and properties same as on chain of custody?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
Samples properly preserved?	(Yes)	No	
Sample bottles intact?	(Yes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
Sufficient sample amount for indicated test?	(Yes)	No	
All samples received within sufficient hold time?	(Yes)	No	
VOC samples have zero headspace?	(Yes)	No	Not Applicable

Other observations:

Variance Documentation:

Contact Person: - Date/Time: Contacted by:

Regarding:

Corrective Action Taken:

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: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 09/06/05
Reporting Date: 09/08/05
Project Owner: CHESAPEAKE ENERGY CORPORATION
Project Name: RUTH 20-2
Project Location: UL-D SEC. 20, T16S, R36E

Sampling Date: 09/06/05
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: NF
Analyzed By: BC

LAB NUMBER	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:		09/06/05	09/06/05	09/07/05	09/07/05	09/07/05	09/07/05
H10157-1	SP-12 (3')	<10.0	24.5	<0.005	<0.005	<0.005	<0.015
H10157-2	SP-13 (6')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10157-3	SP-14 (3')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10157-4	SP-15 (6')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10157-5	SP-16 (3')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
Quality Control		792	809	0.110	0.095	0.098	0.305
True Value QC		800	800	0.100	0.100	0.100	0.300
% Recovery		99.1	101	110	94.9	98.4	102
Relative Percent Difference		2.4	1.7	0.5	1.6	4.1	4.7

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

Burgess J. A. Cooke. Ph. D.

9/8/05
Date

H10157.XLS

PLEASE NOTE: **Liability and Damages**. **Cardinal's** liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by **Cardinal** within thirty (30) days after completion of the applicable service. In no event shall **Cardinal** be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by **Cardinal**, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

Environmental Lab of Texas

Chain of Custody Form

101 East Marland, Hobbs, NM 88240
505-393-2326 Fax 505-393-2476

2111 Beechwood, Abilene, TX 79603
915-673-7001 Fax 915-673-7020

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 Corporation
Facility Name	Ruth 20-2
Location	UL-D, Sect. 20. T 16 S, R 36 E
Project Reference	160011
EPI Sampler Name	John Robinson

Attn: Iain Olness
PO Box 1558
Eunice, NM 88231

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	ANALYSIS REQUEST: BTEX 8021B	TPH 8015M	CHLORIDES (Cl)	SULFATES (SO_4^{-2})	pH	TCLP	OTHER >>>	PAH
H10157 - 1	SP-12 (3')	G	1			X					X		06-Sep-05	11:00	X	X						
- 2	SP-13 (6')	G	1			X					X		06-Sep-05	11:03	X	X						
- 3	SP-14 (3')	G	1			X					X		06-Sep-05	11:06	X	X						
- 4	SP-15 6')	G	1			X					X		06-Sep-05	11:09	X	X						
- 5	SP-16 (3')	G	1			X					X		06-Sep-05	11:12	X	X						
6																						
7																						
8																						
9																						
10																						

Sampler Relinquished: John Robinson	Date 4-6-05 Time 4:30 PM	Received By:	E-mail results to: iolness@hotmail.com
Relinquished by:	Date / Time	Received By: (lab staff)	REMARKS:
Delivered by:	Sample Cool & Intact: (Yes) No	Checked By:	

APPENDIX II

PROJECT PHOTOGRAPHS

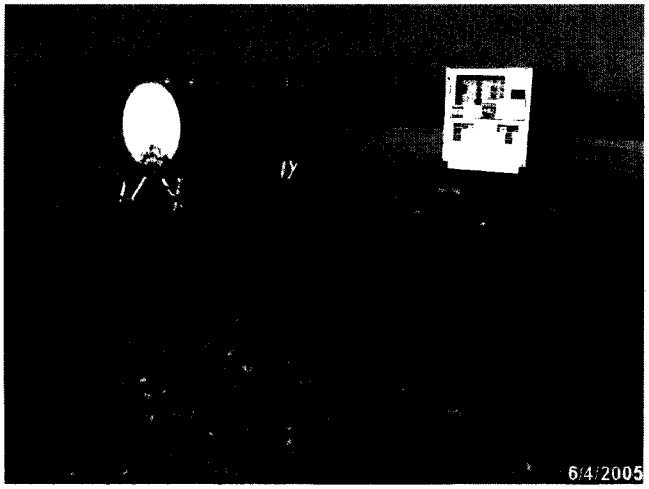

Photo #1: Looking northwesterly at diesel tank, generator and release area.

Photo #2: Looking westerly at release area.

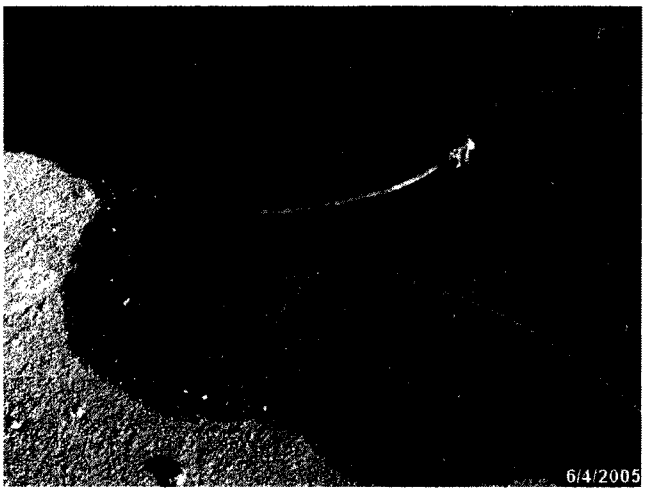

Photo #3: Looking down at point-of-release.

Photo #4: Looking at pooled diesel fuel on caliche pad.

Photo #5: Excavated, diesel soaked soil stockpiled on plastic. Drilling pit is in background of photo.


Photo #6: Looking southwesterly at excavation.

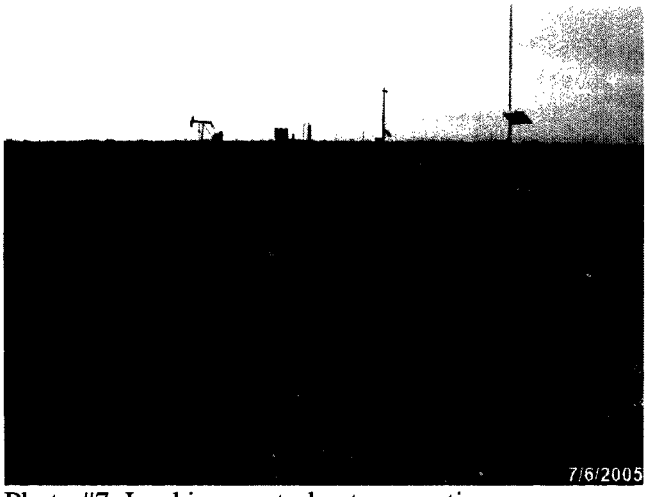

Photo #7: Looking westerly at excavation.


Photo #8: Looking westerly at excavation. Drilling pit is in right side of photo.


Photo #9: Looking northerly at excavation.


Photo #10: Looking northwesterly at excavation.

Photo #11: Current status, looking northeasterly.

APPENDIX III

SOIL BORING LOG

Log Of Test Borings

(NOTE - Page 1 of 3)

ENVIRONMENTAL PLUS, INC.
STATE APPROVED LAND FARM AND ENVIRONMENTAL SERVICES
EUNICE
505-394-3481

Project Number: 160016

Project Name: Chesapeake Ruth 20-2 Pit Closure

Location: UL-D, Section 20, Township 16 South, Range 36 East

Boring Number: BH-1 | Surface Elevation: 3,938-feet amsl

Start Date: 10/19/05 Time: 1030 hrs

Completion Date: 10/19/05 Time: 1350 hrs

Time	Sample Type	Recovery (inches)	Moisture	PID Readings (ppm)	Chloride Analysis (mg/kg)	U.S.C.S. Symbol	Depth (feet)	Description
								1' Sandy Loam Topsoil
								CALICHE, White to Tan, Hard
							5	
1030	PS	6		5.4	1,360		10	
1035	PS	12		4.7	1,360	SM	15	SAND, White to Tan to Red, Fine to Coarse Grained
1038	PS	7		3.7	1,280	SP	20	Sand turns to Red
1043	PS	8		6.4	1,280	SP	25	Sand turns to White
1050	PS	12		3.2	1,040	SM	30	

Water Level Measurements (feet)

Date	Time	Sample Depth	Casing Depth	Cave-in Depth	Water Level
-	-	-	-	-	-
-	-	-	-	-	-

Drilling Method: HSA 3.5" ID

Backfill Method: Bentonite

Field Representative: JR

Log Of Test Borings

ENVIRONMENTAL PLUS, INC.
STATE APPROVED LAND FARM AND ENVIRONMENTAL SERVICES
EUNICE
505-394-3481

Project Number: 160016

Project Name: Chesapeake Ruth 20-2 Pit Closure

Location: UL-D, Section 20, Township 16 South, Range 36 East

Boring Number: BH-1 | Surface Elevation: 3,938-feet ansl

Start Date: 10/19/05 Time: 1030 hrs

Completion Date: 10/19/05 Time: 1350 hrs

Time	Sample Type	Recovery (inches)	Moisture	PID Readings (ppm)	Chloride Analysis (mg/Kg)	U.S.C.S. Symbol	Depth (feet)	Description
								SAND, White to Tan to Red, Fine to Coarse Grained
1054	PS	11		1.6	1,520	SM	35	
1203	PS	8		2.6	1,520	SM	40	
1220	PS	8		2.3	1,120	SM	45	
1230	PS	12		1.9	1,040	SM	50	
1241	PS	8		1.3	1,040	SM	55	
1316	PS	8		1.7	1,320	SM	60	

Water Level Measurements (feet)

Date	Time	Sample Depth	Casing Depth	Cave-in Depth	Water Level
-	-	-	-	-	-
-	-	-	-	-	-

Drilling Method: HSA 3.5' ID

Backfill Method: Bentonite

Field Representative: JR

Log Of Test Borings

ENVIRONMENTAL PLUS, INC.
STATE APPROVED LAND FARM AND ENVIRONMENTAL SERVICES
EUNICE
505-394-3481

Project Number: 160016

Project Name: Chesapeake Ruth 20-2 Pit Closure

Location: UL-D, Section 20, Township 16 South, Range 36 East

Boring Number: BH-1 | Surface Elevation: 3,938-feet amsl

Start Date: 10/19/05 Time: 1030 hrs

Completion Date: 10/19/05 Time: 1350 hrs

Time	Sample Type	Recovery (inches)	Moisture	PID Readings (ppm)	Chloride Analysis (mg/Kg)	U.S.C.S. Symbol	Depth (feet)	Description
								SAND, White to Tan to Red, Fine to Coarse Grained
							65	
1320	PS	10		2.0	4,000	SM		
							70	
1327	PS	10		1.1	4,880	SM		
								▼
1343	PS	12	Damp	1.8	>4,000	SM		
							75	
1350	PS	12	Wet	--	--	SM		
								End of Soil Boring at 76' bgs
							80	
							85	
							90	

Water Level Measurements (Feet)

Date	Time	Sample Depth	Casing Depth	Cave-in Depth	Water Level
10/19/05	1343	-	-	-	72'
-	-	-	-	-	-

Drilling Method: HSA 3.5" ID

Backfill Method: Bentonite

Field Representative: JR

APPENDIX IV

FINAL NMOCD C-141 FORM

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, N.M. 88240	**Telephone No.:** (505) 391-1462 ext. 24
Facility Name: Ruth 20-2	**Facility Type:** Tank Battery

Surface Owner: State of New Mexico - Leased by Dale Gandy	**Mineral Owner:** State of New Mexico	**Lease No.:** V0-4719-0000

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
D	20	16 S	36 E					Lea

Latitude: N 32º 54' 48.033" **Longitude:** W 103° 22' 57.430"

NATURE OF RELEASE

Type of Release: Diesel Fuel	**Volume of Release:** 500 gallons	**Volume Recovered:** 0 gallons
Source of Release: Tank	**Date and Hour of Occurrence:** 03 June 2005, time unkown	**Date and Hour of Discovery:** 04 June 2005
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	**If YES, To Whom?** Not Applicable	
By Whom? Not Applicable	**Date and Hour:** Not Applicable	
Was a Watercourse Reached? ☐ Yes ☒ No	**If YES, Volume Impacting the Watercourse:** Not Applicable	

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

Describe Cause of Problem and Remedial Action Taken.* The site was vandalized and the fuel line from the diesel tank to the generator was cut and all the diesel allowed to flow onto the caliche pad. Soil impacted above the NMOCD remedial thresholds has been excavated and transported to a State approved treatment facility.

Describe Area Affected and Cleanup Action Taken.* Approximately 3,150 square feet of surface area was impacted by the release, all of which was on the caliche pad at the site. Approximately 340-cubic yards of hydrocarbon impacted soil above the NMOCD remedial guidelines was excavated and transported to Artesia Aeration for treatment. An equivalent amount of clean soil was obtained from an off-site source and utilized to backfill the excavation. NMOCD remedial thresholds for the site were: 10 mg/Kg for benzene, 50 mg/Kg for BTEX and 100 mg/Kg for TPH.

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~~:** ENVIRO ENGR
Title: Field Technician	**Approval Date:** 6.4.07 **Expiration Date:** —
E-mail Address: bblevins@chkenergy.com	**Conditions of Approval:** — **Attached** ☐
Date: 7-4-06 **Phone:** (505) 391-1462 ext. 24	

*** Attach Additional Sheets If Necessary**