



## CLOSURE PROPOSAL

**A-8-13-1 RELEASE SITE**

**DEFS REF: 130032**

**UL-C (NE¼ OF THE NW¼) OF SECTION 11 T17S R34E**

**~4 MILES NORTHWEST OF BUCKEYE**

**LEA COUNTY, NEW MEXICO**

**LATITUDE: N 32° 51' 10.26"**

**LONGITUDE: W 103° 31' 58.08"**

**JANUARY 2006**

**PREPARED BY:**

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# **Standard of Care**

## **Closure Proposal**

**A-8-13-1-Line (Ref. #130032)**

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:

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Jason Stegemoller, M.S.  
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Date

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## **1.0 Summary**

This report addresses the site investigation and remediation of the Duke Energy Field Services (DEFS) A-8-13-1 6-inch natural gas pipeline remediation site. On September 12, 2005, Environmental Plus, Inc. (EPI) was notified by DEFS regarding a natural gas and natural gas liquid (NGL) release along the A-8-13-1 pipeline. This site is located approximately 4 miles southwest of Buckeye, Lea County, New Mexico (reference *Figures 1 and 2*). The initial C-141 Form submitted to the New Mexico Oil Conservation Division (NMOCD) stated a release of 4 barrels (bbl) of NGL, with none recovered. EPI performed GPS surveying, photography and characterization of the site on September 12, 2005. The site consisted of an approximate 640 square feet (ft<sup>2</sup>) of visibly affected surface area (reference *Figure 3*).

Remedial activities at the site consisted of excavating visibly NGL saturated soil and transporting approximately 360 cubic yards (yds<sup>3</sup>) to Artesia Aeration, L.L.C. for treatment (reference *Figure 3*). On November 7, 2005, soil samples were collected from eastern and southern portions of the excavation and from a test trench excavated beneath the point-of-release to approximately 18-feet below ground surface (bgs). The samples were analyzed in the field for the presence of organic vapors utilizing an UltraRae photoionization detector (PID) equipped with a 9.8 electron-volt (eV) lamp. Field analyses indicated organic vapor concentrations in the excavation floor and sidewalls ranged from 2.0 to 59.5 ppm. Field analytical data for the samples collected from the test trench indicated organic vapor concentrations at 14-feet bgs were 1,653 ppm and at 18-feet bgs were 3,065 ppm.

On November 10, 2005, soil samples were collected from the excavation floor and sidewalls. A portion of each sample was placed in a laboratory provided container and submitted for laboratory confirmation that hydrocarbon impacted soil had been removed. The remaining portion of each soil sample was analyzed in the field for the presence of organic vapors utilizing an UltraRae photoionization detector (PID) equipped with a 9.8 electron-volt (eV) lamp. Laboratory analytical results indicated total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and total xylenes (BTEX constituents) were below the NMOCD remedial threshold for each analyte. Reported chloride concentrations ranged from 48 to 80 mg/Kg and sulfate concentrations were non-detectable (ND) at or above laboratory MDL. Field analyses indicated organic vapor concentrations ranged from 1.0 to 69.4 mg/Kg (reference *Table 1*).

On November 10, 2005, a soil boring (SB-1) was advanced to a depth of approximately 29-feet bgs to delineate the vertical extent of hydrocarbon impacts. The soil boring was located approximately 10 feet southeast of the point of release and appears to have been situated near the edge of the release area at fifteen feet below ground surface (reference *Figure 4*). Soil samples were collected at 19, 24 and 29-feet bgs and a portion of each sample was submitted to an independent laboratory for quantification of TPH, BTEX constituents, chlorides and sulfates. The remaining portion of the sample was analyzed in the field for the presence of organic vapors and chloride concentrations. Laboratory analytical data indicated TPH and BTEX constituent concentrations were ND at or above laboratory MDL. Reported chloride concentrations ranged from 32 to 64 mg/Kg and sulfate concentrations were ND at or above laboratory MDL (reference *Table 1*).

Field analyses of soil samples collected from the test trench indicated organic vapor concentrations in excess of 3,000 ppm at 18-feet bgs. Laboratory analyses of soil samples collected during the advancement of soil boring SB-1 indicated the absence of hydrocarbons at all sampling intervals. Based on this information, a second test trench (TT-1) was excavated on November 30, 2005 (i.e., in the same location as the original test trench), to approximately 32-feet bgs. Soil samples were collected at 20, 25, 30 and 32-feet bgs. A portion of each sample was placed in a laboratory

provided container and submitted to an independent laboratory for quantification of TPH, BTEX constituent, chloride and sulfate concentrations.

Laboratory analytical data indicated BTEX and TPH concentrations were in excess of the NMOCD remedial thresholds for each analyte to approximately 30-feet bgs. The soil sample collected at 32-feet bgs (TT-1 32') indicated benzene concentrations were 0.0327 mg/Kg, BTEX constituent concentrations were 0.149 mg/Kg and TPH concentrations were 13.2 mg/Kg; below each analytes' NMOCD remedial threshold. Reported chloride concentrations ranged from 24.3 to 84.2 mg/Kg and sulfate concentrations ranged from 24.1 to 46.0 mg/Kg (reference *Table 1*).

This release site is located in Unit Letter C (NE $\frac{1}{4}$  of the NW $\frac{1}{4}$ ), Section 11, T17S, R34E, at a latitude of N32° 51' 10.26" and a longitude of W103° 31' 58.08". The site is approximately 4-miles northwest of Buckeye, New Mexico. The property is 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 an area that "is a flat, gently sloping plain, treeless, and marred only by slight undulations and covered with short prairie grass."

### ***2.2 Ecological Description***

The site is located in the High Plains with vegetation consisting primarily of semi-desert grasslands interspersed with Honey Mesquite (*Prosopis glandulosa*) and annual and perennial forbs. Mammals represented, include Orrd's and Merriam's Kangaroo Rats, Deer Mouse, White Throated Wood Rat, Cottontail Rabbit, Black Tailed Jackrabbit, Mule Deer, Bobcat, Red Fox and Coyote. Reptiles, amphibians, and birds are numerous and typical of area. A survey of *Listed*, *Threatened*, or *Endangered* species was not conducted.

### ***2.3 Area Groundwater***

The unconfined groundwater aquifer at this site is projected to be approximately 85-ft bgs based on water depth data obtained from the New Mexico State Engineers Office database (reference *Table 2*).

### ***2.4 Area Water Wells***

All recorded wells are greater than 1,000 horizontal feet from the site, with the exception of L05806 (E) 2 which is utilized for prospecting or development of natural resources (reference *Figure 2*).

### ***2.5 Area Surface Water Features***

The release site is within 60-feet of an ephemeral playa lake (reference *Figure 2*).

### 3.0 NMOCD Site Ranking

Contaminant delineation and remedial work done at this site indicate 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)*
- ◆ *Unlined Surface Impoundment Closure Guidelines (February 1993)*

Acceptable thresholds for contaminants/constituents of concern 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); and*
- ◆ *Distance to Surface Water Bodies (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. Groundwater		2. Wellhead Protection Area	3. Distance to Surface Water
Depth to GW <50 feet:	20 points	If <1,000' from water source, or; <200' from private domestic water source: 20 points	<200 horizontal feet: 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) = 10 + 20 + 20 = 30 points			
Total Site Ranking Score and Acceptable Remedial Goal Concentrations			
Parameter	20 or >	10	0
Benzene <sup>1</sup>	10 ppm	10 ppm	10 ppm
BTEX <sup>1</sup>	50 ppm	50 ppm	50 ppm
TPH	100 ppm	1,000 ppm	5,000 ppm

<sup>1</sup> 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

Remedial excavation activities consisted of excavating NGL saturated soil (*reference Figure 3*). To confirm removal of NGL contaminated soil, grab-type soil samples were collected from the excavation on the eastern and southern sidewalls and from a test trench excavated to approximately 18-feet bgs. A portion of each sample was analyzed in the field for organic vapor concentrations utilizing an UltraRae PID equipped with a 9.8 eV lamp. Field analyses of the sidewall samples indicated organic vapor concentrations ranged from 2.0 to 59.5 ppm. Organic vapor concentrations



in the sample collected from the test trench at 14-feet bgs were 1,653 ppm and at 18-feet bgs were 3,065 ppm.

On November 10, 2005, soil samples were collected from the excavation floor and sidewalls. A portion of each sample was placed in a jar, set on ice for transport and submitted to an independent laboratory for analyses. The remaining portion of each sample was analyzed in the field utilizing a PID. Field analyses indicated organic vapor concentrations ranged from 1.0 to 6.5 ppm. Laboratory analyses indicated benzene concentrations were non-detectable (ND) at or above laboratory method detection limits (MDL). BTEX constituent concentrations were reported to range from ND to 0.096 mg/Kg, below the NMOCD remedial threshold of 50 mg/Kg. With the exception of the sample collected from the east excavation floor (BH-E), TPH concentrations were ND at or above laboratory MDL. TPH concentrations in BH-E were 209 mg/Kg, above the NMOCD remedial threshold of 100 mg/Kg. Chloride concentrations ranged from 48 to 80 mg/Kg and sulfates were reported as ND at or above laboratory MDL (reference *Table 1*).

On November 10, 2005, a soil boring was advanced to approximately 29-feet bgs. Soil samples were collected at 19, 24 and 29-feet bgs, with a portion of each sample placed in a laboratory provided container and set on ice for transport to an independent laboratory. The remaining portion of each sample was analyzed in the field for the presence of organic vapors. In addition the sample collected at 29-feet bgs was analyzed for chloride concentrations. Field analyses indicated organic vapor concentrations ranged from 1.8 to 22.5 mg/Kg and chloride concentrations at 29-feet bgs were 160 mg/Kg. Laboratory analyses indicated TPH and BTEX constituent concentrations were ND at or above laboratory MDL. Chloride concentrations ranged from 32 to 64 mg/Kg and sulfates were reported as ND at or above laboratory MDL (reference *Table 1*).

Due to conflicting data from samples collected from the test trench and soil boring SB-1, a second test trench TT-1 was excavated on November 30, 2005, to approximately 32-feet bgs. Soil samples were collected at 20, 25, 30 and 32-feet bgs. Upon collection, each sample was placed in a laboratory provided container and set on ice for transport to an independent laboratory for quantification of TPH, BTEX constituents, chloride and sulfate concentrations. Laboratory analytical data indicated hydrocarbon impacts above NMOCD remedial thresholds existed to approximately 30-feet bgs. The sample collected at 32-feet bgs (TT-1 32') indicated benzene concentrations were 0.0327 mg/Kg, below the NMOCD remedial threshold of 10 mg/Kg. Reported BTEX concentrations were 0.149 mg/Kg, below the NMOCD remedial threshold of 50 mg/Kg and TPH concentrations were 13.2 mg/Kg, below the NMOCD remedial threshold of 100 mg/Kg (reference *Table 1*).

## **5.0 Groundwater Investigation**

The projected depth to groundwater at this site is ~~≈85-ft bgs~~. Excavation of impacted soil was to a maximum depth of 15-feet bgs. Laboratory analytical results from soil sample collected from the November 30, 2005 test trench (TT-1) indicated hydrocarbon impacted soil in excess of remedial thresholds existed to approximately 30-feet bgs. Analytical results for the soil sample collected from 32-feet bgs indicated TPH and BTEX constituent concentrations were below each analytes' respective NMOCD remedial threshold (reference *Table 1* and *Appendix I*).

Approximately 360 cubic yards of hydrocarbon impacted soil was excavated and transported to Artesia Aeration, L.L.C. for treatment. Based on the removal of hydrocarbon impacted soil above NMOCD remedial threshold and adequate depth to ground water (~50-feet bgs), there is no need for further groundwater investigation at this site.

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## **6.0 Remediation Process**

Remedial activities at the site consisted of the excavation of approximately 360 yd<sup>3</sup> of NGL contaminated soil from the site and transported to the Artesia Aeration, L.L.C. for treatment. Analytical results for the samples collected from the excavation sidewalls indicated TPH and BTEX constituent concentrations were below NMOCD remedial thresholds. Sulfates concentrations were non-detectable at or above laboratory MDL. Chloride concentrations ranged from 32 to 80 mg/Kg. Laboratory analyses of soil samples collected from test trench TT-1 in the excavation floor beneath the point of release indicated hydrocarbon impacts above the NMOCD remedial thresholds exists to approximately 30-feet bgs. Analytical data indicated chloride concentrations ranged from 24.3 to 84.2 mg/Kg and sulfate concentrations ranged from 24.1 to 46.0 mg/Kg (reference *Table 1* and *Appendix 1*). Approximately 800 cubic yards of impacted soil is stockpiled adjacent to the excavation.

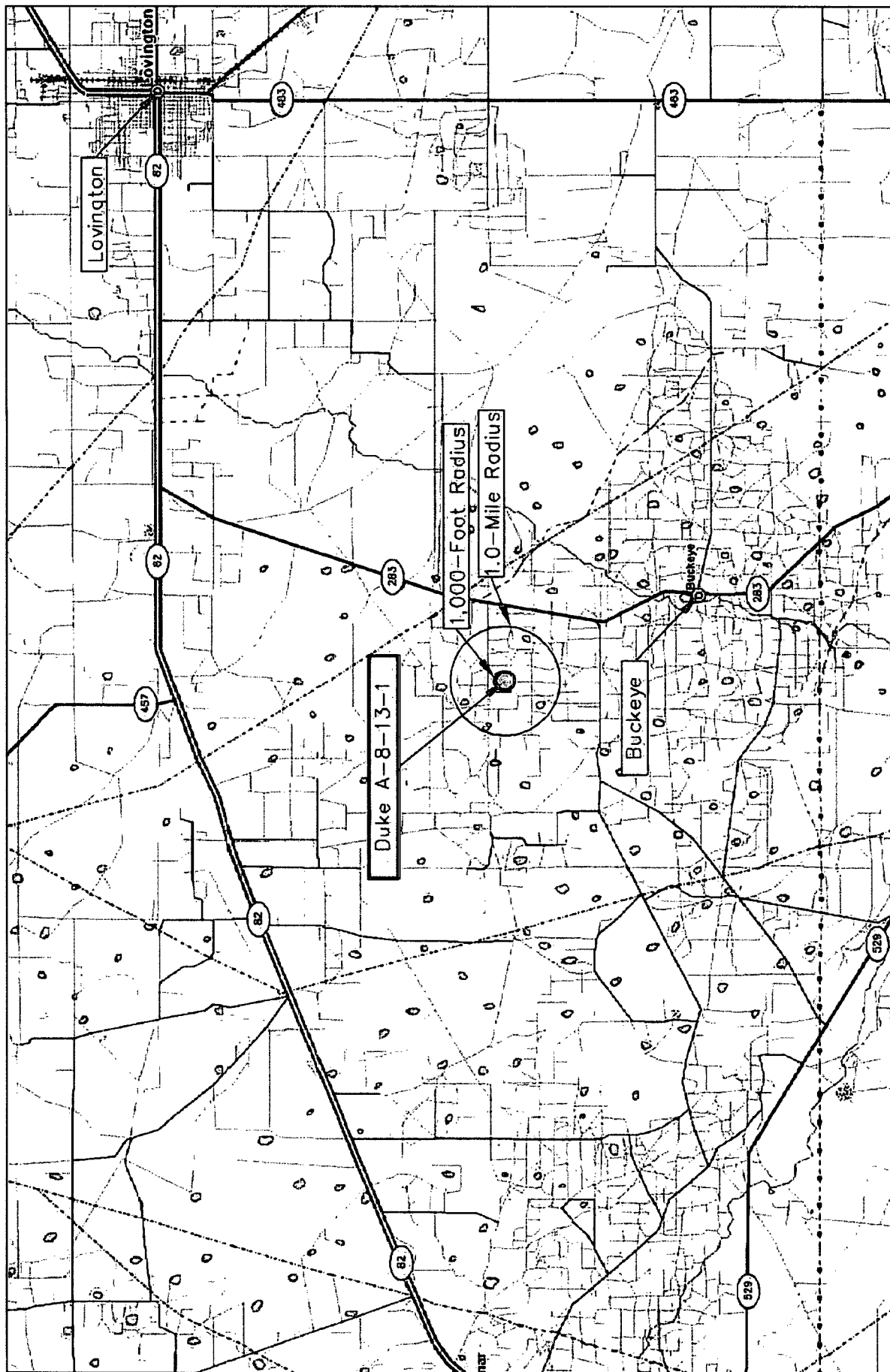
## **7.0 Closure Proposal**

This report documents treatment of impacted soil above the NMOCD remedial thresholds in the excavation floor and sidewalls (with exception to the area beneath the point of release). Approximately 360 cubic yards of excavated, NGL impacted soil was transported to Artesia Aeration, L.L.C. for treatment. Another 800 cubic yards of excavated soil is stockpiled adjacent to the excavation. Based on field and analytical results, Environmental Plus, Inc. recommends the placement of a clay, poly-vinyl chloride or equivalent liner on the excavation floor to isolate residual NGL impacted soil below the point of release. The excavation will then be backfilled with excavated soil after blending with clean soil (obtained from Eidson Ranches) to below the NMOCD remedial thresholds. Upon completion of backfilling, the site will be graded to allow natural drainage and seeded with a blend preferred by the New Mexico State Land Office (NMSLO). A *Closure Report* documenting remedial activities will be provided to the NMOCD and the NMSLO upon completion of final closure activities.

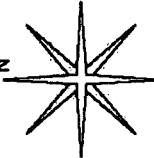
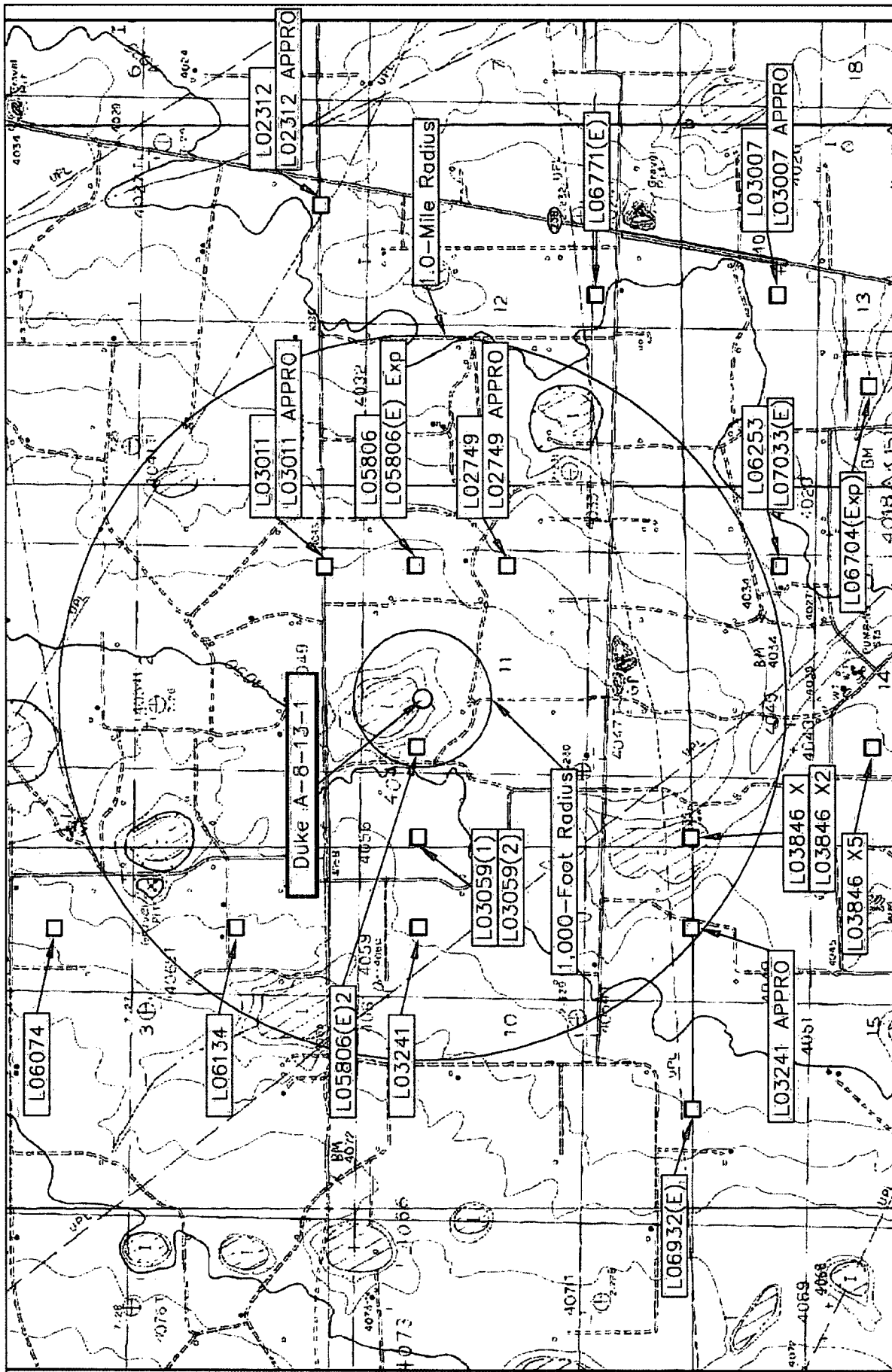
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## FIGURES

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<p><b>Figure 1</b> Area Map Duke Energy A-8-13-1</p>	<p>Lea County, New Mexico NE 1/4 of the NW 1/4, Sec. 11, T17S, R34E N 32° 51' 10.26" W 103° 31' 58.08" Elevation: 4,044 feet amsl</p>		<p>DWG By: Daniel Dominguez September 2005</p>	<p>REVISED:</p>	
	<p>0 2.5 5.0 Miles</p>		<p>0 2.5 5.0 SHEET 1 of 1</p>		



REVISED:

DWG By: Daniel Dominguez  
September 2005



SHEET  
1 of 1

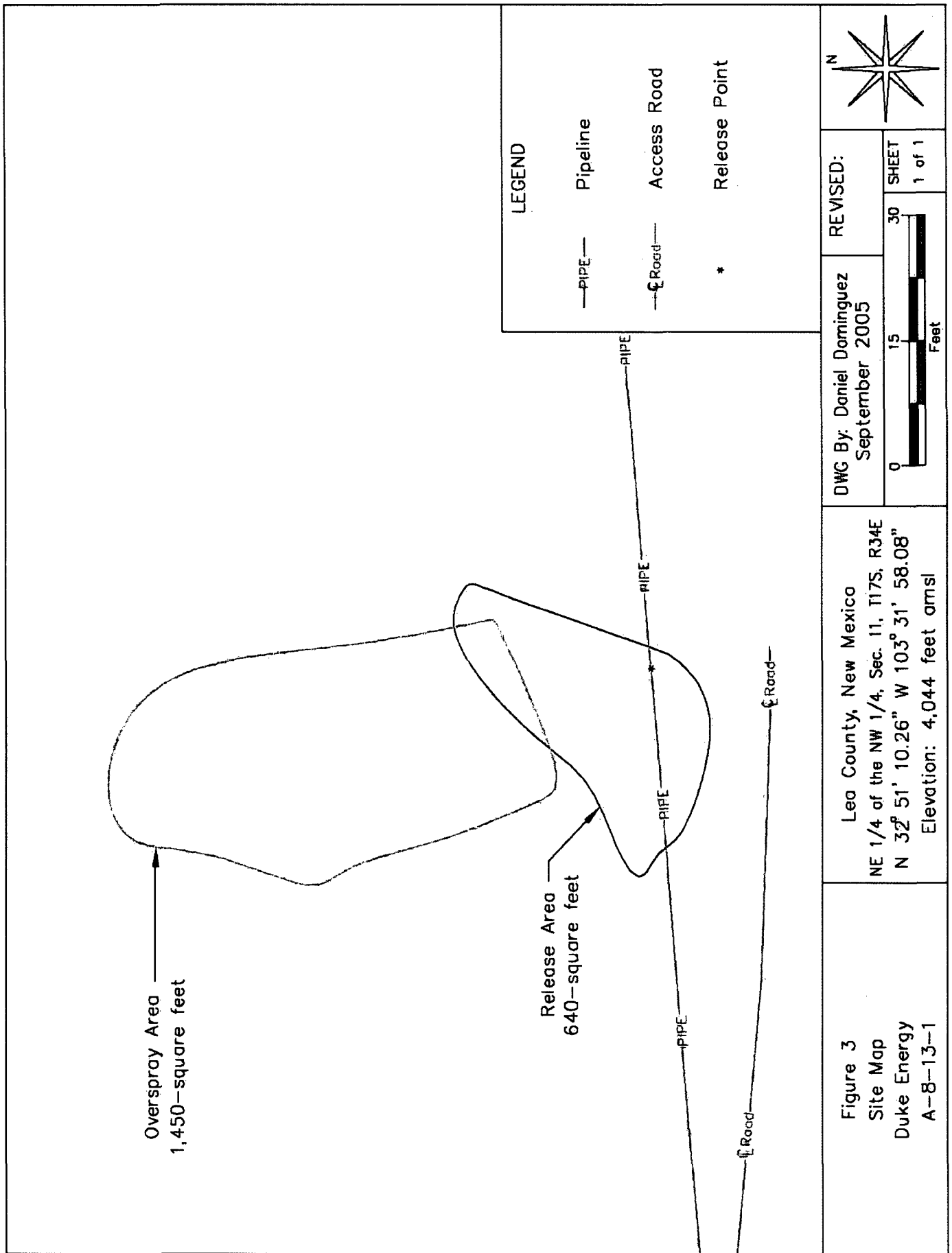
Leo County, New Mexico

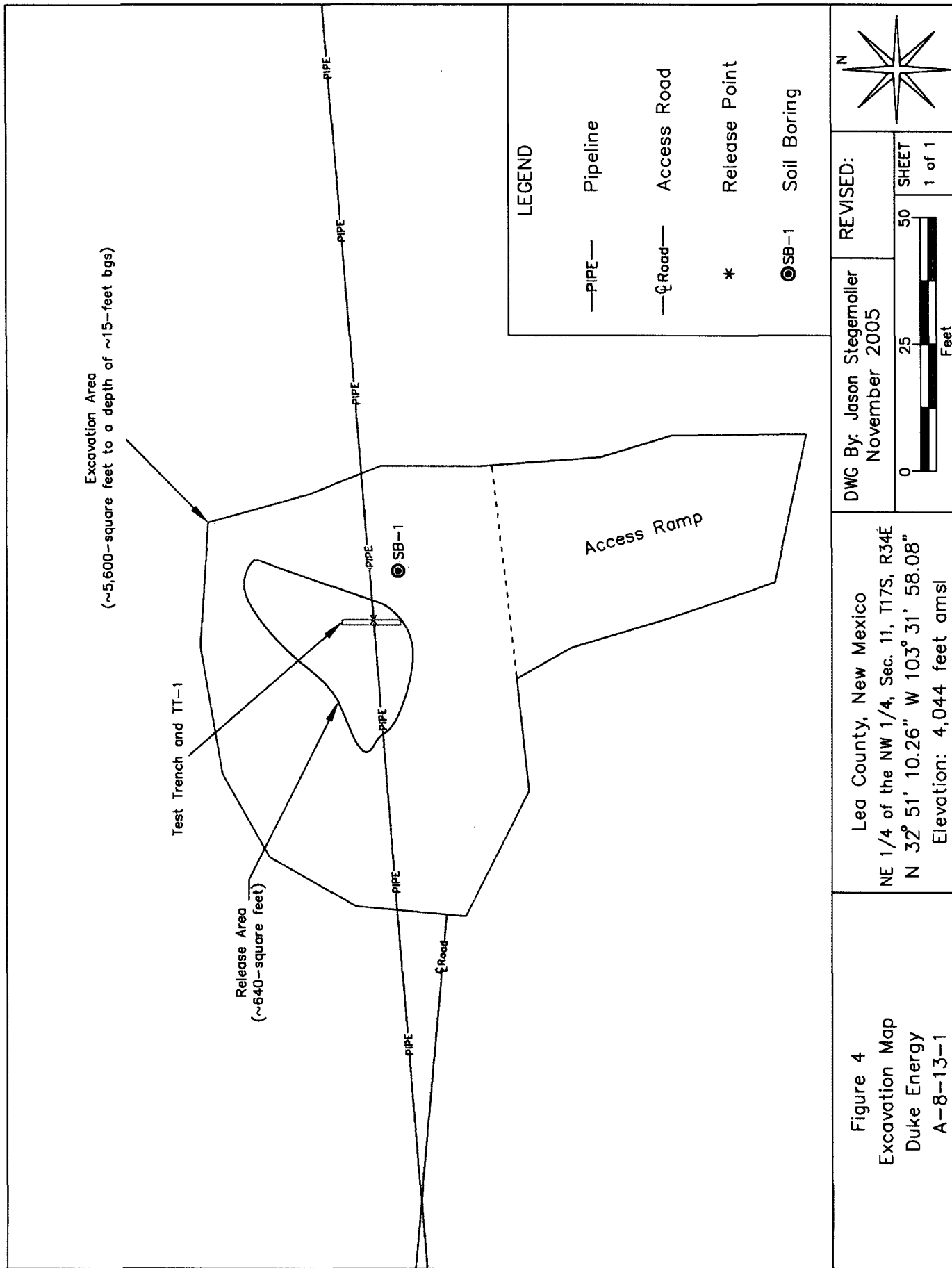
NE 1/4 of the NW 1/4, Sec. 11, T17S, R34E

N 32° 51' 10.26" W 103° 31' 58.08"

Elevation: 4,044 feet amsl

Figure 2  
Site Location Map  
Duke Energy  
A-8-13-1





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## TABLES

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TABLE 1

## Summary of Soil Sample Field Analyses and Laboratory Analytical Results

DEFS A-8-13-1 (Ref. #130032)

Soil Sample ID	Depth (feet)	Sample Date	Soil Status	PID Reading (ppm)	Field Chloride (mg/kg)	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)	Chloride (mg/kg)	Sulfate (mg/kg)
Test Trench	14	07-Nov-05	Excavated	1,653	--	--	--	--	--	--	--	--	--	--	--
	18	07-Nov-05	In Situ	3,065	--	--	--	--	--	--	--	--	--	--	--
BH-W (15')	15	10-Nov-05	Excavated	2.1	--	<0.005	0.024	<0.005	<0.015	0.024	<10.0	<10.0	<20.0	48	<1
ESW (10')	10	10-Nov-05	Excavated	1.0	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	80	<1
WSW-S (5')	5	10-Nov-05	Excavated	2.0	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	64	<1
WSW-N (10')	10	10-Nov-05	Excavated	1.8	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	80	<1
NSW-W (5')	5	10-Nov-05	Excavated	1.3	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	64	<1
NSW-E (5')	5	10-Nov-05	Excavated	6.5	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	48	<1
ESW-N (5')	5	10-Nov-05	Excavated	2.5	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	48	<1
ESW-S (10')	10	10-Nov-05	Excavated	3.6	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	48	<1
BH-E (14')	14	10-Nov-05	Excavated	69.4	--	<0.005	<0.005	0.023	0.073	0.096	<10.0	209	209	48	<1
Soil Boring SB-1	19	10-Nov-05	In Situ	22.5	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	64	<1
	24	10-Nov-05	In Situ	5.2	--	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	48	<1
	29	10-Nov-05	In Situ	1.8	160	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	48	<1
	20	30-Nov-05	In Situ	--	--	82.8	413	272	383	1,150	<10.0	<10.0	<20.0	32	<1
TT-1	25	30-Nov-05	In Situ	--	--	187	651	288	401	1,530	6,160	3,970	10,100	38.8	32.1
	30	30-Nov-05	In Situ	--	--	36.8	165	84.9	124	411	6,470	2,060	8,530	84.2	46.0
	32	30-Nov-05	In Situ	--	--	0.0327	0.0483	0.0291	0.0390	0.149	<10.0	13.2	13.2	29.5	27.1
	32	30-Nov-05	In Situ	--	--	10	--	--	--	50	--	--	100	250	650
NMOCD Remedial Thresholds															

<sup>1</sup> Bolded values are in excess of the NMOCD Remediation Thresholds<sup>2</sup> -- = Not Analyzed<sup>3</sup> In lieu of laboratory analyses of benzene, toluene, ethylbenzene and total xylenes.<sup>4</sup> Detected, but below the reporting limit; therefore the result is an estimated concentration (CLP J-Flag)<sup>5</sup> 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 INFORMATION REPORT\*

Duke Energy Field Services A-8-13-1 - Ref #130032

Well Number	Diversion <sup>A</sup>	Owner	Use	Source	Twsp	Rng	Sec q q q	Latitude	Longitude	Date Measured	Surface Elevation <sup>B</sup>	Depth to Water (ft bgs)
L 02312	3	WARREN & BRADSHAW, ATTENTION	PRO	Shallow	17S	34E	01 4 4	N 32° 51' 24.81" W 103° 30' 33.39"		05-Aug-53	4,030	71
L 02312 APPRO				Shallow	17S	34E	01 4 4	N 32° 51' 24.81" W 103° 30' 33.39"		05-Aug-53	4,030	71
L 02749	3	DON ANGLE & SP YATES DRILLING	PRO	Shallow	17S	34E	31 2 4	N 32° 50' 58.21" W 103° 31' 35.39"		14-Jan-55	4,049	85
L 02749 APPRO				Shallow	17S	34E	11 2 4	N 32° 50' 58.21" W 103° 31' 35.39"		14-Jan-55	4,049	85
L 03007	3	DONNELLY DRILLING CO.	PRO	Shallow	17S	34E	13 2 1	N 32° 50' 19.21" W 103° 30' 49"		26-Oct-55	4,030	70
L 03007 APPRO				Shallow	17S	34E	13 2 1	N 32° 50' 19.21" W 103° 30' 49"		26-Oct-55	4,030	70
L 03011	3	OSCAR HOURS DRILLING INC.	PRO	Shallow	17S	34E	02 4 4	N 32° 51' 24.38" W 103° 31' 35.41"		09-Nov-55	4,052	80
L 03011 APPRO				Shallow	17S	34E	02 4 4	N 32° 51' 24.38" W 103° 31' 35.41"		09-Nov-55	4,052	80
L 03059 (1)	0	SP. YATES DRILLING CO.	PRO		17S	34E	11 1 1	N 32° 51' 11.01" W 103° 32' 21.94"			4,060	
L 03059 (2)	0	YATES DRILLING COMPANY	PRO		17S	34E	11 1 1	N 32° 51' 11.01" W 103° 32' 21.94"			4,060	
L 03241	3	DENVER DRILLING CO.	PRO	Shallow	17S	34E	10 2 2	N 32° 51' 10.93" W 103° 32' 37.45"		12-Jul-56	4,061	92
L 03241 APPRO				Shallow	17S	34E	10 4 4	N 32° 50' 31.7" W 103° 32' 37.42"		10-Jul-56	4,055	92
L 03846 X	1200	MOBIL OIL CORPORATION	SRG	Shallow	17S	34E	11 3 3	N 32° 50' 31.78" W 103° 32' 21.9"			4,047	
L 03846 X 2				Shallow	17S	34E	11 3 3	N 32° 50' 31.78" W 103° 32' 21.9"			4,047	
L 03846 X 3				Shallow	17S	34E	14 4 4	N 32° 49' 39.7" W 103° 31' 35.37"			4,029	
L 03846 X 4				Shallow	17S	34E	14 4 1	N 32° 49' 52.71" W 103° 31' 50.87"			4,039	
L 03846 X 5				Shallow	17S	34E	14 1 4	N 32° 50' 5.7" W 103° 32' 6.37"			4,049	
L 05806	0	MARCUM DRILLING CO.	PRO	Shallow	17S	34E	11 2 2	N 32° 51' 11.3" W 103° 31' 35.4"		03-Nov-63	4,054	105
L 05806 (B) EXP	0	GULF OIL CORPORATION	PRO		17S	34E	11 2 2	N 32° 51' 11.3" W 103° 31' 35.4"			4,054	
L 05806 (B) 2	0	GULF OIL CORPORATION	PRO		17S	34E	11 1 2	N 32° 51' 11.1" W 103° 32' 6.42"			4,054	
L 06074	0	LEG. LOWE DRILLING CO.	PRO	Shallow	17S	34E	03 2 2	N 32° 52' 3.2" W 103° 32' 37.66"		19-Nov-66	4,070	95
L 06134	0	MARCUM DRILLING COMPANY	PRO	Shallow	17S	34E	03 4 2	N 32° 51' 37.07" W 103° 32' 37.53"		01-May-67	4,068	95
L 06240	0	A. W. INC. THOMPSON	PRO	Shallow	17S	34E	13 4 3	N 32° 49' 39.94" W 103° 30' 49.02"		08-Dec-67	4,023	
L 06253	0	MARCUM DRILLING COMPANY	PRO	Shallow	17S	34E	14 2 2	N 32° 50' 18.96" W 103° 31' 35.38"		06-Jan-68	4,037	81
L 06254	0	MARCUM DRILLING CO.	PRO	Shallow	17S	34E	14 4 4	N 32° 49' 39.7" W 103° 31' 35.37"		04-Jan-68	4,030	75
L 06704 EXP	0	NOBLE DRILLING CORP.	PRO		17S	34E	13 1 4	N 32° 50' 6.04" W 103° 31' 4.44"			4,023	
L 06771 (B)	0	CACTUS DRILLING CORPORATION	PRO	Shallow	17S	34E	12 4 1	N 32° 50' 45.41" W 103° 30' 49"		28-Feb-71	4,032	86
L 06932 (B)	0	MORAN OIL PROD & DRUG CORP.	PRO	Shallow	17S	34E	10 3 4	N 32° 50' 31.56" W 103° 33' 8.46"		10-Apr-72	4,064	101
L 07033 (B)	0	MARCUM DRILLING COMPANY	PRO	Shallow	17S	34E	14 2 2	N 32° 50' 18.96" W 103° 31' 35.38"		21-Dec-72	4,037	80
L 09987	3	INC. EIDSON RANCH	STK	Shallow	17S	34E	15 4	N 32° 49' 39.34" W 103° 32' 52.88"		08-Apr-88	4,060	60

\* = Data obtained from the New Mexico Office of the State Engineer Website ([http://waters.ose.state.nm.us:7001/iWATERS/wr\\_RegisServlet1](http://waters.ose.state.nm.us:7001/iWATERS/wr_RegisServlet1)) and USGS Database.

Shaded well information indicates well location shown on Figure 2

A = in acre feet per annum

B = Interpolated from USGS Topographical Map

IND = Industrial

STK = Livestock Watering

CLW = Change Location of Well (Ground)

EXP = Expired

PRO = Production

(quarters are 1=NW, 2=NE, 3=SW, 4=SE)

(quarters are biggest to smallest - X Y are in Feet - UTM are in Meters)

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**APPENDIX I**

**LABORATORY ANALYTICAL REPORTS**

**AND**

**CHAIN-OF-CUSTODY FORMS**

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# ARDINAL 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 OLNES

P.O. BOX 1558

EUNICE, NM 88231

FAX TO: (505) 394-2601

Receiving Date: 11/11/05

Reporting Date: 11/17/05

Project Owner: DUKE ENERGY FIELD SERVICES (130032)

Project Name: A-8-13-1

Project Location: UL-C, SEC11, T17S, R34E

Sampling Date: 11/10/05

Sample Type: SOIL

Sample Condition: COOL & INTACT

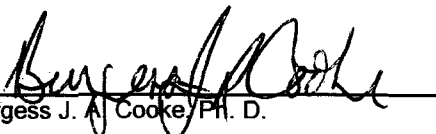
Sample Received By: HM

Analyzed By: BC

LAB NUMBER	SAMPLE ID	GRO (C <sub>6</sub> -C <sub>10</sub> ) (mg/Kg)	DRO (>C <sub>10</sub> -C <sub>28</sub> ) (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
------------	-----------	--	--	--------------------	--------------------	-----------------------------	-----------------------------

ANALYSIS DATE:		11/14/05	11/14/05	11/16/05	11/16/05	11/16/05	11/16/05
H10405-1	BH-W (15')	<10.0	<10.0	<0.005	0.024	0.005	0.032
H10405-2	ESW (10')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10405-3	WSW-S (5')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10405-4	WSW-N (10')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10405-5	NSW-W (5')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10405-6	NSW-E (10')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10405-7	ESW-N (5')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10405-8	ESW-S (10')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10405-9	BH-E (14')	<10.0	209	<0.005	<0.005	0.023	0.073
H10405-10	SB-1 (19')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10405-11	SB-1 (24')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H10405-12	SB-1 (29')	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
Quality Control		806	742	0.093	0.092	0.096	0.295
True Value QC		800	800	0.100	0.100	0.100	0.300
% Recovery		101	92.8	92.8	91.9	95.7	98.2
Relative Percent Difference		4.1	2.2	4.3	3.4	4.2	4.0

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

  
Burgess J. A. Cooke, Ph. D.

11/17/05  
Date

H10405A.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.



# ARDINAL 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: 11/11/05  
Reporting Date: 11/15/05  
Project Owner: DUKE ENERGY FIELD SERVICES (130032)  
Project Name: A-8-13-1  
Project Location: UL-C, SEC11, T17S, R34E

Sampling Date: 11/10/05  
Sample Type: SOIL  
Sample Condition: COOL & INTACT  
Sample Received By: HM  
Analyzed By: AH

LAB NUMBER	SAMPLE ID	SO <sub>4</sub> (mg/Kg)	Cl (mg/Kg)
ANALYSIS DATE:		11/15/05	11/15/05
H10405-1	BH-W (15')	<1	48
H10405-2	ESW (10')	<1	80
H10405-3	WSW-S (5')	<1	64
H10405-4	WSW-N (10')	<1	80
H10405-5	NSW-W (5')	<1	64
H10405-6	NSW-E (10')	<1	48
H10405-7	ESW-N (5')	<1	48
H10405-8	ESW-S (10')	<1	48
H10405-9	BH-E (14')	<1	48
H10405-10	SB-1 (19')	<1	64
H10405-11	SB-1 (24')	<1	48
H10405-12	SB-1 (29')	<1	32
Quality Control		42.53	950
True Value QC		50.00	1000
% Recovery		85.1	95.0
Relative Percent Difference		3.2	5.0

METHODS: EPA 600/4-79-020

375.4

SM 4500 Cl'B

Note: Analyses performed on 1:4 w:v aqueous extracts.

Amy Hill  
Chemist

11/15/05  
Date

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 Plus, Inc.**

2100 Avenue O, Eunice, NM 88231


(505) 394-3481 FAX: (505) 394-2601

P.O. Box 1558, Eunice, NM 88231

Chain of Custody Form

Company Name		Environmental Plus, Inc.		Bill To		ANALYSIS REQUEST									
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		Duke Energy Field Services													
Facility Name		A-8-13-1													
Location		UL-C, Sect. 11, T 17 S, R 34 E													
Project Reference		130032													
EPI Sampler Name		David Robinson													



**Attn: Ronnie Gilchrist**  
1625 West Marland  
Hobbs, NM 88240

LAB I.D.	SAMPLE I.D.	# CONTAINERS	MATRIX					PRESERV.			SAMPLING		TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl)	SULFATES (SO <sub>4</sub> )	pH	TCLP	OTHER >>>	PAH	
			GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	ACID/BASE	ICE/COOL	OTHER	DATE										
110405 - 1	BH-W (15')	G 1												X	X	X	X					
2	ESW (10')	G 1												X	X	X	X					
3	WSW-S (5')	G 1												X	X	X	X					
4	WSW-N (10')	G 1												X	X	X	X					
5	NSW-W (5')	G 1												X	X	X	X					
6	NSW-E (10')	G 1												X	X	X	X					
7	ESW-N (5')	G 1												X	X	X	X					
8	ESW-S (10')	G 1												X	X	X	X					
9																						
10																						

Sampler Relinquished:		Received By:		E-mail results to: iolness@envplus.net	
Date	Time	Date	Time	REMARKS:	
Date 11-11-05	Time 4:40	Date 11-11-05	Time 4:40	Received By: (lab staff) <i>Haye J. Mena</i>	
Relinquished by: <i>[Signature]</i>		Sample Cool & Intact		Checked By:	
Delivered by: <i>[Signature]</i>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			

# Environmental Plus, Inc.

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

## Chain of Custody Form

Company Name Environmental Plus, Inc.		Bill To		ANALYSIS REQUEST											
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 Duke Energy Field Services															
Facility Name A-8-13-1															
Location UL-C, Sect. 11, T 17 S, R 34 E															
Project Reference 130032															
EPI Sampler Name David Robinson															

**Duke Energy  
Field Services**

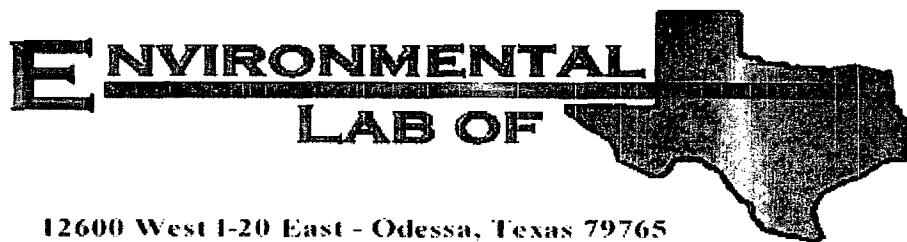
Attn: Ronnie Gilchrist  
 1625 West Marland  
 Hobbs, NM 88240

LAB I.D.	SAMPLE I.D.	MATRIX				PRESERV.				SAMPLING		ANALYSIS REQUEST								
		GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	ACID/BASE	ICE/COOL	OTHER	DATE	TIME	TPH 8015M	CHLORIDES (Cl)	SULFATES (SO <sub>4</sub> )	PH	TCLP	OTHER >>>	PAH	
110405-1	BH-E (14')	G	1										X	X	X	X				
110405-2	SB-1 (19')	G	1										X	X	X	X				
110405-3	SB-1 (24')	G	1										X	X	X	X				
110405-4	SB-1 (29')	G	1										X	X	X	X				
5																				
6																				
7																				
8																				
9																				
10																				

Sampler Relinquished:		Date		Received By:		E-mail results to: iolness@envplus.net	
		Time				REMARKS:	
Relinquished by:		Date 11-11-05		Received By: (lab staff)			
		Time 4:40		Iain Olness			
Delivered by:		Sample Cool & Intact		Checked By:			
		Yes		No			



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: DEFS/ A-8-13-1

Project Number: 130032

Location: UL-C, Sect. 11, T 17 S, R 34 E

Lab Order Number: 5L01002

Report Date: 12/07/05



Environmental Plus, Incorporated  
P.O. Box 1558  
Eunice NM, 88231

Project: DEFS/ A-8-13-1  
Project Number: 130032  
Project Manager: Iain Olness

Fax: 505-394-2601

**Reported:**  
12/07/05 16:45

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TT-1 20'	5L01002-01	Soil	11/30/05 09:20	12/01/05 09:45
TT-1 25'	5L01002-02	Soil	11/30/05 10:20	12/01/05 09:45
TT-1 30'	5L01002-03	Soil	11/30/05 10:50	12/01/05 09:45
TT-1 32'	5L01002-04	Soil	11/30/05 11:40	12/01/05 09:45

Environmental Plus, Incorporated  
P.O. Box 1558  
Eunice NM, 88231

Project: DEFS/ A-8-13-1  
Project Number: 130032  
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:  
12/07/05 16:45

**Organics by GC**  
**Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>TT-1 20' (5L01002-01) Soil</b>									
Benzene	82.8	5.00	mg/kg dry	5000	EL50509	12/05/05	12/06/05	EPA 8021B	
Toluene	413	5.00	"	"	"	"	"	"	
Ethylbenzene	272	5.00	"	"	"	"	"	"	
Xylene (p/m)	279	5.00	"	"	"	"	"	"	
Xylene (o)	104	5.00	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		112 %	80-120		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.5 %	80-120		"	"	"	"	
Gasoline Range Organics C6-C12	6160	10.0	mg/kg dry	1	EL50203	12/02/05	12/03/05	EPA 8015M	
Diesel Range Organics >C12-C35	3970	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	10100	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		220 %	70-130		"	"	"	"	S-04
Surrogate: 1-Chlorooctadecane		181 %	70-130		"	"	"	"	S-04
<b>TT-1 25' (5L01002-02) Soil</b>									
Benzene	187	5.00	mg/kg dry	5000	EL50509	12/05/05	12/06/05	EPA 8021B	
Toluene	651	5.00	"	"	"	"	"	"	
Ethylbenzene	288	5.00	"	"	"	"	"	"	
Xylene (p/m)	299	5.00	"	"	"	"	"	"	
Xylene (o)	102	5.00	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		134 %	80-120		"	"	"	"	S-04
Surrogate: 4-Bromofluorobenzene		100 %	80-120		"	"	"	"	
Gasoline Range Organics C6-C12	6470	10.0	mg/kg dry	1	EL50203	12/02/05	12/03/05	EPA 8015M	
Diesel Range Organics >C12-C35	2060	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	8530	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		189 %	70-130		"	"	"	"	S-04
Surrogate: 1-Chlorooctadecane		153 %	70-130		"	"	"	"	S-04
<b>TT-1 30' (5L01002-03) Soil</b>									
Benzene	36.8	1.00	mg/kg dry	1000	EL50509	12/05/05	12/06/05	EPA 8021B	
Toluene	165	1.00	"	"	"	"	"	"	
Ethylbenzene	84.9	1.00	"	"	"	"	"	"	
Xylene (p/m)	91.7	1.00	"	"	"	"	"	"	
Xylene (o)	32.6	1.00	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		133 %	80-120		"	"	"	"	S-04
Surrogate: 4-Bromofluorobenzene		110 %	80-120		"	"	"	"	
Gasoline Range Organics C6-C12	2690	10.0	mg/kg dry	1	EL50203	12/02/05	12/03/05	EPA 8015M	
Diesel Range Organics >C12-C35	893	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	3580	10.0	"	"	"	"	"	"	

Environmental Lab of Texas

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

Page 2 of 10

Environmental Plus, Incorporated  
P.O. Box 1558  
Eunice NM, 88231

Project: DEFS/ A-8-13-1  
Project Number: 130032  
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:  
12/07/05 16:45

**Organics by GC**  
**Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>TT-1 30' (5L01002-03) Soil</b>									
Surrogate: 1-Chlorooctane		129 %	70-130		EL50203	12/02/05	12/03/05	EPA 8015M	
Surrogate: 1-Chlorooctadecane		129 %	70-130		"	"	"	"	
<b>TT-1 32' (5L01002-04) Soil</b>									
Benzene	0.0327	0.0250	mg/kg dry	25	EL50509	12/05/05	12/06/05	EPA 8021B	
Toluene	0.0483	0.0250	"	"	"	"	"	"	
Ethylbenzene	0.0291	0.0250	"	"	"	"	"	"	
Xylene (p/m)	0.0390	0.0250	"	"	"	"	"	"	
Xylene (o)	ND	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		88.5 %	80-120		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	80-120		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EL50205	12/02/05	12/05/05	EPA 8015M	
Diesel Range Organics >C12-C35	13.2	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	13.2	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		88.8 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		99.6 %	70-130		"	"	"	"	

Environmental Plus, Incorporated  
P.O. Box 1558  
Eunice NM, 88231

Project: DEFS/ A-8-13-1  
Project Number: 130032  
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:  
12/07/05 16:45

### General Chemistry Parameters by EPA / Standard Methods

#### Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>TT-1 20' (5L01002-01) Soil</b>									
Chloride	38.8	5.00	mg/kg	10	EL50208	12/01/05	12/02/05	EPA 300.0	
% Moisture	9.4	0.1	%	1	EL50202	12/01/05	12/02/05	% calculation	
Sulfate	32.1	5.00	mg/kg	10	EL50208	12/01/05	12/02/05	EPA 300.0	
<b>TT-1 25' (5L01002-02) Soil</b>									
Chloride	84.2	5.00	mg/kg	10	EL50208	12/01/05	12/02/05	EPA 300.0	
% Moisture	12.7	0.1	%	1	EL50202	12/01/05	12/02/05	% calculation	
Sulfate	46.0	5.00	mg/kg	10	EL50208	12/01/05	12/02/05	EPA 300.0	
<b>TT-1 30' (5L01002-03) Soil</b>									
Chloride	29.5	5.00	mg/kg	10	EL50208	12/01/05	12/02/05	EPA 300.0	
% Moisture	7.2	0.1	%	1	EL50202	12/01/05	12/02/05	% calculation	
Sulfate	27.1	5.00	mg/kg	10	EL50208	12/01/05	12/02/05	EPA 300.0	
<b>TT-1 32' (5L01002-04) Soil</b>									
Chloride	24.3	5.00	mg/kg	10	EL50208	12/01/05	12/02/05	EPA 300.0	
% Moisture	6.2	0.1	%	1	EL50202	12/01/05	12/02/05	% calculation	
Sulfate	24.1	5.00	mg/kg	10	EL50208	12/01/05	12/02/05	EPA 300.0	

Environmental Lab of Texas

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Page 4 of 10

Environmental Plus, Incorporated  
P.O. Box 1558  
Eunice NM, 88231

Project: DEFS/ A-8-13-1  
Project Number: 130032  
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:  
12/07/05 16:45

**Organics by GC - Quality Control**  
**Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
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**Batch EL50203 - Solvent Extraction (GC)**

**Blank (EL50203-BLK1)**

Prepared: 12/02/05 Analyzed: 12/03/05

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	48.4		mg/kg	50.0		96.8	70-130		
Surrogate: 1-Chlorooctadecane	50.1		"	50.0		100	70-130		

**LCS (EL50203-BS1)**

Prepared: 12/02/05 Analyzed: 12/03/05

Gasoline Range Organics C6-C12	416	10.0	mg/kg wet	500		83.2	75-125		
Diesel Range Organics >C12-C35	485	10.0	"	500		97.0	75-125		
Total Hydrocarbon C6-C35	901	10.0	"	1000		90.1	75-125		
Surrogate: 1-Chlorooctane	57.5		mg/kg	50.0		115	70-130		
Surrogate: 1-Chlorooctadecane	54.9		"	50.0		110	70-130		

**Calibration Check (EL50203-CCV1)**

Prepared: 12/02/05 Analyzed: 12/03/05

Gasoline Range Organics C6-C12	438		mg/kg	500		87.6	80-120		
Diesel Range Organics >C12-C35	531		"	500		106	80-120		
Total Hydrocarbon C6-C35	969		"	1000		96.9	80-120		
Surrogate: 1-Chlorooctane	56.4		"	50.0		113	70-130		
Surrogate: 1-Chlorooctadecane	53.4		"	50.0		107	70-130		

**Matrix Spike (EL50203-MS1)**

Source: 5K30021-01

Prepared: 12/02/05 Analyzed: 12/05/05

Gasoline Range Organics C6-C12	384	10.0	mg/kg dry	510	ND	75.3	75-125		
Diesel Range Organics >C12-C35	480	10.0	"	510	ND	94.1	75-125		
Total Hydrocarbon C6-C35	864	10.0	"	1020	ND	84.7	75-125		
Surrogate: 1-Chlorooctane	49.9		mg/kg	50.0		99.8	70-130		
Surrogate: 1-Chlorooctadecane	53.6		"	50.0		107	70-130		

**Matrix Spike Dup (EL50203-MSD1)**

Source: 5K30021-01

Prepared: 12/02/05 Analyzed: 12/05/05

Gasoline Range Organics C6-C12	383	10.0	mg/kg dry	510	ND	75.1	75-125	0.261	20
Diesel Range Organics >C12-C35	461	10.0	"	510	ND	90.4	75-125	4.04	20
Total Hydrocarbon C6-C35	844	10.0	"	1020	ND	82.7	75-125	2.34	20
Surrogate: 1-Chlorooctane	48.4		mg/kg	50.0		96.8	70-130		
Surrogate: 1-Chlorooctadecane	53.8		"	50.0		108	70-130		

Environmental Lab of Texas

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Environmental Plus, Incorporated  
P.O. Box 1558  
Eunice NM, 88231

Project: DEFS/ A-8-13-1  
Project Number: 130032  
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:  
12/07/05 16:45

**Organics by GC - Quality Control**  
**Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch EL50205 - Solvent Extraction (GC)**

**Blank (EL50205-BLK1)**

Prepared: 12/02/05 Analyzed: 12/03/05

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	48.8		mg/kg	50.0		97.6	70-130			
Surrogate: 1-Chlorooctadecane	50.7		"	50.0		101	70-130			

**LCS (EL50205-BS1)**

Prepared: 12/02/05 Analyzed: 12/03/05

Gasoline Range Organics C6-C12	423	10.0	mg/kg wet	500		84.6	75-125			
Diesel Range Organics >C12-C35	567	10.0	"	500		113	75-125			
Total Hydrocarbon C6-C35	990	10.0	"	1000		99.0	75-125			
Surrogate: 1-Chlorooctane	58.5		mg/kg	50.0		117	70-130			
Surrogate: 1-Chlorooctadecane	56.9		"	50.0		114	70-130			

**Calibration Check (EL50205-CCV1)**

Prepared: 12/02/05 Analyzed: 12/04/05

Gasoline Range Organics C6-C12	435		mg/kg	500		87.0	80-120			
Diesel Range Organics >C12-C35	526		"	500		105	80-120			
Total Hydrocarbon C6-C35	961		"	1000		96.1	80-120			
Surrogate: 1-Chlorooctane	56.3		"	50.0		113	70-130			
Surrogate: 1-Chlorooctadecane	52.4		"	50.0		105	70-130			

**Matrix Spike (EL50205-MS1)**

Source: 5L01002-04

Prepared: 12/02/05 Analyzed: 12/03/05

Gasoline Range Organics C6-C12	401	10.0	mg/kg dry	533	ND	75.2	75-125			
Diesel Range Organics >C12-C35	457	10.0	"	533	13.2	83.3	75-125			
Total Hydrocarbon C6-C35	858	10.0	"	1070	13.2	79.0	75-125			
Surrogate: 1-Chlorooctane	47.4		mg/kg	50.0		94.8	70-130			
Surrogate: 1-Chlorooctadecane	52.6		"	50.0		105	70-130			

**Matrix Spike Dup (EL50205-MSD1)**

Source: 5L01002-04

Prepared: 12/02/05 Analyzed: 12/03/05

Gasoline Range Organics C6-C12	406	10.0	mg/kg dry	533	ND	76.2	75-125	1.24	20	
Diesel Range Organics >C12-C35	511	10.0	"	533	13.2	93.4	75-125	11.2	20	
Total Hydrocarbon C6-C35	917	10.0	"	1070	13.2	84.5	75-125	6.65	20	
Surrogate: 1-Chlorooctane	49.0		mg/kg	50.0		98.0	70-130			
Surrogate: 1-Chlorooctadecane	53.5		"	50.0		107	70-130			

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Environmental Plus, Incorporated  
P.O. Box 1558  
Eunice NM, 88231

Project: DEFS/ A-8-13-1  
Project Number: 130032  
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:  
12/07/05 16:45

**Organics by GC - Quality Control**  
**Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch EL50509 - EPA 5030C (GC)**

**Blank (EL50509-BLK1)**

Prepared & Analyzed: 12/05/05

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	32.8		ug/kg	40.0		82.0	80-120			
Surrogate: 4-Bromofluorobenzene	39.8		"	40.0		99.5	80-120			

**LCS (EL50509-BS1)**

Prepared & Analyzed: 12/05/05

Benzene	0.0555	0.00100	mg/kg wet	0.0500		111	80-120			
Toluene	0.0574	0.00100	"	0.0500		115	80-120			
Ethylbenzene	0.0521	0.00100	"	0.0500		104	80-120			
Xylene (p/m)	0.0985	0.00100	"	0.100		98.5	80-120			
Xylene (o)	0.0512	0.00100	"	0.0500		102	80-120			
Surrogate: a,a,a-Trifluorotoluene	39.4		ug/kg	40.0		98.5	80-120			
Surrogate: 4-Bromofluorobenzene	35.8		"	40.0		89.5	80-120			

**Calibration Check (EL50509-CCV1)**

Prepared & Analyzed: 12/05/05

Benzene	0.0445		mg/kg wet	0.0500		89.0	80-120			
Toluene	0.0450		"	0.0500		90.0	80-120			
Ethylbenzene	0.0406		"	0.0500		81.2	80-120			
Xylene (p/m)	0.0809		"	0.100		80.9	80-120			
Xylene (o)	0.0415		"	0.0500		83.0	80-120			
Surrogate: a,a,a-Trifluorotoluene	33.0		ug/kg	40.0		82.5	80-120			
Surrogate: 4-Bromofluorobenzene	32.1		"	40.0		80.2	80-120			

**Matrix Spike (EL50509-MS1)**

Source: 5K30023-01

Prepared: 12/05/05 Analyzed: 12/06/05

Benzene	0.0459	0.00100	mg/kg dry	0.0547	ND	83.9	80-120			
Toluene	0.0497	0.00100	"	0.0547	ND	90.9	80-120			
Ethylbenzene	0.0484	0.00100	"	0.0547	ND	88.5	80-120			
Xylene (p/m)	0.0930	0.00100	"	0.109	ND	85.3	80-120			
Xylene (o)	0.0479	0.00100	"	0.0547	ND	87.6	80-120			
Surrogate: a,a,a-Trifluorotoluene	35.2		ug/kg	40.0		88.0	80-120			
Surrogate: 4-Bromofluorobenzene	44.1		"	40.0		110	80-120			

Environmental Lab of Texas

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Environmental Plus, Incorporated  
P.O. Box 1558  
Eunice NM, 88231

Project: DEFS/ A-8-13-1  
Project Number: 130032  
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:  
12/07/05 16:45

**Organics by GC - Quality Control**  
**Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch EL50509 - EPA 5030C (GC)**

**Matrix Spike Dup (EL50509-MSD1)**

Source: **5K30023-01**

Prepared: 12/05/05 Analyzed: 12/06/05

Benzene	0.0482	0.00100	mg/kg dry	0.0547	ND	88.1	80-120	4.88	20	
Toluene	0.0528	0.00100	"	0.0547	ND	96.5	80-120	5.98	20	
Ethylbenzene	0.0500	0.00100	"	0.0547	ND	91.4	80-120	3.22	20	
Xylene (p/m)	0.0961	0.00100	"	0.109	ND	88.2	80-120	3.34	20	
Xylene (o)	0.0488	0.00100	"	0.0547	ND	89.2	80-120	1.81	20	
Surrogate: a,a,a-Trifluorotoluene	35.6		ug/kg	40.0		89.0	80-120			
Surrogate: 4-Bromofluorobenzene	40.6		"	40.0		102	80-120			

Environmental Lab of Texas

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Environmental Plus, Incorporated  
P.O. Box 1558  
Eunice NM, 88231

Project: DEFS/ A-8-13-1  
Project Number: 130032  
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:  
12/07/05 16:45

**General Chemistry Parameters by EPA / Standard Methods - Quality Control**  
**Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch EL50202 - General Preparation (Prep)**

**Blank (EL50202-BLK1)**

Prepared: 12/01/05 Analyzed: 12/02/05

% Solids	100		%							
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**Duplicate (EL50202-DUP1)**

Source: 5K30025-01

Prepared: 12/01/05 Analyzed: 12/02/05

% Solids	92.2		%		92.0			0.217	20	
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**Batch EL50208 - Water Extraction**

**Blank (EL50208-BLK1)**

Prepared: 12/01/05 Analyzed: 12/02/05

Chloride	ND	0.500	mg/kg							
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Sulfate	ND	0.500	"							
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**LCS (EL50208-BS1)**

Prepared: 12/01/05 Analyzed: 12/02/05

Chloride	8.00		mg/L	10.0		80.0	80-120			
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Sulfate	8.60		"	10.0		86.0	80-120			
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**Calibration Check (EL50208-CCV1)**

Prepared: 12/01/05 Analyzed: 12/02/05

Chloride	8.00		mg/L	10.0		80.0	80-120			
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Sulfate	8.59		"	10.0		85.9	80-120			
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**Duplicate (EL50208-DUP1)**

Source: 5K30023-01

Prepared: 12/01/05 Analyzed: 12/02/05

Sulfate	85.0	5.00	mg/kg		91.0			6.82	20	
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Chloride	80.9	5.00	"		93.2			14.1	20	
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Environmental Lab of Texas

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Page 9 of 10

Environmental Plus, Incorporated  
P.O. Box 1558  
Eunice NM, 88231

Project: DEFS/ A-8-13-1  
Project Number: 130032  
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:  
12/07/05 16:45

### 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:

12/7/2005

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.

Environmental Lab of Texas

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# Environmental Plus, Inc.

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

P.O. Box 1558, Eunice, NM 88231

## Chain of Custody Form

Company Name Environmental Plus, Inc.		Bill To		ANALYSIS REQUEST											
EPI Project Manager Iain Olness		Duke Energy Field Services													
Mailing Address P.O. BOX 1558		Attn: Ronnie Gilchrist													
City, State, Zip Eunice New Mexico 88231		1625 West Marland													
EPI Phone/Fax# 505-394-3481 / 505-394-2601		Hobbs, NM 88240													
Client Company Duke Energy Field Services															
Facility Name A-8-13-1															
Location UL-C, Sect. 11, T 17 S, R 34 E															
Project Reference 130032															
EPI Sampler Name David Robinson															

LAB I.D.	SAMPLE I.D.	MATRIX				PRESERV.			SAMPLING		TIME	TPH 8015M	CHLORIDES (Cl)	SULFATES (SO <sub>4</sub> )	PH	TCLP	OTHER >>	PAH	
		GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	ACID/BASE	ICE/COOL	OTHER									DATE
1	TT-1 (20')	G	1	1	1	1	1	1	1	1	30-Nov-05	9:20	X	X	X				
2	TT-1 (25')	G	1	1	1	1	1	1	1	1	30-Nov-05	10:20	X	X	X				
3	TT-1 (30')	G	1	1	1	1	1	1	1	1	30-Nov-05	10:50	X	X	X				
4	TT-1 (32')	G	1	1	1	1	1	1	1	1	30-Nov-05	11:40	X	X	X				
5																			
6																			
7																			
8																			
9																			
10																			

Sampler Relinquished:	Received By:	Lab 12-1-05	Time 000
Relinquished by:	Received By: (lab staff)	12-1-05	Time 000
Delivered by:	Sample Cool & Intact	Yes	No
	Checked By:		

E-mail results to: iolness@envplus.net

REMARKS:

402. 5.0

label

---

**APPENDIX II**

**PROJECT PHOTOGRAPHS**

---

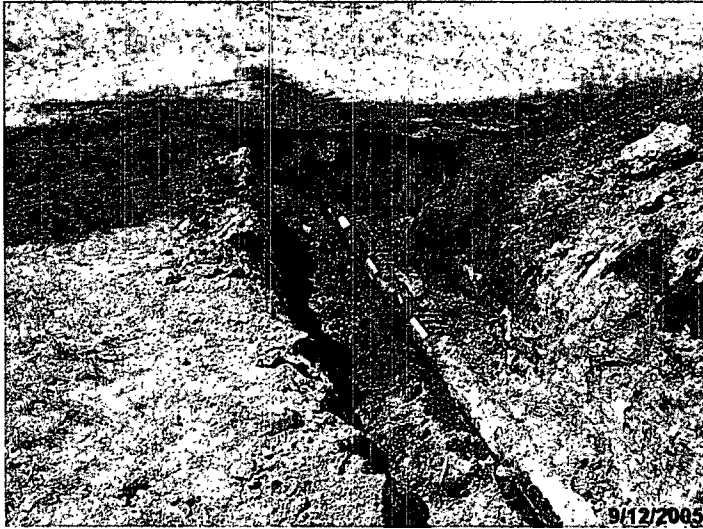


Photo #1: Looking westerly at point-of release. Dark stained soil indicates NGL contamination.

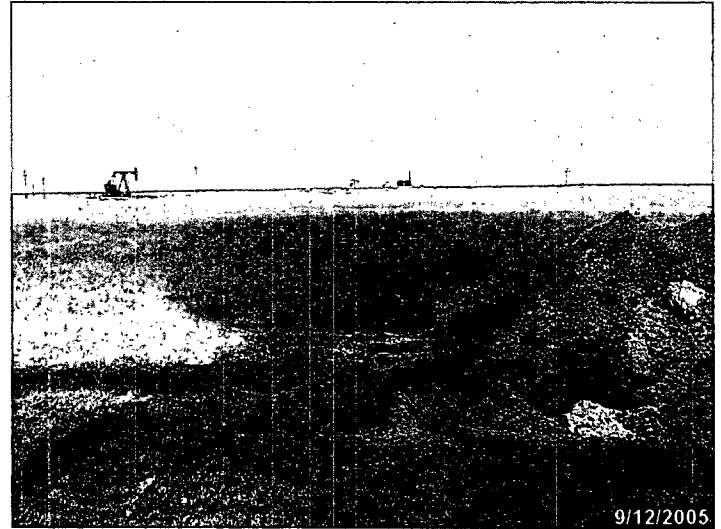


Photo #2: Release area, looking northerly. Dark stained soil indicates contamination

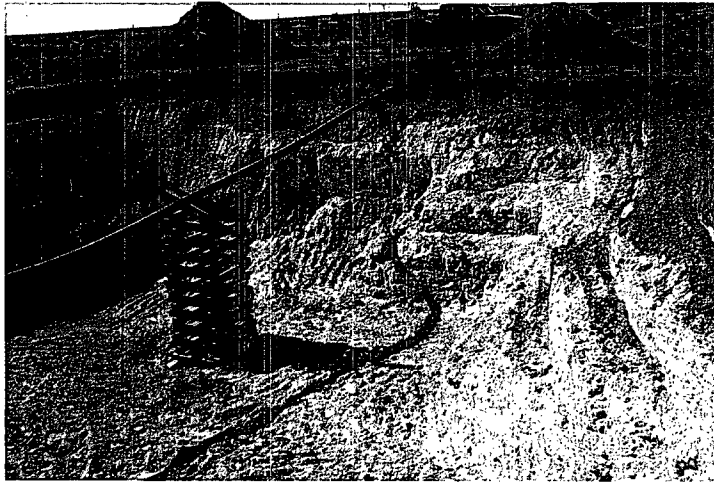


Photo #3: Excavation area, looking westerly.



Photo #4: Excavation area, looking southerly.

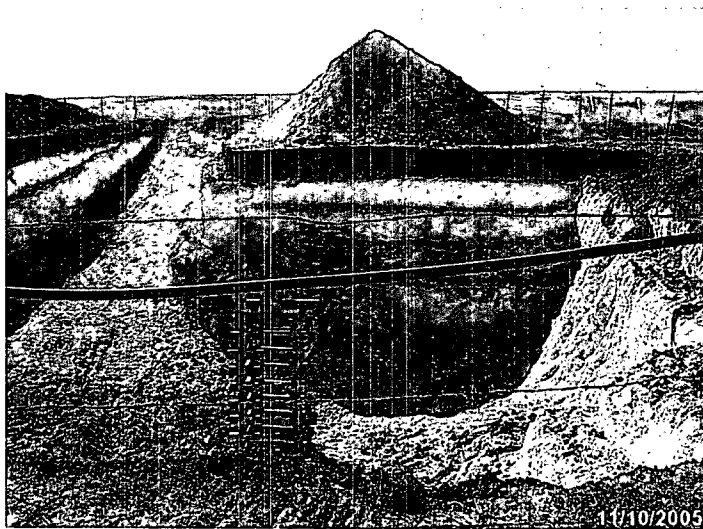


Photo #5: Excavation area, looking southerly. Access ramp is in background of photo.

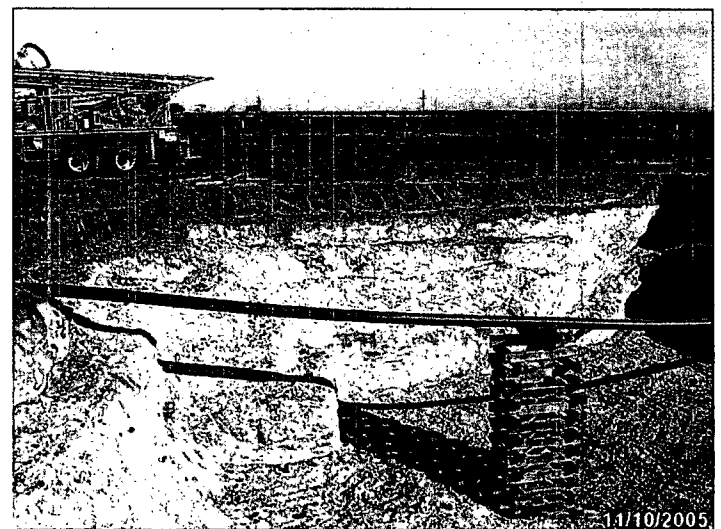


Photo #6: Excavation area, looking northerly.

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**APPENDIX III**

**SITE INFORMATION AND METRICS FORM**

**AND**

**INFORMATIONAL COPY OF INITIAL**

**NMOCD C-141 FORM**

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Site Information and Metrics

Incident Date:  
12 September 2005NMOCD Notified:  
12 September 2005

Site: A-8-13-1		Assigned Site Reference #: 130032	
Company: Duke Energy Field Services			
Street Address:			
Mailing Address: 1625 West Marland			
City, State, Zip: Hobbs, New Mexico 88240			
Representative: Lynn Ward			
Representative Telephone: (505) 397-5541			
Telephone:			
Fluid volume released (bbls): 4 bbls		Recovered (bbls): No Recovery	
>25 bbls: Notify NMOCD verbally within 24 hrs and submit form C-141 within 15 days. (Also applies to unauthorized releases >500 mcf Natural Gas)			
5-25 bbls: Submit form C-141 within 15 days (Also applies to unauthorized releases of 50-500 mcf Natural Gas)			
Leak, Spill, or Pit (LSP) Name: A-8-13-1			
Source of contamination: 6" low pressure steel pipeline with a normal daily flow rate of 0.5 mcf/day and 0.113% H2S content.			
Land Owner, i.e., BLM, ST, Fee, Other: State of New Mexico			
LSP Dimensions: 20 feet by 32 feet			
LSP Area: $\approx 640 \text{ ft}^2$			
Location of Reference Point (RP):			
Location distance and direction from RP:			
Latitude: N 32° 51' 10.26"			
Longitude: W 103° 31' 58.08"			
Elevation above mean sea level: 4,044			
Feet from South Section Line:			
Feet from West Section Line:			
Location- Unit or $\frac{1}{4}$ : NE $\frac{1}{4}$ of the NW $\frac{1}{4}$		Unit Letter: C	
Location- Section: 11			
Location- Township: T17 S			
Location- Range: R 34 E			
Surface water body within 1000' radius of site: none			
Domestic water wells within 1000' radius of site: none			
Agricultural water wells within 1000' radius of site: none			
Public water supply wells within 1000' radius of site: none			
Depth from land surface to ground water (DG): $\approx 85$			
Depth of contamination (DC): Unknown			
Depth to ground water (DG - DC = DtGW): 50 to 99 feet			
1. Ground Water		2. Wellhead Protection Area	
If Depth to GW < 50 feet: 20 points		If < 1000' from water source, or, < 200' from private domestic water source: 20 points	
If Depth to GW 50 to 99 feet: 10 points		If > 1000' from water source, or, > 200' from private domestic water source: 0 points	
If Depth to GW > 100 feet: 0 points			
3. Distance to Surface Water Body			
< 200 horizontal feet: 20 points			
200-100 horizontal feet: 10 points			
> 1000 horizontal feet: 0 points			
Site Rank (1+2+3) = 30			
Total Site Ranking Score and Acceptable Concentrations			
Parameter	> 19	10-19	0-9
Benzene <sup>1</sup>	10 ppm	10 ppm	10 ppm
BTEX <sup>1</sup>	50 ppm	50 ppm	50 ppm
TPH	100 ppm	1,000 ppm	5,000 ppm
<sup>1</sup> 100 ppm field VOC headspace measurement may be substituted for lab analysis			

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

State of New Mexico  
Energy Minerals and Natural Resources

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

Form C-141  
Revised March 17, 1999

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

Informational Only

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Duke Energy Field Services	Contact Mark Owens
Address 1625 West Marland, Hobbs, New Mexico 88240	Telephone No. (505) 397-4451
Facility Name A-8-13-1	Facility Type Natural Gas Pipeline

Surface Owner State of New Mexico	Mineral Owner State of New Mexico	Lease No.
--------------------------------------	--------------------------------------	-----------

LOCATION OF RELEASE

Unit Letter C	Section 11	Township T17S	Range R34E	Feet from the North/South Line	Feet from the East/West Line	County: Lea Lat. N 32° 51' 10.26" Lon. W 103° 31' 58.08"
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NATURE OF RELEASE

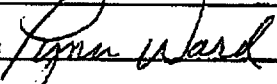
Type of Release Condensate	Volume of Release 4 barrels	Volume Recovered No Recovery
Source of Release 6" low pressure steel line with a normal daily flow rate of 0.5 mcf/day and 0.113% H2S content.	Date and Hour of Occurrence September 12, 2005	Date and Hour of Discovery September 12, 2005 @ 09:30 hrs
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Larry Johnson, NMOCD Hobbs District	
By Whom? Lynn Ward, DEFS Hobbs	Not Required	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.\*  
NA

Describe Cause of Problem and Remedial Action Taken.\* Corrosion of a 6" low pressure steel line with a normal daily flow rate of 0.5 mcf/day. Line was shut in and clamped by 12:00 pm.

Describe Area Affected and Cleanup Action Taken.\* Site will be delineated and a Remediation/Closure Proposal submitted to the NMOCD. Remedial Goals: TPH = 1,000 mg/Kg, benzene = 10 mg/Kg, and BTEX = 50 mg/Kg.

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: 	<b>OIL CONSERVATION DIVISION</b>		
Printed Name: Lynn Ward	Approved by District Supervisor:		
E-mail Address: lward@duke-energy.com			
Title: Senior Environment Specialist	Approval Date:	Expiration Date:	
Date: 9/27/05 Phone: (432) 620-4207	Conditions of Approval:	Attached <input type="checkbox"/>	

\* Attach Additional Sheets If Necessary