1R - 314

REPORTS

DATE:

2000

Site Assessment Report and Remedial Action Plan

Performed for

Duke Energy Field Services
3300 North "A" Street, Building 7
Midland, Texas 79705

Performed at

G Loop Eunice Spill
Lea County, New Mexico
Center of the Southeast Quarter of the Southwest Quarter
Unit Letter M of Section 6, T-22-S, R-36-E
Site Assessment Conducted December 19, 2000

RITTER ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
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1.0 Introduction

This report will document the findings and provide a recommended site remediation plan for the spill of approximately 12,600 gallons of pipeline liquids from the pipeline gathering system identified as the G Loop located in Section 6, Township 22 South, Range 36 East, Lea County New Mexico.

Mr. Stan Shaver with Duke Energy Field Services (DEFS) properly reported the spill to the NMOCD via telephone on November 24, 2000. The spill occurred at the bottom of the 16-inch pipeline, which was buried approximately three feet below the ground surface. This is a low-pressure gathering line. Of the 12,600 gallons spilled, approximately 6,510 gallons were recovered by vacuum truck. The spill originated at the south end of the spill site (See Site Maps in the appendix of this report) and ran along a lease road for a distance of approximately 750 feet prior to termination on the north end. A localized area of pooling was evident approximately 150 feet north of the leak. The majority of the surface area of the spill was less than three feet in width.

2.0 Site Assessment

Mr. Mitchell Ritter with REGS conducted a site assessment on December 19, 2000. The investigation consisted of a visual inspection of the surface of the impacted area, backhoe excavation of four selected sites spread over the extent of the pooled area, placement of 11 soil borings along the length of the spill and sampling for vertical clearance at those selected sites that were excavated or drilled. The horizontal extent of the spill was confirmed by the placement of four soil borings to a depth of approximately three feet on the east and west borders of the spill area and two borings located at the north and south ends of the spill. The vertical extent of the spill was confirmed and delineated by the placement of seven soil borings along the length of the spill.

The near surface geology of the area consists of an unconsolidated soft fine sandy clay layer overlying a dense layer of tan to white caliche. The sandy clay is approximately

two to three feet in thickness and is reddish brown in color. The caliche is fairly dense, uniform and not fractured. Excavation of the caliche with the backhoe was accomplished with little difficulty. At the southern tip of the spill, approximately in the vicinity of SB-1, the caliche layer is within two feet of the surface. The caliche layer dips somewhat to the north; however, it remains within the first three to four feet of the soil surface throughout the spill area. The thickness of the caliche layer was not determined, as a soil boring (SB-9) drilled to a depth of 20 feet from the surface did not reach the lower limits of the caliche layer. It is therefore assumed the caliche layer is at least 17 feet thick in the vicinity of the spill.

Four sites within the main pooled area of the spill were chosen to delineate any part of the spill that would have reached the surface of the caliche and run along the boundary between the sandy clay and the caliche or that would have penetrated the caliche. These sites are labeled BH-1 through BH-4. No visible evidence of the spill was noted in the placement of the excavated sites. These sites were excavated to a depth of five to six feet from the ground surface. Each site was sampled and the samples were analyzed for GRO, DRO and BTEX. The result of the sampling and analysis of the bottom of each excavation is included in Table 1 located in the appendix of this report.

Previous site excavation had occurred and the impacted soils were placed on 10-mil poly plastic sheeting. This excavation occurred at the time the spill was identified and the pipeline was repaired. Approximately two hundred yards of contaminated soil are stockpiled on the site.

Seven sites along the north-south axis of the spill were selected for drilling and sampling for the purpose of definition of the vertical extent of the spill. These sites were labeled SB-1, SB-2, SB-3, SB-4, SB-9, SB-10 and SB-11. SB-1 was sampled at four feet and ten feet respectively. SB-1 was located at the source of the leak. SB-2 was sampled at two feet at the interface of the sandy clay and the caliche. SB-2 was located upgradient of the spill and was designed to delineate the southern horizontal extent of the spill. SB-3 and SB-4 were sampled at three feet from the surface. SB-9 was located immediately

downgradient of the main area of pooling of the liquids. SB-9 was sampled at three, ten, fifteen and twenty feet due to the detection of hydrocarbons with the field PID. SB-9 recorded the highest levels of DRO at the site at the depth of three feet. The DRO at three feet in SB-9 was reported on the lab report as 1550 mg/kg. DRO at ten feet was non-detect, at fifteen feet was 90 mg/kg and at twenty feet was 140 mg/kg. All of these levels, as well as the remainder of the sample results, were well below the 5000 ppm guideline levels set forth in the 1993 NMOCD document "Guidelines for Remediation of Leaks, Spills and Releases."

Soil boring SB-2, SB-5, SB-6, SB-7, SB-8, and SB-11were placed in order to delineate the horizontal limits of the spill. Each of these borings was drilled to a depth of three feet from the surface and sampled. Each of the samples was non-detect for DRO GRO and BTEX. SB-11 was placed at the north end or downgradient part of the spill. SB-2 was placed at the south end of the spill. SB-5 through SB-8 were placed on the eastern and western edges of the spill.

A detailed site map depicting the surficial extent of the spill as well as the selected sample locations is included in the appendix of this report. Photographic documentation of the spill site and the excavated areas is also included in the appendix.

Please refer to the following table, the site maps and the laboratory report for documentation regarding the results of the analyses performed on the soils at the sites.

ANALYTICAL RESULTS
DUKE ENERGY/EUNICE G LOOP SPILL
ANALYTICAL RESULTS IN MG/KG

Sample	Depth	DRO	GRO	Total BTEX	Benzene	Toluene	E. Benzene	Xylene
SB1-1	4'	169	<5	N/A	N/A	N/A	N/A	N/A
SB1-2	10'	56	<5	0.109	<0.05	0.109	<0.05	<0.05
SB2-1	2'	57	<5	<0.05	<0.05	<0.05	<0.05	<0.05

Sample	Depth	DRO	GRO	Total BTEX	Benzene	Toluene	E. Benzene	Xylene
SB3-1	3'	<50	<5	<0.05	<0.05	<0.05	<0.05	<0.05
SB4-1	3'	84	<5	<0.05	<0.05	<0.05	<0.05	<0.05
SB5-1	3'	<50	<5	<0.05	<0.05	<0.05	<0.05	<0.05
SB6-1	3'	<50	<5	<0.05	<0.05	<0.05	<0.05	<0.05
SB7-1	3'	<50	<5	<0.05	<0.05	<0.05	<0.05	<0.05
SB8-1	3'	<50	<5	<0.05	<0.05	<0.05	<0.05	<0.05
SB9-1	3'	1550	<5	N/A	N/A	N/A	N/A	N/A
SB9-2	10'	<50	<5	N/A	N/A	N/A	N/A	N/A
SB9-3	15'	90	<5	N/A	N/A	N/A	N/A	N/A
SB9-4	20'	140	<5	<0.05	<0.05	<0.05	<0.05	<0.05
SB10-1	3'	<50	<5	<0.05	<0.05	<0.05	<0.05	<0.05
SB11-1	3'	<50	<5	<0.05	<0.05	<0.05	<0.05	<0.05
BH-1	5'	<50	<5	<0.05	<0.05	<0.05	<0.05	<0.05
BH-2	5'	<50	<5	<0.05	<0.05	<0.05	<0.05	<0.05
BH-3	5'	<50	<5	<0.05	<0.05	<0.05	<0.05	<0.05
BH-4	6'	<50	<5	<0.05	<0.05	<0.05	<0.05	<0.05

Maps of the DRO concentrations have been included in the appendix.

According to the records of the State of New Mexico Engineering office in Santa Fe, it was determined that the groundwater depth in the vicinity of the spill was approximately 170 feet. There is no surface water within one mile of the site. The nearest windmill is located over one-half mile to the northwest; therefore, the total ranking score according to the recommended guidelines is zero (0). Thus, according to the NMOCD guidelines, the acceptable Benzene level is 10 ppm, the Total BTEX level is 50 ppm and the TPH level is 5000 ppm for this site. No samples were analyzed that approached the recommended levels established in the guidelines. The highest levels documented at the site were those in SB-9 with DRO at 1550 mg/kg and SB-1 with Total BTEX at 0.109 mg/kg.

3.0 Conclusions

Based upon the work performed on the site investigation and results of the analyses performed on the near surface soils, the following conclusions concerning the site condition can be drawn:

A. The spill has been completely delineated both horizontally and vertically by the placement of the soil borings and the excavations along the length and width of the spill. The vertical limit of the impacted soils is defined by the soil boring SB-9. The bottom sample analyzed from this boring documented DRO at 140 mg/kg, GRO at non-detect or less than 5 mg/kg and BTEX at non-detect or less than 0.05 mg/kg. The horizontal limit of the spill has been defined by SB-5, SB-6, SB-7 and SB-8, which documented that all constituents of concern were non-detect.

B. The heavily impacted soils are limited to the near surface sandy clays that are localized within the top three feet of the surface.

C. As evidenced by the results of the site investigation, no ongoing long-term pipeline leaks have occurred.

4.0 Remedial Action Plan

Based on the findings of the site investigation we have performed, we have determined the following:

A. Approximately 200 to 500 cubic yards of contaminated soils remain on-site that will require treatment or landfarming. Approximately 200 cubic yards of these soils are stockpiled on the site on poly sheeting.

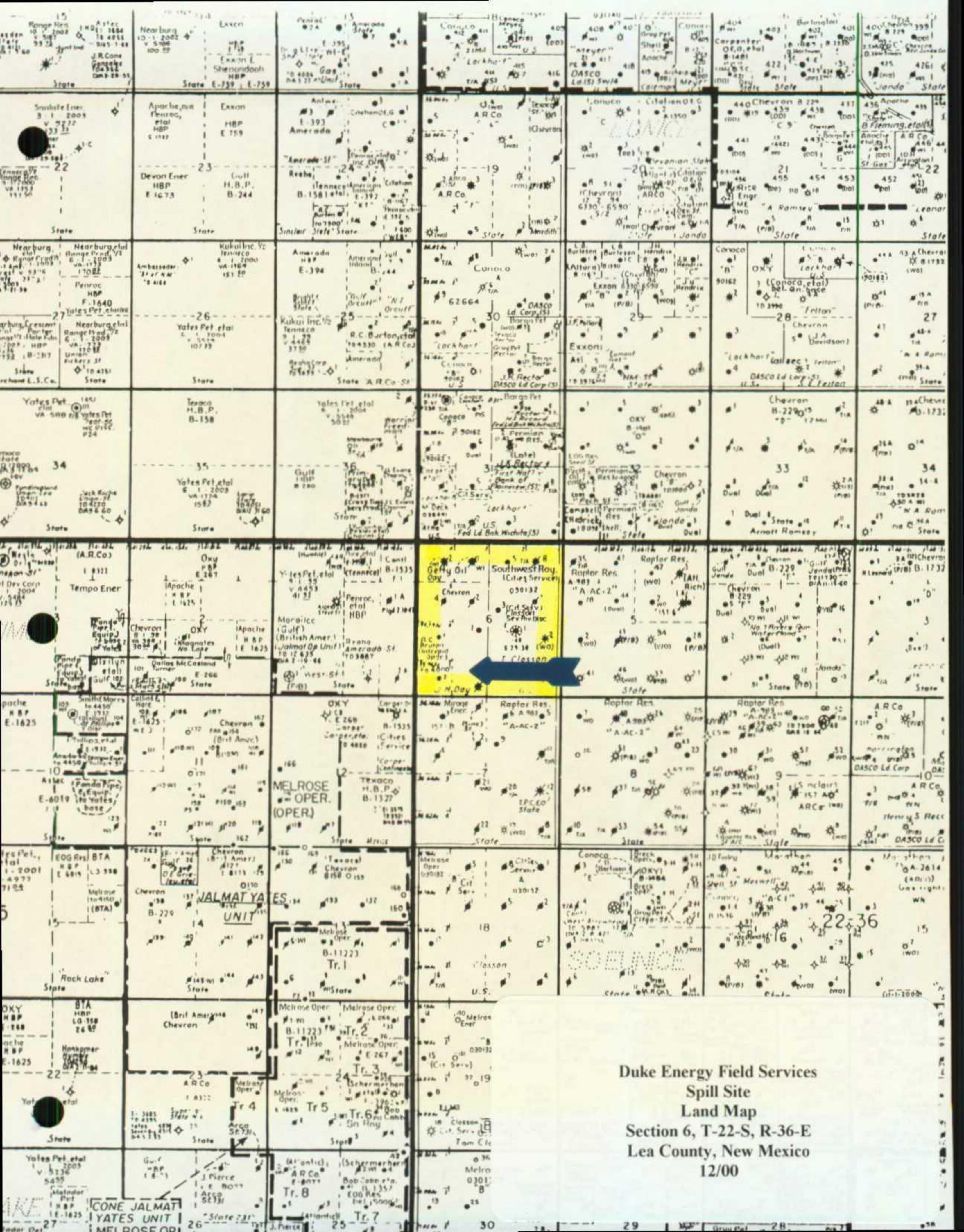
B. DEFS hereby proposes to landfarm the impacted soils on-site with the landowner's permission. The impacted soils will be excavated and brought to the surface of the spill area and spread over the surface of the ground in no more than 12-inch lifts. The volume of

the soils in question does not exceed 900 cubic yards. Using the impacted site measurements of 750 feet in length by 2 feet in depth and 15 feet in width, which calculates to approximately 22,500 cubic feet or 833 cubic yards, the approximate size of the landfarm area will be similar in surface area to the spill site. The area of the landfarm will occupy an area approximately 750 feet long by 30 feet wide and 1 foot in depth. The impacted soils will be tilled with a plow to a depth sufficient to turn the bottom most soils to the surface on a three-month interval. At the time that DEFS has landfarmed the soils for a period of one year, final clearance samples will be taken to verify that the landfarm process has achieved the goals set forth herein. All surface soils in landfarm will be remediated to levels within the current guidelines of the NMOCD concerning the remediation of spills. The goals are to be as follows:

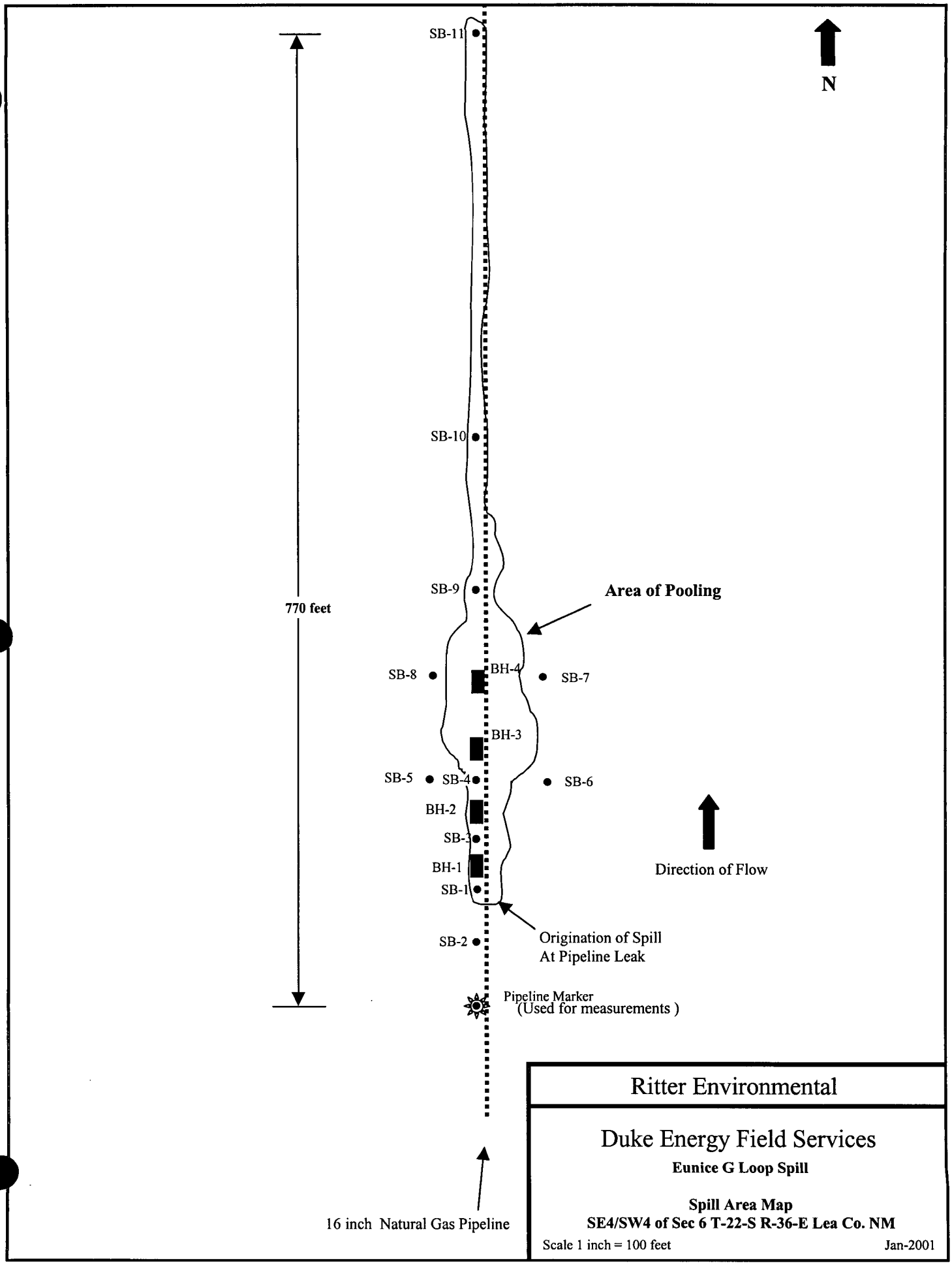
TPH < 5000 mg/kg DRO +GRO < 50 mg/kg Benzene < 10 mg/kg

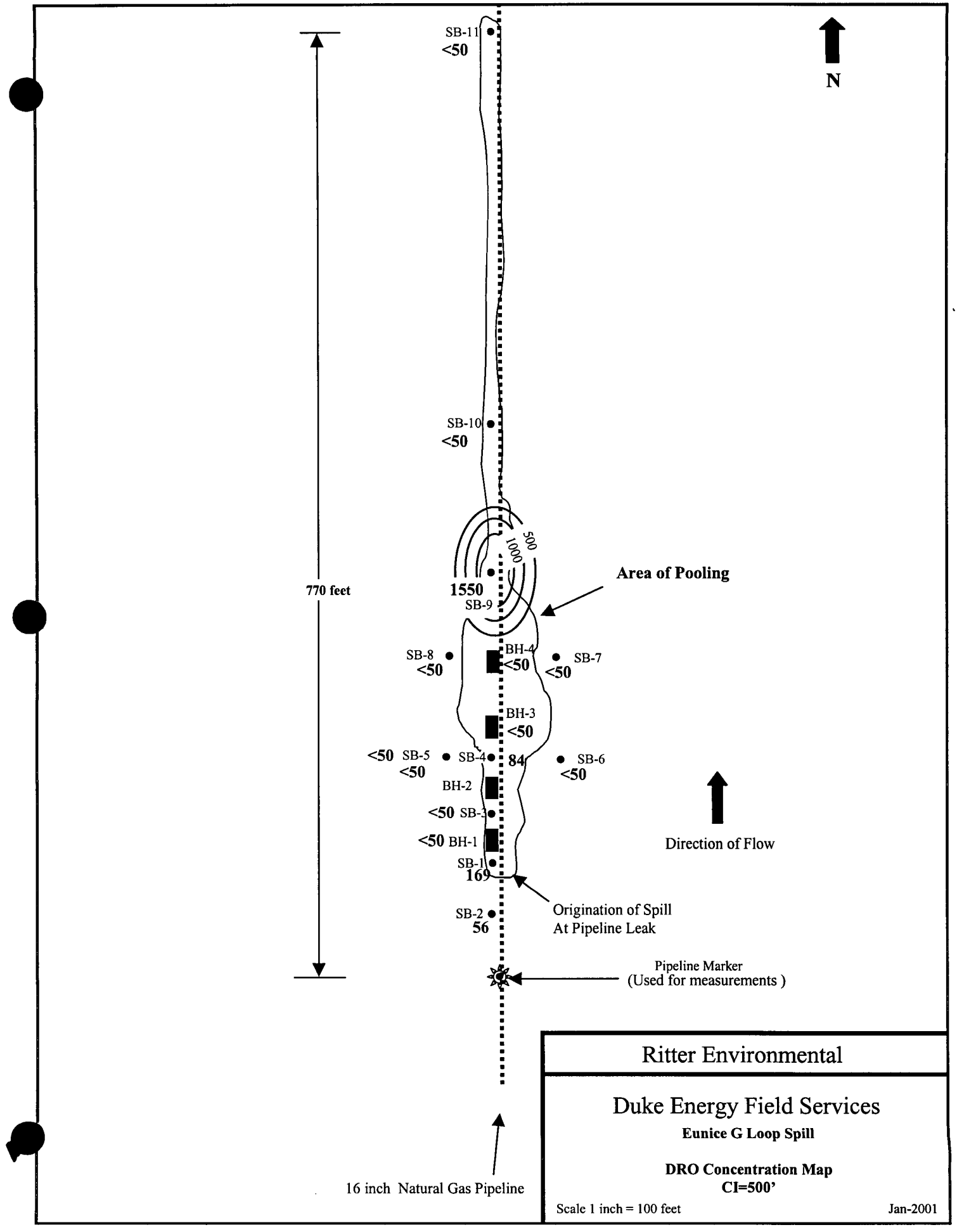
A final report documenting the results of the analyses will be furnished to the NMOCD along with a request for final closure.

C. In the event landowner approval is not obtained for the on-site landfarm or in the event that DEFS should desire to pursue other methods of remediation, a Revised Remedial Action Plan will be re-submitted to the NMOCD for approval.


Duke Energy Field Services
Spill Site
Land Map
Section 6, T-22-S, R-36-E
Lea County, New Mexico
12/00

Oil Center Topo Map
Duke Energy Field Services/Eunice
Spill Site
SE/4 of SW/4 of Section 6, T-22-S, R-36-E


SB-11
N
SB-10
770 feet
SB-9
Area of Pooling
SB-8
BH-4
SB-7
BH-3
SB-5
SB-4
SB-6
BH-2
SB-3
BH-1
SB-1
Direction of Flow
SB-2
Origination of Spill
At Pipeline Leak
Pipeline Marker
(Used for measurements)
16 inch Natural Gas Pipeline
Ritter Environmental
Duke Energy Field Services
Eunice G Loop Spill
Spill Area Map
SE4/SW4 of Sec 6 T-22-S R-36-E Lea Co. NM
Scale 1 inch = 100 feet
Jan-2001


SB-11
<50
N
SB-10
<50
500
1000
770 feet
1550
SB-9
Area of Pooling
SB-8
<50
BH-4
<50
SB-7
<50
BH-3
<50
<50 SB-5
<50
SB-4
84
SB-6
<50
BH-2
<50 SB-3
<50 BH-1
SB-1
169
Direction of Flow
SB-2
56
Origination of Spill
At Pipeline Leak
Pipeline Marker
(Used for measurements)
16 inch Natural Gas Pipeline
Ritter Environmental
Duke Energy Field Services
Eunice G Loop Spill
DRO Concentration Map
CI=500'
Scale 1 inch = 100 feet
Jan-2001

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Mitch Ritter
Ritter Environmental
2900 N. Big Spring
Midland, TX 79705

Report Date: January 8, 2001

Order ID Number: A00122110

Project Number: N/A
Project Name: Duke Energy/Eunice
Project Location: N/A

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to Trace-Analysis. Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
161297	SB1-1	Soil	12/19/00	8:35	12/21/00
161298	SB1-2	Soil	12/19/00	9:55	12/21/00
161299	SB2-1	Soil	12/19/00	10:13	12/21/00
161300	SB3-1	Soil	12/19/00	10:27	12/21/00
161301	SB4-1	Soil	12/19/00	10:40	12/21/00
161302	SB5-1	Soil	12/19/00	10:57	12/21/00
161303	SB6-1	Soil	12/19/00	11:25	12/21/00
161304	SB7-1	Soil	12/19/00	11:45	12/21/00
161305	SB8-1	Soil	12/19/00	12:03	12/21/00
161306	SB9-1	Soil	12/19/00	13:30	12/21/00
161307	SB9-2	Soil	12/19/00	13:50	12/21/00
161308	SB9-3	Soil	12/19/00	14:12	12/21/00
161309	SB9-4	Soil	12/19/00	14:45	12/21/00
161310	SB10-1	Soil	12/19/00	14:40	12/21/00
161311	SB11-1	Soil	12/19/00	15:05	12/21/00
161312	BH-1	Soil	12/19/00	12:14	12/21/00
161313	BH-2	Soil	12/19/00	12:22	12/21/00
161314	BH-3	Soil	12/19/00	12:41	12/21/00
161315	BH-4	Soil	12/19/00	13:05	12/21/00

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director

Analytical and Quality Control Report

Sample: 161297 - SB1-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07763	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06803	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		169	mg/Kg	1	50

Sample: 161297 - SB1-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161298 - SB1-2

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		0.109	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		0.109	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.95	mg/Kg	50	0.10	99	72 - 128
4-BFB		4.44	mg/Kg	50	0.10	88	72 - 128

Sample: 161298 - SB1-2

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07763	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06803	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		56	mg/Kg	1	50

Sample: 161298 - SB1-2

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161299 - SB2-1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.82	mg/Kg	50	0.10	96	72 - 128
4-BFB		4.38	mg/Kg	50	0.10	87	72 - 128

Sample: 161299 - SB2-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07763	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06803	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		57	mg/Kg	1	50

Sample: 161299 - SB2-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161300 - SB3-1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.77	mg/Kg	50	0.10	95	72 - 128
4-BFB		4.29	mg/Kg	50	0.10	85	72 - 128

Sample: 161300 - SB3-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07763	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06803	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161300 - SB3-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161301 - SB4-1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.66	mg/Kg	50	0.10	93	72 - 128
4-BFB		4.18	mg/Kg	50	0.10	83	72 - 128

Sample: 161301 - SB4-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07763	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06803	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		84	mg/Kg	1	50

Sample: 161301 - SB4-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161302 - SB5-1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		5.02	mg/Kg	50	0.10	100	72 - 128
4-BFB		4.52	mg/Kg	50	0.10	90	72 - 128

Sample: 161302 - SB5-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07763	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06803	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161302 - SB5-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161303 - SB6-1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		5.06	mg/Kg	50	0.10	101	72 - 128
4-BFB		4.6	mg/Kg	50	0.10	92	72 - 128

Sample: 161303 - SB6-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07763	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06803	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161303 - SB6-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161304 - SB7-1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.99	mg/Kg	50	0.10	99	72 - 128
4-BFB		4.46	mg/Kg	50	0.10	89	72 - 128

Sample: 161304 - SB7-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07763	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06803	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161304 - SB7-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161305 - SB8-1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.72	mg/Kg	50	0.10	94	72 - 128
4-BFB		4.23	mg/Kg	50	0.10	84	72 - 128

Sample: 161305 - SB8-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07763	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06803	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161305 - SB8-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161306 - SB9-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07763	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06803	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		1550	mg/Kg	1	50

Sample: 161306 - SB9-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161307 - SB9-2

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07764	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06804	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161307 - SB9-2

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161308 - SB9-3

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07764	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06804	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		90	mg/Kg	1	50

Sample: 161308 - SB9-3

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161309 - SB9-4

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.86	mg/Kg	50	0.10	97	72 - 128
4-BFB		4.35	mg/Kg	50	0.10	87	72 - 128

Sample: 161309 - SB9-4

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07764	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06804	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		140	mg/Kg	1	50

Sample: 161309 - SB9-4

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161310 - SB10-1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		5.33	mg/Kg	50	0.10	106	72 - 128
4-BFB		4.82	mg/Kg	50	0.10	96	72 - 128

Sample: 161310 - SB10-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07764	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06804	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161310 - SB10-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161311 - SB11-1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		5.26	mg/Kg	50	0.10	105	72 - 128
4-BFB		4.77	mg/Kg	50	0.10	95	72 - 128

Sample: 161311 - SB11-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07764	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06804	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161311 - SB11-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161312 - BH-1

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.79	mg/Kg	50	0.10	95	72 - 128
4-BFB		4.26	mg/Kg	50	0.10	85	72 - 128

Sample: 161312 - BH-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07764	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06804	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161312 - BH-1

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161313 - BH-2

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.81	mg/Kg	50	0.10	96	72 - 128
4-BFB		4.35	mg/Kg	50	0.10	87	72 - 128

Sample: 161313 - BH-2

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07764	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06804	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161313 - BH-2

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161314 - BH-3

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		5.18	mg/Kg	50	0.10	103	72 - 128
4-BFB		4.64	mg/Kg	50	0.10	92	72 - 128

Sample: 161314 - BH-3

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07764	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06804	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161314 - BH-3

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Sample: 161315 - BH-4

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC07879	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	5035	Prep Batch:	PB06891	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.05	mg/Kg	50	0.001
Toluene		<0.05	mg/Kg	50	0.001
Ethylbenzene		<0.05	mg/Kg	50	0.001
M,P,O-Xylene		<0.05	mg/Kg	50	0.001
Total BTEX		<0.05	mg/Kg	50	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		4.8	mg/Kg	50	0.10	96	72 - 128
4-BFB		4.22	mg/Kg	50	0.10	84	72 - 128

Sample: 161315 - BH-4

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	QC Batch:	QC07764	Date Analyzed:	12/31/00
Analyst:	BP	Preparation Method:	3550 B	Prep Batch:	PB06804	Date Prepared:	12/29/00

Param	Flag	Result	Units	Dilution	RDL
DRO		<50	mg/Kg	1	50

Sample: 161315 - BH-4

Analysis:	TPH GRO	Analytical Method:	8015B	QC Batch:	QC07880	Date Analyzed:	1/2/01
Analyst:	RC	Preparation Method:	N/A	Prep Batch:	PB06892	Date Prepared:	1/2/01

Param	Flag	Result	Units	Dilution	RDL
GRO		<5	mg/Kg	1	0.10

Quality Control Report
Method Blank

Sample: Method Blank QCBatch: QC07763

Param	Flag	Results	Units	Reporting Limit
DRO		<50	mg/Kg	50

Sample: Method Blank QCBatch: QC07764

Param	Flag	Results	Units	Reporting Limit
DRO		<50	mg/Kg	50

Sample: Method Blank QCBatch: QC07879

Param	Flag	Results	Units	Reporting Limit
Benzene		<0.05	mg/Kg	0.001
Toluene		<0.05	mg/Kg	0.001
Ethylbenzene		<0.05	mg/Kg	0.001
M,P,O-Xylene		<0.05	mg/Kg	0.001
Total BTEX		<0.05	mg/Kg	0.001

Surrogate	Flag	Result	Units	Spike Amount	Percent Recovery	Recovery Limit
TFT		4.94	mg/Kg	0.10	98	72 - 128
4-BFB		4.51	mg/Kg	0.10	90	72 - 128

Sample: Method Blank QCBatch: QC07880

Param	Flag	Results	Units	Reporting Limit
GRO		<5	mg/Kg	0.10

Quality Control Report
Lab Control Spikes and Duplicate Spikes

Sample: LCS QC Batch: QC07763

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
DRO		215	mg/Kg	1	250	<50	86		70 - 130	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
n-Octane		239	mg/Kg	1	250	95	70 - 130

Sample: LCSD QC Batch: QC07763

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
DRO		218	mg/Kg	1	250	<50	87	1	70 - 130	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
n-Octane		251	mg/Kg	1	250	100	70 - 130

Sample: LCS QC Batch: QC07764

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
DRO		197	mg/Kg	1	250	<50	78		70 - 130	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
n-Octane		233	mg/Kg	1	250	93	70 - 130

Sample: LCSD QC Batch: QC07764

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
DRO		204	mg/Kg	1	250	<50	81	3	70 - 130	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
n-Octane		229	mg/Kg	1	250	91	70 - 130

Sample: LCS

QC Batch: QC07879

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
MTBE		4.35	mg/Kg	50	0.10	<0.05	87		80 - 120	20
Benzene		4.37	mg/Kg	50	0.10	<0.05	87		80 - 120	20
Toluene		4.22	mg/Kg	50	0.10	<0.05	84		80 - 120	20
Ethylbenzene		4.2	mg/Kg	50	0.10	<0.05	84		80 - 120	20
M,P,O-Xylene		12	mg/Kg	50	0.30	<0.05	80		80 - 120	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
TFT		4.69	mg/Kg	50	0.10	93	72 - 128
4-BFB		4.31	mg/Kg	50	0.10	86	72 - 128

Sample: LCSD

QC Batch: QC07879

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
MTBE		4.47	mg/Kg	50	0.10	<0.05	89	3	80 - 120	20
Benzene		4.38	mg/Kg	50	0.10	<0.05	87	0	80 - 120	20
Toluene		4.24	mg/Kg	50	0.10	<0.05	84	0	80 - 120	20
Ethylbenzene		4.24	mg/Kg	50	0.10	<0.05	84	1	80 - 120	20
M,P,O-Xylene		12.11	mg/Kg	50	0.30	<0.05	81	1	80 - 120	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
TFT		4.83	mg/Kg	50	0.10	96	72 - 128
4-BFB		4.42	mg/Kg	50	0.10	88	72 - 128

Sample: LCS

QC Batch: QC07880

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
GRO		0.972	mg/Kg	1	1	<5	97		70 - 130	20

Sample: LCSD QC Batch: QC07880

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
GRO		0.946	mg/Kg	1	1	<5	94	3	70 - 130	20

Quality Control Report
Matrix Spikes and Duplicate Spikes

Sample: MS QC Batch: QC07763

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
DRO		273	mg/Kg	1	250	56	86		70 - 130	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
n-Octane		193	mg/Kg	1	250	77	70 - 130

Sample: MSD QC Batch: QC07763

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
DRO		282	mg/Kg	1	250	56	90	4	70 - 130	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
n-Octane		179	mg/Kg	1	250	71	70 - 130

Sample: MS QC Batch: QC07764

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
DRO		191	mg/Kg	1	250	<50	76		70 - 130	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
n-Octane		210	mg/Kg	1	250	84	70 - 130

Sample: MSD QC Batch: QC07764

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
DRO		218	mg/Kg	1	250	<50	87	13	70 - 130	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
n-Octane		186	mg/Kg	1	250	74	70 - 130

Sample: MS

QC Batch: QC07879

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
Benzene		4.89	mg/Kg	50	0.10	<0.05	97	0	80 - 120	20
Toluene		4.78	mg/Kg	50	0.10	<0.05	95	1	80 - 120	20
Ethylbenzene		4.6	mg/Kg	50	0.10	<0.05	92	2	80 - 120	20
M,P,O-Xylene		12.9	mg/Kg	50	0.30	<0.05	86	2	80 - 120	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
TFT		4.71	mg/Kg	50	0.10	94	72 - 128
4-BFB		4.4	mg/Kg	50	0.10	88	72 - 128

Sample: MSD

QC Batch: QC07879

Param	Flag	Sample Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec.	RPD	% Rec. Limit	RPD Limit
Benzene		4.85	mg/Kg	50	0.10	<0.05	97	1	80 - 120	20
Toluene		4.84	mg/Kg	50	0.10	<0.05	96	1	80 - 120	20
Ethylbenzene		4.52	mg/Kg	50	0.10	<0.05	90	2	80 - 120	20
M,P,O-Xylene		12.7	mg/Kg	50	0.30	<0.05	84	2	80 - 120	20

Surrogate	Flag	Result	Units	Dil.	Spike Amount	% Rec.	% Rec. Limit
TFT		4.54	mg/Kg	50	0.10	90	72 - 128
4-BFB		4.5	mg/Kg	50	0.10	90	72 - 128

Quality Control Report
Continuing Calibration Verification Standards

Sample: CCV (1)

QC Batch: QC07763

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	211	84	75 - 125	12/31/00
n-Octane		mg/Kg	250	202	80	75 - 125	12/31/00

Sample: CCV (2) QC Batch: QC07763

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	274	109	75 - 125	12/31/00
n-Octane		mg/Kg	250	243	97	75 - 125	12/31/00

Sample: ICV (1) QC Batch: QC07763

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	262	104	75 - 125	12/31/00
n-Octane		mg/Kg	250	237	94	75 - 125	12/31/00

Sample: CCV (1) QC Batch: QC07764

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	202	80	75 - 125	12/31/00
n-Octane		mg/Kg	250	252	100	75 - 125	12/31/00

Sample: CCV (2) QC Batch: QC07764

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	214	85	75 - 125	12/31/00
n-Octane		mg/Kg	250	215	86	75 - 125	12/31/00

Sample: ICV (1) QC Batch: QC07764

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	231	92	75 - 125	12/31/00
n-Octane		mg/Kg	250	293	117	75 - 125	12/31/00

Sample: CCV (1)

QC Batch: QC07879

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/Kg	0.10	0.095	95	80 - 120	1/2/01
Benzene		mg/Kg	0.10	0.093	93	80 - 120	1/2/01
Toluene		mg/Kg	0.10	0.09	90	80 - 120	1/2/01
Ethylbenzene		mg/Kg	0.10	0.089	89	80 - 120	1/2/01
M,P,O-Xylene		mg/Kg	0.30	0.248	82	80 - 120	1/2/01

Sample: CCV (2)

QC Batch: QC07879

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/Kg	0.10	0.095	95	80 - 120	1/2/01
Benzene		mg/Kg	0.10	0.093	93	80 - 120	1/2/01
Toluene		mg/Kg	0.10	0.091	91	80 - 120	1/2/01
Ethylbenzene		mg/Kg	0.10	0.09	90	80 - 120	1/2/01
M,P,O-Xylene		mg/Kg	0.30	0.255	85	80 - 120	1/2/01

Sample: ICV (1)

QC Batch: QC07879

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/Kg	0.10	0.096	96	80 - 120	1/2/01
Benzene		mg/Kg	0.10	0.095	95	80 - 120	1/2/01
Toluene		mg/Kg	0.10	0.092	92	80 - 120	1/2/01
Ethylbenzene		mg/Kg	0.10	0.092	92	80 - 120	1/2/01
M,P,O-Xylene		mg/Kg	0.30	0.262	87	80 - 120	1/2/01

Sample: CCV (1)

QC Batch: QC07880

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1	0.949	94	75 - 125	1/2/01

Sample: CCV (2)

QC Batch: QC07880

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1	1.02	102	75 - 125	1/2/01

Sample: ICV (1)

QC Batch: QC07880

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1	0.885	88	75 - 125	1/2/01

A00122110

CHAIN OF CUSTODY

RITTER ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
2900 N. Big Spring, Midland, Texas 79705
Bus: (915) 682-7404 • (915) 570-REGS • Metro: (915) 570-6007 • Fax: (915) 682-7440

REPORT TO	INVOICE TO
COMPANY: RITTER ENVIRONMENTAL	COMPANY: SAME
ADDRESS: 2900 N. BIG SPRING	ADDRESS:
CITY/STATE/ZIP: MIDLAND, TX 79705	CITY/STATE/ZIP
ATTENTION: MITCH RITTER PHONE: 570-6007	ATTENTION: PHONE:

PROJECT/SITE NAME:	REMARKS:	TURN AROUND TIME
DUKE ENERGY/EUNICE	ANALYZED BY: TRACE	■ NORMAL ☐ RUSH ☐ OTHER

								REQUESTED ANALYSIS						
DATE	TIME	COMP	GRAB	SAMPLE #	SAMPLE DESCRIPTION	MATRIX	# CONT	8015 GRO	8015 DRO	BTEX				REMARKS
12/19/00	08:35		✔	SB1-1	Soil @ 5'	Soil	1	✔	✔					161297
12/19/00	09:55		✔	SB1-2	Soil @ 10'	Soil	1	✔	✔	✔				98
12/19/00	10:13		✔	SB2-1	Soil @ 3'	Soil	1	✔	✔	✔				99
12/19/00	10:27		✔	SB3-1	Soil @ 3'	Soil	1	✔	✔	✔				300
12/19/00	10:40		✔	SB4-1	Soil @ 3'	Soil	1	✔	✔	✔				301
12/19/00	10:57		✔	SB5-1	Soil @ 3'	Soil	1	✔	✔	✔				302
12/19/00	11:25		✔	SB6-1	Soil @ 3'	Soil	1	✔	✔	✔				303
12/19/00	11:45		✔	SB7-1	Soil @ 3'	Soil	1	✔	✔	✔				304
12/19/00	12:03		✔	SB8-1	Soil @ 3'	Soil	1	✔	✔	✔				305
12/19/00	13:30		✔	SB9-1	Soil @ 3'	Soil	1	✔	✔					306

REVIEWED BY: ☐ MRR ☐ BNR

RELINQUISHED BY	DATE/TIME	RECEIVED BY:	DATE / TIME	SAMPLE CONDITION	DATE / TIME
	12/20/00	Helen Shelton	12/20/00 1605		
Helen Shelton	12/20/00 1830				
		Vicki Gensley	12-21-00	10:00	

Shipped Greyhound 10 samples - HS

1/9/01

2° Greyhound GU-163-573-431-0

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CHAIN OF CUSTODY

REPORT TO	INVOICE TO
COMPANY: RITTER ENVIRONMENTAL	COMPANY: SAME
ADDRESS: 2900 N. BIG SPRING	ADDRESS:
CITY/STATE/ZIP: MIDLAND, TX 79705	CITY/STATE/ZIP
ATTENTION: MITCH RITTER PHONE: 570-6007	ATTENTION: PHONE:

PROJECT/SITE NAME:	REMARKS:	TURN AROUND TIME
DUKE ENERGY/EUNICE	ANALYZED BY: TRACE	■ NORMAL ☐ RUSH ☐ OTHER

DATE	TIME	COMP	GRAB	SAMPLE #	SAMPLE DESCRIPTION	MATRIX	# CONT	REQUESTED ANALYSIS: 8015 GRO	8015 DRO	BTEX				REMARKS
12/19/00	13:50		✔	SB9-2	Soil @ 10'	Soil	1	✔	✔					307
12/19/00	14:12		✔	SB9-3	Soil @ 15'	Soil	1	✔	✔					308
12/19/00	14:45		✔	SB9-4	Soil @ 20'	Soil	1	✔	✔	✔				309
12/19/00	14:40		✔	SB10-1	Soil @ 3'	Soil	1	✔	✔	✔				310
12/19/00	15:05		✔	SB11-1	Soil @ 3'	Soil	1	✔	✔	✔				311
12/19/00	12:14		✔	BH – 1	Soil @ 5'	Soil	1	✔	✔	✔				312
12/19/00	12:22		✔	BH – 2	Soil @ 5'	Soil	1	✔	✔	✔				313
12/19/00	12:41		✔	BH – 3	Soil @ 5'	Soil	1	✔	✔	✔				314
12/19/00	13:05		✔	BH – 4	Soil @ 6'	Soil	1	✔	✔	✔				315

REVIEWED BY: ☐ MRR ☐ BNR

RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE / TIME	SAMPLE CONDITION DATE / TIME
Mitch 12/20/00 1605	Helen Shelton 12/20/00 1605	
Helen Shelton 12/20/00 1830		

Shipped Greyhound 9 samples - HS

MS

1-1 Soil Boring #1

1-2 Looking north from south end of spill

1-3 Looking north across stockpiled soil

1-4 Spill site

1-5 Main pooling area

1-6 BH-2

1-7 BH-2

2-1 BH-2

2-2 BH-2 at 4.5 feet

2-3 BH-1

2-4 BH-1

2-5 BH-1 at 5 feet

3-1 BH-3

3-2 BH-4

3-3 BH-4 at 6 feet

3-4 BH-4 at 6 feet

3-5 BH-2

3-6 BH-1

3-7 BH-3 Foreground BH-4 Background

3-8 BH-3 Foreground BH-4 Background

3-9 Pooled area

3-10 BH-1 and BH-2

3-11 Looking south at south end of spill

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-1	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	5	Red/Brown sandy clay, caliche at 4'	1-1	0.5	Y	GP	SC	31.8	Y	N	8:35
5	10	Soft white/tan caliche	1-2	9-10	N	GP	LS	^{2}4.0 ^{1}0.0	Y	N	9:55
		95' north of pipeline marker									

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-2	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	2	Red/brown clay sand, caliche at 2'	2-1	0-2	N	GP	CL	0.0	Y	N	10:13
		42' north of pipeline marker									

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-3	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	3	Red/brown sandy clay	3-1	0-3	Y	GP	CL	2.1	Y	N	10:27
		30' north of SB-1									

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-4	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	3	Red/brown sandy clay	4-1	0-3	Y	GP	CL	4.0	Y	N	10:40
		77' north of SB-1									

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-5	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	4	Red/brown sandy clay, caliche at 4'	5-1	3-4	N	GP	SC	0.9	Y	N	10:57
		30' west of center line, 63' north of SB-1									

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-6	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	3	Red sandy clay	6-1	2-3	N	GP	SC	0.9	Y	N	11:25
		30' west of center line, 63' north of SB-1									

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-7	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	3	Red/brown sandy clay	7-1	0-3	N	GP	SC	0.9	Y	N	11:45
		30' east of center line, 135' south of SB-6									

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-8	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	3	Red/brown sandy clay	8-1	2-3	N	GP	SC	0.9	Y	N	12:03

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-9	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	3	Red/brown sandy clay	9-1	3'	Y	GP	SC	179	Y	N	13:30
3	10	Soft white/tan caliche	9-2	10'	Y	SS	LS	9.2	Y	N	13:50
10	15	Soft white/tan caliche	9-3	15'	Y	SS	LS	24	Y	N	14:12
15	20	Soft white/tan caliche	9-4	20'	N	SS	LS	15.6	Y	N	14:45
		North end of pooled area									

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-9	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	3	Red/brown sandy clay	9-1	3'	Y	GP	SC	179	Y	N	13:30
3	10	Soft white/tank caliche	9-2	10'	Y	SS	LS	9.2	Y	N	13:50
10	15	Soft white/tank caliche	9-3	15'	Y	SS	LS	24	Y	N	14:12
15	20	Soft white/tank caliche	9-4	20'	N	SS	LS	15.6	Y	N	14:45
		North end of pooled area									

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-10	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	3	Red/brown sandy clay	10-1	2-3	N	GP	SC	2.1	Y	N	14:40
		437' north of SB-1									

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
SB-11	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	3	Red/brown sandy clay	11-1	2-3	N	GP	SC	2.1	Y	N	15:05
		675' north of SB-1									

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DRILLING LOG

HOLE / WELL NO.:	PROJECT:	DATE:	GEOLOGIST:
BH 1, 2, 3, 4	Duke Energy Field Services/Eunice G Loop	12/19/00	MRR
DRILL METHOD:	**AUGER SIZE:**	**DRILLING COMPANY:**	
Hollow Stem	4" Auger 2 ¼ H.S.	EPI	

DEPTH FROM	DEPTH TO	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE INTERVAL	ODOR	SAMPLE TYPE	SOIL SYMBOL	HNU	LAB ANALYZED	STAIN	TIME
0	5	BH - 1 (Between SB1 and SB-3) at 5'	BH-1	5'	N	GRAB	LS	11.3	Y	N	12:14
0	5	BH - 2 (North of SB-4) at 5'	BH-2	5'	N	GRAB	LS	9.5	Y	N	12:22
0	5	BH - 3 (North of BH-2) at 5'	BH-3	5'	N	GRAB	LS	1.9	Y	N	12:41
0	5	BH - 5 (West of BH-3) at 6'	BH-4	6'	N	GRAB	LS	9.5	Y	N	13:05