CORRECTIVE ACTION REPORT

Property:

1009 Relief Valve Overspray
32.393580, -103.770060
SW¼ NW ¼, S15 T22S R31E
Eddy County, New Mexico
ECIRTS: 25361
2RP-2915

November 2015
Apex Project No. 7250715028.001

Prepared for:

Enterprise Field Services, LLC
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1.0 INTRODUCTION

1.1 Site Description & Background

The 1009 Relief Valve Overspray Release Site is located within the Enterprise Field Services, LLC (Enterprise) pipeline right-of-way (ROW) in the southwest (SW) ¼ of the northwest (NW) ¼ of Section 15 in Township 22 South and Range 31 East in rural Eddy County, New Mexico (32.393580N, 103.770060W), referred to hereinafter as the "Site" or "subject Site". The Site is located north of an unpaved road on Bureau of Land Management (BLM) managed lands. The Site is surrounded by native rangeland with oil and gas production and gathering facilities, including the 1009 Enterprise natural gas gathering pipeline. The Site is located approximately two (2) miles northeast of the U.S. Department of Energy (DOE) Waste Isolation Pilot Plant (WIPP), located on BLM managed property.

On March 10, 2015, Enterprise was notified by the BLM of an overspray caused by a pressure relief valve activation on the 1009 natural gas gathering line. The release through the pressure relief valve consisted of natural gas (immediately dispersed into the atmosphere) and natural gas pipeline liquids. The contamination from the overspray was located north of the pipeline ROW. An area of liquid contamination (liquid flow area) was observed around the valve on the ground surface and remained on the pipeline ROW. Pipeline liquids also flowed west down the lease road. Two fluid spray areas were noted which extend to the northeast and the northwest of the release point. Surface impacts of the spray area were approximately 3.6 acres to the northwest and approximately 1.7 acres to the northeast.

A topographic map depicting the location and approximate area of the surface indication of the impact is shown of the Site is included as Figure 1, and a Site Vicinity Map is included as Figure 2 in Appendix A.

1.2 Project Objective

The primary objective of the corrective actions was to reduce the concentration of constituents of concern (COCs) in on-Site soils to below the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD), Oil Conservation Division (OCD) *Remediation Action Levels* using the New Mexico EMNRD OCD's *Guidelines for Remediation of Leaks, Spills and Releases* as guidance.

2.0 SITE RANKING

In accordance with the New Mexico EMNRD OCD's *Guidelines for Remediation of Leaks, Spills and Releases*, Apex TITAN, Inc. (Apex) utilized the general site characteristics obtained during the completion of corrective action activities and information available from the New Mexico Office of the State Engineer (OSE) to determine the appropriate "ranking" for the Site. The ranking criteria and associated scoring are provided in the following table:

Ranking Criteria			Ranking Score
Depth to Groundwater	<50 feet	20	0
	50 to 99 feet	10	
	>100 feet	0	
Wellhead Protection Area <1,000 feet from a water source, or; <200 feet from private domestic water source.	Yes	20	0
	No	0	
Distance to Surface Water Body	<200 feet		0
	200 to 1,000 feet	10	
	>1,000 feet	0	
Total Ranking Score			0

Based on Apex's evaluation of the scoring criteria, the Site would have a maximum Total Ranking Score of "0". This ranking is based on the following:

- The approximate depth to the initial groundwater-bearing zone is greater than 100 feet at the Site.
- No water source wells (municipal/community wells) were identified within 1,000 feet of the Site. No private domestic water sources were identified within 200 feet of the Site.
- The distance to the nearest surface water body is greater than 1,000 feet.

Based on a Total Ranking Score of "0", cleanup goals for soils remaining in place include:

- 10 milligrams per kilogram (mg/Kg) for benzene
- 50 mg/Kg for total benzene, toluene, ethylbenzene and xylene (BTEX)
- 5,000 mg/Kg for total petroleum hydrocarbons (TPH)
- 1,000 mg/Kg for chloride.

3.0 RESPONSE ACTIONS

3.1 Soil Remediation Activities

On March 20, 2015, Enterprise and Apex conducted an initial site investigation. BLM and United States DOE WIPP representatives were on site to observe initial confirmation sampling of the fluid stained areas near the relief valve and site investigation activities. The perimeters of the two spray areas were delineated and a remediation plan was created to treat the soils and vegetation in-situ, which were affected by the relief valve overspray.

The area of liquid contamination was observed around the valve and remained on the existing pipeline ROW, flowing west down the lease road. Fluid staining measuring approximately 145 feet long by three (3) feet wide was observed on the ground surface. The pipeline ROW is fifty (50) feet wide perpendicular to the length of the pipeline.

Surface staining of the spray area was observed on the ground surface and extended to the northeast and northwest of the pressure relief valve, outside of the pipeline ROW. The northeast spray area measured approximately 160 feet wide by 920 feet long. The northwest spray area measured approximately 160 feet wide by 420 feet long.

From March 30 through April 1, 2015, Apex returned to the Site to conduct in-situ soil remediation activities. Ikon Environmental Solutions, LP (Ikon) applied a microbial-decomposition product (Microblaze®) to introduce additional nonpathogenic bacterial strains designed to metabolize petroleum hydrocarbons to the spray areas and the affected area surrounding the pressure relief valve. On-Site equipment, located in the vicinity of the relief valve, and cattle pens, located to the northwest of the relief valve, were power-washed with a heated Microblaze solution.

3.2 Soil Sampling Program

On March 20, 2015, Apex collected three (3) confirmation soil samples (CS-1 through CS-3) from the affected area where pipeline liquids were observed flowing from the relief valve westward down the pipeline ROW to establish baseline conditions subsequent to the release.

On May 6, 2015, Apex collected 22 confirmation soil samples (CS-1 through CS-22) and 22 vegetation samples (Veg-1 through Veg-22) from the northwest and northeast spray areas following the application of Microblaze®. Due to the size of the spray areas, each area was divided into 22 separate grid areas. A sample was collected from the surface every 100 foot interval within the spray areas. The sampled vegetation was limited to forage species based on the concern of the grazing livestock that may inhabit the area. The BLM and WIPP were notified by Enterprise 48 hours prior to the collection of the confirmation soil and vegetation samples.

On June 10, 2015, Apex returned to the Site and resampled vegetation (Veg-14 through Veg-16) after lab results indicated elevated levels of TPH based on the previously submitted samples. The vegetation samples were collected five (5) weeks after the initial Microblaze application, allowing the bacterial strains in the Microblaze additional time to metabolize petroleum hydrocarbons in the affected spray areas. The BLM and WIPP were notified by Enterprise 48 hours prior to the collection of the vegetation samples.

Samples were collected and delivered under chain of custody control to Trace Analysis laboratory in Midland, Texas for analysis of BTEX utilizing EPA SW-846 Method #8021B, TPH gasoline range organics (GRO) and diesel range organics (DRO) utilizing EPA SW-846 Method #8015 and chloride utilizing EPA Method SM 4500-Cl B.

Executed chain-of-custody form and laboratory data sheets are provided in Appendix D. All samples were analyzed within specified holding times.

Figure 3A is a site map indicating the extent of the spray area in relation to the excavation. Figure 3B is a Site detail map that indicates the approximate location of liquid flow area in relation to the relief valve and pertinent land features (Appendix A).

4.0 DATA EVALUATION

The Site is subject to regulatory oversight by the New Mexico EMNRD OCD. To address activities related to condensate releases, the New Mexico EMNRD OCD utilizes the *Guidelines for Remediation of Leaks, Spills and Releases* as guidance, in addition to the OCD rules, specifically NMAC 19.15.29 *Remediation Plan*. These guidance documents establish investigation and abatement action requirements for sites subject to reporting and/or corrective action.

4.1 Analytical Results

Apex compared the benzene, BTEX, TPH and chloride results associated with the confirmation soil samples collected from the liquid flow area (CS-1 through CS-3), the confirmation soil samples taken from the spray areas (CS-1 through CS-22) and vegetation samples (Veg-1 through Veg-22) to the OCD *Recommended Remediation Action Levels* (RRALs) for sites having a total ranking score of "0".

The laboratory analyses of confirmation soil samples collected from the liquid flow area (CS-1 through CS-3) indicate benzene, BTEX and combined TPH GRO/DRO concentrations are below the laboratory reporting limits, which are below the OCD RRAL limits of 10 mg/Kg for a Site ranking of "0".

The laboratory analyses for confirmation soil samples (CS-1 through CS-3) collected from the liquid flow area indicate chloride concentrations of 870 mg/Kg, 1,260 mg/Kg and 580 mg/Kg, respectively. The confirmation soil sample chloride concentrations are below the OCD RRAL limits of 1,000 mg/Kg, with the exception of CS-2. However, due to the levels of groundwater in the vicinity of the site being greater than one hundred (100) feet below ground surface, it is likely that the remaining concentration will decline at depth and be protective of groundwater.

Confirmation soil sample CS-1 was analyzed for Toxicity Characteristic Leach Procedure (TCLP) heavy metals for waste disposal purposes based on initial confirmation soil sample results from the liquid flow area.

The laboratory analyses of the confirmation soil samples (CS-1 through CS-22) collected from the overspray areas indicate total BTEX concentrations are below the laboratory reporting limits, which are below the OCD RRAL limits of 50 mg/Kg for a Site ranking of "0". The laboratory analyses of the confirmation soil samples indicate combined TPH GRO/DRO concentrations ranging from below the laboratory reporting limits to 418 mg/Kg, which are below the OCD RRAL limit of 5,000 mg/Kg for a Site ranking of "0". The laboratory analyses of the confirmation soil samples indicate chloride concentrations ranging from below the laboratory reporting limits to 600 mg/Kg, which are below the OCD RRAL limit of 1,000 mg/Kg.

The laboratory analyses of the initial vegetation samples (Veg-1 through Veg-13 and Veg-17 through Veg-22) indicate total combined TPH GRO/DRO concentrations ranging from 160 mg/Kg to 2,800 mg/Kg, which is below the OCD RRAL limit of 5,000 mg/Kg. The laboratory analyses of the initial vegetation samples (Veg-14, Veg-15 and Veg-16) indicate total combined TPH GRO/DRO concentrations ranging from 7,630 mg/Kg to 27,500 mg/Kg, which are above the OCD RRAL limit of 5,000 mg/Kg for a Site ranking of "0". The laboratory analyses of the additional vegetation samples (Veg-14, Veg-15 and Veg-16) indicate total combined TPH GRO/DRO concentrations ranging from 168 mg/Kg to 2,800 mg/Kg, which are below the OCD RRAL limit. The additional vegetation samples (Veg-14, Veg-15 and Veg-16) were collected five (5) weeks after the initial Microblaze application to the spray areas, allowing the bacterial strains in the Microblaze additional time to metabolize petroleum hydrocarbons in the affected spray areas. As a result, the additional vegetation samples (Veg-14, Veg-15 and Veg-16) indicate TPH concentrations below the OCD RRAL limit of 5,000 mg/Kg for a Site raking of "0".

Analytical results for confirmation soil samples collected from the liquid flow area are provided in Table 1 in Appendix C. Confirmation soil sample and vegetation sample results from areas affected by the overspray are provided in Table 2 in Appendix C.

5.0 FINDINGS AND RECOMMENDATIONS

The 1009 Relief Valve Overspray Release Site is located within the Enterprise pipeline ROW in rural Eddy County, New Mexico. The Site is located north of an unpaved road on BLM managed lands. The Site is surrounded by native vegetation rangeland with oil and gas production and gathering facilities, including the 1009 Enterprise natural gas gathering pipeline. The Site is located approximately two (2) miles northeast of the U.S. DOE WIPP, located on BLM managed property.

On March 10, 2015, Enterprise was notified by BLM of an overspray caused by a pressure relief valve activation on the 1009 natural gas gathering line. The release through the pressure relief valve consisted of natural gas (immediately dispersed into the atmosphere) and natural gas pipeline liquids. The contamination from the overspray was located north of the pipeline ROW. An area of liquid contamination was observed around the valve on the ground surface and remained on the ROW, flowing west down the lease road. Two fluid spray areas were noted which extend to the northeast and the northwest. Surface impacts of the spray area are approximately 3.6 acres to the northwest and approximately 1.7 acres to the northeast.

- The primary objective of the corrective actions was to reduce the concentration of COCs in the on-Site soils to below the New Mexico EMNRD OCD *RALs* using the New Mexico EMNRD OCD's *Guidelines for Remediation of Leaks, Spills and Releases* as guidance.

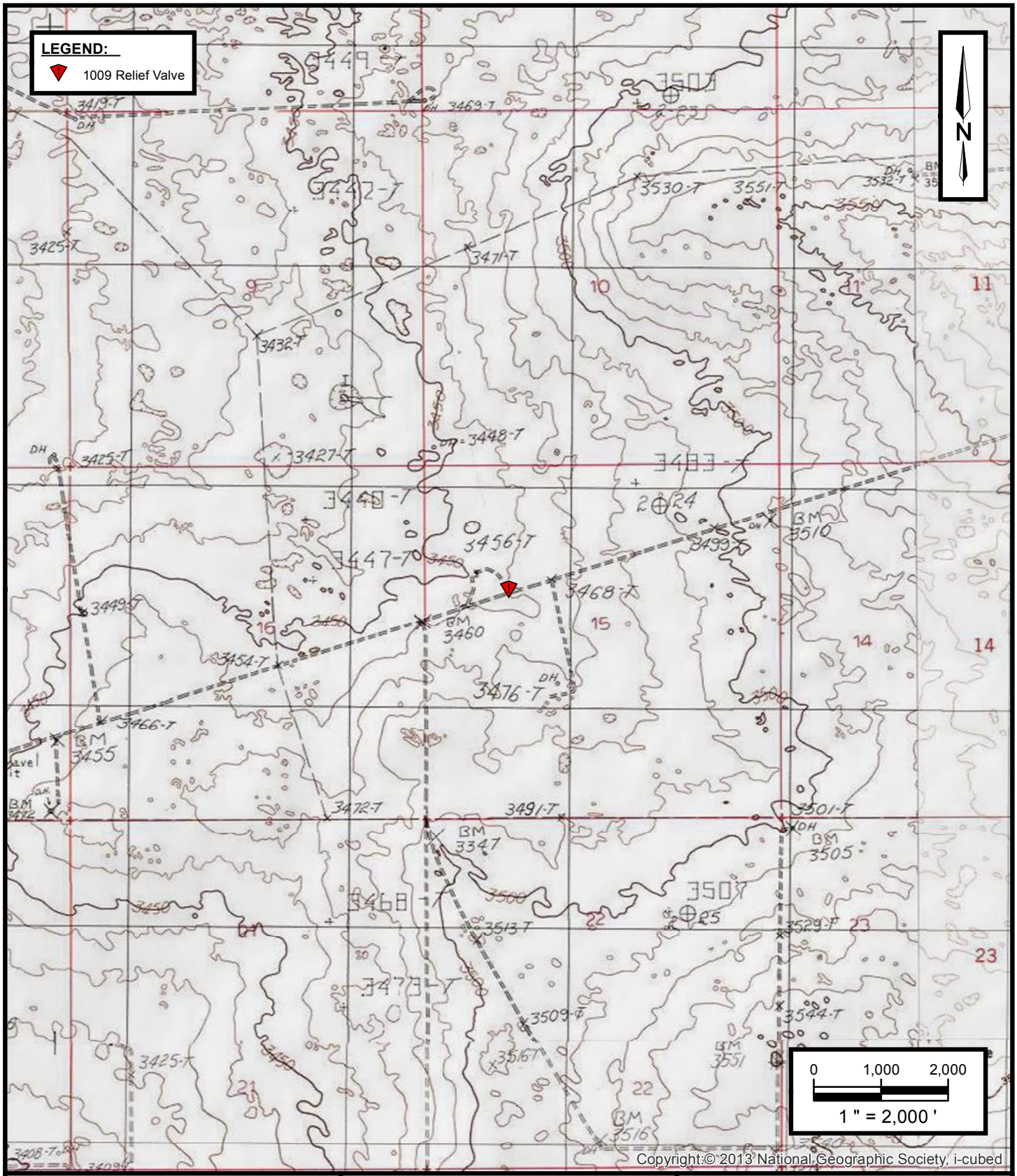
- On-Site remediation included application of Microblaze to the spray areas and the affected area surrounding the pressure relief valve. On-site equipment located in the vicinity of the relief valve and cattle pens, located to the northwest of the relief valve, were power-washed with a hot Microblaze®.

- A total of three (3) confirmation soil samples were collected from the liquid flow area. A total of 22 confirmation soil samples and 22 vegetation samples were collected from the spray area for laboratory analyses. An additional three (3) vegetation samples were resampled after laboratory analysis of the initial vegetation samples. Based on analytical results, soils and vegetation remaining in place do not exhibit COC concentrations above the OCD *Remediation Action Levels* for a Site ranking of "0"

Based on field observations and laboratory analytical results, no additional investigation or corrective action appears warranted at this time.

APPENDIX A

Figures



Enterprise Field Services, LLC
1009 Relief Valve Release
Eddy County, New Mexico
32.393580 N, 103.770060 W

Project No. 7250715028.001

Apex TITAN, Inc.
505 N Big Spring St., Suite 301A
Midland, Texas 79701
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A Subsidiary of Apex Companies, LLC

FIGURE 1

Topographic Map

Livingston Ridge
New Mexico Quadrangle
1985

P:\Drafting\Midland\2015\7250715028\Figure 1.mxd 9/28/2015 NAD 1983 2011 StatePlane New Mexico East FIPS 3001 Ft US Projected Coordinate System

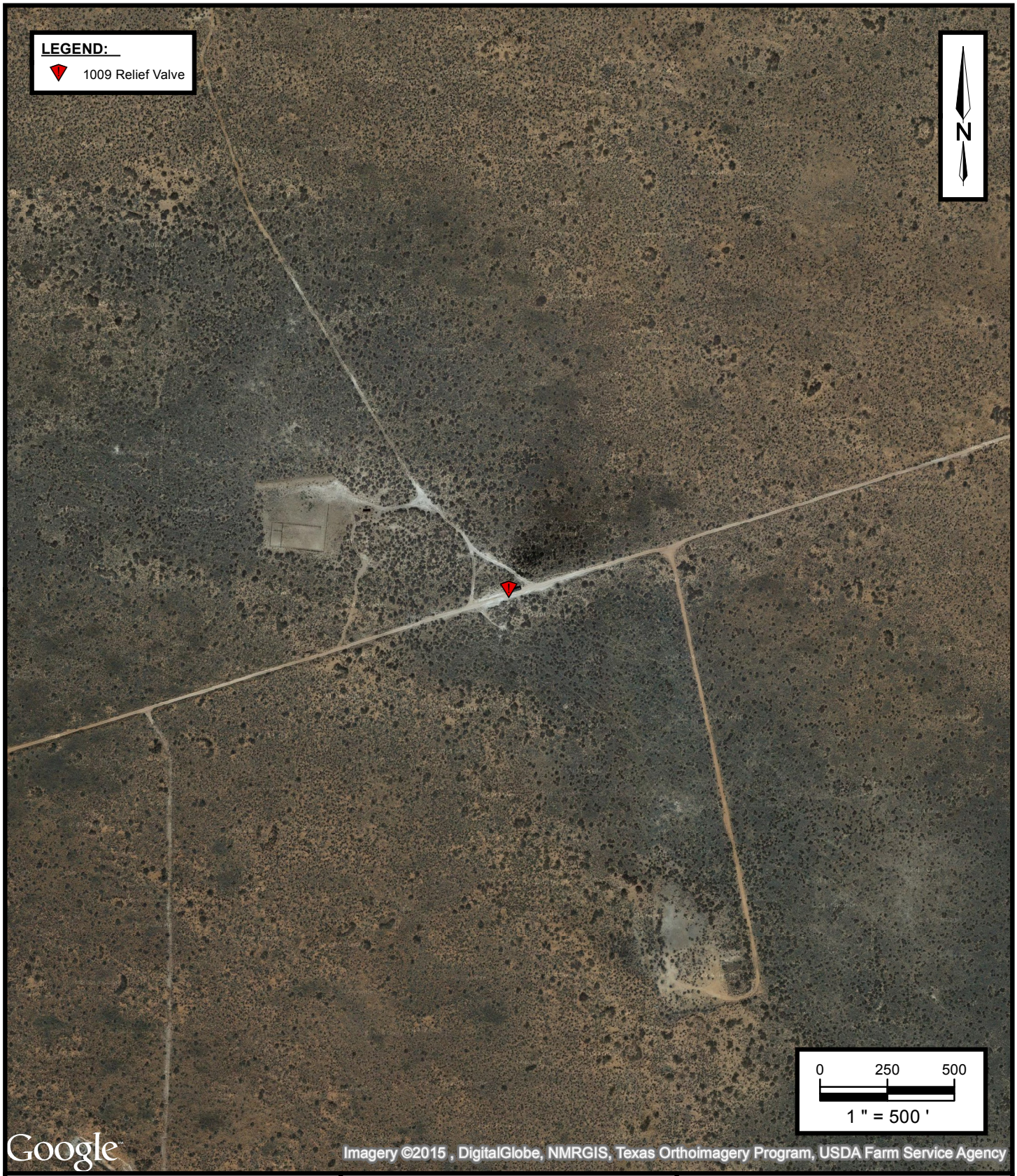

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FIGURE 2

Site Vicinity Map

Aerial Photograph February 2014

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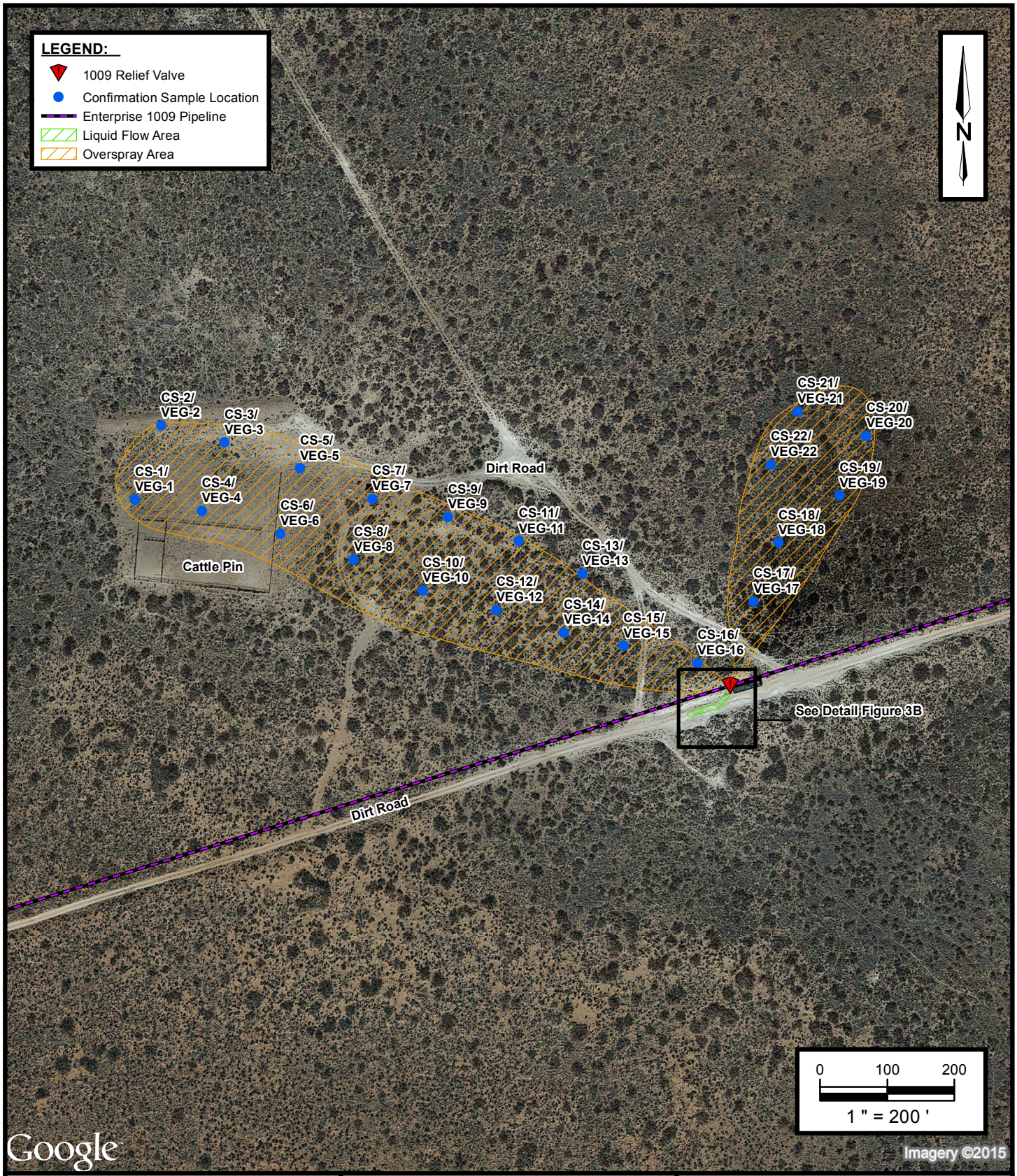

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FIGURE 3A

Site Map

Aerial Photograph February 2014

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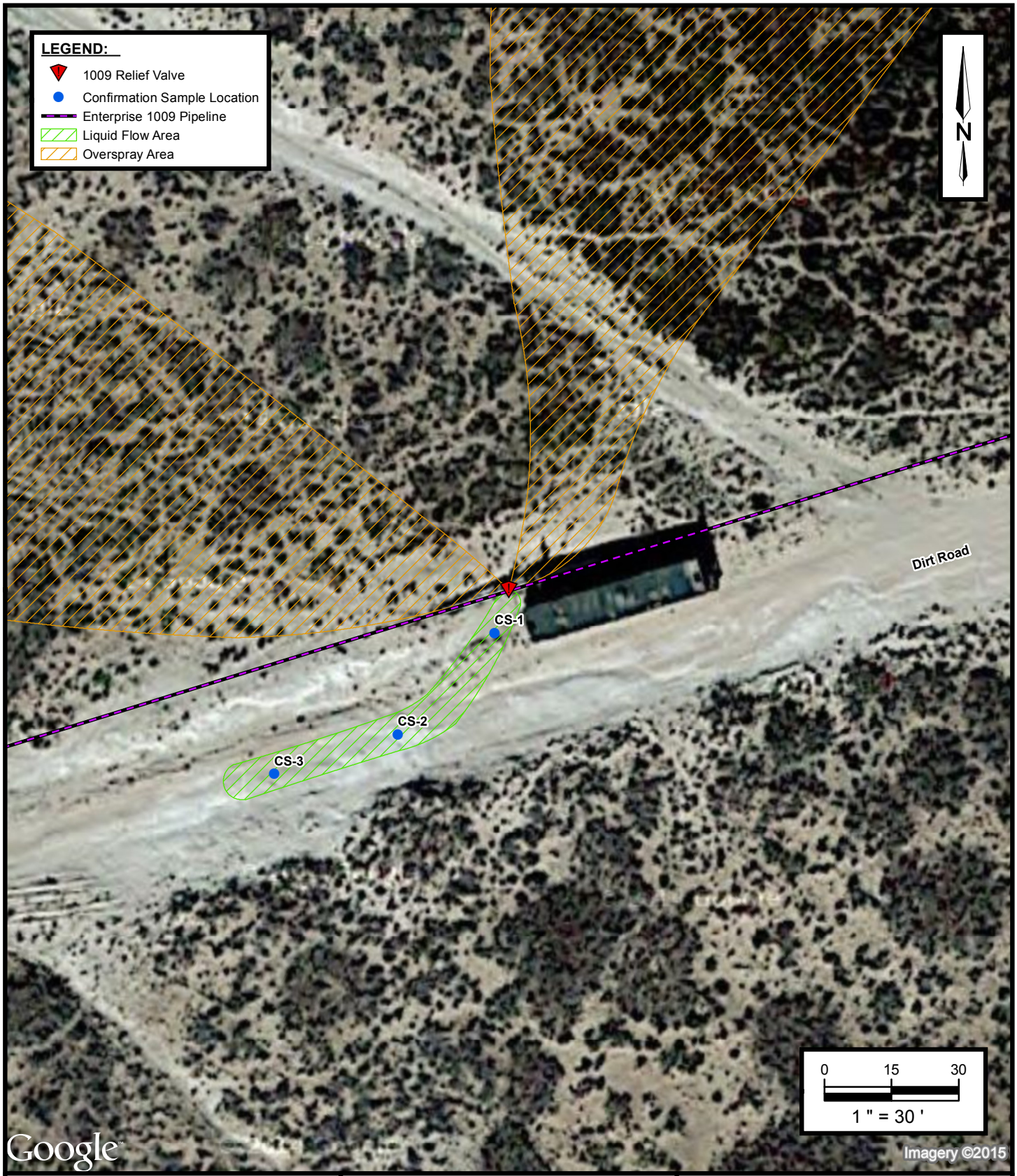

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FIGURE 3B

Site Detail Map

Aerial Photograph February 2014

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APPENDIX B

Photographic Documentation

View looking west of relief valve and northwest overspray area prior to remediation activities.

Close up view of on Site equipment prior to remediation activities.

View looking west of liquid flow area.

View looking northeast of northeast spray area.

View looking north of Microblaze application near cattlepen area.

View of Microblaze application in northeast spray area.

APEX

APPENDIX C

Analytical Tables

TABLE 1 - PIPELINE LIQUIDS RELEASE

SOIL SAMPLE ANALYTICAL RESULTS

1009 Relief Valve Release

Sample I.D.	Sample Date	Sample Depth (feet bgs)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylenes (mg/Kg)	BTEX (mg/Kg)	TPH GRO (mg/Kg)	TPH DRO (mg/Kg)	TPH GRO/DRO (mg/Kg)	Chloride (mg/Kg)
New Mexico Oil Conservation Division (NMOCD) Recomended Remediation Action Levels (RRALs) (Total Ranking Score: 0)											
New Mexico Oil Conservation Division (NMOCD) Recomended Remediation Action Level			**10**	**NE**	**NE**	**NE**	**50**	**NE**	**NE**	**1,000**	**1,000**
LIQUID FLOW AREA CONFIRMATION SOIL SAMPLES											
CS-1	3/20/2015	1'	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<4.00	<50.0	<54.0	**870**
CS-2	3/20/2015	1'	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<4.00	<50.0	<54.0	**1,260**
CS-3	3/20/2015	1'	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<4.00	<50.0	<54.0	**580**

mg/Kg- milligrams per Kilograms

Note: Concentrations in **bold** and yellow exceed the applicable OCD Remediation Action Level

NE: Not Established

TABLE 2 - OVERSPRAY AREA

SOIL AND VEGETATION SAMPLE ANALYTICAL RESULTS

1009 Relief Valve Release

Sample I.D.	Sample Date	Sample Depth (inches bgs)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylenes (mg/Kg)	BTEX (mg/Kg)	TPH GRO (mg/Kg)	TPH DRO (mg/Kg)	TPH GRO/DRO (mg/Kg)	Chloride (mg/Kg)
New Mexico Oil Conservation Division (NMOCD) Recomended Remediation Action Levels (RRALs) (Total Ranking Score: 0)											
New Mexico Oil Conservation Division (NMOCD) Recomended Remediation Action Level			10	NE	I	NE	50	NE	NE	5,000	1,000
SPRAY AREA CONFIRMATION SOIL SAMPLE ANALYTICAL RESULTS											
CS-1	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	<20.0
CS-2	5/6/2015	.25	<0.0400	<0.0400	<0.0400	<0.0400	<0.1600	<8.00	<50.0	<58.00	<20.0
CS-3	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	<20.0
CS-4	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	**600**
CS-5	5/6/2015	.25	<0.0400	<0.0400	<0.0400	<0.0400	<0.1600	<8.00	<50.0	<58.00	<20.0
CS-6	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	<20.0
CS-7	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	<20.0
CS-8	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	**103**	**103**	<20.0
CS-9	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	**133**	**133**	<20.0
CS-10	5/6/2015	.25	<0.0400	<0.0400	<0.0400	<0.0400	<0.1600	<8.00	<50.0	<58.00	<20.0
CS-11	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	**272**	**272**	<20.0
CS-12	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	<20.0
CS-13	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	<20.0
CS-14	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	<20.0
CS-15	5/6/2015	.25	<0.0400	<0.0400	<0.0400	<0.0400	<0.1600	<8.00	**418**	**418**	<20.0
CS-16	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	**126**	**126**	**98.0**
CS-17	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	**131**	**131**	**98.0**
CS-18	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	**66.7**	**66.7**	<20.0
CS-19	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	**287**
CS-20	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	<20.0
CS-21	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	**96.0**
CS-22	5/6/2015	.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0800	<4.00	<50.0	<54.0	**574**
SPRAY AREA VEGETATION SAMPLE ANALYTICAL RESULTS											
Veg-1	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**370**	**370**	NA
Veg-2	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**484**	**484**	NA
Veg-3	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**662**	**662**	NA
Veg-4	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**340**	**340**	NA
Veg-5	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**1,380**	**1,380**	NA
Veg-6	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**876**	**876**	NA
Veg-7	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**668**	**668**	NA
Veg-8	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**929**	**929**	NA
Veg-9	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**1,830**	**1,830**	NA

TABLE 2 - OVERSPRAY AREA

SOIL AND VEGETATION SAMPLE ANALYTICAL RESULTS

1009 Relief Valve Release

Sample I.D.	Sample Date	Sample Depth (inches bgs)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylenes (mg/Kg)	BTEX (mg/Kg)	TPH GRO (mg/Kg)	TPH DRO (mg/Kg)	TPH GRO/DRO (mg/Kg)	Chloride (mg/Kg)
New Mexico Oil Conservation Division (NMOCD) Recomended Remediation Action Levels (RRALs) (Total Ranking Score: 0)											
New Mexico Oil Conservation Division (NMOCD) Recomended Remediation Action Level			10	NE	I	NE	50	NE	NE	5,000	1,000
Veg-10	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**1,190**	**1,190**	NA
Veg-11	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**1,350**	**1,350**	NA
Veg-12	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**1,360**	**1,360**	NA
Veg-13	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**2,600**	**2,600**	NA
Veg-14	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**7,630***	**7630***	NA
Veg-14	6/10/2015	NA	NA	NA	NA	NA	NA	<8.00	**168**	**168**	NA
Veg-15	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**27,500***	**27,500***	NA
Veg-15	6/10/2015	NA	NA	NA	NA	NA	NA	<8.00	**2,510**	**2,510**	NA
Veg-16	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**22,500***	**22,500***	NA
Veg-16	6/10/2015	NA	NA	NA	NA	NA	NA	<8.00	**2,800**	**2,800**	NA
Veg-17	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**753**	**753**	NA
Veg-18	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**1,620**	**1,620**	NA
Veg-19	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**333**	**333**	NA
Veg-20	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**186**	**186**	NA
Veg-21	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**326**	**326**	NA
Veg-22	5/6/2015	NA	NA	NA	NA	NA	NA	<8.00	**1,210**	**1210**	NA

Note: Concentrations in **bold** and yellow exceed the applicable OCD Remediation Action Level

mg/Kg- milligrams per Kilograms

NE: Not Established

NA: Not applicable

*Resampling of vegetation indicated bioremediation product application was successful, see confirmation samples directly below.

APPENDIX D

Laboratory Analytical Reports & Chain-of-Custody Documentation

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972•242•7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Karolanne Toby
APEX/Titan
2351 W. Northwest Hwy.
Suite 3321
Dallas, Tx, 75220

Report Date: March 27, 2015

Work Order: 15032028

Project Location: Eddy Co, NM
Project Name: ENTERPRISE 1009 RELIEF VALVE
Project Number: 7250715028.001

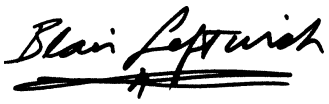
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
389290	CS-1		2015-03-20	13:00	2015-03-20
389291	CS-2		2015-03-20	13:05	2015-03-20
389292	CS-3		2015-03-20	13:10	2015-03-20

Notes

- **Work Order 15032028:** SAMPLES STRAIGHT FROM FIELD

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
James Taylor, Assistant Director
Brian Pellam, Operations Manager

Report Contents

Case Narrative

Samples for project ENTERPRISE 1009 RELIEF VALVE were received by TraceAnalysis, Inc. on 2015-03-20 and assigned to work order 15032028. Samples for work order 15032028 were received intact at a temperature of 11.4 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Ag, Total	S 6010C	101746	2015-03-25 at 11:20	120321	2015-03-26 at 17:08
As, Total	S 6010C	101746	2015-03-25 at 11:20	120321	2015-03-26 at 17:08
Ba, Total	S 6010C	101746	2015-03-25 at 11:20	120321	2015-03-26 at 17:08
BTEX	S 8021B	101644	2015-03-20 at 07:53	120168	2015-03-23 at 07:26
Cd, Total	S 6010C	101746	2015-03-25 at 11:20	120321	2015-03-26 at 17:08
Chloride (Titration)	SM 4500-Cl B	101679	2015-03-23 at 09:38	120172	2015-03-23 at 09:38
Cr, Total	S 6010C	101746	2015-03-25 at 11:20	120321	2015-03-26 at 17:08
Hg, Total	S 7471 B	101783	2015-03-26 at 10:15	120304	2015-03-26 at 13:36
Pb, Total	S 6010C	101746	2015-03-25 at 11:20	120321	2015-03-26 at 17:08
Se, Total	S 6010C	101746	2015-03-25 at 11:20	120321	2015-03-26 at 17:08
TPH DRO - NEW	S 8015 D	101678	2015-03-23 at 09:09	120180	2015-03-23 at 12:11
TPH GRO	S 8015 D	101644	2015-03-20 at 07:53	120169	2015-03-23 at 07:31

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15032028 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 389290 - CS-1

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	120168	Date Analyzed:	2015-03-23	Analyzed By:	AK
Prep Batch:	101644	Sample Preparation:	2015-03-20	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	5	<0.0200	mg/Kg	1	0.0200
Toluene	U	5	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	5	<0.0200	mg/Kg	1	0.0200
Xylene	U	5	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.71	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			2.13	mg/Kg	1	2.00	106	70 - 130

Sample: 389290 - CS-1

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	120172	Date Analyzed:	2015-03-23	Analyzed By:	EM
Prep Batch:	101679	Sample Preparation:	2015-03-23	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**870**	mg/Kg	5	4.00

Sample: 389290 - CS-1

Laboratory:	Lubbock				
Analysis:	Total 8 Metals	Analytical Method:	S 7471 B	Prep Method:	N/A
QC Batch:	120304	Date Analyzed:	2015-03-26	Analyzed By:	TP
Prep Batch:	101783	Sample Preparation:	2015-03-26	Prepared By:	TP
Laboratory:	Lubbock				
Analysis:	Total 8 Metals	Analytical Method:	S 6010C	Prep Method:	S 3050B
QC Batch:	120321	Date Analyzed:	2015-03-26	Analyzed By:	LM
Prep Batch:	101746	Sample Preparation:	2015-03-25	Prepared By:	LM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Silver	U	1,2,3,4,6	<0.500	mg/Kg	1	0.500
Total Arsenic	U	1,2,3,4,6	<2.00	mg/Kg	1	2.00
Total Barium		1,2,3,4,6	**64.4**	mg/Kg	1	1.00
Total Cadmium	U	1,2,3,4,6	<0.500	mg/Kg	1	0.500
Total Chromium		1,2,3,4,6	**4.42**	mg/Kg	1	0.500
Total Mercury	U	1,2,3,4,6	<0.0250	mg/Kg	1	0.0250
Total Lead	U	1,2,3,4,6	<1.00	mg/Kg	1	1.00
Total Selenium	U	1,2,3,4,6	<2.00	mg/Kg	1	2.00

Sample: 389290 - CS-1

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	120180	Date Analyzed:	2015-03-23	Analyzed By:	SC
Prep Batch:	101678	Sample Preparation:	2015-03-23	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			122	mg/Kg	1	100	122	70 - 130

Sample: 389290 - CS-1

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	120169	Date Analyzed:	2015-03-23	Analyzed By:	AK
Prep Batch:	101644	Sample Preparation:	2015-03-20	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.78	mg/Kg	1	2.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)			2.05	mg/Kg	1	2.00	102	70 - 130

Sample: 389291 - CS-2

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	120168	Date Analyzed:	2015-03-23	Analyzed By:	AK
Prep Batch:	101644	Sample Preparation:	2015-03-20	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	5	<0.0200	mg/Kg	1	0.0200
Toluene	U	5	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	5	<0.0200	mg/Kg	1	0.0200
Xylene	U	5	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.64	mg/Kg	1	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)			2.01	mg/Kg	1	2.00	100	70 - 130

Sample: 389291 - CS-2

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	120172	Date Analyzed:	2015-03-23	Analyzed By:	EM
Prep Batch:	101679	Sample Preparation:	2015-03-23	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**1260**	mg/Kg	5	4.00

Sample: 389291 - CS-2

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	120180	Date Analyzed:	2015-03-23	Analyzed By:	SC
Prep Batch:	101678	Sample Preparation:	2015-03-23	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	U	5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			126	mg/Kg	1	100	126	70 - 130

Sample: 389291 - CS-2

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	120169	Date Analyzed:	2015-03-23	Analyzed By:	AK
Prep Batch:	101644	Sample Preparation:	2015-03-20	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qs,U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.65	mg/Kg	1	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	70 - 130

Sample: 389292 - CS-3

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	120168	Date Analyzed:	2015-03-23	Analyzed By:	AK
Prep Batch:	101644	Sample Preparation:	2015-03-20	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	5	<0.0200	mg/Kg	1	0.0200
Toluene	U	5	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	5	<0.0200	mg/Kg	1	0.0200
Xylene	U	5	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.61	mg/Kg	1	2.00	80	70 - 130
4-Bromofluorobenzene (4-BFB)			2.06	mg/Kg	1	2.00	103	70 - 130

Sample: 389292 - CS-3

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	120172	Date Analyzed:	2015-03-23	Analyzed By:	EM
Prep Batch:	101679	Sample Preparation:	2015-03-23	Prepared By:	EM

continued ...

sample 389292 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**580**	mg/Kg	5	4.00

Sample: 389292 - CS-3

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	120180	Date Analyzed:	2015-03-23	Analyzed By:	SC
Prep Batch:	101678	Sample Preparation:	2015-03-23	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	5	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			119	mg/Kg	1	100	119	70 - 130

Sample: 389292 - CS-3

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	120169	Date Analyzed:	2015-03-23	Analyzed By:	AK
Prep Batch:	101644	Sample Preparation:	2015-03-20	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.73	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.92	mg/Kg	1	2.00	96	70 - 130

Method Blanks

Method Blank (1) QC Batch: 120168

QC Batch:	120168	Date Analyzed:	2015-03-23	Analyzed By:	AK
Prep Batch:	101644	QC Preparation:	2015-03-20	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		5	<0.00533	mg/Kg	0.02
Toluene		5	<0.00645	mg/Kg	0.02
Ethylbenzene		5	<0.0116	mg/Kg	0.02
Xylene		5	<0.00874	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.85	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			2.01	mg/Kg	1	2.00	100	70 - 130

Method Blank (1) QC Batch: 120169

QC Batch:	120169	Date Analyzed:	2015-03-23	Analyzed By:	AK
Prep Batch:	101644	QC Preparation:	2015-03-20	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.84	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	70 - 130

Method Blank (1) QC Batch: 120172

QC Batch:	120172	Date Analyzed:	2015-03-23	Analyzed By:	EM
Prep Batch:	101679	QC Preparation:	2015-03-23	Prepared By:	EM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 120180

QC Batch: 120180 Date Analyzed: 2015-03-23 Analyzed By: SC
Prep Batch: 101678 QC Preparation: 2015-03-23 Prepared By: SC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		5	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	70 - 130

Method Blank (1) QC Batch: 120304

QC Batch: 120304 Date Analyzed: 2015-03-26 Analyzed By: TP
Prep Batch: 101783 QC Preparation: 2015-03-26 Prepared By: TP

Parameter	Flag	Cert	MDL Result	Units	RL
Total Mercury		1,2,3,4,6	<0.00325	mg/Kg	0.025

Method Blank (1) QC Batch: 120321

QC Batch: 120321 Date Analyzed: 2015-03-26 Analyzed By: LM
Prep Batch: 101746 QC Preparation: 2015-03-25 Prepared By: PM

Parameter	Flag	Cert	MDL Result	Units	RL
Total Silver		1,2,3,4,6	<0.0344	mg/Kg	0.5
Total Arsenic		1,2,3,4,6	<0.432	mg/Kg	2
Total Barium		1,2,3,4,6	<0.0501	mg/Kg	1
Total Cadmium		1,2,3,4,6	<0.0320	mg/Kg	0.5
Total Chromium		1,2,3,4,6	<0.0512	mg/Kg	0.5

continued ...

method blank continued ...

Parameter	Flag	Cert	MDL Result	Units	RL
Total Lead		1,2,3,4,6	<0.263	mg/Kg	1
Total Selenium		1,2,3,4,6	<0.422	mg/Kg	2

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 120168 | Date Analyzed: 2015-03-23 | Analyzed By: AK
Prep Batch: 101644 | QC Preparation: 2015-03-20 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		5	2.02	mg/Kg	1	2.00	<0.00533	101	70 - 130
Toluene		5	1.96	mg/Kg	1	2.00	<0.00645	98	70 - 130
Ethylbenzene		5	1.98	mg/Kg	1	2.00	<0.0116	99	70 - 130
Xylene		5	5.97	mg/Kg	1	6.00	<0.00874	100	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		5	2.03	mg/Kg	1	2.00	<0.00533	102	70 - 130	0	20
Toluene		5	1.94	mg/Kg	1	2.00	<0.00645	97	70 - 130	1	20
Ethylbenzene		5	1.94	mg/Kg	1	2.00	<0.0116	97	70 - 130	2	20
Xylene		5	5.88	mg/Kg	1	6.00	<0.00874	98	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.69	1.62	mg/Kg	1	2.00	84	81	70 - 130
4-Bromofluorobenzene (4-BFB)	2.00	1.92	mg/Kg	1	2.00	100	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 120169 | Date Analyzed: 2015-03-23 | Analyzed By: AK
Prep Batch: 101644 | QC Preparation: 2015-03-20 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	21.9	mg/Kg	1	20.0	<2.32	110	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued ...

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		[5]	23.0	mg/Kg	1	20.0	<2.32	115	70 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.84	1.85	mg/Kg	1	2.00	92	92	70 - 130
4-Bromofluorobenzene (4-BFB)	1.89	1.91	mg/Kg	1	2.00	94	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 120172 | Date Analyzed: 2015-03-23 | Analyzed By: EM
Prep Batch: 101679 | QC Preparation: 2015-03-23 | Prepared By: EM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2320	mg/Kg	5	2500	<19.2	93	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2420	mg/Kg	5	2500	<19.2	97	85 - 115	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 120180 | Date Analyzed: 2015-03-23 | Analyzed By: SC
Prep Batch: 101678 | QC Preparation: 2015-03-23 | Prepared By: SC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		[5]	292	mg/Kg	1	250	<7.41	117	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued ...

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		[5]	277	mg/Kg	1	250	<7.41	111	70 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	120	111	mg/Kg	1	100	120	111	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 120304 | Date Analyzed: 2015-03-26 | Analyzed By: TP
Prep Batch: 101783 | QC Preparation: 2015-03-26 | Prepared By: TP

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury		[1,2,3,4,6]	0.247	mg/Kg	1	0.250	<0.00325	99	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury		[1,2,3,4,6]	0.243	mg/Kg	1	0.250	<0.00325	97	80 - 120	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 120321 | Date Analyzed: 2015-03-26 | Analyzed By: LM
Prep Batch: 101746 | QC Preparation: 2015-03-25 | Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver		[1,2,3,4,6]	12.5	mg/Kg	1	12.5	<0.0344	100	85 - 115
Total Arsenic		[1,2,3,4,6]	50.2	mg/Kg	1	50.0	<0.432	100	85 - 115
Total Barium		[1,2,3,4,6]	103	mg/Kg	1	100	<0.0501	103	85 - 115
Total Cadmium		[1,2,3,4,6]	25.7	mg/Kg	1	25.0	<0.0320	103	85 - 115
Total Chromium		[1,2,3,4,6]	10.0	mg/Kg	1	10.0	<0.0512	100	85 - 115
Total Lead		[1,2,3,4,6]	52.3	mg/Kg	1	50.0	<0.263	105	85 - 115

continued ...

control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Selenium		1,2,3,4,6	50.8	mg/Kg	1	50.0	<0.422	102	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver		1,2,3,4,6	12.5	mg/Kg	1	12.5	<0.0344	100	85 - 115	0	20
Total Arsenic		1,2,3,4,6	50.2	mg/Kg	1	50.0	<0.432	100	85 - 115	0	20
Total Barium		1,2,3,4,6	104	mg/Kg	1	100	<0.0501	104	85 - 115	1	20
Total Cadmium		1,2,3,4,6	25.7	mg/Kg	1	25.0	<0.0320	103	85 - 115	0	20
Total Chromium		1,2,3,4,6	10.0	mg/Kg	1	10.0	<0.0512	100	85 - 115	0	20
Total Lead		1,2,3,4,6	53.2	mg/Kg	1	50.0	<0.263	106	85 - 115	2	20
Total Selenium		1,2,3,4,6	50.4	mg/Kg	1	50.0	<0.422	101	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 389081

QC Batch: 120168 | Date Analyzed: 2015-03-23 | Analyzed By: AK
Prep Batch: 101644 | QC Preparation: 2015-03-20 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		[5]	1.65	mg/Kg	1	2.00	<0.00533	82	70 - 130
Toluene		[5]	1.67	mg/Kg	1	2.00	<0.00645	84	70 - 130
Ethylbenzene		[5]	1.77	mg/Kg	1	2.00	<0.0116	88	70 - 130
Xylene		[5]	5.42	mg/Kg	1	6.00	<0.00874	90	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		[5]	1.68	mg/Kg	1	2.00	<0.00533	84	70 - 130	2	20
Toluene		[5]	1.72	mg/Kg	1	2.00	<0.00645	86	70 - 130	3	20
Ethylbenzene		[5]	1.83	mg/Kg	1	2.00	<0.0116	92	70 - 130	3	20
Xylene		[5]	5.56	mg/Kg	1	6.00	<0.00874	93	70 - 130	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.65	1.55	mg/Kg	1	2	82	78	70 - 130
4-Bromofluorobenzene (4-BFB)	2.04	1.98	mg/Kg	1	2	102	99	70 - 130

Matrix Spike (MS-1) Spiked Sample: 389081

QC Batch: 120169 | Date Analyzed: 2015-03-23 | Analyzed By: AK
Prep Batch: 101644 | QC Preparation: 2015-03-20 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO [Qs]	[Qs]	[5]	12.6	mg/Kg	1	20.0	<2.32	63	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued ...

matrix spikes continued ...

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		[5]	14.8	mg/Kg	1	20.0	<2.32	74	70 - 130	16	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.75	1.77	mg/Kg	1	2	88	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.95	1.99	mg/Kg	1	2	98	100	70 - 130

Matrix Spike (MS-1) Spiked Sample: 389292

QC Batch: 120172 | Date Analyzed: 2015-03-23 | Analyzed By: EM
Prep Batch: 101679 | QC Preparation: 2015-03-23 | Prepared By: EM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3190	mg/Kg	5	2500	580	104	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			3190	mg/Kg	5	2500	580	104	78.9 - 121	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 389290

QC Batch: 120180 | Date Analyzed: 2015-03-23 | Analyzed By: SC
Prep Batch: 101678 | QC Preparation: 2015-03-23 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		[5]	275	mg/Kg	1	250	<7.41	110	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued ...

matrix spikes continued ...

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		5	269	mg/Kg	1	250	<7.41	108	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	111	106	mg/Kg	1	100	111	106	70 - 130

Matrix Spike (MS-1) Spiked Sample: 389290

QC Batch: 120304 | Date Analyzed: 2015-03-26 | Analyzed By: TP
Prep Batch: 101783 | QC Preparation: 2015-03-26 | Prepared By: TP

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury		1,2,3,4,6	0.248	mg/Kg	1	0.250	<0.00325	99	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury		1,2,3,4,6	0.242	mg/Kg	1	0.250	<0.00325	97	80 - 120	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 389290

QC Batch: 120321 | Date Analyzed: 2015-03-26 | Analyzed By: LM
Prep Batch: 101746 | QC Preparation: 2015-03-25 | Prepared By: PM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver		1,2,3,4,6	11.1	mg/Kg	1	12.5	<0.0344	89	75 - 125
Total Arsenic		1,2,3,4,6	45.5	mg/Kg	1	50.0	<0.432	91	75 - 125
Total Barium		1,2,3,4,6	161	mg/Kg	1	100	64.35	97	75 - 125
Total Cadmium		1,2,3,4,6	23.8	mg/Kg	1	25.0	<0.0320	95	75 - 125
Total Chromium		1,2,3,4,6	13.6	mg/Kg	1	10.0	4.423	92	75 - 125
Total Lead		1,2,3,4,6	48.9	mg/Kg	1	50.0	<0.263	98	75 - 125

continued ...

matrix spikes continued ...

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Selenium		1,2,3,4,6	48.4	mg/Kg	1	50.0	<0.422	97	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver		1,2,3,4,6	11.3	mg/Kg	1	12.5	<0.0344	90	75 - 125	2	20
Total Arsenic		1,2,3,4,6	46.6	mg/Kg	1	50.0	<0.432	93	75 - 125	2	20
Total Barium		1,2,3,4,6	159	mg/Kg	1	100	64.35	95	75 - 125	1	20
Total Cadmium		1,2,3,4,6	24.0	mg/Kg	1	25.0	<0.0320	96	75 - 125	1	20
Total Chromium		1,2,3,4,6	13.8	mg/Kg	1	10.0	4.423	94	75 - 125	1	20
Total Lead		1,2,3,4,6	48.8	mg/Kg	1	50.0	<0.263	98	75 - 125	0	20
Total Selenium		1,2,3,4,6	46.6	mg/Kg	1	50.0	<0.422	93	75 - 125	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (CCV-2)

QC Batch: 120168 Date Analyzed: 2015-03-23 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		5	mg/kg	0.100	0.0985	98	80 - 120	2015-03-23
Toluene		5	mg/kg	0.100	0.0963	96	80 - 120	2015-03-23
Ethylbenzene		5	mg/kg	0.100	0.0957	96	80 - 120	2015-03-23
Xylene		5	mg/kg	0.300	0.287	96	80 - 120	2015-03-23

Standard (CCV-3)

QC Batch: 120168 Date Analyzed: 2015-03-23 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		5	mg/kg	0.100	0.102	102	80 - 120	2015-03-23
Toluene		5	mg/kg	0.100	0.0988	99	80 - 120	2015-03-23
Ethylbenzene		5	mg/kg	0.100	0.0961	96	80 - 120	2015-03-23
Xylene		5	mg/kg	0.300	0.297	99	80 - 120	2015-03-23

Standard (CCV-2)

QC Batch: 120169 Date Analyzed: 2015-03-23 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	1.07	107	80 - 120	2015-03-23

Standard (CCV-3)

QC Batch: 120169 Date Analyzed: 2015-03-23 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	1.11	111	80 - 120	2015-03-23

Standard (ICV-1)

QC Batch: 120172 Date Analyzed: 2015-03-23 Analyzed By: EM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2015-03-23

Standard (CCV-1)

QC Batch: 120172 Date Analyzed: 2015-03-23 Analyzed By: EM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2015-03-23

Standard (CCV-1)

QC Batch: 120180 Date Analyzed: 2015-03-23 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	270	108	80 - 120	2015-03-23

Standard (CCV-2)

QC Batch: 120180 Date Analyzed: 2015-03-23 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	272	109	80 - 120	2015-03-23

Standard (CCV-1)

QC Batch: 120304 Date Analyzed: 2015-03-26 Analyzed By: TP

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		1,2,3,4,6	mg/L	0.0100	0.0100	100	90 - 110	2015-03-26

Standard (CCV-2)

QC Batch: 120304 Date Analyzed: 2015-03-26 Analyzed By: TP

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		1,2,3,4,6	mg/L	0.0100	0.00985	98	90 - 110	2015-03-26

Standard (ICV-1)

QC Batch: 120321 Date Analyzed: 2015-03-26 Analyzed By: LM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		1,2,3,4,6	mg/Kg	0.125	0.127	102	90 - 110	2015-03-26
Total Arsenic		1,2,3,4,6	mg/Kg	1.00	0.996	100	90 - 110	2015-03-26
Total Barium		1,2,3,4,6	mg/Kg	1.00	1.03	103	90 - 110	2015-03-26
Total Cadmium		1,2,3,4,6	mg/Kg	1.00	1.03	103	90 - 110	2015-03-26
Total Chromium		1,2,3,4,6	mg/Kg	1.00	1.00	100	90 - 110	2015-03-26
Total Lead		1,2,3,4,6	mg/Kg	1.00	1.09	109	90 - 110	2015-03-26
Total Selenium		1,2,3,4,6	mg/Kg	1.00	1.07	107	90 - 110	2015-03-26

Standard (CCV-1)

QC Batch: 120321 | Date Analyzed: 2015-03-26 | Analyzed By: LM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		1,2,3,4,6	mg/Kg	0.125	0.124	99	90 - 110	2015-03-26
Total Arsenic		1,2,3,4,6	mg/Kg	1.00	1.01	101	90 - 110	2015-03-26
Total Barium		1,2,3,4,6	mg/Kg	1.00	0.906	91	90 - 110	2015-03-26
Total Cadmium		1,2,3,4,6	mg/Kg	1.00	1.00	100	90 - 110	2015-03-26
Total Chromium		1,2,3,4,6	mg/Kg	1.00	1.00	100	90 - 110	2015-03-26
Total Lead		1,2,3,4,6	mg/Kg	1.00	1.08	108	90 - 110	2015-03-26
Total Selenium		1,2,3,4,6	mg/Kg	1.00	1.03	103	90 - 110	2015-03-26

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	PJLA	L14-93	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-14-10	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.

F	Description
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

WO# 150320 28

CHAIN OF CUSTODY RECORD

APEX

Office Location Midland TX

Project Manager Kasolanne Toby

Laboratory: Trace

Address: Midland Tx

Contact:

Phone:

PO/SO #:

Lab use only
Due Date:

Temp. of coolers when received (C°): 11.4

1 | 2 | 3 | 4 | 5

Page 1 of 1

Sampler's Name: Travis Turner

Sampler's Signature:

Proj. No.: 725071502 8.001

Project Name: 1009 Relief Valve Enterprise - Eddy Co NM

No/Type of Containers: 3 / Glass

ANALYSIS REQUESTED: BTEX 8021B | TPH 8015M DRO/GRO | Chloride

Matrix	Date 2015	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	Glass Jar	T/P	BTEX	TPH	Chloride	Lab Sample ID (Lab Use Only)
S	3/20	13:00		X	CS-1	0	1'				X	X	X	X	X	389290
↓	↓	13:05		↓	CS-2	0	1'				↓	↓	↓	↓	↓	389291
↓	↓	13:10		↓	CS-3	0	1'				↓	↓	↓	↓	↓	389292

3/20/15

Turn around time ❑ Normal ❑ 25% Rush ❑ 50% Rush ☒ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	3/20/15	1305		3/20/15	1315
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	3/20/15	1670	Nally	3/20/15	16:20
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

NOTES: Straight from field

#24 HR RUSH

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil

Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other _____

WO# 15032028

CHAIN OF CUSTODY RECORD

APEX

Office Location: Midland TX

Project Manager: Kerrolanne Toby

Laboratory: Trace

Address: Midland TX

Contact:

Phone:

PO/SO #:

Lab use only
Due Date:

Temp. of coolers when received (C°): 11.4

1 | 2 | 3 | 4 | 5

Page 1 of 1

Sampler's Name: Travis Turner

Sampler's Signature:

Proj. No.: 725071502B.001

Project Name: 1009 Relief Valve Enterprise - Eddy Co NM

No/Type of Containers: 3 / Glass

ANALYSIS REQUESTED

Matrix	Date 2015	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	Glass Jar	P/O	BTEX 8021B	TPH 8015M DRO GRO	Chloride	Lab Sample ID (Lab Use Only)
S	3/20	13:00		X	CS-1	0	1'				X	X	X	X	X	389290
↓	↓	13:05		↓	CS-2	0	1'				↓	↓	↓	↓	↓	389291
↓	↓	13:10		↓	CS-3	0	1'				↓	↓	↓	↓	↓	389292

Add: TOT. 8 per: Sheryl S. 3/23/15

IT 3/20/15

Turn around time: ☐ Normal ☐ 25% Rush ☐ 50% Rush ☒ 100% Rush

	Date	Time		Date	Time
Relinquished by (Signature)	3/20/15	1305	Received by: (Signature)	3/20/15	1315
Relinquished by (Signature)	3/20/15	1670	Received by: (Signature)	3/20/15	16:20
Relinquished by (Signature)			Received by: (Signature)		
Relinquished by (Signature)			Received by: (Signature)		

NOTES:

Straight from field

3/23/15 - Sent a Preliminary on all except the TOT. 8. Added the TOT. 8 on 3/23/15. per: Sheryl S.

24 HR RUSH

SMC

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil

Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972•242•7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Karolanne Toby
APEX/Titan
2351 W. Northwest Hwy.
Suite 3321
Dallas, Tx, 75220

Report Date: May 13, 2015

Work Order: 15050632

Project Name: 1009 Relief Valve Release
Project Number: 7250715028

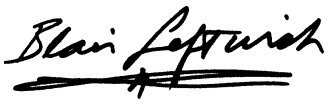
Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
392611	CS-1	soil	2015-05-06	13:00	2015-05-06
392612	CS-2	soil	2015-05-06	13:05	2015-05-06
392613	CS-3	soil	2015-05-06	13:10	2015-05-06
392614	CS-4	soil	2015-05-06	13:15	2015-05-06
392615	CS-5	soil	2015-05-06	13:20	2015-05-06
392616	CS-6	soil	2015-05-06	13:25	2015-05-06
392617	CS-7	soil	2015-05-06	13:30	2015-05-06
392618	CS-8	soil	2015-05-06	13:35	2015-05-06
392619	CS-9	soil	2015-05-06	13:40	2015-05-06
392620	CS-10	soil	2015-05-06	13:45	2015-05-06
392621	CS-11	soil	2015-05-06	13:50	2015-05-06
392622	CS-12	soil	2015-05-06	13:55	2015-05-06
392623	CS-13	soil	2015-05-06	14:00	2015-05-06
392624	CS-14	soil	2015-05-06	14:05	2015-05-06
392625	CS-15	soil	2015-05-06	14:10	2015-05-06
392626	CS-16	soil	2015-05-06	14:15	2015-05-06
392627	CS-17	soil	2015-05-06	12:30	2015-05-06
392628	CS-18	soil	2015-05-06	12:35	2015-05-06

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
392629	CS-19	soil	2015-05-06	12:40	2015-05-06
392630	CS-20	soil	2015-05-06	12:45	2015-05-06
392631	CS-21	soil	2015-05-06	12:50	2015-05-06
392632	CS-22	soil	2015-05-06	12:55	2015-05-06

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.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.



Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

Report Contents

Case Narrative

Samples for project 1009 Relief Valve Release were received by TraceAnalysis, Inc. on 2015-05-06 and assigned to work order 15050632. Samples for work order 15050632 were received intact at a temperature of 5.7 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	102658	2015-05-07 at 08:17	121360	2015-05-08 at 07:31
BTEX	S 8021B	102695	2015-05-08 at 10:01	121396	2015-05-11 at 07:43
Chloride (Titration)	SM 4500-Cl B	102667	2015-05-07 at 11:44	121337	2015-05-07 at 11:45
Chloride (Titration)	SM 4500-Cl B	102671	2015-05-07 at 11:53	121342	2015-05-07 at 11:54
Chloride (Titration)	SM 4500-Cl B	102692	2015-05-08 at 08:51	121366	2015-05-08 at 08:52
TPH DRO - NEW	S 8015 D	102683	2015-05-07 at 10:30	121364	2015-05-08 at 08:45
TPH DRO - NEW	S 8015 D	102684	2015-05-07 at 14:54	121397	2015-05-11 at 08:04
TPH GRO	S 8015 D	102658	2015-05-07 at 08:17	121361	2015-05-08 at 07:37
TPH GRO	S 8015 D	102727	2015-05-11 at 11:22	121435	2015-05-12 at 10:39

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15050632 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 392611 - CS-1

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.16	mg/Kg	1	2.00	108	70 - 130
4-Bromofluorobenzene (4-BFB)			2.20	mg/Kg	1	2.00	110	70 - 130

Sample: 392611 - CS-1

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121337	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102667	Sample Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392611 - CS-1

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			93.5	mg/Kg	1	100	94	70 - 130

Sample: 392611 - CS-1

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.70	mg/Kg	1	2.00	85	70 - 130
4-Bromofluorobenzene (4-BFB)			1.96	mg/Kg	1	2.00	98	70 - 130

Sample: 392612 - CS-2

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene [1]	U	1	<0.0400	mg/Kg	2	0.0200
Toluene	U	1	<0.0400	mg/Kg	2	0.0200
Ethylbenzene	U	1	<0.0400	mg/Kg	2	0.0200
Xylene	U	1	<0.0400	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.29	mg/Kg	2	4.00	107	70 - 130
4-Bromofluorobenzene (4-BFB)			4.30	mg/Kg	2	4.00	108	70 - 130

Sample: 392612 - CS-2

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121337	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102667	Sample Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392612 - CS-2

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			97.7	mg/Kg	1	100	98	70 - 130

Sample: 392612 - CS-2

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO [2]	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.48	mg/Kg	2	4.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			3.88	mg/Kg	2	4.00	97	70 - 130

Sample: 392613 - CS-3

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.25	mg/Kg	1	2.00	112	70 - 130
4-Bromofluorobenzene (4-BFB)			2.31	mg/Kg	1	2.00	116	70 - 130

Sample: 392613 - CS-3

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121337	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102667	Sample Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392613 - CS-3

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			97.4	mg/Kg	1	100	97	70 - 130

Sample: 392613 - CS-3

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.76	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			2.04	mg/Kg	1	2.00	102	70 - 130

Sample: 392614 - CS-4

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.16	mg/Kg	1	2.00	108	70 - 130
4-Bromofluorobenzene (4-BFB)			2.23	mg/Kg	1	2.00	112	70 - 130

Sample: 392614 - CS-4

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121337	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102667	Sample Preparation:	2015-05-07	Prepared By:	EM

continued ...

sample 392614 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**600**	mg/Kg	5	4.00

Sample: 392614 - CS-4

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			84.3	mg/Kg	1	100	84	70 - 130

Sample: 392614 - CS-4

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.74	mg/Kg	1	2.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	70 - 130

Sample: 392615 - CS-5

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene [3]	U	1	<0.0400	mg/Kg	2	0.0200
Toluene	U	1	<0.0400	mg/Kg	2	0.0200
Ethylbenzene	U	1	<0.0400	mg/Kg	2	0.0200
Xylene	U	1	<0.0400	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.31	mg/Kg	2	4.00	108	70 - 130
4-Bromofluorobenzene (4-BFB)			4.38	mg/Kg	2	4.00	110	70 - 130

Sample: 392615 - CS-5

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121337	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102667	Sample Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392615 - CS-5

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			91.2	mg/Kg	1	100	91	70 - 130

Sample: 392615 - CS-5

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO [4]	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.52	mg/Kg	2	4.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			3.96	mg/Kg	2	4.00	99	70 - 130

Sample: 392616 - CS-6

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.14	mg/Kg	1	2.00	107	70 - 130
4-Bromofluorobenzene (4-BFB)			2.24	mg/Kg	1	2.00	112	70 - 130

Sample: 392616 - CS-6

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121337	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102667	Sample Preparation:	2015-05-07	Prepared By:	EM

continued ...

sample 392616 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392616 - CS-6

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			95.7	mg/Kg	1	100	96	70 - 130

Sample: 392616 - CS-6

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.73	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	70 - 130

Sample: 392617 - CS-7

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.17	mg/Kg	1	2.00	108	70 - 130
4-Bromofluorobenzene (4-BFB)			2.19	mg/Kg	1	2.00	110	70 - 130

Sample: 392617 - CS-7

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121337	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102667	Sample Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392617 - CS-7

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			110	mg/Kg	1	100	110	70 - 130

Sample: 392617 - CS-7

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.72	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.96	mg/Kg	1	2.00	98	70 - 130

Sample: 392618 - CS-8

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.07	mg/Kg	1	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB)			2.09	mg/Kg	1	2.00	104	70 - 130

Sample: 392618 - CS-8

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121337	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102667	Sample Preparation:	2015-05-07	Prepared By:	EM

continued ...

sample 392618 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392618 - CS-8

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**103**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			96.7	mg/Kg	1	100	97	70 - 130

Sample: 392618 - CS-8

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.64	mg/Kg	1	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	70 - 130

Sample: 392619 - CS-9

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.23	mg/Kg	1	2.00	112	70 - 130
4-Bromofluorobenzene (4-BFB)			2.22	mg/Kg	1	2.00	111	70 - 130

Sample: 392619 - CS-9

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121342	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102671	Sample Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392619 - CS-9

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	**133**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			102	mg/Kg	1	100	102	70 - 130

Sample: 392619 - CS-9

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.75	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.96	mg/Kg	1	2.00	98	70 - 130

Sample: 392620 - CS-10

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene [5]	U	1	<0.0400	mg/Kg	2	0.0200
Toluene	U	1	<0.0400	mg/Kg	2	0.0200
Ethylbenzene	U	1	<0.0400	mg/Kg	2	0.0200
Xylene	U	1	<0.0400	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.37	mg/Kg	2	4.00	109	70 - 130
4-Bromofluorobenzene (4-BFB)			4.18	mg/Kg	2	4.00	104	70 - 130

Sample: 392620 - CS-10

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121342	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102671	Sample Preparation:	2015-05-07	Prepared By:	EM

continued ...

sample 392620 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392620 - CS-10

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			102	mg/Kg	1	100	102	70 - 130

Sample: 392620 - CS-10

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO [6]	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.35	mg/Kg	2	4.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)			3.74	mg/Kg	2	4.00	94	70 - 130

Sample: 392621 - CS-11

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.18	mg/Kg	1	2.00	109	70 - 130
4-Bromofluorobenzene (4-BFB)			2.20	mg/Kg	1	2.00	110	70 - 130

Sample: 392621 - CS-11

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121342	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102671	Sample Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392621 - CS-11

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	**272**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			120	mg/Kg	1	100	120	70 - 130

Sample: 392621 - CS-11

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.74	mg/Kg	1	2.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			1.97	mg/Kg	1	2.00	98	70 - 130

Sample: 392622 - CS-12

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.25	mg/Kg	1	2.00	112	70 - 130
4-Bromofluorobenzene (4-BFB)			2.27	mg/Kg	1	2.00	114	70 - 130

Sample: 392622 - CS-12

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121342	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102671	Sample Preparation:	2015-05-07	Prepared By:	EM

continued ...

sample 392622 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392622 - CS-12

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			85.4	mg/Kg	1	100	85	70 - 130

Sample: 392622 - CS-12

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.77	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			2.03	mg/Kg	1	2.00	102	70 - 130

Sample: 392623 - CS-13

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.28	mg/Kg	1	2.00	114	70 - 130
4-Bromofluorobenzene (4-BFB)			2.26	mg/Kg	1	2.00	113	70 - 130

Sample: 392623 - CS-13

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121342	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102671	Sample Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392623 - CS-13

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			90.0	mg/Kg	1	100	90	70 - 130

Sample: 392623 - CS-13

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.77	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			2.02	mg/Kg	1	2.00	101	70 - 130

Sample: 392624 - CS-14

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.26	mg/Kg	1	2.00	113	70 - 130
4-Bromofluorobenzene (4-BFB)			2.26	mg/Kg	1	2.00	113	70 - 130

Sample: 392624 - CS-14

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121342	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102671	Sample Preparation:	2015-05-07	Prepared By:	EM

continued ...

sample 392624 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392624 - CS-14

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			88.1	mg/Kg	1	100	88	70 - 130

Sample: 392624 - CS-14

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.76	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	70 - 130

Sample: 392625 - CS-15

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene [7]	U	1	<0.0400	mg/Kg	2	0.0200
Toluene	U	1	<0.0400	mg/Kg	2	0.0200
Ethylbenzene	U	1	<0.0400	mg/Kg	2	0.0200
Xylene	U	1	<0.0400	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.40	mg/Kg	2	4.00	110	70 - 130
4-Bromofluorobenzene (4-BFB)			4.21	mg/Kg	2	4.00	105	70 - 130

Sample: 392625 - CS-15

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121342	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102671	Sample Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392625 - CS-15

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	**418**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	131	mg/Kg	1	100	131	70 - 130

Sample: 392625 - CS-15

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO [8]	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.42	mg/Kg	2	4.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			3.77	mg/Kg	2	4.00	94	70 - 130

Sample: 392626 - CS-16

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.28	mg/Kg	1	2.00	114	70 - 130
4-Bromofluorobenzene (4-BFB)			2.23	mg/Kg	1	2.00	112	70 - 130

Sample: 392626 - CS-16

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121342	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102671	Sample Preparation:	2015-05-07	Prepared By:	EM

continued ...

sample 392626 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**98.0**	mg/Kg	5	4.00

Sample: 392626 - CS-16

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**126**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			99.1	mg/Kg	1	100	99	70 - 130

Sample: 392626 - CS-16

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.74	mg/Kg	1	2.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			1.98	mg/Kg	1	2.00	99	70 - 130

Sample: 392627 - CS-17

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.25	mg/Kg	1	2.00	112	70 - 130
4-Bromofluorobenzene (4-BFB)			2.29	mg/Kg	1	2.00	114	70 - 130

Sample: 392627 - CS-17

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121342	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102671	Sample Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**98.0**	mg/Kg	5	4.00

Sample: 392627 - CS-17

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**131**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			95.6	mg/Kg	1	100	96	70 - 130

Sample: 392627 - CS-17

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.77	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	70 - 130

Sample: 392628 - CS-18

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.17	mg/Kg	1	2.00	108	70 - 130
4-Bromofluorobenzene (4-BFB)			2.14	mg/Kg	1	2.00	107	70 - 130

Sample: 392628 - CS-18

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121342	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102671	Sample Preparation:	2015-05-07	Prepared By:	EM

continued ...

sample 392628 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392628 - CS-18

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**66.7**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			93.8	mg/Kg	1	100	94	70 - 130

Sample: 392628 - CS-18

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.71	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.92	mg/Kg	1	2.00	96	70 - 130

Sample: 392629 - CS-19

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.20	mg/Kg	1	2.00	110	70 - 130
4-Bromofluorobenzene (4-BFB)			2.15	mg/Kg	1	2.00	108	70 - 130

Sample: 392629 - CS-19

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121366	Date Analyzed:	2015-05-08	Analyzed By:	EM
Prep Batch:	102692	Sample Preparation:	2015-05-08	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**287**	mg/Kg	5	4.00

Sample: 392629 - CS-19

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			86.3	mg/Kg	1	100	86	70 - 130

Sample: 392629 - CS-19

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.71	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			1.92	mg/Kg	1	2.00	96	70 - 130

Sample: 392630 - CS-20

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.27	mg/Kg	1	2.00	114	70 - 130
4-Bromofluorobenzene (4-BFB)			2.22	mg/Kg	1	2.00	111	70 - 130

Sample: 392630 - CS-20

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121366	Date Analyzed:	2015-05-08	Analyzed By:	EM
Prep Batch:	102692	Sample Preparation:	2015-05-08	Prepared By:	EM

continued ...

sample 392630 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 392630 - CS-20

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			85.5	mg/Kg	1	100	86	70 - 130

Sample: 392630 - CS-20

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	Sample Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.76	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.96	mg/Kg	1	2.00	98	70 - 130

Sample: 392631 - CS-21

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121396	Date Analyzed:	2015-05-11	Analyzed By:	AK
Prep Batch:	102695	Sample Preparation:	2015-05-08	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.28	mg/Kg	1	2.00	114	70 - 130
4-Bromofluorobenzene (4-BFB)			2.27	mg/Kg	1	2.00	114	70 - 130

Sample: 392631 - CS-21

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121366	Date Analyzed:	2015-05-08	Analyzed By:	EM
Prep Batch:	102692	Sample Preparation:	2015-05-08	Prepared By:	EM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**96.0**	mg/Kg	5	4.00

Sample: 392631 - CS-21

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121397	Date Analyzed:	2015-05-11	Analyzed By:	SC
Prep Batch:	102684	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			101	mg/Kg	1	100	101	70 - 130

Sample: 392631 - CS-21

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.91	mg/Kg	1	2.00	96	70 - 130

Sample: 392632 - CS-22

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	121396	Date Analyzed:	2015-05-11	Analyzed By:	AK
Prep Batch:	102695	Sample Preparation:	2015-05-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.18	mg/Kg	1	2.00	109	70 - 130
4-Bromofluorobenzene (4-BFB)			2.22	mg/Kg	1	2.00	111	70 - 130

Sample: 392632 - CS-22

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	121366	Date Analyzed:	2015-05-08	Analyzed By:	EM
Prep Batch:	102692	Sample Preparation:	2015-05-08	Prepared By:	EM

continued ...

sample 392632 continued . . .

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**574**	mg/Kg	5	4.00

Sample: 392632 - CS-22

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121397	Date Analyzed:	2015-05-11	Analyzed By:	SC
Prep Batch:	102684	Sample Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			87.5	mg/Kg	1	100	88	70 - 130

Sample: 392632 - CS-22

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.84	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1	2.00	90	70 - 130

Method Blanks

Method Blank (1) QC Batch: 121337

QC Batch:	121337	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102667	QC Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 121342

QC Batch:	121342	Date Analyzed:	2015-05-07	Analyzed By:	EM
Prep Batch:	102671	QC Preparation:	2015-05-07	Prepared By:	EM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 121360

QC Batch:	121360	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	QC Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00533	mg/Kg	0.02
Toluene		1	<0.00645	mg/Kg	0.02
Ethylbenzene		1	<0.0116	mg/Kg	0.02
Xylene		1	<0.00874	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.22	mg/Kg	1	2.00	111	70 - 130
4-Bromofluorobenzene (4-BFB)			2.24	mg/Kg	1	2.00	112	70 - 130

Method Blank (1) QC Batch: 121361

QC Batch:	121361	Date Analyzed:	2015-05-08	Analyzed By:	AK
Prep Batch:	102658	QC Preparation:	2015-05-07	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.74	mg/Kg	1	2.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			2.00	mg/Kg	1	2.00	100	70 - 130

Method Blank (1) QC Batch: 121364

QC Batch:	121364	Date Analyzed:	2015-05-08	Analyzed By:	SC
Prep Batch:	102683	QC Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			96.9	mg/Kg	1	100	97	70 - 130

Method Blank (1) QC Batch: 121366

QC Batch:	121366	Date Analyzed:	2015-05-08	Analyzed By:	EM
Prep Batch:	102692	QC Preparation:	2015-05-08	Prepared By:	EM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 121396

QC Batch:	121396	Date Analyzed:	2015-05-11	Analyzed By:	AK
Prep Batch:	102695	QC Preparation:	2015-05-08	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00533	mg/Kg	0.02
Toluene		1	<0.00645	mg/Kg	0.02
Ethylbenzene		1	<0.0116	mg/Kg	0.02
Xylene		1	<0.00874	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.29	mg/Kg	1	2.00	114	70 - 130
4-Bromofluorobenzene (4-BFB)			2.30	mg/Kg	1	2.00	115	70 - 130

Method Blank (1) QC Batch: 121397

QC Batch:	121397	Date Analyzed:	2015-05-11	Analyzed By:	SC
Prep Batch:	102684	QC Preparation:	2015-05-07	Prepared By:	SC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			98.4	mg/Kg	1	100	98	70 - 130

Method Blank (1) QC Batch: 121435

QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	QC Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	70 - 130

continued ...

method blank continued . . .

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	70 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 121337 | Date Analyzed: 2015-05-07 | Analyzed By: EM
Prep Batch: 102667 | QC Preparation: 2015-05-07 | Prepared By: EM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2500	mg/Kg	5	2500	<19.2	100	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2300	mg/Kg	5	2500	<19.2	92	85 - 115	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 121342 | Date Analyzed: 2015-05-07 | Analyzed By: EM
Prep Batch: 102671 | QC Preparation: 2015-05-07 | Prepared By: EM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2450	mg/Kg	5	2500	<19.2	98	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2450	mg/Kg	5	2500	<19.2	98	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 121360 | Date Analyzed: 2015-05-08 | Analyzed By: AK
Prep Batch: 102658 | QC Preparation: 2015-05-07 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.56	mg/Kg	1	2.00	<0.00533	128	70 - 130
Toluene		1	2.34	mg/Kg	1	2.00	<0.00645	117	70 - 130
Ethylbenzene		1	2.31	mg/Kg	1	2.00	<0.0116	116	70 - 130
Xylene		1	6.88	mg/Kg	1	6.00	<0.00874	115	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.21	mg/Kg	1	2.00	<0.00533	110	70 - 130	15	20
Toluene		1	2.04	mg/Kg	1	2.00	<0.00645	102	70 - 130	14	20
Ethylbenzene		1	2.06	mg/Kg	1	2.00	<0.0116	103	70 - 130	11	20
Xylene		1	6.13	mg/Kg	1	6.00	<0.00874	102	70 - 130	12	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.11	2.17	mg/Kg	1	2.00	106	108	70 - 130
4-Bromofluorobenzene (4-BFB)	2.27	2.23	mg/Kg	1	2.00	114	112	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 121361 | Date Analyzed: 2015-05-08 | Analyzed By: AK
Prep Batch: 102658 | QC Preparation: 2015-05-07 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	14.0	mg/Kg	1	20.0	<2.32	70	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.1	mg/Kg	1	20.0	<2.32	76	70 - 130	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.71	1.76	mg/Kg	1	2.00	86	88	70 - 130
4-Bromofluorobenzene (4-BFB)	2.08	2.10	mg/Kg	1	2.00	104	105	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 121364 | Date Analyzed: 2015-05-08 | Analyzed By: SC
Prep Batch: 102683 | QC Preparation: 2015-05-07 | Prepared By: SC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	215	mg/Kg	1	250	<7.41	86	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	204	mg/Kg	1	250	<7.41	82	70 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	97.2	88.8	mg/Kg	1	100	97	89	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 121366 | Date Analyzed: 2015-05-08 | Analyzed By: EM
Prep Batch: 102692 | QC Preparation: 2015-05-08 | Prepared By: EM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2490	mg/Kg	5	2500	<19.2	100	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2580	mg/Kg	5	2500	<19.2	103	85 - 115	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 121396 | Date Analyzed: 2015-05-11 | Analyzed By: AK
Prep Batch: 102695 | QC Preparation: 2015-05-08 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.29	mg/Kg	1	2.00	<0.00533	114	70 - 130
Toluene		1	2.09	mg/Kg	1	2.00	<0.00645	104	70 - 130
Ethylbenzene		1	2.14	mg/Kg	1	2.00	<0.0116	107	70 - 130
Xylene		1	6.36	mg/Kg	1	6.00	<0.00874	106	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.19	mg/Kg	1	2.00	<0.00533	110	70 - 130	4	20
Toluene		1	2.03	mg/Kg	1	2.00	<0.00645	102	70 - 130	3	20
Ethylbenzene		1	2.02	mg/Kg	1	2.00	<0.0116	101	70 - 130	6	20
Xylene		1	6.02	mg/Kg	1	6.00	<0.00874	100	70 - 130	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.00	2.10	mg/Kg	1	2.00	100	105	70 - 130
4-Bromofluorobenzene (4-BFB)	2.24	2.24	mg/Kg	1	2.00	112	112	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 121397 | Date Analyzed: 2015-05-11 | Analyzed By: SC
Prep Batch: 102684 | QC Preparation: 2015-05-07 | Prepared By: SC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	199	mg/Kg	1	250	<7.41	80	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	204	mg/Kg	1	250	<7.41	82	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	96.6	96.2	mg/Kg	1	100	97	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 121435 | Date Analyzed: 2015-05-12 | Analyzed By: AK
Prep Batch: 102727 | QC Preparation: 2015-05-11 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.6	mg/Kg	1	20.0	<2.32	78	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.4	mg/Kg	1	20.0	<2.32	77	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.84	1.88	mg/Kg	1	2.00	92	94	70 - 130
4-Bromofluorobenzene (4-BFB)	1.99	1.96	mg/Kg	1	2.00	100	98	70 - 130

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 392618

QC Batch: 121337 | Date Analyzed: 2015-05-07 | Analyzed By: EM
Prep Batch: 102667 | QC Preparation: 2015-05-07 | Prepared By: EM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2200	mg/Kg	5	2500	<19.2	88	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2300	mg/Kg	5	2500	<19.2	92	78.9 - 121	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 392628

QC Batch: 121342 | Date Analyzed: 2015-05-07 | Analyzed By: EM
Prep Batch: 102671 | QC Preparation: 2015-05-07 | Prepared By: EM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2450	mg/Kg	5	2500	<19.2	98	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2450	mg/Kg	5	2500	<19.2	98	78.9 - 121	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 392611

QC Batch: 121360 | Date Analyzed: 2015-05-08 | Analyzed By: AK
Prep Batch: 102658 | QC Preparation: 2015-05-07 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.21	mg/Kg	1	2.00	<0.00533	110	70 - 130
Toluene		1	1.99	mg/Kg	1	2.00	<0.00645	100	70 - 130
Ethylbenzene		1	2.03	mg/Kg	1	2.00	<0.0116	102	70 - 130
Xylene		1	6.04	mg/Kg	1	6.00	<0.00874	101	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.27	mg/Kg	1	2.00	<0.00533	114	70 - 130	3	20
Toluene		1	2.02	mg/Kg	1	2.00	<0.00645	101	70 - 130	2	20
Ethylbenzene		1	2.05	mg/Kg	1	2.00	<0.0116	102	70 - 130	1	20
Xylene		1	6.11	mg/Kg	1	6.00	<0.00874	102	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.10	2.06	mg/Kg	1	2	105	103	70 - 130
4-Bromofluorobenzene (4-BFB)	2.18	2.20	mg/Kg	1	2	109	110	70 - 130

Matrix Spike (MS-1) Spiked Sample: 392611

QC Batch: 121361 | Date Analyzed: 2015-05-08 | Analyzed By: AK
Prep Batch: 102658 | QC Preparation: 2015-05-07 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	13.4	mg/Kg	1	20.0	<2.32	67	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.0	mg/Kg	1	20.0	<2.32	75	70 - 130	11	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.64	1.69	mg/Kg	1	2	82	84	70 - 130
4-Bromofluorobenzene (4-BFB)	1.98	2.07	mg/Kg	1	2	99	104	70 - 130

Matrix Spike (MS-1) Spiked Sample: 392615

QC Batch: 121364 | Date Analyzed: 2015-05-08 | Analyzed By: SC
Prep Batch: 102683 | QC Preparation: 2015-05-07 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	197	mg/Kg	1	250	21.8	70	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	198	mg/Kg	1	250	21.8	70	70 - 130	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	90.4	89.3	mg/Kg	1	100	90	89	70 - 130

Matrix Spike (MS-1) Spiked Sample: 392632

QC Batch: 121366 | Date Analyzed: 2015-05-08 | Analyzed By: EM
Prep Batch: 102692 | QC Preparation: 2015-05-08 | Prepared By: EM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3060	mg/Kg	5	2500	574	99	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			3250	mg/Kg	5	2500	574	107	78.9 - 121	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 392631

QC Batch: 121396 | Date Analyzed: 2015-05-11 | Analyzed By: AK
Prep Batch: 102695 | QC Preparation: 2015-05-08 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.04	mg/Kg	1	2.00	<0.00533	102	70 - 130
Toluene		1	1.88	mg/Kg	1	2.00	<0.00645	94	70 - 130
Ethylbenzene		1	1.91	mg/Kg	1	2.00	<0.0116	96	70 - 130
Xylene		1	5.69	mg/Kg	1	6.00	<0.00874	95	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.32	mg/Kg	1	2.00	<0.00533	116	70 - 130	13	20
Toluene		1	2.12	mg/Kg	1	2.00	<0.00645	106	70 - 130	12	20
Ethylbenzene		1	2.13	mg/Kg	1	2.00	<0.0116	106	70 - 130	11	20
Xylene		1	6.40	mg/Kg	1	6.00	<0.00874	107	70 - 130	12	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.08	2.16	mg/Kg	1	2	104	108	70 - 130
4-Bromofluorobenzene (4-BFB)	2.22	2.26	mg/Kg	1	2	111	113	70 - 130

Matrix Spike (MS-1) Spiked Sample: 392631

QC Batch: 121397 | Date Analyzed: 2015-05-11 | Analyzed By: SC
Prep Batch: 102684 | QC Preparation: 2015-05-07 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	191	mg/Kg	1	250	8.02	73	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Qs	Qs 1	181	mg/Kg	1	250	8.02	69	70 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	90.8	86.2	mg/Kg	1	100	91	86	70 - 130

Matrix Spike (MS-1) Spiked Sample: 392610

QC Batch: 121435 | Date Analyzed: 2015-05-12 | Analyzed By: AK
Prep Batch: 102727 | QC Preparation: 2015-05-11 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	35.3	mg/Kg	2	40.0	<4.64	88	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	36.0	mg/Kg	2	40.0	<4.64	90	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	3.63	3.59	mg/Kg	2	4	91	90	70 - 130
4-Bromofluorobenzene (4-BFB)	4.00	3.85	mg/Kg	2	4	100	96	70 - 130

Calibration Standards

Standard (ICV-1)

QC Batch: 121337 Date Analyzed: 2015-05-07 Analyzed By: EM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.0	99	85 - 115	2015-05-07

Standard (CCV-1)

QC Batch: 121337 Date Analyzed: 2015-05-07 Analyzed By: EM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2015-05-07

Standard (ICV-1)

QC Batch: 121342 Date Analyzed: 2015-05-07 Analyzed By: EM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2015-05-07

Standard (CCV-1)

QC Batch: 121342 Date Analyzed: 2015-05-07 Analyzed By: EM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2015-05-07

Standard (CCV-1)

QC Batch: 121360 | Date Analyzed: 2015-05-08 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.118	118	80 - 120	2015-05-08
Toluene		1	mg/kg	0.100	0.103	103	80 - 120	2015-05-08
Ethylbenzene		1	mg/kg	0.100	0.0994	99	80 - 120	2015-05-08
Xylene		1	mg/kg	0.300	0.301	100	80 - 120	2015-05-08

Standard (CCV-2)

QC Batch: 121360 | Date Analyzed: 2015-05-08 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.120	120	80 - 120	2015-05-08
Toluene		1	mg/kg	0.100	0.107	107	80 - 120	2015-05-08
Ethylbenzene		1	mg/kg	0.100	0.103	103	80 - 120	2015-05-08
Xylene		1	mg/kg	0.300	0.303	101	80 - 120	2015-05-08

Standard (CCV-3)

QC Batch: 121360 | Date Analyzed: 2015-05-08 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.119	119	80 - 120	2015-05-08
Toluene		1	mg/kg	0.100	0.106	106	80 - 120	2015-05-08
Ethylbenzene		1	mg/kg	0.100	0.102	102	80 - 120	2015-05-08
Xylene		1	mg/kg	0.300	0.301	100	80 - 120	2015-05-08

Standard (CCV-1)

QC Batch: 121361 | Date Analyzed: 2015-05-08 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.864	86	80 - 120	2015-05-08

Standard (CCV-2)

QC Batch: 121361 Date Analyzed: 2015-05-08 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.795	80	80 - 120	2015-05-08

Standard (CCV-3)

QC Batch: 121361 Date Analyzed: 2015-05-08 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.814	81	80 - 120	2015-05-08

Standard (CCV-1)

QC Batch: 121364 Date Analyzed: 2015-05-08 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	200	80	80 - 120	2015-05-08

Standard (CCV-2)

QC Batch: 121364 Date Analyzed: 2015-05-08 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	220	88	80 - 120	2015-05-08

Standard (CCV-3)

QC Batch: 121364 Date Analyzed: 2015-05-08 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	203	81	80 - 120	2015-05-08

Standard (ICV-1)

QC Batch: 121366 Date Analyzed: 2015-05-08 Analyzed By: EM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2015-05-08

Standard (CCV-1)

QC Batch: 121366 Date Analyzed: 2015-05-08 Analyzed By: EM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.0	99	85 - 115	2015-05-08

Standard (CCV-1)

QC Batch: 121396 Date Analyzed: 2015-05-11 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.118	118	80 - 120	2015-05-11
Toluene		1	mg/kg	0.100	0.104	104	80 - 120	2015-05-11
Ethylbenzene		1	mg/kg	0.100	0.102	102	80 - 120	2015-05-11
Xylene		1	mg/kg	0.300	0.303	101	80 - 120	2015-05-11

Standard (CCV-2)

QC Batch: 121396 Date Analyzed: 2015-05-11 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.112	112	80 - 120	2015-05-11
Toluene		1	mg/kg	0.100	0.100	100	80 - 120	2015-05-11
Ethylbenzene		1	mg/kg	0.100	0.0962	96	80 - 120	2015-05-11
Xylene		1	mg/kg	0.300	0.283	94	80 - 120	2015-05-11

Standard (CCV-1)

QC Batch: 121397 Date Analyzed: 2015-05-11 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	218	87	80 - 120	2015-05-11

Standard (CCV-2)

QC Batch: 121397 Date Analyzed: 2015-05-11 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	219	88	80 - 120	2015-05-11

Standard (CCV-1)

QC Batch: 121435 | Date Analyzed: 2015-05-12 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.904	90	80 - 120	2015-05-12

Standard (CCV-2)

QC Batch: 121435 | Date Analyzed: 2015-05-12 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.835	84	80 - 120	2015-05-12

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-14-8	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Result Comments

1 Dilution due to surfactants.
2 Dilution due to surfactants.
3 Dilution due to surfactants.
4 Dilution due to surfactants.
5 Dilution due to surfactants.
6 Dilution due to surfactants.
7 Dilution due to surfactants.
8 Dilution due to surfactants.

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

WO#: 15050632

1 OF 3

CHAIN OF CUSTODY RECORD

APEX

Office Location Midland, Tx

Project Manager Karolanne Toby

Laboratory: Trace Analysis

Address: 5002 Basin St Midland, Tx

Contact:

Phone:

PO/SO #:

Sampler's Name Karolanne Toby Travis Turner

Sampler's Signature

Lab use only
Due Date:

Temp. of coolers when received (C°): ~~18.9~~ NH 5.7

1	2	3	4	5

Page ____ of ____

Proj. No. 725071502B

Project Name 1009 Relief Valve Release

No/Type of Containers 10/40z

ANALYSIS REQUESTED: TPH GRO/DRO; BTEX 8021; Chlorides

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	Glass Jar	P/O	Lab Sample ID (Lab Use Only)
S	5/6/15	13:00		X	CS-1						X		392611
		13:05			CS-2								392612
		13:10			CS-3								392613
		13:15			CS-4								392614
		13:20			CS-5								392615
		13:25			CS-6								392616
		13:30			CS-7								392617
		13:35			CS-8								392618
		13:40			CS-9								392619
S	5/6/15	13:45		X	CS-10						X		392620

Turn around time ☑ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/6/15	15:53		5/6/15	16:53
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

NOTES:

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil

Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other ____

WO#: 15050632

CHAIN OF CUSTODY RECORD

APEX

Office Location: Midland, TX

Project Manager: Karolanne Toby

Laboratory: Trace Analysis

Address: Midland, TX

Contact:

Phone:

PO/SO #:

Lab use only
Due Date:

Temp. of coolers when received (C°): 18.9 NH 5.7

1	2	3	4	5

Page ____ of ____

Sampler's Name: Karolanne Toby / Irwin Turner

Sampler's Signature:

Proj. No.: 7250715028

Project Name: 1009 Relief Valve Release

No/Type of Containers: 10/4oz

ANALYSIS REQUESTED: TPH GRO/DRO; BTEX 8021; Chlorides

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	Glass Jar	P/O	TPH GRO/DRO	BTEX 8021	Chlorides	Lab Sample ID (Lab Use Only)
S	5/6/15	13:50		X	CS-11						X		X	X	X	392621
		13:55			CS-12											392622
		13:00			CS-13											392623
		14:05			CS-14											392624
		14:10			CS-15											392625
		14:15			CS-16											392626
		12:30			CS-17											392627
		12:35			CS-18											392628
		12:40			CS-19											392629
S	5/6/15	12:45		X	CS-20						X		X	X	X	392630

Turn around time: X Normal ❑ 25% Rush ❑ 50% Rush ❑ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/6/15	15:53	Nalley	5/6/15	15:53
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

NOTES:

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil

Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other ____

WO#: 150501632

3 of 3

CHAIN OF CUSTODY RECORD

APEX

Office Location: Midland, TX

Project Manager: Karolanne Toby

Laboratory: Trace Analysis

Address: Midland, TX

Contact:

Phone:

PO/SO #:

Sampler's Name: Karolanne Toby / Travis Turner

Sampler's Signature:

Lab use only
Due Date:

Temp. of coolers when received (C°): 4.9 / NH 5.7

1	2	3	4	5

Page ____ of ____

Proj. No.	Project Name	No/Type of Containers
725071502B	1009 Relief valve Release	10/40z

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	Glass Jar	P/O	TPH GRO/DRO	BTEX 8021	Chlorides	Lab Sample ID (Lab Use Only)
S	5/6/15	12:50		X	CS-21						X		X	X	X	392631
S	5/6/15	12:55		X	CS-22						X		X	X	X	392632

NFE KT 5/6/15

Turn around time: [X] Normal ❑ 25% Rush ❑ 50% Rush ❑ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/6/15	15:53	Valley	5/6/15	15:53
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

NOTES:

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil

Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other ____

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972•242•7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Karolanne Toby
APEX/Titan
2351 W. Northwest Hwy.
Suite 3321
Dallas, Tx, 75220

Report Date: May 14, 2015

Work Order: 15050631

Project Name: 1009 Relief Valve Release
Project Number: 7250715028

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
392589	1-Veg	soil	2015-05-06	10:20	2015-05-06
392590	2-Veg	soil	2015-05-06	10:25	2015-05-06
392591	3-Veg	soil	2015-05-06	10:15	2015-05-06
392592	4-Veg	soil	2015-05-06	10:10	2015-05-06
392593	5-Veg	soil	2015-05-06	10:05	2015-05-06
392594	6-Veg	soil	2015-05-06	10:00	2015-05-06
392595	7-Veg	soil	2015-05-06	09:55	2015-05-06
392596	8-Veg	soil	2015-05-06	09:50	2015-05-06
392597	9-Veg	soil	2015-05-06	09:45	2015-05-06
392598	10-Veg	soil	2015-05-06	09:40	2015-05-06
392599	11-Veg	soil	2015-05-06	09:30	2015-05-06
392600	12-Veg	soil	2015-05-06	09:35	2015-05-06
392601	13-Veg	soil	2015-05-06	09:20	2015-05-06
392602	14-Veg	soil	2015-05-06	09:25	2015-05-06
392603	15-Veg	soil	2015-05-06	09:15	2015-05-06
392604	16-Veg	soil	2015-05-06	09:12	2015-05-06
392605	17-Veg	soil	2015-05-06	11:00	2015-05-06
392606	18-Veg	soil	2015-05-06	11:05	2015-05-06

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
392607	19-Veg	soil	2015-05-06	11:10	2015-05-06
392608	20-Veg	soil	2015-05-06	11:15	2015-05-06
392609	21-Veg	soil	2015-05-06	11:20	2015-05-06
392610	22-Veg	soil	2015-05-06	11:25	2015-05-06

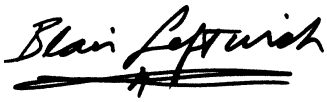
Notes

- **Work Order 15050631:** straight from field , not on ice

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.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 37 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

Report Contents

Case Narrative

Samples for project 1009 Relief Valve Release were received by TraceAnalysis, Inc. on 2015-05-06 and assigned to work order 15050631. Samples for work order 15050631 were received intact at a temperature of 18.9 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
TPH DRO - NEW	S 8015 D	102720	2015-05-08 at 18:00	121445	2015-05-12 at 12:46
TPH DRO - NEW	S 8015 D	102733	2015-05-11 at 14:16	121449	2015-05-12 at 14:01
TPH DRO - NEW	S 8015 D	102733	2015-05-11 at 14:16	121451	2015-05-12 at 15:02
TPH GRO	S 8015 D	102727	2015-05-11 at 11:22	121435	2015-05-12 at 10:39
TPH GRO	S 8015 D	102750	2015-05-12 at 10:11	121472	2015-05-13 at 10:45
TPH GRO	S 8015 D	102792	2015-05-13 at 15:07	121502	2015-05-14 at 09:34

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15050631 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 392589 - 1-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121445	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102720	Sample Preparation:	2015-05-08	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	**370**	mg/Kg	2	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane Qsr	Qsr		260	mg/Kg	2	100	260	70 - 130

Sample: 392589 - 1-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.69	mg/Kg	2	4.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			3.72	mg/Kg	2	4.00	93	70 - 130

Sample: 392590 - 2-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121445	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102720	Sample Preparation:	2015-05-08	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	**484**	mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		267	mg/Kg	2	100	267	70 - 130

Sample: 392590 - 2-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.68	mg/Kg	2	4.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			3.75	mg/Kg	2	4.00	94	70 - 130

Sample: 392591 - 3-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121445	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102720	Sample Preparation:	2015-05-08	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	**662**	mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		285	mg/Kg	2	100	285	70 - 130

Sample: 392591 - 3-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.66	mg/Kg	2	4.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			4.53	mg/Kg	2	4.00	113	70 - 130

Sample: 392592 - 4-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	1	**340**	mg/Kg	2	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane Qsr	Qsr		268	mg/Kg	2	100	268	70 - 130

Sample: 392592 - 4-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.65	mg/Kg	2	4.00	91	70 - 130
4-Bromofluorobenzene (4-BFB)			5.09	mg/Kg	2	4.00	127	70 - 130

Sample: 392593 - 5-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	1	**1380**	mg/Kg	2	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	169	mg/Kg	2	100	169	70 - 130

Sample: 392593 - 5-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.16	mg/Kg	2	4.00	79	70 - 130
4-Bromofluorobenzene (4-BFB)			3.43	mg/Kg	2	4.00	86	70 - 130

Sample: 392594 - 6-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
DRO	Qr,Qs	1	**876**		mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		166	mg/Kg	2	100	166	70 - 130

Sample: 392594 - 6-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
GRO	U	1	<8.00		mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.39	mg/Kg	2	4.00	85	70 - 130
4-Bromofluorobenzene (4-BFB)			3.49	mg/Kg	2	4.00	87	70 - 130

Sample: 392595 - 7-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
DRO	Qr,Qs	1	**668**		mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		286	mg/Kg	2	100	286	70 - 130

Sample: 392595 - 7-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.56	mg/Kg	2	4.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)			3.52	mg/Kg	2	4.00	88	70 - 130

Sample: 392596 - 8-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	1	**929**	mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		210	mg/Kg	2	100	210	70 - 130

Sample: 392596 - 8-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.53	mg/Kg	2	4.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			3.55	mg/Kg	2	4.00	89	70 - 130

Sample: 392597 - 9-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	1	**1830**	mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		294	mg/Kg	2	100	294	70 - 130

Sample: 392597 - 9-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.53	mg/Kg	2	4.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			3.51	mg/Kg	2	4.00	88	70 - 130

Sample: 392598 - 10-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
DRO	Qr,Qs	1	**1190**		mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		266	mg/Kg	2	100	266	70 - 130

Sample: 392598 - 10-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
GRO	U	1	<8.00		mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.57	mg/Kg	2	4.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)			3.55	mg/Kg	2	4.00	89	70 - 130

Sample: 392599 - 11-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
DRO	Qr,Qs	1	**1350**		mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		290	mg/Kg	2	100	290	70 - 130

Sample: 392599 - 11-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.14	mg/Kg	2	4.00	78	70 - 130
4-Bromofluorobenzene (4-BFB)			3.33	mg/Kg	2	4.00	83	70 - 130

Sample: 392600 - 12-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121451	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	**1360**	mg/Kg	4	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		316	mg/Kg	4	100	316	70 - 130

Sample: 392600 - 12-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.52	mg/Kg	2	4.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			3.51	mg/Kg	2	4.00	88	70 - 130

Sample: 392601 - 13-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121451	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	**2600**	mg/Kg	4	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		332	mg/Kg	4	100	332	70 - 130

Sample: 392601 - 13-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121472	Date Analyzed:	2015-05-13	Analyzed By:	AK
Prep Batch:	102750	Sample Preparation:	2015-05-12	Prepared By:	AK

Parameter		Flag	Cert	RL Result	Units	Dilution	RL
GRO	[1]	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.45	mg/Kg	2	4.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			3.56	mg/Kg	2	4.00	89	70 - 130

Sample: 392602 - 14-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121451	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	**7630**	mg/Kg	10	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		636	mg/Kg	10	100	636	70 - 130

Sample: 392602 - 14-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121472	Date Analyzed:	2015-05-13	Analyzed By:	AK
Prep Batch:	102750	Sample Preparation:	2015-05-12	Prepared By:	AK

Parameter		Flag	Cert	Result	RL Units	Dilution	RL
GRO	2	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.34	mg/Kg	2	4.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)			3.40	mg/Kg	2	4.00	85	70 - 130

Sample: 392603 - 15-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121451	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	**27500**	mg/Kg	20	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		1920	mg/Kg	20	100	1920	70 - 130

Sample: 392603 - 15-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121472	Date Analyzed:	2015-05-13	Analyzed By:	AK
Prep Batch:	102750	Sample Preparation:	2015-05-12	Prepared By:	AK

Parameter		Flag	Cert	RL Result	Units	Dilution	RL
GRO	3	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.46	mg/Kg	2	4.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			3.53	mg/Kg	2	4.00	88	70 - 130

Sample: 392604 - 16-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121451	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	**22500**	mg/Kg	20	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		1800	mg/Kg	20	100	1800	70 - 130

Sample: 392604 - 16-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121472	Date Analyzed:	2015-05-13	Analyzed By:	AK
Prep Batch:	102750	Sample Preparation:	2015-05-12	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO [4]	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.23	mg/Kg	2	4.00	81	70 - 130
4-Bromofluorobenzene (4-BFB)			3.25	mg/Kg	2	4.00	81	70 - 130

Sample: 392605 - 17-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121451	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	1	**753**	mg/Kg	2	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane Qsr	Qsr		140	mg/Kg	2	100	140	70 - 130

Sample: 392605 - 17-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121472	Date Analyzed:	2015-05-13	Analyzed By:	AK
Prep Batch:	102750	Sample Preparation:	2015-05-12	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO [5]	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.42	mg/Kg	2	4.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			3.42	mg/Kg	2	4.00	86	70 - 130

Sample: 392606 - 18-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121451	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	**1620**	mg/Kg	2	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			126	mg/Kg	2	100	126	70 - 130

Sample: 392606 - 18-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121472	Date Analyzed:	2015-05-13	Analyzed By:	AK
Prep Batch:	102750	Sample Preparation:	2015-05-12	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO [6]	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.49	mg/Kg	2	4.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			3.46	mg/Kg	2	4.00	86	70 - 130

Sample: 392607 - 19-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121451	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	**333**	mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		212	mg/Kg	2	100	212	70 - 130

Sample: 392607 - 19-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121472	Date Analyzed:	2015-05-13	Analyzed By:	AK
Prep Batch:	102750	Sample Preparation:	2015-05-12	Prepared By:	AK

Parameter		Flag	Cert	RL Result	Units	Dilution	RL
GRO	7	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			6.74	mg/Kg	2	6.00	112	70 - 130
4-Bromofluorobenzene (4-BFB)			6.49	mg/Kg	2	6.00	108	70 - 130

Sample: 392608 - 20-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	1	**186**	mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		194	mg/Kg	2	100	194	70 - 130

Sample: 392608 - 20-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121472	Date Analyzed:	2015-05-13	Analyzed By:	AK
Prep Batch:	102750	Sample Preparation:	2015-05-12	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO [8]	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.54	mg/Kg	2	4.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			3.53	mg/Kg	2	4.00	88	70 - 130

Sample: 392609 - 21-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	1	**326**	mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		201	mg/Kg	2	100	201	70 - 130

Sample: 392609 - 21-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121502	Date Analyzed:	2015-05-14	Analyzed By:	AK
Prep Batch:	102792	Sample Preparation:	2015-05-13	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO [9]	Qs,U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.49	mg/Kg	2	4.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			3.66	mg/Kg	2	4.00	92	70 - 130

Sample: 392610 - 22-Veg

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	Sample Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qr,Qs	1	**1210**	mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		310	mg/Kg	2	100	310	70 - 130

Sample: 392610 - 22-Veg

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	Sample Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	U	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.65	mg/Kg	2	4.00	91	70 - 130
4-Bromofluorobenzene (4-BFB)			3.59	mg/Kg	2	4.00	90	70 - 130

Method Blanks

Method Blank (1) QC Batch: 121435

QC Batch:	121435	Date Analyzed:	2015-05-12	Analyzed By:	AK
Prep Batch:	102727	QC Preparation:	2015-05-11	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	70 - 130

Method Blank (1) QC Batch: 121445

QC Batch:	121445	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102720	QC Preparation:	2015-05-08	Prepared By:	SC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			107	mg/Kg	1	100	107	70 - 130

Method Blank (1) QC Batch: 121449

QC Batch:	121449	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	QC Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			90.5	mg/Kg	1	100	90	70 - 130

Method Blank (1) QC Batch: 121451

QC Batch:	121451	Date Analyzed:	2015-05-12	Analyzed By:	SC
Prep Batch:	102733	QC Preparation:	2015-05-11	Prepared By:	SC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			91.6	mg/Kg	1	100	92	70 - 130

Method Blank (1) QC Batch: 121472

QC Batch:	121472	Date Analyzed:	2015-05-13	Analyzed By:	AK
Prep Batch:	102750	QC Preparation:	2015-05-12	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			1.91	mg/Kg	1	2.00	96	70 - 130

Method Blank (1) QC Batch: 121502

QC Batch:	121502	Date Analyzed:	2015-05-14	Analyzed By:	AK
Prep Batch:	102792	QC Preparation:	2015-05-13	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	70 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 121435 | Date Analyzed: 2015-05-12 | Analyzed By: AK
Prep Batch: 102727 | QC Preparation: 2015-05-11 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.6	mg/Kg	1	20.0	<2.32	78	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.4	mg/Kg	1	20.0	<2.32	77	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.84	1.88	mg/Kg	1	2.00	92	94	70 - 130
4-Bromofluorobenzene (4-BFB)	1.99	1.96	mg/Kg	1	2.00	100	98	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 121445 | Date Analyzed: 2015-05-12 | Analyzed By: SC
Prep Batch: 102720 | QC Preparation: 2015-05-08 | Prepared By: SC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	218	mg/Kg	1	250	<7.41	87	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	203	mg/Kg	1	250	<7.41	81	70 - 130	7	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	104	97.3	mg/Kg	1	100	104	97	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 121449 | Date Analyzed: 2015-05-12 | Analyzed By: SC
Prep Batch: 102733 | QC Preparation: 2015-05-11 | Prepared By: SC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	229	mg/Kg	1	250	<7.41	92	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	220	mg/Kg	1	250	<7.41	88	70 - 130	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	110	107	mg/Kg	1	100	110	107	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 121451 | Date Analyzed: 2015-05-12 | Analyzed By: SC
Prep Batch: 102733 | QC Preparation: 2015-05-11 | Prepared By: SC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	232	mg/Kg	1	250	<7.41	93	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	235	mg/Kg	1	250	<7.41	94	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	111	113	mg/Kg	1	100	111	113	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 121472 | Date Analyzed: 2015-05-13 | Analyzed By: AK
Prep Batch: 102750 | QC Preparation: 2015-05-12 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	16.6	mg/Kg	1	20.0	<2.32	83	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.8	mg/Kg	1	20.0	<2.32	79	70 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.92	1.82	mg/Kg	1	2.00	96	91	70 - 130
4-Bromofluorobenzene (4-BFB)	2.05	1.93	mg/Kg	1	2.00	102	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 121502 | Date Analyzed: 2015-05-14 | Analyzed By: AK
Prep Batch: 102792 | QC Preparation: 2015-05-13 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	14.5	mg/Kg	1	20.0	<2.32	72	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.2	mg/Kg	1	20.0	<2.32	76	70 - 130	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.72	1.79	mg/Kg	1	2.00	86	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.85	1.92	mg/Kg	1	2.00	92	96	70 - 130

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 392610

QC Batch: 121435 | Date Analyzed: 2015-05-12 | Analyzed By: AK
Prep Batch: 102727 | QC Preparation: 2015-05-11 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	35.3	mg/Kg	2	40.0	<4.64	88	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	36.0	mg/Kg	2	40.0	<4.64	90	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	3.63	3.59	mg/Kg	2	4	91	90	70 - 130
4-Bromofluorobenzene (4-BFB)	4.00	3.85	mg/Kg	2	4	100	96	70 - 130

Matrix Spike (xMS-1) Spiked Sample: 392762

QC Batch: 121445 | Date Analyzed: 2015-05-12 | Analyzed By: SC
Prep Batch: 102720 | QC Preparation: 2015-05-08 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO Qs	Qs	1	2290	mg/Kg	1	250	1920	148	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO Qs	Qs	1	2280	mg/Kg	1	250	1920	144	70 - 130	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane Qsr Qsr	191	188	mg/Kg	1	100	191	188	70 - 130

Matrix Spike (MS-1) Spiked Sample: 392592

QC Batch: 121449 | Date Analyzed: 2015-05-12 | Analyzed By: SC
Prep Batch: 102733 | QC Preparation: 2015-05-11 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO [10] Qs	Qs	1	1400	mg/Kg	2	250	340	424	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO Qr,Qs	Qr,Qs	1	1080	mg/Kg	2	250	340	296	70 - 130	26	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	Qsr	Qsr	28.7	275	mg/Kg	2	100	29	275	70 - 130

Matrix Spike (xMS-1) Spiked Sample: 392592

QC Batch: 121451 | Date Analyzed: 2015-05-12 | Analyzed By: SC
Prep Batch: 102733 | QC Preparation: 2015-05-11 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO Qs	Qs	1	1080	mg/Kg	2	250	313	307	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO Qs	Qs	1	1090	mg/Kg	2	250	313	311	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	Qsr	Qsr	241	264	mg/Kg	2	100	241	264	70 - 130

Matrix Spike (MS-1) Spiked Sample: 392949

QC Batch: 121472 | Date Analyzed: 2015-05-13 | Analyzed By: AK
Prep Batch: 102750 | QC Preparation: 2015-05-12 | Prepared By: AK

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	1	516	mg/Kg	5	100	560	-44	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	Qs	Qs	1	619	mg/Kg	5	100	560	59	70 - 130	18	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)			7.86	8.88	mg/Kg	5	10	79	89	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	33.7	43.6	mg/Kg	5	10	337	436	70 - 130

Matrix Spike (MS-1) Spiked Sample: 393011

QC Batch:	121502	Date Analyzed:	2015-05-14	Analyzed By:	AK
Prep Batch:	102792	QC Preparation:	2015-05-13	Prepared By:	AK

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	1	11.4	mg/Kg	1	20.0	<2.32	57	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	Qs	Qs	1	12.8	mg/Kg	1	20.0	<2.32	64	70 - 130	12	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.77	1.74	mg/Kg	1	2	88	87	70 - 130
4-Bromofluorobenzene (4-BFB)	1.86	1.91	mg/Kg	1	2	93	96	70 - 130

Calibration Standards

Standard (CCV-1)

QC Batch: 121435 | Date Analyzed: 2015-05-12 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.904	90	80 - 120	2015-05-12

Standard (CCV-2)

QC Batch: 121435 | Date Analyzed: 2015-05-12 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.835	84	80 - 120	2015-05-12

Standard (CCV-3)

QC Batch: 121435 | Date Analyzed: 2015-05-12 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.995	100	80 - 120	2015-05-12

Standard (CCV-2)

QC Batch: 121445 | Date Analyzed: 2015-05-12 | Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	228	91	80 - 120	2015-05-12

Standard (CCV-3)

QC Batch: 121445 | Date Analyzed: 2015-05-12 | Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	213	85	80 - 120	2015-05-12

Standard (CCV-1)

QC Batch: 121449 | Date Analyzed: 2015-05-12 | Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	220	88	80 - 120	2015-05-12

Standard (CCV-2)

QC Batch: 121449 | Date Analyzed: 2015-05-12 | Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	227	91	80 - 120	2015-05-12

Standard (CCV-3)

QC Batch: 121449 | Date Analyzed: 2015-05-12 | Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	210	84	80 - 120	2015-05-12

Standard (CCV-1)

QC Batch: 121451 | Date Analyzed: 2015-05-12 | Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	218	87	80 - 120	2015-05-12

Standard (CCV-2)

QC Batch: 121451 Date Analyzed: 2015-05-12 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	236	94	80 - 120	2015-05-12

Standard (CCV-3)

QC Batch: 121451 Date Analyzed: 2015-05-12 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	219	88	80 - 120	2015-05-12

Standard (CCV-2)

QC Batch: 121472 Date Analyzed: 2015-05-13 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.848	85	80 - 120	2015-05-13

Standard (CCV-3)

QC Batch: 121472 Date Analyzed: 2015-05-13 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.805	80	80 - 120	2015-05-13

Standard (CCV-1)

QC Batch: 121502 Date Analyzed: 2015-05-14 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.913	91	80 - 120	2015-05-14

Standard (CCV-2)

QC Batch: 121502 Date Analyzed: 2015-05-14 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.904	90	80 - 120	2015-05-14

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-14-8	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Result Comments

1 Dilution due to matrix difficulties.
2 Dilution due to matrix difficulties.
3 Dilution due to matrix difficulties.
4 Dilution due to matrix difficulties.
5 Dilution due to matrix difficulties.
6 Dilution due to matrix difficulties.
7 Dilution due to matrix difficulties.
8 Dilution due to matrix difficulties.
9 Dilution due to matrix.
10 Water present in auto vial.

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

WO#: 150501631

CHAIN OF CUSTODY RECORD

APEX

Office Location: Midland, TX

Project Manager:

Laboratory: Trace Analysis
Address: 5002 Basin St
Midland, TX
Contact:
Phone:
PO/SO #:

Sampler's Name: Karolanne Toby
Travis Turner

Sampler's Signature:

Proj. No.: 7250715028

Project Name: 1009 Relief Valve Release

No/Type of Containers: 10/PO

ANALYSIS REQUESTED

ET 5/6/15
GRO/DRO
TPH

Lab use only
Due Date:

Temp. of coolers when received (C°): 18.9

1	2	3	4	5

Page ____ of ____

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	Glass Jar	P/O	Lab Sample ID (Lab Use Only)
SD	5/6/15	10:20		X	1-veg							X	392589
		10:25			2-veg								392590
		10:15			3-veg								392591
		10:10			4-veg								392592
		10:05			5-veg								392593
		10:00			6-veg								392594
		9:55			7-veg								392595
		9:50			8-veg								392596
		9:45			9-veg								392597
SD	5/6/15	9:40		X	10-veg							X	392598

Turn around time: [X] Normal ❑ 25% Rush ❑ 50% Rush ❑ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/6/15	15:53		5/6/15	15:53
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

NOTES: Straight from field, not on ice

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil
Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other ____

WO#:1505063I

CHAIN OF CUSTODY RECORD

APEX

Office Location Midland, TX

Project Manager Karolanne Toby

Laboratory: Trace Analysis

Address: Midland, TX

Contact:

Phone:

PO/SO #:

Sampler's Name Karolanne Toby

Sampler's Signature

Proj. No. 7250715028

Project Name 1009 Relief Valve Release

No/Type of Containers 10

ANALYSIS REQUESTED: TPH 8015 GRO/DRO KT 5/6/15

Lab use only
Due Date:

Temp. of coolers when received (C°) 1.9

1 | 2 | 3 | 4 | 5

Page ____ of ____

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	Glass Jar	P/O	Lab Sample ID (Lab Use Only)
SD	5/6/15	9:30		X	11-veg							X	392599
		9:35			12-veg								392600
		9:20			13-veg								392601
		9:25			14-veg								392602
		9:15			15-veg								392603
		9:12			16-veg								392604
		11:00			17-veg								392605
		11:05			18-veg								392606
		11:10			19-veg					VOA			392607
SD	5/6/15	11:15		X	20-veg					4oz	4oz	X	392608

Turn around time ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/6/15	15:53		5/6/15	15:53
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

NOTES:

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil

Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other

WO#: 15050631

3 of 3

CHAIN OF CUSTODY RECORD

APEX

Office Location Midland, TX

Project Manager Karolanne Toby

Laboratory: Trace Analysis

Address: Midland, TX

Contact:

Phone:

PO/SO #:

Sampler's Name Karolanne Toby (Louis Turner)

Sampler's Signature

Proj. No. 72507150028

Project Name 1009 Relief Valve Release

No/Type of Containers 2

ANALYSIS REQUESTED

TPH GRO/DRO KT 5/10/15 Extended Range

Lab use only
Due Date:

Temp. of coolers when received (C°): 18.9

1	2	3	4	5

Page ____ of ____

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	Glass Jar	P/O	Lab Sample ID (Lab Use Only)
SD	5/6/15	11:20		X	21-veg							X	392609
SD	5/6/15	11:25		X	22-veg							X	392610

NFG KT 5/6/15

Turn around time ❑ Normal ❑ 25% Rush ❑ 50% Rush ❑ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/6/15	15:53		5/6/15	15:53
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

NOTES:

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil

Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other ____

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972•242•7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Karolanne Toby
APEX/Titan
2351 W. Northwest Hwy.
Suite 3321
Dallas, Tx, 75220

Report Date: June 19, 2015

Work Order: 15061104

Project Name: 1009 RELIEF VALVE
Project Number: 7250715028.001

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

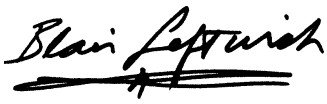
Sample	Description	Matrix	Date Taken	Time Taken	Date Received
395360	Veg-14	soil	2015-06-10	09:10	2015-06-10
395361	Veg-15	soil	2015-06-10	09:15	2015-06-10
395362	Veg-16	soil	2015-06-10	09:18	2015-06-10

Notes

- **Work Order 15061104:** Straight from the fields, brought on ice

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.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.



Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

Report Contents

Case Narrative

Samples for project 1009 RELIEF VALVE were received by TraceAnalysis, Inc. on 2015-06-10 and assigned to work order 15061104. Samples for work order 15061104 were received intact at a temperature of 6.0 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
TPH DRO - NEW	S 8015 D	103493	2015-06-15 at 18:45	122354	2015-06-16 at 12:26
TPH GRO	S 8015 D	103567	2015-06-18 at 10:39	122455	2015-06-19 at 07:23

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15061104 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 395360 - Veg-14

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	122354	Date Analyzed:	2015-06-16	Analyzed By:	SC
Prep Batch:	103493	Sample Preparation:	2015-06-15	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	5	**168**	mg/Kg	2	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		105	mg/Kg	2	50.0	210	70 - 130

Sample: 395360 - Veg-14

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	122455	Date Analyzed:	2015-06-19	Analyzed By:	AK
Prep Batch:	103567	Sample Preparation:	2015-06-18	Prepared By:	AK

Parameter		Flag	Cert	RL Result	Units	Dilution	RL
GRO	1	U	5	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.68	mg/Kg	2	4.00	117	70 - 130
4-Bromofluorobenzene (4-BFB)			3.99	mg/Kg	2	4.00	100	70 - 130

Sample: 395361 - Veg-15

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	122354	Date Analyzed:	2015-06-16	Analyzed By:	SC
Prep Batch:	103493	Sample Preparation:	2015-06-15	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	5	**2510**	mg/Kg	2	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
[2] n-Tricosane	Qsr	Qsr	436	mg/Kg	2	100	436	70 - 130

Sample: 395361 - Veg-15

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	122455	Date Analyzed:	2015-06-19	Analyzed By:	AK
Prep Batch:	103567	Sample Preparation:	2015-06-18	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
[3] GRO	U	5	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.66	mg/Kg	2	4.00	116	70 - 130
4-Bromofluorobenzene (4-BFB)			4.11	mg/Kg	2	4.00	103	70 - 130

Sample: 395362 - Veg-16

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	122354	Date Analyzed:	2015-06-16	Analyzed By:	SC
Prep Batch:	103493	Sample Preparation:	2015-06-15	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr,Qs	5	**2800**	mg/Kg	2	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
[4] n-Tricosane	Qsr	Qsr	323	mg/Kg	2	100	323	70 - 130

Sample: 395362 - Veg-16

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	122455	Date Analyzed:	2015-06-19	Analyzed By:	AK
Prep Batch:	103567	Sample Preparation:	2015-06-18	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO [5]	U	5	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			4.41	mg/Kg	2	4.00	110	70 - 130
4-Bromofluorobenzene (4-BFB)			3.84	mg/Kg	2	4.00	96	70 - 130

Method Blanks

Method Blank (1) QC Batch: 122354

QC Batch:	122354	Date Analyzed:	2015-06-16	Analyzed By:	SC
Prep Batch:	103493	QC Preparation:	2015-06-15	Prepared By:	SC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		5	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			48.8	mg/Kg	1	50.0	98	70 - 130

Method Blank (1) QC Batch: 122455

QC Batch:	122455	Date Analyzed:	2015-06-19	Analyzed By:	AK
Prep Batch:	103567	QC Preparation:	2015-06-18	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.55	mg/Kg	1	2.00	128	70 - 130
4-Bromofluorobenzene (4-BFB)			2.15	mg/Kg	1	2.00	108	70 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 122354 | Date Analyzed: 2015-06-16 | Analyzed By: SC
Prep Batch: 103493 | QC Preparation: 2015-06-15 | Prepared By: SC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		5	238	mg/Kg	1	250	<7.41	95	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		5	271	mg/Kg	1	250	<7.41	108	70 - 130	13	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	52.8	58.4	mg/Kg	1	50.0	106	117	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 122455 | Date Analyzed: 2015-06-19 | Analyzed By: AK
Prep Batch: 103567 | QC Preparation: 2015-06-18 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	16.0	mg/Kg	1	20.0	<2.32	80	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	15.6	mg/Kg	1	20.0	<2.32	78	70 - 130	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.43	2.50	mg/Kg	1	2.00	122	125	70 - 130
4-Bromofluorobenzene (4-BFB)	2.18	2.19	mg/Kg	1	2.00	109	110	70 - 130

Matrix Spikes

Matrix Spike (xMS-1) Spiked Sample: 395471

QC Batch: 122354 | Date Analyzed: 2015-06-16 | Analyzed By: SC
Prep Batch: 103493 | QC Preparation: 2015-06-15 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Qs	Qs 5	1560	mg/Kg	1	250	1680	-48	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Qr,Qs	Qr,Qs 5	1270	mg/Kg	1	250	1680	-164	70 - 130	20	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	Qsr	Qsr	130	109	mg/Kg	1	50	260	218	70 - 130

Matrix Spike (MS-1) Spiked Sample: 395778

QC Batch: 122455 | Date Analyzed: 2015-06-19 | Analyzed By: AK
Prep Batch: 103567 | QC Preparation: 2015-06-18 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	14.2	mg/Kg	1	20.0	<2.32	71	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	14.3	mg/Kg	1	20.0	<2.32	72	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.41	2.47	mg/Kg	1	2	120	124	70 - 130
4-Bromofluorobenzene (4-BFB)	2.22	2.16	mg/Kg	1	2	111	108	70 - 130

Calibration Standards

Standard (CCV-1)

QC Batch: 122354 | Date Analyzed: 2015-06-16 | Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	226	90	80 - 120	2015-06-16

Standard (CCV-2)

QC Batch: 122354 | Date Analyzed: 2015-06-16 | Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		5	mg/Kg	250	233	93	80 - 120	2015-06-16

Standard (CCV-1)

QC Batch: 122455 | Date Analyzed: 2015-06-19 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	1.01	101	80 - 120	2015-06-19

Standard (CCV-2)

QC Batch: 122455 | Date Analyzed: 2015-06-19 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.946	95	80 - 120	2015-06-19

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-15-11	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.

F	Description
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Result Comments

1 Dilution due to matrix.
2 Analyst double spiked surrogate.
3 Dilution due to matrix.
4 Analyst double spiked surrogate.
5 Dilution due to matrix.

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

WO#: 15061104

CHAIN OF CUSTODY RECORD

APEX

Office Location Midland TX

Project Manager Karolanne Tuttle

Laboratory: Trace Analysis

Address:

Contact:

Phone:

PO/SO #:

Sampler's Name: Travis Turner

Sampler's Signature:

Proj. No.: 725071502 8.01

Project Name: 10009 Relief Valve

No/Type of Containers: 3/Bags

ANALYSIS REQUESTED: PH 1,2,20/D20

Lab use only
Due Date:

Temp. of coolers when received (C°): 6.0

1 | 2 | 3 | 4 | 5

Page ____ of ____

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	Glass Jar	P/O	Lab Sample ID (Lab Use Only)
	6/10/15	916		X	Veg-14								395360
	↓	915		↓	Veg-15								395361
	↓	918		↓	Veg-16								395362

Turn around time: X Normal ❑ 25% Rush ❑ 50% Rush ❑ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	6/11/15	1533	Kelley	6/10/15	15:33
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

NOTES: Straight from field

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil

Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other ____

APPENDIX E

NMOCD C-141

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 23 2015

RECEIVED

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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 August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

fAB1508435844
nAB1508436016

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company **Enterprise Field Services LLC**	Contact **Dina Babinski**
Address **PO Box 4324, Houston TX 77210**	Telephone No. **210-528-3824**
Facility Name **Pipeline ROW, 1009 Gathering Lateral**	Facility Type **Gas Gathering Pipeline**

Surface Owner **Department of Energy**	Mineral Owner **NA - Pipeline**	API No. **NA**

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
E	**15**	**22S**	**31E**	**421**	**North**	**7**	**East**	**Eddy**

Latitude ***N 32.392*** **Longitude** ***W -103.770***

NATURE OF RELEASE

Type of Release **Natural Gas, Pipeline Liquids**	Volume of Release **24 MCF, 10 bbl**	Volume Recovered **NA**
Source of Release **Pipeline Relief Valve**	Date and Hour of Occurrence **Unknown**	Date and Hour of Discovery **3/18/2015 @ 11:30 MDT**
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Mike Bratcher**	
By Whom? **Osman De Leon**	Date and Hour **3/18/2015 2:52 MDT**	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

A pipeline relief valve opened and spilled approximately 10 bbl pipeline liquid to the ground and oversprayed surrounding area. Neither the valve nor the pipeline were damaged during the event, and thus no repairs were required.

Describe Area Affected and Cleanup Action Taken.*

Contaminated area is being marked and soil sampling will be performed to determine extent of contamination in soil. Remediation activities will be selected based on the results of the sampling. Additional soil sampling will be performed once remediation is complete to confirm cleanup is complete.

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: Jon Fields	OIL CONSERVATION DIVISION Approved by Signed By Mike Bratcher
Printed Name: *Jon Fields*	
Title: *Director, Field Environmental*	Approval Date: 3/26/15 Expiration Date: N/A
E-mail Address: *snolan@eprod.com*	Conditions of Approval: Attached ☐
Date: 3-20-2015 Phone: *713-381-6595*	**Remediation per O.C.D. Rules & Guidelines** ~~SUBMIT REMEDIATION PROPOSAL NO~~ **LATER THAN: 4/25/15**

* Attach Additional Sheets If Necessary

2RP-2015

APPENDIX F

BLM Approved Workplan

Response/Remediation Plan
Enterprise Field Services, LLC
1009 Relief Valve Release Site
Section 15 Township 22 South
Range 31 East

April 22, 2015

Enterprise Field Services, LLC (Enterprise) is submitting this Response/Remediation Plan to the New Mexico Oil Conservation Division (NMOCD), Bureau of Land Management (BLM) and Waste Isolation Pilot Project (WIPP) operated by Department of Energy (DOE) to mitigate the release of natural gas and natural gas liquids associated with the Enterprise 1009 natural gas gathering pipeline. The Response/Remediation plan describes how Enterprise will respond to the release under NMOCD jurisdiction. The GPS coordinates for the release site are N 32.39358, W 103.77006.

Site History

Enterprise was notified of the release on March 10, 2015 by BLM. No water courses were affected. Three areas of impact have been noted, originating from the release point at the pressure relief valve. Two fluid spray ("spray area") areas were noted which extend to the northeast and the northwest near the cattle pens. Liquid contamination was observed around the valve and remaining on the Right-of-Way (ROW), flowing west down the lease road, with fluid staining approximately 145 feet long by three (3) feet wide, observed on the ground surface. Surface impacts of the spray area are approximately 3.6 acres to the northwest and approximately 1.7 acres to the northeast. The pipeline ROW is 50 feet wide perpendicular to the length of the pipeline. The approximate area of the surface indication of the impact is shown on the attached Figure 1.

Site Ranking

The ranking for this release has been determined by site specific criteria outlined in the NMOCD *Guidelines for Remediation of Leaks, Spills and Releases* (1993). This release location has been assigned an NMOCD ranking of 0, which requires a soil remediation standard of 10 parts per million (ppm) benzene, 50 ppm combined benzene, toluene, ethylbenzene, and total xylenes (BTEX), and 5,000 ppm total petroleum hydrocarbons (TPH).

Assessment and Field Work

The primary objective of corrective actions at the site will be to reduce the concentration of constituents of concern (COCs) in the on-Site soils below the NMOCD *Remediation Action Levels* using the NMOCD *Guidelines for Remediation of Leaks, Spills and Releases* as guidance.

All field activities will be overseen by a third party environmental contractor. The third party environmental contractor will delineate the perimeters of the two spray areas and treat the affected areas by applying a microbial-decomposition product (Microblaze®) to introduce additional nonpathogenic bacterial strains designed to metabolize petroleum hydrocarbons. Any equipment and cattle pens affected within spray areas will be power washed with the hot Microblaze solution. For the "spray area" and power washing activities, a 3% mixture of Microblaze and water will be utilized.

Attached to the Response/Remediation plan is a Natural and Cultural Resources Due Diligence Memorandum. The results indicate that the project area is within the current range of the lesser prairie-chicken (LEPC). As required by conservation measures, remediation activities will not occur between 3 am and 9 am. Remediation activities will be limited to the application of Microblaze, eliminating any ground disturbance that would affect potentially buried archaeological deposits.

Preliminary soil samples (CS-1, CS-2 and CS-3) were collected form the liquid contamination area and analyzed for BTEX, TPH, chlorides and RCRA (Resource Conservation and Recovery Act) (8) Metals which include arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver. A Site Plan depicting the approximate location of the affected areas and confirmation soil sample locations is included as attachment Figure 1 – Site Map and Figure 1A – Affected Area Detail Map. Based on soil confirmation analytical results, contaminant concentrations for BTEX and TPH are compliant with the NMOCD site specific remediation standards (site ranking). The confirmation soil sample CS-2 chloride concentration is 1,260 milligrams per Kilogram (mg/Kg), which is in excess of the NMOCD recommended site ranking remediation standards. The chloride contaminated area was within the pipeline work areas and access roads, so there is no adverse effect on the vegetation.

The spray areas will be sampled approximately four (4) to five (5) weeks after the first application of the Microblaze solution. One confirmation soil sample and vegetation sample will be collected per 100 foot spacing of each spray area. The vegetation to be sampled will be limited to forage species based on the concern of grazing livestock. Enterprise will notify the BLM, WIPP and DOE forty-eight (48) hours prior to the collection of the final (closure) soil and vegetation samples.

Soil samples will be analyzed per the following United States Environmental Protection Agency Methods:

- Method 8021 BTEX
- Method 8015B DRO/GRO (Diesel Range Organics/Gasoline Range Organics)
- Method SM 4500-Cl B (Chlorides)

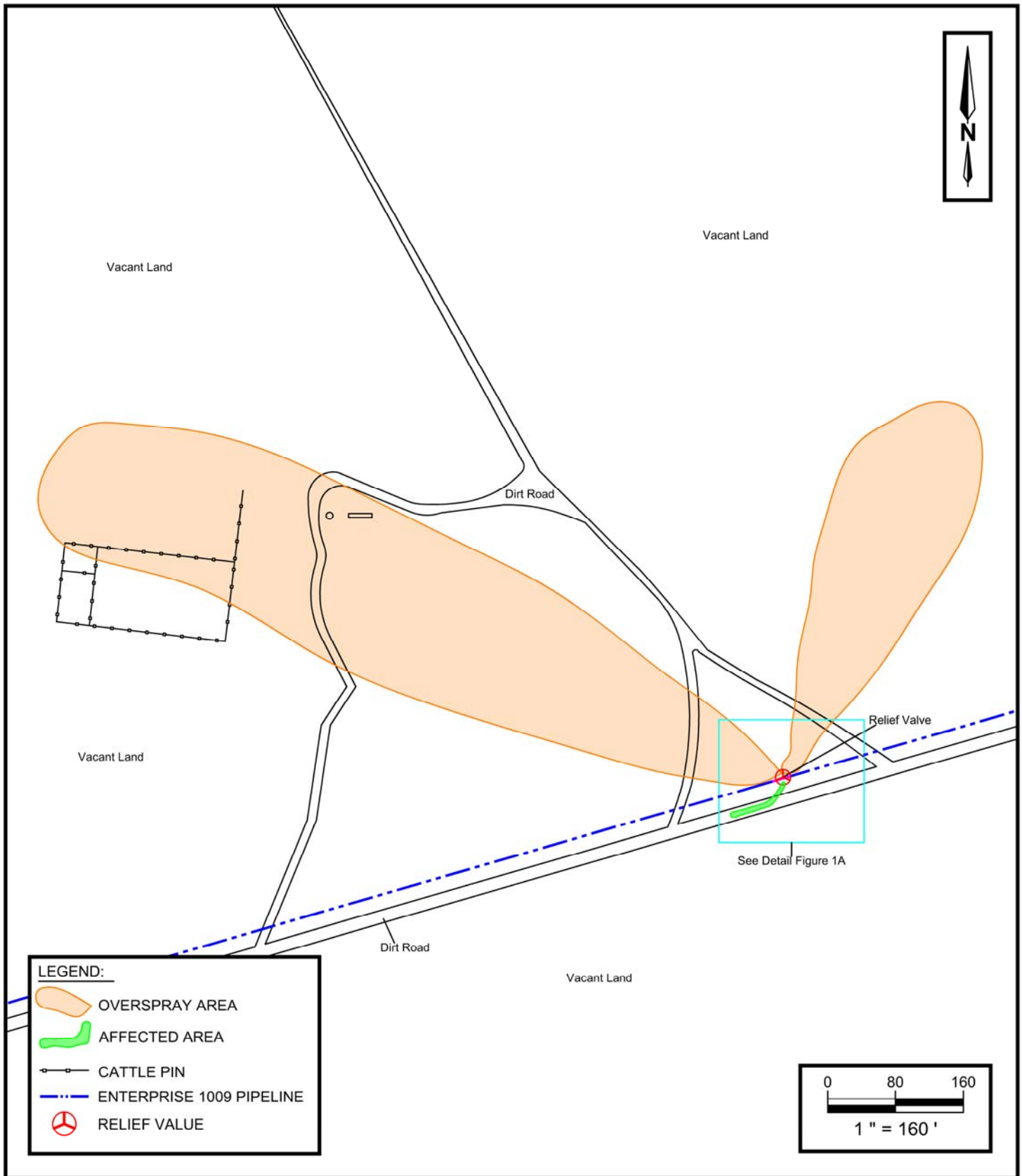
Upon confirmation that BTEX and TPH concentrations comply with the applicable NMOCD remediation standard, the laboratory analytical reports will be emailed to the BLM for prompt review.

Documentation

Upon completion of remediation activities, the third party environmental contractor will prepare and submit a Corrective Action Report (CAR) documenting the field work. The CAR will include the following information:

- Description of the field activities
- Site Map illustrating sample locations (as applicable)
- Laboratory Analytical Reports for soil samples collected
- Photographic documentation

Attachments
Figure 1 – Site Map
Figure 1A – Affected Area Detail Map
Natural and Cultural Resources Due Diligence Memorandum



Enterprise Field Services, LLC
1009 Relief Valve Release
Eddy County, New Mexico
32.39358 N, 103.77006 W

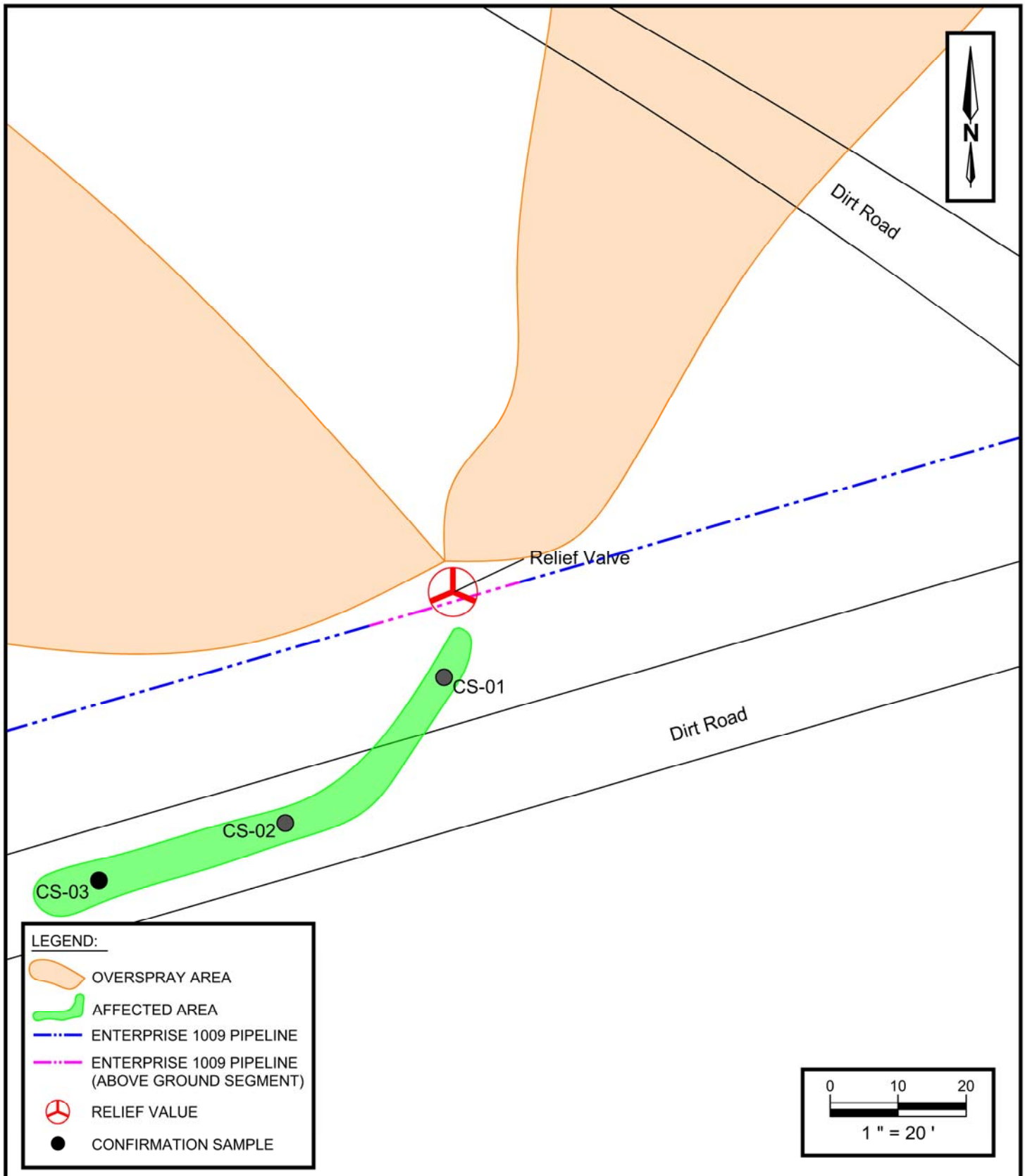
Project No. 7250715028.001

Apex TITAN, Inc.
505 N Big Spring St., Suite 301A
Midland, Texas 79701
Phone: (432) 695-6016
www.apexcos.com
A Subsidiary of Apex Companies, LLC

FIGURE 1

Site Map

P:\Drafting\Midland\2015\7250715028\Figures.dwg 04/07/15



Enterprise Field Services, LLC
1009 Relief Valve Release
Eddy County, New Mexico
32.39358 N, 103.77006 W

Project No. 7250715028.001

Apex TITAN, Inc.
505 N Big Spring St., Suite 301A
Midland, Texas 79701
Phone: (432) 695-6016
www.apexcos.com
A Subsidiary of Apex Companies, LLC

FIGURE 1A

Affected Area Detail Map

P:\Drafting\Midland\2015\7250715028\Figures.dwg 04/07/15

TO: Dina Babinski, Enterprise Field Services, LLC
FROM: Robin Laine, Apex TITAN, Inc.
SUBJECT: Natural and Cultural Resources Due Diligence for Casing Installation the 1009 Relief Valve Overspray in Eddy County, NM
DATE: April 1, 2015

The purpose of this memorandum is to provide a desktop review for natural and cultural resources constraints for a relief valve overspray that occurred on an existing pipeline in Eddy County, NM. The project is located at 32.394009, -103.77062. The footprint of the action includes oblong areas within approximately 945 feet northwest of the release and 470 feet northeast of the release. Figure 1 below shows the project extent. Apex understands that the pipeline easement is on land managed by the Bureau of Land Management (BLM) and the overspray area is on land managed by the Department of Energy (DOE).

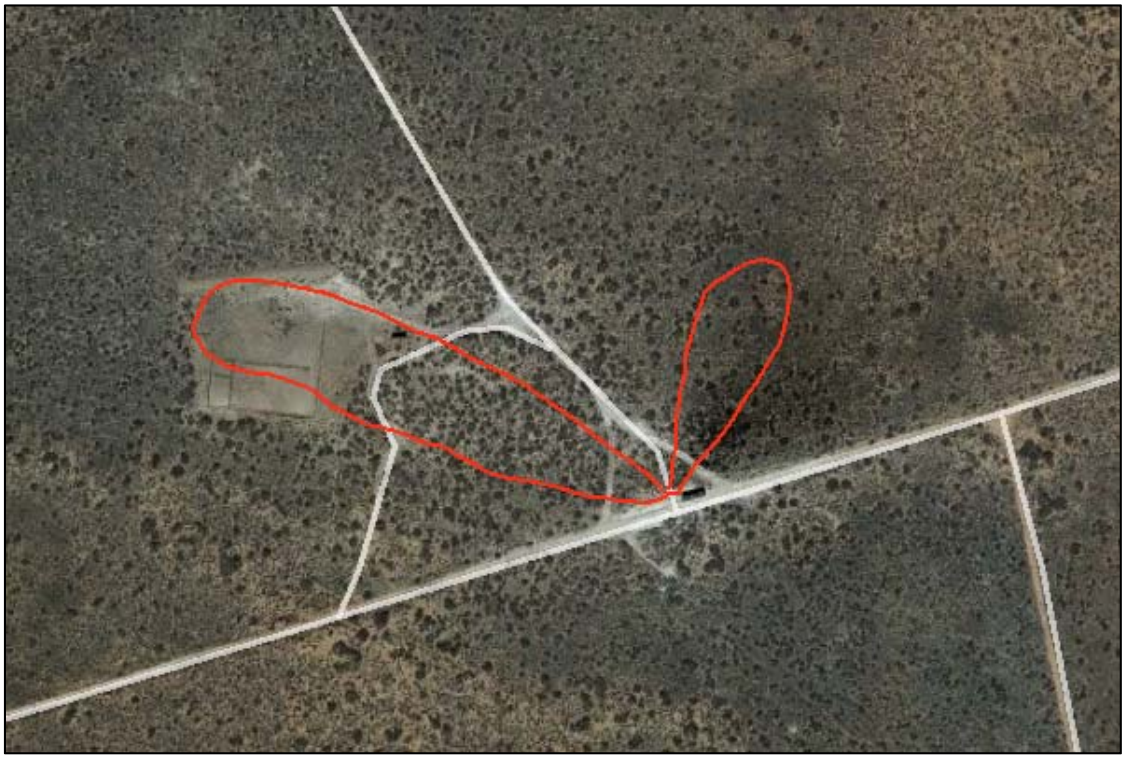


Figure 1 – Approximate Project Extent

Potential Waters of the U.S.

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) has the authority to permit the discharge of dredged or fill material into waters of the United States (U.S). The term "waters of the U.S." is defined as:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;

- All impoundments of waters otherwise defined as waters of the U.S. under the definition;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters: (i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or (ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (iii) Which are used or could be used for industrial purpose by industries in interstate commerce; and
- The territorial seas.

In 2006, Rapanos v. United States clarified that waters of the U.S. are also defined as: Traditional Navigable Waters (TNW) and their adjacent wetlands; non-navigable tributaries of TNWs that are relatively permanent; and, wetlands that directly abut such tributaries. In addition, the Rapanos decision clarified that the USACE asserts jurisdiction over every water body that is not a relatively permanent water (RPW) if that water body is determined to have a significant nexus with a TNW. A significant nexus exists if the tributary, in combinations with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, or biological integrity of a TNW.

The limit of USACE jurisdiction for non-tidal waters of the United States in the absence of adjacent wetlands is the ordinary high water mark (OHWM). "Ordinary high water mark" is defined as that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Results

Using aerial imagery, USGS 7.5' topographic quadrangle maps (Figure 2), National Hydrography Dataset (NHD), the National Wetlands Inventory (NWI) database, and site photographs, the project area was assessed for the presence of potential jurisdictional waters of the U.S., including wetlands. No potential waters of the U.S. were identified during the background search. The project does not appear to be subject to Section 404 of the Clean Water Act. No further action is recommended.

Federally-listed Species Habitat

The United States Fish and Wildlife Service (USFWS) has authority under the Endangered Species Act (ESA) to list and monitor the status of species whose populations are considered imperiled. Species listed as threatened or endangered by the USFWS are provided full protection under the ESA including a prohibition of indirect "take." The term ''take'' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct with regards to a federally-endangered species. Critical habitat is also protected under the ESA. Critical habitat is defined as areas that are essential for the conservation of a threatened or endangered species and that may require special management and protection. Candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Candidate species receive no statutory protection under the ESA.

According to the USFWS Information, Planning, and Conservation System (IPaC), fifteen species were identified in Eddy County, New Mexico to be considered in the effects analysis for the project area and were assessed by this study. Table 1 provides a species list, habitat summary, and evaluation of potential occurrence in the project area.

Table 1: Endangered, Threatened, and Candidate Species in Eddy County, New Mexico

Common Name	Scientific Name	Federal Status	Species Likely to Occur in Project Area?
Least Tern	Sterna antillarum	E	No; there are no rivers or beaches consistent with tern migratory or nesting habitat.
Lesser Prairie-chicken	*Tympanuchus pallidicinctus*	T	The project is within the range of the species. See discussion below.
Mexican Spotted owl	*Strix occidentalis lucida*	T	No; no structurally complex old growth or mature forests, mixed conifer forests, or canyons are within the vicinity of the project.
Northern Aplomado Falcon	*Falco femoralis septentrionalis*	Experimental Population, Non-Essential	Yes, the open grassland terrain in the project area is potential habitat for the species. However, if falcons occur in the area, they will likely be flying overhead. No nesting habitat is present in the project area.
Piping Plover	*Charadrius melodus*	T	No; no preferred shoreline or riverine habitat is within the vicinity of the project.
Southwestern Willow flycatcher	*Falco femoralis septentrionalis*	E	No; no dense riparian cottonwood/willow and tamarisk habitat is present in the vicinity of the project. No saturated soils, standing water, pools, streams, or cienegas.
Sprague's Pipit	*Anthus spragueii*	C	Unlikely; mixed grasslands and wet meadow breeding habitat is not present in the vicinity of the project. The species may migrate through the area.
Texas Hornshell	*Popenaias popei*	C	No; no aquatic habitat is present in the vicinity of the project.
Pecos Bluntnose shiner	*Notropis simus pecosensis*	T	No; no aquatic habitat is present in the vicinity of the project
Pecos gambusia	*Gambusia nobilis*	E	No; no aquatic habitat is present in the vicinity of the project
Gypsum wild-buckwheat	*Eriogonum gypsophilum*	T	No; known only to occur in three populations that are distant from the project area. Restricted to almost pure gypsum habitats, which are not located in the vicinity of the project.

Common Name	Scientific Name	Federal Status	Species Likely to Occur in Project Area?
Kuenzler Hedgehog cactus	*Echinocereus fendleri var. kuenzleri*	E	No; no preferred habitat of gravelly or rocky slopes, benches, limestone, or sandstone.
Lee Pincushion cactus	*Coryphantha sneedii var. leei*	T	No; limestone cracks and steep slopes not present. The project is below the typical occurrence elevation of the species of 4,000 to 5,000 ft.
Sneed Pincushion cactus	*Coryphantha sneedii var. sneedii*	E	No; limestone cracks and steep slopes not present.
Wright's Marsh thistle	*Cirsium wrightii*	C	No; no wet, alkaline soils around spring seeps or marshy pond or stream edges are within the project area.

E – Endangered, T – Threatened, C - Candidate

Lesser Prairie-chicken
The project area is within the current range of the lesser prairie-chicken (LEPC). In New Mexico, LEPC habitat consists of sand shinnery communities dominated by shinnery oak (*Quercus havardii*) and various native grasses. From March to July, male LEPC gather on breeding grounds, known as leks, to perform mating displays for females. According to the Southern Great Plains Crucial Habitat Assessment Tool (CHAT), previous surveys in the last 5 years have not identified the presence of leks within the immediate vicinity of the project. A historic lek is known approximately 12 miles east of the project. The nearest known current lek is 54 miles north of the project. However, much of the LEPC range in New Mexico has not been surveyed for the presence of leks.

The project is on federal land and is therefore not eligible for enrollment in the LEPC Range-wide Conservation Plan (RWP). Under Section 7 of the Endangered Species Act, federal agencies are responsible for ensuring that federal actions, including those funded or authorized by the agency, do not jeopardize the existence of any federally-protected species. Apex recommends coordinating with BLM and/or DOE regarding minimization strategies and best management practices to avoid effects to LEPC.

Cultural Resources
There have been a few small negative cultural resource surveys conducted for the BLM in the general area of the proposed Project. However, no cultural resource surveys have been conducted, and therefore, no cultural resource sites have been have recorded within the proposed project area. The project area is located in hummocky sand dunes, stabilized against wind erosion by native vegetation; these have good potential for containing buried archeological deposits. As the responsible federal agency, the BLM, Roswell District, and/or the DOE should be contacted to determine whether they would require immediate cleanup of the released material and whether it should be preceded or followed by a cultural resource investigation. The BLM and/or DOE has the final authority to determine the need for a cultural resource investigation. The proposed project is subject to the provisions of Section 106 of the NHPA and a BLM permit could be necessary. Any archeological permitting would likely require consultation with the BLM Archeologists located in the Carlsbad Field Office.

Migratory Bird Treaty Act
The migratory Bird Treaty Act (MBTA) makes it illegal to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird…or any part, nest, or egg of any such bird."

Burrowing Owl
Apex understands that burrowing owls *(Athene cunicularia)* may have been observed in the vicinity of the project. Burrowing owls are protected under the MBTA, but are not protected by the State of New Mexico. According to USFWS, the New Mexico population of burrowing owl is apparently secure[1].

Burrowing owls are generally found on breeding grounds from mid-March through September, with courtship and pair formation in March and April in most areas. Burrowing owls generally stay close to the nest burrow during daylight and forage farther from the nest between dusk and dawn[1]. USFWS recommends that construction activities should not occur within 250 feet of an active nest[2].

According to Ms. Kristin Madden, Bird Program Manager at the New Mexico Department of Game and Fish Wildlife Management Division and participant in the New Mexico Burrowing Owl Work Group, burrowing owls have not likely started to nest at this point in the season (pers. comm March 25, 2015). As such, impacts to active nest burrows are unlikely. Please see Attachment A for additional guidance. Coordination with the BLM and/or DOE may be warranted if burrowing owls appear to be exhibiting nesting behaviors.

Please feel free to contact me if you have any further questions or comments.

Sincerely,

Robin Laine

Robin Laine
National Program Manager, Natural Resources

[1] U.S. Fish and Wildlife Service. 2003. Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States. Biological Technical Publication. BTP-R6001-2003.
[2] U.S. Fish and Wildlife Service. 2015. Protecting Burrowing Owls At Construction Sites. Nevada Fish and Wildlife Office. Available online at http://www.fws.gov/nevada/nv_species/burrowing_owl.htm

Attachment A

GUIDELINES AND RECOMMENDATIONS
FOR BURROWING OWL
SURVEYS AND MITIGATION

NEW MEXICO DEPARTMENT OF GAME AND FISH

JULY 2007

(Note: Most of the following recommendations were developed by the New Mexico Burrowing Owl Working Group (2005), The California Burrowing Owl Consortium (1993), and The California Department of Fish and Game (1995))

The burrowing owl (*Athene cunicularia*) is considered a species of concern by the U.S. Fish and Wildlife Service and is protected by both the Migratory Bird Treaty Act and by New Mexico statute 17-2-14 (NMSA 1978). These guidelines are provided to assist in conducting burrowing owl surveys and mitigation during the preparation of environmental assessment reports and environmental impact statements. The guidelines also aid in the decision making process implemented when there is potential for any type of project to adversely affect burrowing owls or any of the resources that support them.

Project proponents should: 1) identify burrowing owl habitats and burrows; 2) choose and implement an appropriate survey method to confirm the presence of owls; and 3) determine and implement appropriate mitigation.

Step 1. Identify Burrowing Owl Habitat and Burrows

Seventy-five percent of New Mexico's ecological zones, as described by Dick-Peddie (1993), support or have the potential to support burrowing owls (Arrowood et al. 2001). These zones include: Chihuahuan desert scrub, closed basin scrub, desert grassland, Great Basin desert scrub, juniper savanna, lava beds, plains-mesa grassland, plains-mesa sand scrub, sand dunes, urban, and farmland (Arrowood et al. 2001). More specifically, burrowing owls generally are associated with dry, open, short-grass, treeless plains (Haug et al. 1993). Burrowing owls are also known to use areas that include shrubs such as creosote bush (*Larrea tridentata*), mesquite (*Prosopis* spp.), four-wing saltbush (*Atriplex canescens*), and rabbit-brush (*Chrysothanmus nauseous*) (Martin 1973, Botelho and Arrowood 1996). Burrowing owls also inhabit human-modified landscapes, such as golf courses and parking lots.

Burrowing owls rarely dig their own burrows and, therefore, depend in part upon the presence of burrowing animals. In New Mexico, burrowing owls are associated with Gunnison's prairie dogs (*Cynomys gunnisoni*), black-tailed prairie dogs (*C. ludovicianus*), American badgers (*Taxidea taxus*), ground squirrels (*Spermophilus* spp.), rock squirrels (*S. variegatus*), foxes (*Vulpes* spp.), and coyotes (*Canis latrans*). Burrowing owls and prairie dogs are included as species of greatest conservation need in the western great plain shortgrass prairie vegetation type (Comprehensive Wildlife Conservation Strategy for New Mexico 2006). Burrowing owls can also utilize human-made structures, such as, storm drains, berms, roadsides, irrigation canals, and artificial burrows specifically constructed for the owls.

Occupancy of suitable burrowing owl sites can be verified by observing at least one burrowing owl, or owl molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance (The California Burrowing Owl Consortium 1993).

Step 2. Choose and Implement an Appropriate Survey Method to Confirm Owl Presence

The most suitable time to survey for burrowing owls in New Mexico is during the nest initiation and incubation phases (Table 1). Most burrowing owls are migratory in the state, although some over-winter in New Mexico, particularly males in southern New Mexico (Arrowood et al. 2001, Johnson et al. 1997). Migratory owls typically arrive on the breeding grounds by March and remain there until October.

Table 1. General breeding chronology of the burrowing owl in New Mexico.

Location	Pair Bonding/Nest Initiation	Egg Laying and Incubation	Chicks Fledge above Ground	Independence
New Mexico	March to April	Late April to early June	Early-Mid June	Mid-Late July

Surveys should not be conducted in certain weather conditions when owls are more likely to be in their burrows and not visible, such as temperatures above 30°C (86°F) and winds exceeding 20 km/hr (approx. 12 mph). Surveys also should be restricted to the early morning and evening hours, because above ground activity is often higher during these times (Conway and Simon 2003).

A single survey on a proposed project site is adequate to determine the presence or absence of active burrows. If owls are not observed, all active burrows should be inspected for indications of use by the presence of owl pellets, droppings, or feathers. If active burrows are found follow-up survey, utilizing the methods described below, should be scheduled to confirm the presence or absence and numbers of owls on a project site.

Burrowing owl surveys can be accomplished effectively by either walking or driving transects. Either the entire length of the transect or point count stations along the transect can be surveyed, and surveys can be conducted with or without broadcasting audio burrowing owl alarm (*quick-quick-quick*) and/or male territory (*coo-coo*) calls. Studies have shown that broadcasting calls increases detection probability of burrowing owls (Haug and Didiuk 1993, Conway and Simon 2003) and that trained surveyors can detect owls up to 300 m (Conway and Simon 2003). These methods might need to be modified depending upon the terrain and equipment being used, which, respectively, affect the distance owls and the broadcasted vocalizations can be heard.

If burrowing owl habitat is found at the project site, a 150-m buffer zone around the project should also be assessed for potential burrowing owl habitat. At the project site, use one of the following survey methods as recommended by the New Mexico Burrowing Owl Working Group (NMBOWG).

METHOD 1: Walking Surveys

Without Audio Calls

Transects should be established in suitable owl habitat. A single, straight line should be walked for the entire length of the transect (for specific protocol and comparison of line transect methodology see Emlen 1971 and 1977). Observers should record all owls observed along either side of the line. If a more thorough estimate of abundance in a specific area is desired, an observer should walk multiple parallel lines (or many observers walk parallel lines concurrently) that are approximately 50 m apart. All owls observed along either side of the transect line should be recorded. Data recorded should include: date and time of survey, weather conditions, dominant vegetation, burrow aspect, survey location (including GPS coordinates), number of owls observed, sex and age classes of owls (if determinable), and presence of prairie dogs and other burrowing animals.

With Audio Calls

Observers should proceed along a transect line, stopping at points approximately every 200 m to broadcast owl vocalizations and listen for responses. Distance between points will depend upon terrain and broadcast system , which, respectively, affect the distance owls and the broadcasted vocalizations can be heard. If the broadcast system and owl response calls, can be heard up to 200 m. then the observer should stop every 200 m. The distance between observation points can be shortened if necessary. If a more thorough estimate of abundance is desired, the observer should walk multiple parallel lines (or many observers walk parallel lines concurrently) to cover a greater proportion of the area. The lines should be spaced according to the same distance of audio coverage. At each observation point, the observer should scan for any owls with binoculars for the first two minutes, after which a territorial and/or alarm calls should be played for one minute. Finally, there should be two additional minutes of scanning after broadcasting. Scanning and broadcasting should be done in a 360° arc. All owls detected during this five-minute observation period should be recorded. Data recorded should include: date and time of survey, weather conditions, dominant vegetation, burrow aspect, survey location (including GPS coordinates), number of owls observed, sex and age classes of owls (if determinable), and presence of prairie dogs and other burrowing animals.

METHOD 2: Roadside Point-count Surveys

Without Audio Calls
Routes should be established along roads in the project site. Observers should stop the vehicle and pull off the side of the road at 0.5-mile (0.8 km) intervals (if project site is large enough). If visibility is impaired at a point, observers should continue until the next immediate suitable surveying spot is reached. All surveyors should exit the vehicle at each point and scan with binoculars in a 360° arc for a total of five minutes. All owls detected during this five-minute observation period should be recorded. Data recorded should include: date and time of survey, weather conditions, dominant vegetation, burrow aspect, survey location (including GPS coordinates), number of owls observed, sex and age classes of owls (if determinable), and presence of prairie dogs and other burrowing animals.

With Audio Calls
Routes should be established along roads in the project site. Observers should stop the vehicle and pull off the side of the road at 0.5-mile (0.8km) intervals (if project site is large enough). If visibility is impaired at a point, observers should continue until the next immediate suitable surveying spot is reached. Observers should exit the vehicle at each point and scan for the first two minutes. Afterwards, owl calls (territorial and/or alarm) should be played for one minute, followed by two additional minutes of scanning. Scanning should be done with binoculars in a 360° arc. All owls detected during this five-minute observation should be recorded. Data recorded should include: date and time of survey, weather conditions, dominant vegetation, burrow aspect, survey location (including GPS coordinates), number of owls observed, sex and age classes of owls (if determinable), and presence of prairie dogs and other burrowing animals.

Step 3. Determine and Implement Appropriate Mitigation

The objectives of these mitigation guidelines are to minimize the negative impacts to burrowing owls at a project site and preserve habitat that will support burrowing owl populations into the future. The mitigation process begins with the survey protocol to document the presence of burrowing owl habitat, and to determine if burrowing owls use the project site and the surrounding buffer zone. Occupied burrows should be determined based on survey information. If more than 30 days elapse between the initial survey and construction activities, project sites and buffer zones with suitable habitat should be resurveyed to ensure no burrowing owls have occupied these areas in the interim period. Resurveying the project site should be conducted no more than 30 days prior to initial project initiation. If ground disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site should be resurveyed.
If burrowing owls are present on a project site, the following mitigation measures should be followed to minimize negative impacts to burrowing owls, nest burrows and burrowing owl habitat.

According to the California Burrowing Owl Consortium there are three definitions of negative impacts:

- Disturbance or harassment within 50 m of occupied burrows.
- Destruction of burrows and burrow entrances. Burrows include structures such as culverts, concrete slabs and debris piles that provide shelter to burrowing owls.
- Destruction and/or degradation of foraging habitat adjacent to occupied burrows (within 100 m).

If burrowing owls are found at a project site, measures to avoid or mitigate negative impacts should follow one of three general approaches. These approaches are listed below:

1. Design and implement project activities to spatially avoid negative impacts and disturbance to burrowing owls and their habitat.

    - No disturbance should occur within 50 m of occupied burrows during the non-breeding season (September through February) or within 75 m during the breeding season (March through August). Avoidance also requires that a minimum of 6.5 acres of foraging habitat be maintained in undisturbed habitat condition for each pair or unpaired burrowing owl.
    - No disturbance or destruction of any prairie dogs or other burrowing animals or their burrows, should occur within the owl avoidance areas.

2. Design and implement project activities to seasonally avoid negative impacts and disturbances to burrowing owls.

    - Occupied burrows should not be disturbed during the nesting period, from March 1st through August 1st.
    - No disturbance or destruction of any prairie dogs or other burrowing animals or their burrows, should occur within the owl avoidance areas.
    - When destruction of burrows is unavoidable, burrow destruction or ground disturbing activities should only occur during the season when migratory owls have left the breeding site. The unoccupied season can be expected to begin in September or October and end in February or March. However, burrowing owl occupancy always must be confirmed by survey data, regardless of season. Immediately prior to burrow destruction a video probe should be used to confirm that the burrow is unoccupied.
    - For any occupied burrows that are destroyed outside of the nesting season, any remaining, undestroyed, burrows should be enhanced (enlarged or cleared of debris) or new burrows should be created (by installing artificial burrows) at a ratio of 2:1 on the protected lands site. A minimum of 6.5 acres of foraging habitat should be maintained in an undisturbed habitat condition for each pair or unpaired resident bird.
    - To ensure compliance with the federal Migratory Bird Treaty Act and state laws and regulations, the U.S. Fish and Wildlife Service and New Mexico Department of Game and Fish must be contacted to confirm that any construction activities resulting in destruction of burrows will not result in a taking of burrowing owls and, thus, violation of federal and state law.

3. Relocate burrowing owls that will be negatively impacted by project activities to protected areas of potential burrowing owl habitat.

    - If owls must be moved away from the disturbance area, passive relocation techniques should be used rather than trapping. At least one or more weeks will be necessary to accomplish this and to allow the owls to acclimate to alternate burrows. Passive relocation can be accomplished by use of one-way doors. Owls should be excluded from burrows in the immediate negatively impacted zone and within a 50-m buffer zone by installing one-way doors in burrow entrances. One-way doors should be left in place for approximately 48 hours to ensure that owls have left burrows before excavation. Prior to burrow destruction a video probe should be used to confirm that the burrow is unoccupied. If a video probe is not available burrows should be excavated with hand tools to ensure that the burrows are unoccupied. Two natural or artificial burrows should be provided for each burrow in the project area that will be rendered biologically unsuitable. Passive relocation should only be used during the non-breeding season,. This method should not be used once a pair of owls is at a burrow unless it is determined that the female does not exhibit a brood patch.
    - If removal or relocation is necessary, trapped burrowing owls should be released in a new location with suitable habitat in a soft release cage. Soft release involves placing owls in a cage with an artificial burrow and fed mice daily for three weeks. After three weeks one side of the cage is removed. More information on this technique is available from NMBOWG.
    - A minimum of 6.5 acres of foraging habitat should be maintained in an undisturbed habitat condition for each pair or unpaired resident bird. No disturbance or destruction of any prairie dogs or other burrowing animals or their burrows, should occur within the owl avoidance areas.
    - To ensure compliance with the federal Migratory Bird Treaty Act and state laws and regulations, the U.S. Fish and Wildlife Service (505-248-7882) and New Mexico Department of Game and Fish (505-476-8101) must be contacted and federal and state permits must be obtained for handling of owls.

Links

New Mexico Burrowing Owl Working Group
http://www.hawksaloft.org/BUOW/BUOW.htm

Use of Artificial Burrows by Burrowing Owls at the HAMMER Facility on the U.S. Dept. of Energy Hanford Site
http://www.pnl.gov/main/publications/external/technical_reports/PNNL-15414.pdf

How to Install Artificial Nesting Burrows for Burrowing Owls
http://www.usga.org/turf/articles/environment/general/Burrowing-Owl-Brochure.pdf

Artificial Burrowing Owl Burrow Design
http://www2.ucsc.edu/scpbrg/artifici.htm

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