# SITE INFORMATION

. ..... --..

		Repor	t Type: Clo	sure R	eport	
General Site In	nformation:	an a	Carl Barbara and Clark	A . N. W. W. SHI . TO ST	59 E (1943)   1899 ( ET (6 ''4' 3) ( South	Cotti i departazione e sulla della sulla con
Site:			eral 23 Tank Batt			
Company:		COG Opera	ting LLC			· · · · · · · · · · · · · · · · · · ·
	ship and Range	Unit L	Sec 23	T16S	R28E	
Lease Number	r:	API-30-015	25332			
County:		Eddy Coun	and the second			
GPS:			32.905833° N			104.152166° W
Surface Owne		Federal				
Mineral Owner	r:					
and travel 2.				travel 2.3	miles, turn left	st on Hwy 82 for 9.3 miles, turn right t and travel 2.3 miles, turn right and
Release Data:		 ∭1st Spill			2nd Spill	
Date Released		02/21/2011			02/26/20	الهربيب المستحد المستحد المستحد فيتعاد والمتحد والمتحد المتحد والمتحد والمستحد والمستحد والمستحد والمستحد والم
Type Release:		Oil			Oil	
Source of Cont			ank Battery		Stock Ta	ink
Fluid Released		65 bbls			40 bbls	<u></u>
Fluids Recover		63 bbls		A	35 bbls	
Official Comm	unication:			E. S. F. A. L.		Statistic Constant Constant
Name:	Pat Ellis				Ike Tavare	9Z
Company:	COG Operating, L	COG Operating, LLC			Tetra Tech	יייייייייייייייייייייייייייייייייייייי
Address:	550 W. Texas Ave	550 W. Texas Ave. Ste. 1300			1910 N. Bi	ig Spring
P.O. Box		· · · · · · · · · · · · · · · · · · ·				
City:	Midland Texas, 79	701			exas	
Phone number:			-		559	
Fax:	(432) 684-7137					
Email:	pellis@conchores				ike tovore	ez@tetratech.com
Linali.	penis@concriores	ources.com			<u>like.lavale</u>	
Ranking Criter				and and a second se Second second second Second second		
Depth to Ground	dwater:		Ranking Score	1		Site Data
<50 ft		·	20	1		
50-99 ft			10			
>100 ft.			0			0
W-111- 1 B.	-4:			T		
WellHead Protect	ction: 1,000 ft., Private <200		Ranking Score 20			Site Data
	1,000 ft., Private >200		0			0
Surface Body of	f Water:		Ranking Score	1		Site Data
<200 ft.	· · · · · · · · · · · · · · · · · · ·		Ranking Score Site Data			She Dala
200 ft - 1,000 ft.			10			
>1,000 ft.			0			0
ста Т	otal Ranking Score		able Soil RRAL (	_		MAY 21 2012
		Benzene	Total BTEX	TPH		MOCD ARTESIA
l		10	50	5,000		NUCD ARTESIA



March 30, 2012

Mr. Mike Bratcher Environmental Engineer Specialist Oil Conservation Division, District 2 1301 West Grand Avenue Artesia, New Mexico 88210

#### Re: Closure Report for the COG Operating LLC., Moose Federal 23 Tank Battery, Unit L, Section 23, Township 16 South, Range 28 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Moose Federal 23 Tank Battery located in Unit L, Section 23, Township 16 South, Range 28 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.905833°, W 104.152166°. The site location is shown on Figures 1 and 2.

#### Background (Spill #1 and #2)

According to the State of New Mexico C-141 Initial Reports, COG had two reportable leaks at the facility. On February 21, 2011, a spill occurred when a swedge failed on a circulating line, releasing approximately sixty five (65) barrels of oil, which was contained inside the facility firewalls. Sixty three (63) barrels of standing fluids were recovered. The spill area measured approximately 10' x 100'.

On February 26, 2011, the second spill was discovered when a hole developed on an oil tank and released approximately forty (40) barrels. Thirty five (35) barrels of fluid were recovered. The release was contained inside the facility firewall and measured approximately 20' x 50'. The initial C-141 forms are enclosed in Appendix A.



#### Groundwater

No water wells were listed within Section 23. According to the NMOCD groundwater map, the average depth to groundwater in this area is less than 50' below surface. A well located in Section 24, T16S, R23E showed a depth to groundwater of 24', with an elevation of approximately 3,570'. In addition, a well located in Section 2, T17S, R28E showed a depth to water of 34' with a surface elevation of 3,574'. The Moose Federal 23 Tank Battery is located on top of the Pavo Mesa, with a surface elevation of 3750', approximately 175' high in elevation. Based on the site relative elevations, the groundwater depth at the Moose Federal Tank Battery should be greater than 100' below surface. The well report data and topographic maps are included in Appendix B.

#### Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

#### **Soil Assessment and Analytical Results**

On March 24, 2010, Tetra Tech personnel inspected and sampled the spill area. Nine (9) auger holes (AH-1 and AH-9) were installed using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The spill area and auger hole locations are shown on Figure 3.

Referring to Table 1, the areas of auger holes (AH-6 and AH-7) did not show TPH and BTEX concentrations above the RRAL. However, AH-1, AH-3, AH-5 and AH-8 samples were above the RRAL for TPH at 0-1' and only



the area of AH-3 was vertically defined at 2.5' below surface. In addition, either the total BTEX or benzene concentrations exceeded the RRAL at 0-1' in the areas of AH-1, AH-2, AH-3, AH-4, AH-5, AH-8 and AH-9. Auger holes (AH-2, AH-3 and AH-4) were vertically defined at 1.0', 2.0' and 1.0', respectively.

Elevated chloride concentrations were detected at 0-1' in the areas of AH-5 and AH-8 with concentrations of 1,570 mg/kg and 2,270 mg/kg, respectively. Due to the dense caliche formation, these areas were not defined using a hand auger.

#### **Closure Activities**

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. The final excavation depths of the soil remediation were met and exceeded as stated in the approved work plan. The spill area inside the tank battery was excavated to approximately 1.0' to 3.0' below surface. A total of 80 cubic yards of soil were excavated and hauled to proper disposal. The excavation depths are highlighted in Table 1 and shown on Figure 4.

As requested by the BLM, confirmation samples were collected from the excavation bottom holes and sidewalls. The confirmation samples results are shown in Table 1. Once excavated to the appropriate depths, the excavation was backfilled with clean soil to grade.

Based on the remedial activities performed, COG request closure of the site. Copies of the C-141's (Finals) are included in Appendix A. If you have any questions or comments concerning the remedial activities, please call at (432) 682-4559

Respectfully submitted, TETRA TECH

Ike Tavarez

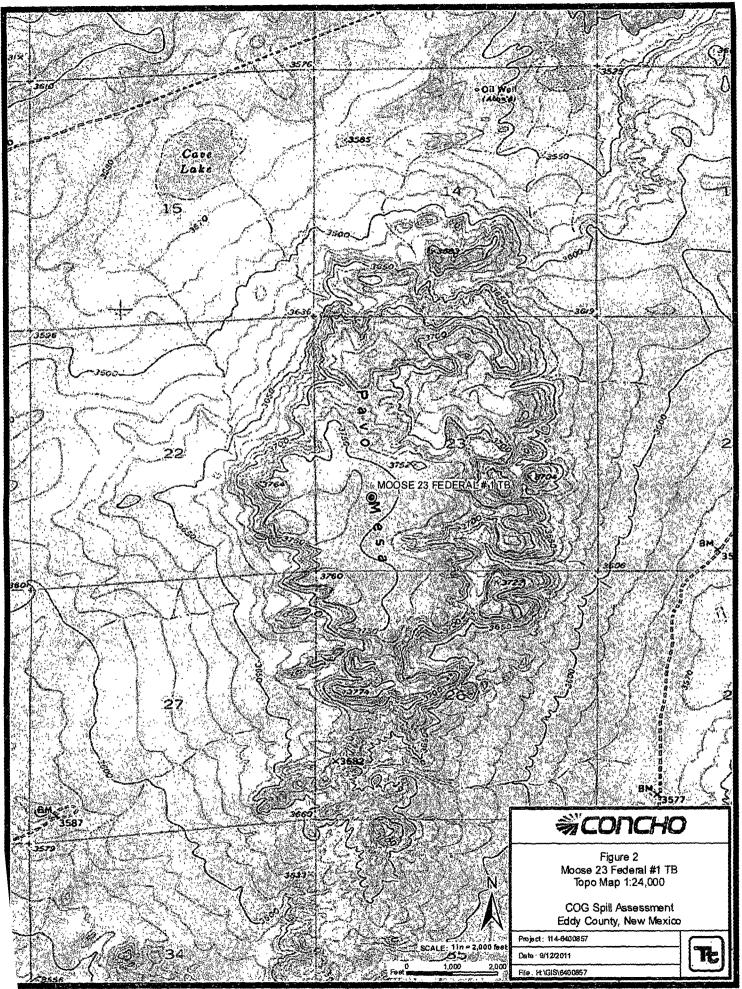
Project Manager

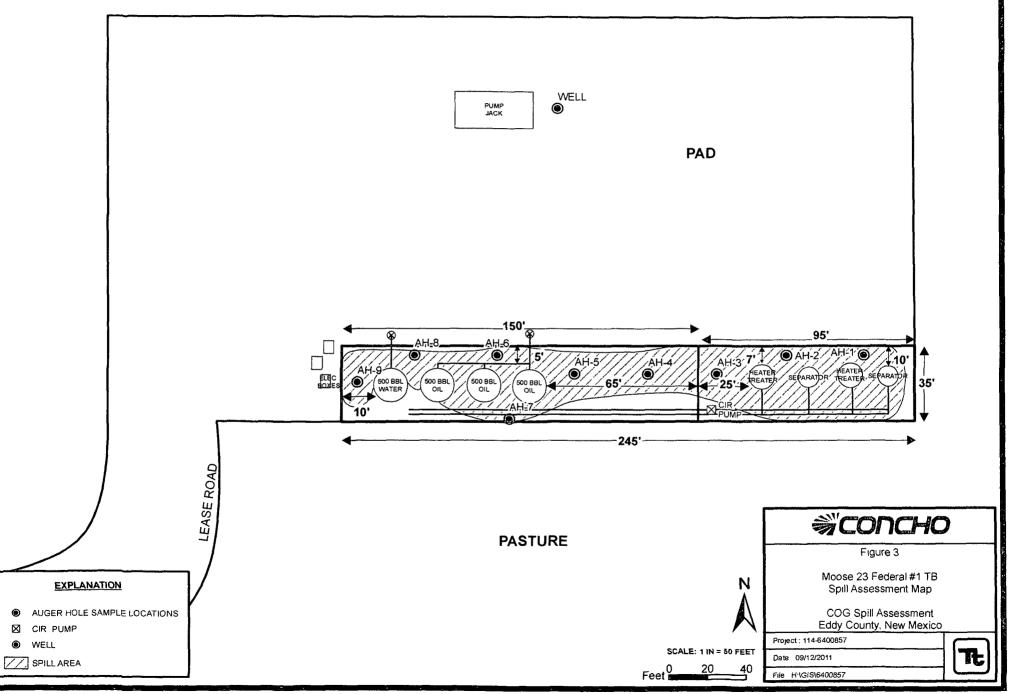
cc: Pat Ellis – COG cc: Terry Gregston – BLM

٠.

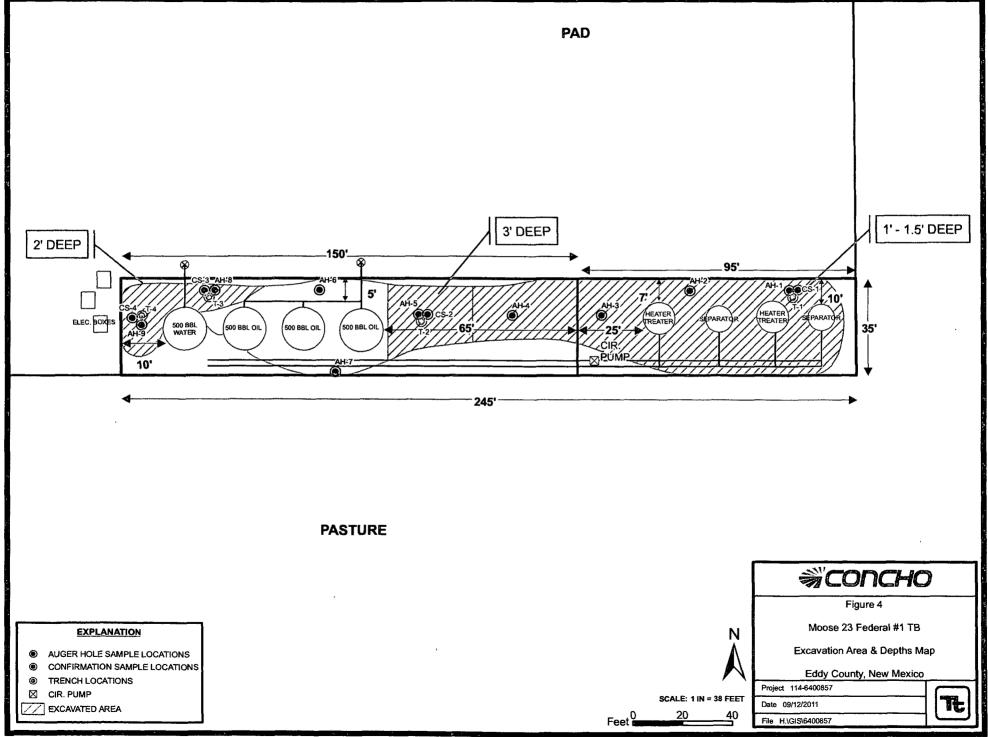
Figures

和伊尼下小学校	
	HERNELLE M
	CHAVES COLOR CONTRACTOR CONTRACTOR COLOR C
	MOOSE 23 FEDERAL # 1 TB
	行行来的建国建立
HIRAS AND AND	
	Э Солсно
	Figure 1 Moose 23 Federal #1 TB Topo Map 1:200,000
	COG Spill Assessment Eddy County, New Mexico Project: 114-6400857
	Scale: 1in = 16,667 fee         Project: 114-6400857           Date: 9/12/2011         Date: 9/12/2011           Feet         File: Ht\GIS\6400857





Drawn By Isebei Marmolejo



Drawn By: Isabel Marmolejo

# Tables

,

# Table 1COG Operating LLC.MOOSE FEDERAL #23 TANK BATTERYEddy County, New Mexico

01-10		Sample	Depth	Soil	Depth Soil Status		PH (mg/k	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX	(mg/kg)
AH-1	3/24/2011	0-1	0.5'	1987 99779 1994 - 468 1984 - 468	X	3,190	1,990	5,180	15.6	1,48	97,2	165	425.8	<200
CS-1 Bottom Hole	1/13/2012	1	-	x		454	664	1,118	<0.100	1.07	6.31	16.7	24.08	-
CS-1 North	1/13/2012	-	-	x		2.84	<50.0	2.84	<0.200	<0.200	<0.200	<0.200	<0.200	-
CS-1 South	1/13/2012	-	-	X		727	607	1,334	<0.100	2.05	5.78	21.5	29.33	-
CS-1 East	1/13/2012	-	-	X		101	2,780	2,881	<0.100	<0.100	<0.100	0.221	0.221	-
T-1	1/13/2012	2	-	x		5.09	<50.0	5.09	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	-
AH-2	3/24/2011	्र्रे, 0-1	0:5		X.	632	929	1,561	0.209	7:40	15.0	28.3	50.9	<200
	11	1-1.5	0.5'	X		64.9	78.8	143.7	<0.0200	0.147	0.244	0.645	1.04	<200
	0/04/0011					× 4/070			21.3				528.3	
AH-3	3/24/2011	0-1 1-1.5				*4,870 5,020	11,700 8,780	16,570 13,800	21.3	165 160	130 113	212 183	528.3 483.7	-324 <200
	11	2-2.5		X		7.26	<50.0	7.26	<0.02	0.171	0.157	0.426	0.75	<200

# Table 1COG Operating LLC.MOOSE FEDERAL #23 TANK BATTERYEddy County, New Mexico

		Sample	Depth	Soil	Status		[PH (mg/l	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX	(mg/kg)
AH-4	3/24/2011	0-1			X	688	37,10	4398	1.37	20.5	19.4	33.8	75.1	as<200.
	16	1-1.5		Х		28.1	<50.0	28.1	<0.0200	0.177	0.277	0.749	1.2	<200
	11	2-2.5		X		10.3	<50.0	10.3	-	-	-	-	-	<200
AH-5	3/24/2011	0-1		8 gt.	X	3,360,	7,300	10,660	13.0	83.5	73	1.24	293.5	1.570
CS-2 Bottom Hole	1/13/2012	3	-	X		512	951	1,463	0.465	12.3	11.5	24.8	49.1	222
CS-2 North	1/13/2012	-	-	x		3.64	<50.0	3.64	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<200
CS-2 South	1/13/2012	-	-	X		66.6	744	811	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<200
AH-6	3/24/2011	0-1		 X		127	293	420	-	 	<u> </u>	   -	-	385
AH-7	3/24/2011	0-1		X		156	2,770	2,926	0.223	0.162	0.154	1.83	2.4	547
								[			[			

## Table 1 COG Operating LLC. **MOOSE FEDERAL #23 TANK BATTERY** Eddy County, New Mexico

		Sample	Depth	Soil	Status	ר	PH (mg/k	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX	(mg/kg)
AH-8	3/24/2011	0-1,			X	.1,280	4,090	<b>5,370</b>	4.25	12.8	5.85	32.9	55.8	2,270
CS-3 Bottom Hole	1/13/2012			A	× X ∦	9.78	65.8	75.6	<0:0200	<0.0200	<0:0200	<0:0200	<0.0200	573
CS-3 Bottom Hole	1/30/2012	2	-	X		-	-	-	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	-
(resampled)														
CS-3 North	1/13/2012	-	-	x		8.97	112	121	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	710
CS-3 South	1/13/2012	-	-	X		10.2	151	161	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,310
	1/13/2012	2	-	x		697	1,420	2,117	3.39	48.8	21.2	64.5	137.9	375
T-3	1/13/2012	4	-	Х		-	-	-	0.412	4.27	1.73	5.45	11.9	-
AH-9	3/24/2011	0-1			X	1,420	2,290	3,710	22.2	111	58.0	96.7	287.9	781
CS-4 Bottom Hole	1/13/2012	2		X		-	-	-	<0.100	0.381	0.383	1.46	2.224	-
CS-4 North	1/13/2012	-	-	x		-	-	-	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	-
CS-4 South	1/13/2012	-	-	X		-	-	-	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	-
CS-4 West	1/13/2012	-		X		-	-	-	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	-
BEB	Below Excavation	on Bottom			•	•			•		· · · · · · · · · · · · · · · · · · ·		<u></u>	1

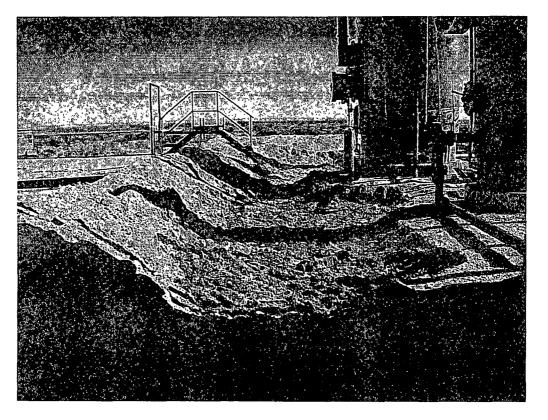
Not Analyzed

(--) 100 - 41 - 3 - 4

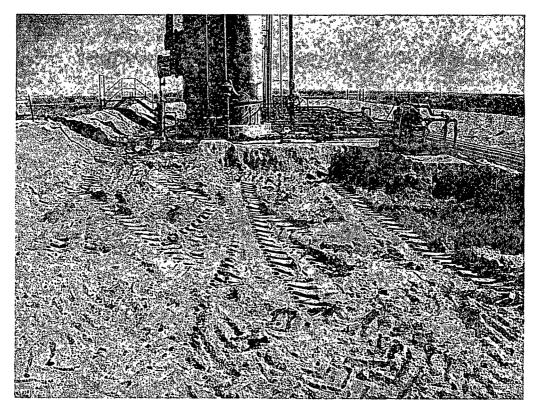
Excavation Depths

Photos

COG Operating LLC Moose Federal 23 Eddy County, New Mexico

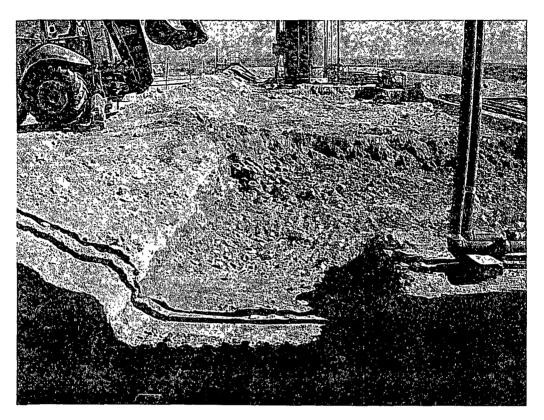


View East – AH-1 and AH-2

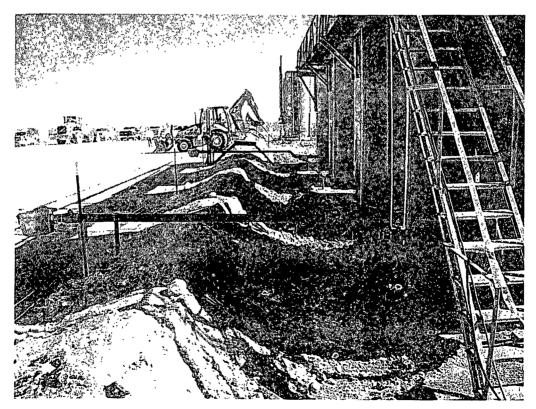


View East – AH-3

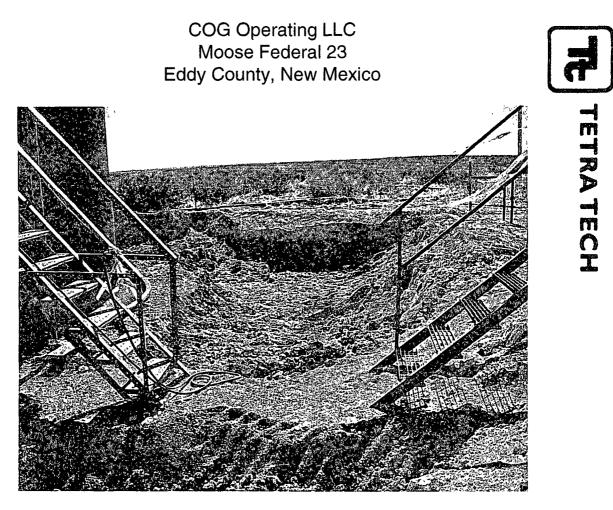
COG Operating LLC Moose Federal 23 Eddy County, New Mexico



View East – AH-4 and AH5



View East – AH-8



View South - AH-9

# Appendix A

	Г	RECEIVE	D					
District II Energy Minera	of New Mexico Is and Natural Resourc	MAY 01 2013	1					
1301 W. Grand Avenue, Artesia, NM 88210	ervation Division		Submit 2 Copies to appropriate					
1000 Rio Brazos Road Aztec: NM 87410	th St. Francis Dr.	NMOCD ARTE	District Office in accordance with Rule 116 on back					
	Fe, NM 87505		side of form					
Release Notificati		e Action						
	OPERATOR		al Report 📋 Final Report					
Name of Company COG OPERATING LLC	Contact	Pat Ellis						
Address 550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077						
Facility Name Moose Federal 23	Facility Type	Tank Battery						
Surface Owner Federal Mineral Owner	f	Lease N	lo. (API#) 30-015-25332					
LOCATI	ON OF RELEASE							
Unit LetterSectionTownshipRangeFeet from theNotL2316528E	th/South Line Feet from	the East/West Line	County Eddy					
Latitude 32 54.35	0 Longitude 104 09	9.130						
	E OF RELEASE							
Type of Release Oil	Volume of Release 65		Recovered 63bbls					
Source of Release Swedge inside tank battery	Date and Hour of Occu 02/21/2011	Urrence Date and 02/21/201	and Hour of Discovery 1/2011 4:30 p.m.					
Was Immediate Notice Given?	If YES, To Whom?	Mike Bratcher-O						
By Whom? Josh Russo	Date and Hour 02/22							
Was a Watercourse Reached?	If YES, Volume Impacting the Watercourse.							
If a Watercourse was Impacted, Describe Fully.*								
Describe Cause of Problem and Remedial Action Taken.*								
Swedge failed on circulating line coming off of production tank. The s	wedge has been replaced wi	ith a new one.						
Describe Area Affected and Cleanup Action Taken.*		·						
Initially 65bbls of oil was released and completely contained inside the standing fluid has been recovered. The contaminated soil has been remo- sample the spill site area to delineate any possible contamination from approval prior to any significant remediation work.	wed from the facility and th	te spill area measured 10	' x 100'. Tetra Tech will					
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:	OIL CONSERVATION DIVISION							
Printed Name: Josh Russo	Approved by District Sup	ervisor.						
Title: HSE Coordinator	Approval Date:	Date:						
E-mail Address: jrusso@conchoresources.com	Conditions of Approval;							
Date: 03/02/2011 Phone: 432-212-2399	L							

.

\* Attach Additional Sheets If Necessary

1625 N, French Dr., Hobbs, NM 88240       Energy Minera <u>District II</u> Oil Cons         1301 W. Grand Avenue, Artesia, NM 88210       District III         1000 Rio Brazos Road, Azteo, NM 87410       0il Cons <u>District IV</u> 1220 Sot         1220 S. St. Francis Dr., Santa Fe, NM 87505       Santa         Release Notificati         Name of Company       COG OPERATING LLC         Address       550 W. Texas, Suite 100, Midland, TX 79701	MAY Is and Natural Resources MOC Servation Division ath St. Francis Dr. Fe, NM 87505 On and Corrective Acti OPERATOR Contact Pat E Telephone No. 432-230	Submit 2 Copies to appropriat District Office in accordance with Rule 116 on bac side of forr OII Initial Report Final Report Ilis -0077
Facility Name Moose Federal 23	Facility Type Tank Ba	
Surface Owner Federal Mineral Owne	ſ	Lease No. (API#) 30-015-25332
		ist/West Line County Eddy
NATUR	E OF RELEASE	
Type of Release Oil	Volume of Release 40bbls	Volume Recovered 35bbls
Source of Release Stock tank	Date and Hour of Occurrence 02/26/2011	Date and Hour of Discovery 02/26/2011 8:30 a.m.
Was Immediate Notice Given?	If YES, To Whom?	te Bratcher—OCD
By Whom? Josh Russo		9:38 a.m.
Was a Watercourse Reached?	If YES, Volume Impacting the V	watercourse.
If a Watercourse was Impacted, Describe Fully.*		
Describe Cause of Problem and Remedial Action Taken.* A hole developed in a stock tank at the tank battery. The tank has been Describe Area Affected and Cleanup Action Taken.*	removed from service.	
Initially 40bbls of oil was released from the stock tank and we were abl the berm walls of the facility and measured an area of 20' x 50' around free fluids have been picked up. Tetra Tech will sample the spill site an remediation work plan to the NMOCD / BLM for approval prior to any	the tanks and toward the heaters. The ea to delineate any possible contamin significant remediation work.	e contaminated soil has been removed and all ation from the release and we will present a
I hereby certify that the information given above is true and complete to regulations all operators are required to report and/or file certain release public health or the environment. The acceptance of a C-141 report by should their operations have failed to adequately investigate and remed or the environment. In addition, NMOCD acceptance of a C-141 report federal, state, or local laws and/or regulations.	notifications and perform corrective the NMOCD marked as "Final Repor- ate contamination that pose a threat to does not relieve the operator of respo-	actions for releases which may endanger t" does not relieve the operator of liability o ground water, surface water, human health onsibility for compliance with any other
Signature: 7-7		RVATION DIVISION
Printed Name: Josh Russo	Approved by District Supervisor:	T
Title: HSE Coordinator	Approval Date:	Expiration Date;
E-mail Address: jrusso@conchoresources.com	Conditions of Approval:	Attached
Date: 03/02/2011 Phone: 432-212-2399 Attach Additional Sheets If Necessary	<u></u>	

.

State of New Mexico Energy Minerals and Natural Resources

**Oil Conservation Division** 

1220 South St. Francis Dr.

Santa Fe, NM 87505

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

Re	lease	Notifica	ation	and	Correcti	ve Action

		OPERATOR	Initial Report	🛛 Final Report
Name of Company COG Operating L	LC	Contact Pat Ellis		
Address 550 W. Texas, Suite 1300 Mid	land, Texas 79701	Telephone No. (432) 230-0077		
Facility Name Moose Federal 23		Facility Type Tank Battery		
Surface Owner: Federal	Mineral Owne	er	Lease No. (API#)	30-015-25332

Surface Ow	er: Federal
------------	-------------

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County	
L	23	16S	28E						Eddy
1									

Latitude 32 54.350 Longitude 104 09.130

#### NATURE OF RELEASE

Type of Release: Oil	Volume of Release 40 bbls	Volume Recovered 35 bbls
Source of Release: Equalizer	Date and Hour of Occurrence	Date and Hour of Discovery
	02/26/2011	02/26/2011 8:30 a.m.
Was Immediate Notice Given?	If YES, To Whom?	
🛛 Yes 🗌 No 🗋 Not Required	I Mike	BratcherOCD
By Whom? Josh Russo	Date and Hour 02/28/2011 9:38	a.m.
Was a Watercourse Reached?	If YES, Volume Impacting the Wa	tercourse.
🗌 Yes 🖾 No	N/A	
If a Watercourse was Impacted, Describe Fully.*		
N/A		
	1100 444	
Describe Cause of Problem and Remedial Action Taken.*		
A hole developed in a stock tank at the tank battery. The tank has been r	emoved from service	
The unit as been the unit of the unit has been t	enioved nom service.	
Describe Area Affected and Cleanup Action Taken.*		
Tetra Tech inspected the site and collected samples to define the spills ex	stent. Impacted soil exceeding RRAL	was removed and hauled to proper disposal.
Once excavated to the appropriate depths, the excavation was backfilled for review.	with clean soil. Tetra Tech prepared	a closure report and submitted it to NMOCD
I hereby certify that the information given above is true and complete to	the best of my knowledge and understa	and that pursuant to NMOCD rules and
regulations all operators are required to report and/or file certain release	notifications and perform corrective ac	tions for releases which may endanger
public health or the environment. The acceptance of a C-141 report by the	he NMOCD marked as "Final Report"	does not relieve the operator of liability
should their operations have failed to adequately investigate and remedia	te contamination that pose a threat to g	ground water, surface water, human health
or the environment. In addition, NMOCD acceptance of a C-141 report of federal, state, or local laws and/or regulations.	does not relieve the operator of respon	sibility for compliance with any other
rederal, state, or local laws and the guide ons.	OIL CONSERV	
	<u>OIL CONSER</u>	VATION DIVISION
Signature:		
	Approved by District Supervisor:	
Printed Name: Ike Tavarez (agent for COG)		
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	
	Conditions of Approval.	Attached
Date: 3-30-12 Phone: (432) 682-4559 * Attach Additional Sheets If Necessary		
* Attach Additional Sheets If Necessary		· · · · · · · · · · · · · · · · · · ·

State of New Mexico Energy Minerals and Natural Resources

Form C-141 Revised October 10, 2003

with Rule 116 on back

side of form

Submit 2 Copies to appropriate District Office in accordance

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

### **Release Notification and Corrective Action**

		OPERATOR	Initial Report	t 🛛 🛛 Final Repoi
Name of Company COG Operating LLC	, ,	Contact Pat Ellis		
Address 550 W. Texas, Suite 1300 Midla	nd, Texas 79701	Telephone No. (432) 230-0077		
Facility Name Moose Federal 23		Facility Type Tank Battery		
				W 00 015 05000
Surface Owner: Federal	Mineral Owne	er	Lease No. (API	(#) 30-015-25332

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County	
L	23	16S	28E						Eddy

Latitude 32 54.350 Longitude 104 09.130

NATURE OF RELEASE

Type of Release: Oil	Volume of Release 65 bbls	Volume Recovered 63 bbls					
Source of Release: Equalizer	Date and Hour of Occurrence	Date and Hour of Discovery					
	02/21/2011	02/21/2011 4:30 p.m.					
Was Immediate Notice Given?	If YES, To Whom?						
🛛 Yes 🔲 No 🗌 Not Required	Mike	BratcherOCD					
By Whom? Josh Russo	Date and Hour 3/15/10 4:59 p.m						
Was a Watercourse Reached?	If YES, Volume Impacting the Wa	tercourse.					
🗌 Yes 🖾 No	N/A						
If a Watercourse was Impacted, Describe Fully.*							
N/A							
Describe Cause of Problem and Remedial Action Taken.*		······					
Describe Cause of Froblem and Kemedial Action Taken.							
Swedge failed on circulating line coming off of production tank. The sw	edge has been replaced with a new on	e.					
Describe Area Affected and Cleanup Action Taken.*							
Tetra Tech inspected the site and collected samples to define the spills ex	tent Imposted soil exceeding DDAL	was removed and havled to prepar dispess!					
Once excavated to the appropriate depths, the excavation was backfilled							
for review.	with clour son. Tout Teen prepared						
I hereby certify that the information given above is true and complete to							
regulations all operators are required to report and/or file certain release	notifications and perform corrective ac	tions for releases which may endanger					
public health or the environment. The acceptance of a C-141 report by the	ne NMOCD marked as "Final Report"	does not relieve the operator of liability					
should their operations have failed to adequately investigate and remedia	te contamination that pose a threat to g	ground water, surface water, human health					
or the environment. In addition, NMOCD acceptance of a C-141 report of federal, state, or Jocal laws and/or regulations.	loes not relieve the operator of respon	sibility for compliance with any other					
rederal, state, of feed laws and/of regulations.	OIL CONSED	VATION DIVISION					
	<u>OIL CONSER</u>	VATION DIVISION					
Signature:							
	Approved by District Supervisor:						
Printed Name: Ike Tavarez (agent for COG)							
Title: Project Manager	Approval Date:	Expiration Date:					
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:						
E man riddross. ike. Tavaleze redaredn.com	Conditions of Approval.	Attached					
Date: J-JU-12 Phone: (432) 682-4559							

Attach Additional Sheets If Necessary

# Appendix B

#### Water Well Data Average Depth to Groundwater (ft) COG - Moose Federal 23 Eddy County, New Mexico

2	26 East				15 9	iouth		27 Eae	st			15 1	South		28 East			
3	2	.11	7	6 18	5	4	3	2	1 23	7	6	5	4	3	2	1		6
10	11	12	-1	7	8	9	10	11	12	-	7	B	9	10	11	12	1	7
15	14	13	-	18	17	16	15	14	13	-	18	17	16	15	14	13	-1	18
			_							_	35	43						
22	23	24		19	20	21 40	22	23	24	1	19	20	21	22	23	24		19
27	26	25	1	30	29	28	27	26	25	1	30	29	28	27	26	25	1	30
34	35	36	1	31	32	33	34	35	36	-	31	32	33	34	35	36	-{	31
			ļ	62			85		<u> </u>							<u> </u>		
	16 :	South	2	27 East				16	South		28 East				16 S	outh		29 Ea
3	5	4	3	2	1	7	6	5	4	3	2	1	7	6	5	4	3	2
i	в	Ð	10	11	12	1	7	8	9	10	11	12 47'	1	7	8	9	10	11
18	17	16	15	14	13	1	18	17	16	15	14	13	1	18	17	16	15	14
19	20	21	22	23	24	1	19	20	21	22	23, SH		1	19	20	21	22	23
30	29	28	27	26	25	1	30	29	28	27	26	24' 25	-	<u>110</u> 30	29	28	27	26
31	32	33	70 34	35	36		31	32	33	34	35	36	-	31	32	33	34	35
					1	1							4	L				
	and the second se	South	the state of the s	27 East		-		_	South	_	28 East		-	(	17 Sc	puth		29 Ea
š	5 30	4	3	2	1		6	5	4	3	2 34'	1		6	5	4	3	2
4	B	9	10	11 54 50	12	1	7	8	9	10	11	12	7	7	8	9	10	11
8	17	16	15	14	13	1	18	17	16	15	14	13	1	18	17	16	15	14
16 19	283	194	22	23	24	-	19	20	21	-		-	-1	19	20	0.	-	
			<u> </u>	40		]	L			22 79	23	24				21		60 23
Ю	29	28	27	26	25		30	29	28	27	26	25	1	30	29 210 208'	28	27	26
51	32 120	33	34	35	36	1	31	32	33	34 53	35	36	1	31		33	34	35 153
_	TIL V			and some second		1			1	123				L				1103

New Mexico State Engineers Well Reports

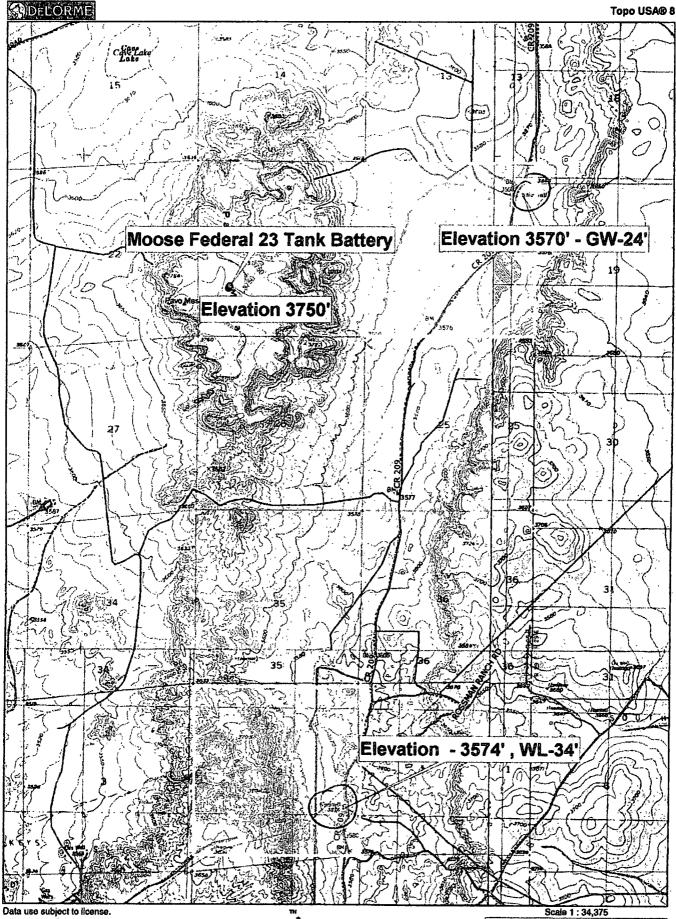
USGS Well Reports

· ·

.

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD Map - Groundwater Data



MIN (7.9'E)

100

1" = 2,864.6 ft

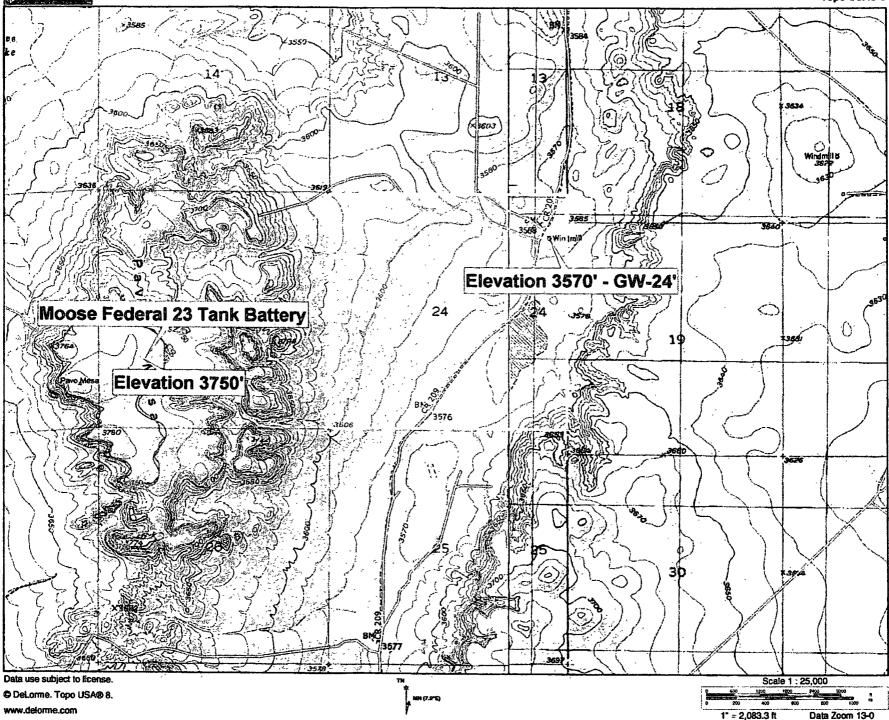
7

Data Zoom 12-5

© DeLorme. Topo USA® 8.

www.delorme.com

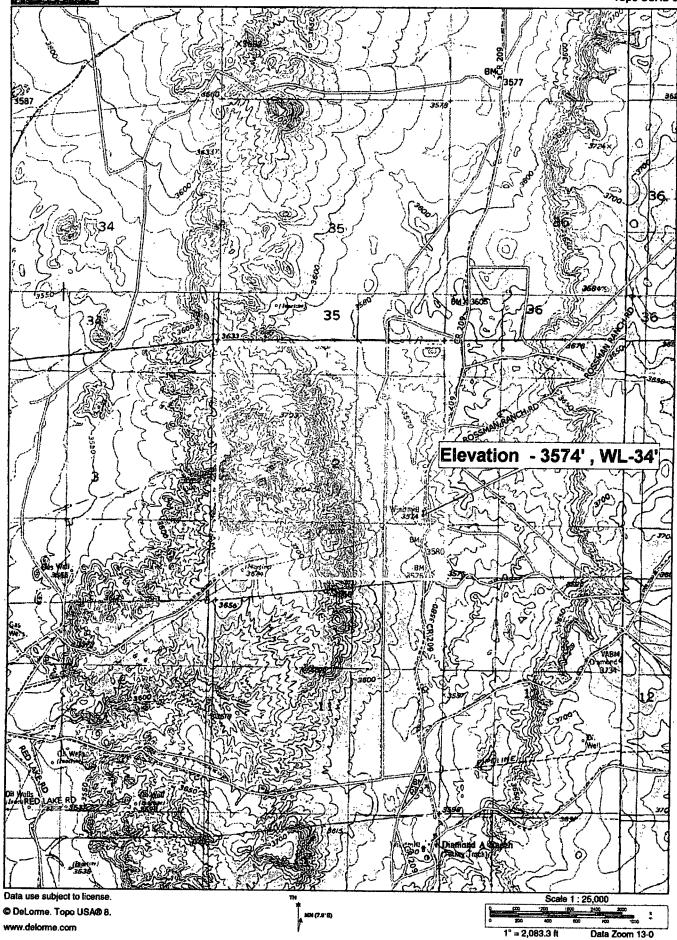
#### DELORME



### DELORME

.

Topo USA® 8





# New Mexico Office of the State Engineer Water Column/Average Depth to Water

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

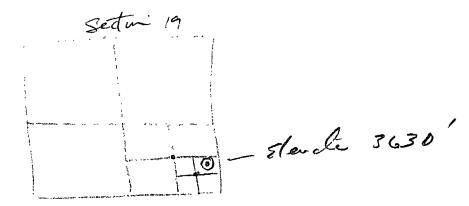
Su POD Number bas	b in Use (	(quarte County							(NAD83 UTN X		Depth       Well	(In feet) Depth W WaterCo	
RA 09342	DOM	ED	4	4	3	19	16S	29E	582737 Aven	3640640* age Depth to	220 Water:	110 110 fe	110 et
										Minimum	•		

#### **Record Count: 1**

#### PLSS Search:

Township: 16S

Range: 29E



9

#### \*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



# New Mexico Office of the State Engineer Water Column/Average Depth to Water

No records found.

**PLSS Search:** 

Township: 16S

Range: 28E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



.

# New Mexico Office of the State Engineer Water Column/Average Depth to Water

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

S POD Number ba	ub Isin Use (	(quarte County							NAD83 UTN		) Veli V	(in feet) Depth W NaterCo	
RA 09342	DOM	ED	4	4	3	19	16S	29E	582737	3640640*	220	110	110
									Avera	age Depth to	Water:	110 fee	et
										Minimum	Depth:	110 fee	et
										Maximum	Depth:	110 fea	et

#### **Record Count: 1**

#### PLSS Search:

Township: 16S Range: 29E

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

# Appendix C

.

### **Summary Report**

Ike Tavarez Tetra Tech 1910 N. Big Spring Street Midland, TX 79705

Project Location:Eddy Co., NMProject Name:COG/Moose Fed. #23 TBProject Number:114-6400857

Date Date Time Sample Description Matrix Taken Taken Received 261909 AH-2 0-1' 0.5' BEB 2011-03-24 2011-03-28 soil 00:00 261910 AH-2 1-1.5' 0.5' BEB soil 2011-03-24 00:00 2011-03-28 261914 AH-4 0-1' soil 2011-03-24 2011-03-28 00:00 261915 AH-4 1-1.5' soil 2011-03-24 00:00 2011-03-28 AH-7 0-1' 261919 soil 2011-03-24 2011-03-28 00:00 AH-9 0-1' 1' BEB 261921 soil 2011-03-24 2011-03-28 00:00

		]	BTEX	
	Benzene	Toluene	Ethylbenzene	Xylene
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
261909 - AH-2 0-1' 0.5' BEB	0.209	7.40	15.0	28.3
261910 - AH-2 1-1.5' 0.5' BEB	< 0.0200	0.147	0.244	0.645
261914 - AH-4 0-1'	1.37	20.5	19.4	33.8
261915 - AH-4 1-1.5'	<0.0200	0.177	0.277	0.749
261919 - AH-7 0-1'	0.223	0.162	0.154	1.83
261921 - AH-9 0-1' 1' BEB	22.2	111	58.0	96.7

Report Date: September 8, 2011

Work Order: 11032822



5002 Basin Street, Soite Ail 6915 Hams Parkway, Suite 110 - Ft. Worth: Texas 76132

Midland, Javas 79703

E-Mail: lab@traceanalysis.com

FAX 432+689+6313 817+201+5260

**WBENC:** 237019

HUB: 1752439743100-86536 NCTRCA WFWB38444Y0909

Certifications

DBE: VN 20657

### **NELAP** Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317

El Paso: T104704221-08-TX LELAP-02002

Midland: T104704392-08-TX

## Analytical and Quality Control Report

Ike Tavarez Tetra Tech 1910 N. Big Spring Street Midland, TX, 79705

Report Date: September 8, 2011

Work Order: 11032822 

Project Location: Eddy Co., NM Project Name: COG/Moose Fed. #23 TB Project Number: 114-6400857

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
261909	AH-2 0-1' 0.5' BEB	soil	2011-03-24	00:00	2011-03-28
261910	AH-2 1-1.5' 0.5' BEB	soil	2011-03-24	00:00	2011-03-28
261914	AH-4 0-1'	soil	2011-03-24	00:00	2011-03-28
261915	AH-4 1-1.5'	soil	2011-03-24	00:00	2011-03-28
261919	AH-7 0-1'	soil	2011-03-24	00:00	2011-03-28
261921	AH-9 0-1' 1' BEB	soil	2011-03-24	00:00	2011-03-28

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.

This report consists of a total of 9 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael april

Dr. Blair Leftwich, Director Dr. Michael Abel, Project Manager

#### Standard Flags

 ${\bf B}\,$  - The sample contains less than ten times the concentration found in the method blank.

# **Case Narrative**

Samples for project COG/Moose Fed. #23 TB were received by TraceAnalysis, Inc. on 2011-03-28 and assigned to work order 11032822. Samples for work order 11032822 were received intact at a temperature of 3.6 C.

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

		Prep	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	67886	2011-04-01 at 11:35	80015	2011-04-02 at 14:30

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 11032822 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.

Report Date:	September 8, 2011
114-6400857	

Work Order: 11032822 COG/Moose Fed. #23 TB Page Number: 4 of 9 Eddy Co., NM

# **Analytical Report**

#### Sample: 261909 - AH-2 0-1' 0.5' BEB

Laboratory:MidlandAnalysis:BTEXQC Batch:80015Prep Batch:67886		Analytical Date Analy Sample Pre	zed:	S 8021B 2011-04-02 2011-04-01		Prep Me Analyze Preparec	d By:	S 5035 ME ME
		$\mathbf{RL}$						
Parameter Fla	g	$\mathbf{Result}$		Units	Γ	Dilution		$\mathbf{RL}$
Benzene		0.209		mg/Kg		1		0.0200
Toluene		7.40		mg/Kg		1		0.0200
Ethylbenzene		15.0		mg/Kg		1		0.0200
Xylene		28.3		mg/Kg		1		0.0200
					Spike	Percent	Re	covery
Surrogate	Flag	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	$\mathbf{L}$	imits
Trifluorotoluene (TFT)		2.45	mg/Kg	1	2.00	122	82.8	- 143.1
4-Bromofluorobenzene (4-BFB)	1	6.47	mg/Kg	1	2.00	324	70.	6 - 179

#### Sample: 261910 - AH-2 1-1.5' 0.5' BEB

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 80015 67886		Analytical Date Analy Sample Pre	zed:	S 8021B 2011-04-02 2011-04-01		Prep Me Analyze Preparec	d By:	S 5035 ME ME
			RI	,					
Parameter	Flag	5	Result	t	Units	Ι	Dilution		$\mathbf{RL}$
Benzene			< 0.0200	)	mg/Kg		1		0.0200
Toluene			0.147	,	mg/Kg		1		0.0200
Ethylbenzene	;		0.244	l	mg/Kg		1		0.0200
Xylene			0.645	<b>.</b>	mg/Kg		1		0.0200
						Spike	Percent	Re	covery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	L	imits
Trifluorotolue	ene (TFT)		2.10	mg/Kg	1	2.00	105	82.8	- 143.1
4-Bromofluor	obenzene (4-BFB)		2.25	mg/Kg	1	2.00	112	70.	6 - 179

#### Sample: 261914 - AH-4 0-1'

Laboratory:		Applytical Mathad	C 0001D	Drop Mathad	G 5025
Analysis: QC Batch:	BTEX 80015	Analytical Method: Date Analyzed:	S 8021B 2011-04-02	Prep Method: Analyzed By:	
Prep Batch:		Sample Preparation:		Prepared By:	

<sup>1</sup>High surrogate recovery due to peak interference.

Report Date: September 8, 2011 114-6400857		(		ler: 11032822 e Fed. #23 TE	3	Page	Number: 5 of 9 Eddy Co., NM
		RL					
Parameter Flag		$\mathbf{Result}$		Units	Γ	Dilution	RL
Benzene		1.37		mg/Kg		1	0.0200
Toluene <sup>2</sup>		20.5		mg/Kg		1	0.0200
Ethylbenzene <sup>3</sup>		19.4		mg/Kg		1	0.0200
Xylene 4		33.8		mg/Kg		1	0.0200
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.06	mg/Kg	1	2.00	103	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)	5	6.44	mg/Kg	1	2.00	322	70.6 - 179
Sample: 261915 - AH-4 1-1.5' Laboratory: Midland		A	Madla J	0 00010			
Sample: 261915 - AH-4 1-1.5' Laboratory: Midland Analysis: BTEX QC Batch: 80015		Analytical Date Anal Sample Pr	yzed:	S 8021B 2011-04-02 2011-04-01		Prep Me Analyze Preparec	d By: ME
Sample: 261915 - AH-4 1-1.5' Laboratory: Midland Analysis: BTEX QC Batch: 80015		Date Anal	yzed: eparation:	2011-04-02		Analyze	d By: ME
Sample: 261915 - AH-4 1-1.5' Laboratory: Midland Analysis: BTEX QC Batch: 80015 Prep Batch: 67886		Date Anal Sample Pr	yzed: eparation: L	2011-04-02	Γ	Analyze	d By: ME
Sample: 261915 - AH-4 1-1.5' Laboratory: Midland Analysis: BTEX QC Batch: 80015 Prep Batch: 67886 Parameter Flag		Date Anal Sample Pr RI Resul	yzed: eparation: L t 0	2011-04-02 2011-04-01 Units mg/Kg	E	Analyze Preparec	d By: ME l By: ME
Sample: 261915 - AH-4 1-1.5' Laboratory: Midland Analysis: BTEX QC Batch: 80015 Prep Batch: 67886 Parameter Flag Benzene Toluene		Date Analy Sample Pr RI Resul <0.020 0.17	yzed: eparation: L t 0 7	2011-04-02 2011-04-01 Units mg/Kg mg/Kg	T	Analyzed Prepared Dilution	d By: ME l By: ME RL 0.0200 0.0200
Sample: 261915 - AH-4 1-1.5' Laboratory: Midland Analysis: BTEX QC Batch: 80015 Prep Batch: 67886 Parameter Flag Benzene Toluene Ethylbenzene		Date Analy Sample Pr RI Resul <0.0200 0.17' 0.27'	yzed: eparation: L t 0 7 7	2011-04-02 2011-04-01 <u>Units</u> mg/Kg mg/Kg	<u>F</u>	Analyzed Prepared Dilution 1 1 1	d By: ME l By: ME RL 0.0200 0.0200 0.0200
Sample: 261915 - AH-4 1-1.5' Laboratory: Midland Analysis: BTEX QC Batch: 80015 Prep Batch: 67886 Parameter Flag Benzene		Date Analy Sample Pr RI Resul <0.020 0.17	yzed: eparation: L t 0 7 7	2011-04-02 2011-04-01 Units mg/Kg mg/Kg	<u> </u>	Analyzed Prepared Dilution 1 1	d By: ME l By: ME RL 0.0200 0.0200
Sample: 261915 - AH-4 1-1.5' Laboratory: Midland Analysis: BTEX QC Batch: 80015 Prep Batch: 67886 Parameter Flag Benzene Toluene Ethylbenzene Xylene		Date Analy Sample Pr Rl Resul <0.0200 0.17' 0.27' 0.74	yzed: eparation: L t 0 7 7	2011-04-02 2011-04-01 <u>Units</u> mg/Kg mg/Kg	Spike	Analyzed Prepared Dilution 1 1 1 1 Percent	d By: ME l By: ME RL 0.0200 0.0200 0.0200 0.0200 Recovery
Sample: 261915 - AH-4 1-1.5' Laboratory: Midland Analysis: BTEX QC Batch: 80015 Prep Batch: 67886 Parameter Flag Benzene Toluene Ethylbenzene	Flag	Date Analy Sample Pr RI Resul <0.0200 0.17' 0.27'	yzed: eparation: L t 0 7 7 9	2011-04-02 2011-04-01 <u>Units</u> mg/Kg mg/Kg mg/Kg mg/Kg		Analyzed Prepared Dilution 1 1 1 1	d By: ME l By: ME RL 0.0200 0.0200 0.0200 0.0200

#### Sample: 261919 - AH-7 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 80015 67886		Analytical Method: Date Analyzed: Sample Preparation:	S 8021B 2011-04-02 2011-04-01	Prep Method: Analyzed By: Prepared By:	S 5035 ME ME
			RL			
Parameter		Flag	Result	Units	Dilution	RL
Benzene			0.223	mg/Kg	1	0.0200
Toluene			0.162	mg/Kg	1	0.0200
Ethylbenzene	e		0.154	mg/Kg	1	0.0200
Xylene			1.83	mg/Kg	1	0.0200

<sup>2</sup>Estimated concentration value greater than standard range. <sup>3</sup>Estimated concentration value greater than standard range. <sup>4</sup>Estimated concentration value greater than standard range. <sup>5</sup>High surrogate recovery due to peak interference.

Report Date: September 8, 2011 114-6400857				er: 11032822 Fed. #23 TE	}	Ų	Page Number: 6 of 9 Eddy Co., NM		
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits		
Trifluorotoluene (TFT)		1.93	mg/Kg	1	2.00	96	82.8 - 143.1		
4-Bromofluorobenzene (4-BFB)		2.36	mg/Kg	1	2.00	118	70.6 - 179		

#### Sample: 261921 - AH-9 0-1' 1' BEB

Laboratory:	Midland								
Analysis:	BTEX		Analytical	Method:	S 8021B		Prep Me	thod:	S 5035
QC Batch:	80015		Date Analy	yzed:	2011-04-02		Analyzed	d By:	ME
Prep Batch:	67886		Sample Pro	eparation:	2011-04-01		Preparec	l By:	ME
1			$\mathbf{RL}$						
Parameter	Flag		Result		Units	Γ	Dilution		RL
Benzene			22.2		mg/Kg		10		0.0200
Toluene	6		111		mg/Kg		10		0.0200
Ethylbenzene			58.0		mg/Kg		10		0.0200
Xylene			96.7		mg/Kg		10		0.0200
						Spike	Percent	Re	covery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	L	imits .
Trifluorotolue	ne (TFT)		9.66	mg/Kg	10	10.0	97	82.8	3 - 143.1
4-Bromofluor	obenzene (4-BFB)	7	21.0	mg/Kg	10	10.0	210	70.	6 - 179

#### Method Blank (1) QC Batch: 80015

QC Batch: 80015		Date An		011-04-02		•	vzed By: ME
Prep Batch: 67886		QC Prep	earation: 2	011-04-01		Prepa	ared By: ME
			MI	DL			
Parameter	Flag		Res	ult	Un	its	$\mathbf{RL}$
Benzene			< 0.01	18	mg	′Kg	0.02
Toluene			< 0.006	00	mg/	′Kg	0.02
Ethylbenzene			< 0.008	50	mg	′Kg	0.02
Xylene			< 0.006	13	mg	′Kg	0.02
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		1.78	mg/Kg	1	2.00	89	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)		1.73	mg/Kg	1	2.00	86	48.4 - 123.1

<sup>6</sup>Estimated concentration value greater than standard range. <sup>7</sup>High surrogate recovery due to peak interference.

Report Date: September 8, 2011 114-6400857				k Order: 1 Moose Fed		B			Page	Number Eddy (	r: 7 of 9 Co., NM
Laboratory Control Spike (Le	CS-1)										
QC Batch: 80015		Date	Analyze	d: 2011-(	)4-02				Anal	yzed By	: ME
Prep Batch: 67886		QC P	reparati	on: 2011-0	)4-01				Prep	ared By	: ME
	LC	10			G., 11,		М.,	·		т	2
Param	Res		Units	Dil.	Spik Amou		Rea	trix sult	Rec.		Rec. imit
Benzene	1.7		mg/Kg	1	2.00			)118	85		- 121.7
Toluene	1.7		mg/Kg	1	2.00			0600	88		- 121.6
Ethylbenzene	1.9		mg/Kg	1	2.00		<0.0		96		- 117.9
Xylene	5.7		mg/Kg	1	6.00			0613	96		- 118.8
Percent recovery is based on the s									t.		
	LCSD			Spike	Mat	rix		]	Rec.		RPD
Param	Result	Units	Dil.	Amount	Res	ult	Rec.	I	Jimit	RPD	Limit
Benzene	1.76	mg/Kg	g 1	2.00	<0.0	118	88	77.4	- 121.7	4	20
Toluene	1.81	mg/Kg	g 1	2.00	<0.00	)600	90	88.6	- 121.6	3	20
Ethylbenzene	1.96	mg/K		2.00	<0.00	)850	98	74.3	- 117.9	3	20
Xylene	5.89	mg/Kg		6.00	<0.00	)613	98	73.4	- 118.8	2	20
Percent recovery is based on the s				on the spik	e and sp		_			_	
a ,	LC		CSD	TT ''	וית	Spik		LCS	LCSD		lec.
Surrogate	Res		lesult	Units	Dil.	Amou		Rec.	Rec.		imit
							<b>`</b>				- 116.7
	1.7		1.51 1.50	mg/Kg mg/Kg	1	2.00		87 02	76		
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike	1.8	34	1.59	mg/Kg	1	2.00		92	80		- 132.1
4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike		261925		mg/Kg	1				80		- 132.1
4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike QC Batch: 80015	1.8	34 261925 Date .	1.59	mg/Kg l: 2011-0	1				80 Analy	56.2	- 132.1 ME
4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike QC Batch: 80015	1.8 d Sample:	261925 Date . QC P	1.59 Analyzea	mg/Kg l: 2011-0	1 )4-02 )4-01	2.00	)	92	80 Analy	56.2 yzed By: ared By:	- 132.1 ME ME
4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike QC Batch: 80015 Prep Batch: 67886	1.8 d Sample: 1 M	34 261925 Date .	1.59 Analyzea reparatio	mg/Kg d: 2011-0 on: 2011-0	1	2.00		92 trix	80 Analy Prepa	56.2 yzed By: ared By: F	- 132.1 ME
4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 80015 Prep Batch: 67886 Param	1.8 d Sample: M Res	34 261925 Date QC P IS sult	1.59 Analyzea reparatio Units	mg/Kg l: 2011-0	1 04-02 04-01 Spika	2.00 e nt	) Ma Res	92 trix ult	80 Analy Prepa Rec.	56.2 yzed By: ared By: F	ME ME ME tec.
4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike QC Batch: 80015 Prep Batch: 67886 Param Benzene	1.8 d Sample: 1 M Res 8 1.	34 261925 Date QC P IS sult 61	1.59 Analyzeo reparatio Units mg/Kg	mg/Kg d: 2011-0 on: 2011-0 Dil.	1 94-02 94-01 Spike <u>Amou</u> 2.00	2.00 e nt	) Mai Res <0.(	92 trix sult 118	80 Analy Prepa Rec. 80	56.2 yzed By: ared By: F Li 69.4	- 132.1 ME ME tec. imit - 123.6
4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 80015 Prep Batch: 67886 Param Benzene Toluene	1.8 d Sample: 1 M Res 8 1. 9 1.	261925 Date QC P 1S sult 61 70	Analyzea reparatio Units mg/Kg mg/Kg	mg/Kg d: 2011-0 on: 2011-0 Dil. 1	1 )4-02 )4-01 Spik Amou	2.00 e nt	) Ma Res	92 trix sult 1118 724	80 Analy Prepa Rec.	56.2 yzed By: wred By: F Li 69.4 75.4	- 132.1 ME ME tec. imit - 123.6 - 134.3
4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 80015 Prep Batch: 67886 Param Benzene Toluene Ethylbenzene	1.8 d Sample: 1 d Sample: 1 M Res 8 1. 9 1. 1	34 261925 QC P IS sult 61 70 72	1.59 Analyzeo reparatio Units mg/Kg	mg/Kg d: 2011-0 on: 2011-0 Dil. 1 1	1 94-02 94-01 Spike Amou 2.00 2.00	2.00	) Ma Res <0.( 0.1'	92 trix oult 1118 724 0850	80 Analy Prepa Rec. 80 76	56.2 yzed By: wred By: Ei 69.4 75.4 58.8	- 132.1 ME ME tec. imit - 123.6
4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike QC Batch: 80015 Prep Batch: 67886 Param Benzene Toluene Ethylbenzene Xylene	1.8 d Sample: 1 M Res 8 1. 9 1. 1. 10 5.	261925 Date QC P IS sult 61 70 72 25	Analyzee reparatio Units mg/Kg mg/Kg mg/Kg mg/Kg	mg/Kg d: 2011-0 on: 2011-0 Dil. 1 1 1 1 1	1 04-02 04-01 Spik Amou 2.00 2.00 2.00 6.00	2.00	) Ma Res <0.0 0.1' <0.0 0.5	92 trix ult 0118 724 0850 52	80 Analy Prepa Rec. 80 76 86 78	56.2 yzed By: wred By: Ei 69.4 75.4 58.8	- 132.1 ME ME - 123.6 - 134.3 - 133.7
4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike QC Batch: 80015	1.8 d Sample: 1 M Res 8 1. 9 1. 1. 10 5.	261925 Date QC P IS sult 61 70 72 25	Analyzee reparatio Units mg/Kg mg/Kg mg/Kg mg/Kg	mg/Kg d: 2011-0 on: 2011-0 Dil. 1 1 1 1 1	1 04-02 04-01 Spik Amou 2.00 2.00 2.00 6.00	e nt ike du	) Ma Res <0.0 0.1' <0.0 0.5	92 trix ult 0118 724 0850 52 e result	80 Analy Prepa Rec. 80 76 86 78	56.2 yzed By: wred By: Ei 69.4 75.4 58.8	- 132.1 ME ME - 123.6 - 134.3 - 133.7
4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spike QC Batch: 80015 Prep Batch: 67886 Param Benzene Toluene Ethylbenzene Xylene	1.8 d Sample: 1 d Sample: 1 M Res 8 1. 9 1. 1 10 5. spike result	261925 Date QC P IS sult 61 70 72 25	Analyzee reparatio Units mg/Kg mg/Kg mg/Kg mg/Kg	mg/Kg d: 2011-0 on: 2011-0 Dil. 1 1 1 1 1 0 the spik	1 04-02 04-01 Spik Amou 2.00 2.00 2.00 6.00 e and sp	e nt ike du rix	) Ma Res <0.0 0.1' <0.0 0.5	92 trix ult 0118 724 0850 52 e result F	80 Analy Prepa Rec. 80 76 86 78 5.	56.2 yzed By: wred By: Ei 69.4 75.4 58.8	- 132.1 ME ME tec. imit - 123.6 - 134.3 - 133.7 134.2

<sup>8</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control. <sup>9</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control. <sup>10</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

continued ...

Report Date: September 8, 2011	Work Order: 11032822	Page Number: 8 of 9
114-6400857	COG/Moose Fed. #23 TB	Eddy Co., NM

matrix spikes continued ...

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Toluene	1.88	mg/Kg	1	2.00	0.1724	85	75.4 - 134.3	10	20
Ethylbenzene	1.96	mg/Kg	1	2.00	< 0.00850	98	58.8 - 133.7	13	20
Xylene	5.97	mg/Kg	1	6.00	0.552	90	57 - 134.2	13	20

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

Surrogate	MS Result	${ m MSD}$ Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.87	2.28	mg/Kg	1	2	94	114	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.12	2.41	mg/Kg	1	2	106	120	71 - 167

.

#### Standard (CCV-1)

QC Batch: 80015			Date Analyzed:	2011-04-02		Analyzed By: ME		
			CCVs	CCVs	CCVs	Percent		
			True	Found	Percent	Recovery	Date	
Param	Flag	$\mathbf{Units}$	Conc.	Conc.	Recovery	Limits	Analyzed	
Benzene	······································	mg/Kg	0.100	0.0871	87	80 - 120	2011-04-02	
Toluene		mg/Kg	0.100	0.0894	89	80 - 120	2011-04-02	
Ethylbenzene		mg/Kg	0.100	0.0981	98	80 - 120	2011-04-02	
Xylene		mg/Kg	0.300	0.294	98	80 - 120	2011-04-02	

#### Standard (CCV-2)

QC Batch: 80	015		Date Analyzed	: 2011-04-02		Analy	yzed By: ME
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0885	88	80 - 120	2011-04-02
Toluene		mg/Kg	0.100	0.0908	91	80 - 120	2011-04-02
Ethylbenzene		mg/Kg	0.100	0.0974	97	80 - 120	2011-04-02
Xylene		mg/Kg	0.300	0.294	98	80 - 120	2011-04-02

#### Standard (CCV-3)

QC Batch: 80	015		Date Analyzed:	2011-04-02	2	Anal	yzed By: ME
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0872	87	80 - 120	2011-04-02
				-			

continued ...

Report Date: Se 114-6400857	eptember 8, 2	011		ork Order: 110 /Moose Fed.		Page	Number: 9 of 9 Eddy Co., NM
standard continu	<i>ded</i>		CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Toluene		mg/Kg	0.100	0.0887	89	80 - 120	2011-04-02
Ethylbenzene		mg/Kg	0.100	0.0935	94	80 - 120	2011-04-02
Xylene		mg/Kg	0.300	0.282	94	80 - 120	2011-04-02

	~~~	X	U.	20	#	:1103	28	22	/~ \																		~`		
								in of Custo	dv F	3	ec	co	rc	1	T							PAGE				С	DF:	2	
			7						j ·										(Ci		IALY: or Sp					<b>)</b> .)			
			Ľ	Í	L	1910 N. Midland	Big S i, Texa	<b>TECH</b> Spring St. as 79705 Fax (432) 682-3946								15 (Ext. to C36)	Cd Cr Pb Hg Se	βH bd γγ								T	pH, TDS		
CLIENT NAM	E: COG	}				SITE MA	NAGEF	}: VareZ	NERS		F		ERV	/ative Od		TX1005	8	8			260/624								
PROJECT NO		,	PR		CT NA	the state of the second se			CONTAINERS		·	Π					is Ag As	ls Ag As	Volatiles		8240/82	808	æ		S N	(103)	is/Cations,		
LAB I.D. NUMBER	DATE Zoi i	тіме	MATRIX	COMP	GHAB	•	•	M. E IDENTIFICATION	NUMBER OF			HNO3	ICE	NONE	BTEX 80210	етов на <u>т</u> 1011 година	RCRA Metals Ag	TCLP Metals Ag	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624 GC.MS Semi Vol. 8270/62	PCB's 8080	Pest. 808/6(	Chloride	Gamma ope ∆inha Beta	PLM (Asbestos)	Major Anions/C		
261908	3/24		S	)	( A	H-1 0-1'		0.5 BEB	1				X			X								X	I		$\Box$		
909					A	H-Z 0-1		0.5 BEI3	[				$\square$			X								Ш	$\bot$		Ш	⊥	
910					A	H-Z 1-1.5	•	0.5 IJEB	]]				Ц						Ĺ				Ц	Ш	$\perp$		$\square$	$\perp$	$\square$
911					A!	H-3 0-1	, 	·								X								Ш			Ш		Ш
912			Щ		A	H-3 1-13	<u> </u>	· · · · · · · · · · · · · · · · · · ·	[															Ш		$\bot$	$\square$		Ш
913				1	A	H-3 2'-7	.5		]]				Ц											$\prod$			Ш	1	
914						H-4 0	- 1'	·····					$\prod$			X								Ш	$\perp$		Ш		$\square$
915			Щ		<u> </u> e	14-41 1-	1.5			L			$\prod$											Ш			Ш		
916	$\rightarrow$		$\prod$		4	44-41	2- 7:	5	)				$\downarrow$					_				L		Ш		$\bot$	Щ	$\perp$	
RELINGUESHED	15		Y			++-5	0-1	/ RECEIVED BY: (Signature)	*			Date:	1			X	SAMPL					L		1			L],	24/1	Ш
RELINQUISHED B	1				Tin Da	ne:	23	RECEIVED BY: (Signature)			7	1me: Date:				_	ampl	e shif		BY; (C	lincte)	<u>м/</u>	ÞE			Time:			
RELINQUISHED B	Y: (Signatur	2)			Thr Dai Thr	te:	<u> </u>	RECEIVED BY: (Signature)			C	Tme: Date: Tme:				=k	HANC	DEL		$\mathbf{\Sigma}$	BUS UPS PERSC	IN:			от	HEA:	sults b		
RECEIVING LABO ADDRESS:	RATORY:	STATE:	<del>د</del> ۲	TY PHO		ZIP:		ECEIVED BY: (Signature)	<u>ل</u> کر ج	) ME:			Z'	~~	\$						art						ISH Ch thorize Yes		No
SAMPLE CONDIT			Ł	)		REMARKS: If total TP		1 10 1	1		pk		12		TEX .														0-7/4

. \_ . ... .

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

	1 °.		C	℅	J.	No #: 110.	3:2822	$\langle \cdot \rangle$																	,	、		
An	alvs	sis F	Re	a	U	est of Cha	ain of Cus	todv	F	?e	CC	ord	d		_					_	PAG			Z	(	DF:	2	
			-			5				_								(C		NALY or S					<b>5.</b> )			
						Midland, Tex	Spring St.								5 (Ext. to C35)	Cr Pb Hg										TDS	T	
CLIENT NAM	ME: DG					SITE MANAGE IKe Tava			LERS	Τ		SER	VATIV	Æ	TX1005	Ba Cd	8			30/624	10/625					E		
<b>PROJECT N</b>		7	PR		ECT	NAME:		······	CONTAINERS	ξ					ADDN MOIN	a Ag As	s Ag As	86 Violetiee	COMPOS	8240/82(	1. VOI. 82 608	8		0.11	tos)	s/Cations,		
LAB I.D. NUMBER	DATE ZGI\	тіме	MATRIX	COMP	GRAB		LE IDENTIFICATION		NUMBER OF	FILTERED (Y/N)	HNO3	ICE	NONE	E115X 80211	TPH . 8015	RCRA Metals Ag	TCLP Metals Ag As	TCLP Volati	RCI	GC.MS Vol. 8240/8260/824	PCB's 8080	Pest. 808/6(	Aline	Gamma Spec.	PLM (Asbea	Major Anlons/		
261918	3/24		3		X	AH-6 0-1			1			X			X	T		T			T		X					
919	(		[[		/	AH-7 0-1			/						X								X					
6190	$\mathbf{\Lambda}$		$\prod$			AH-8 0-1			$\left[ \right]$		Τ				X	Τ	Π	T		Π	Τ		X		T	Π		Π
921	+		4			AH-9 0-1	' I'BEB								K		Π	Τ					X					
																	Π											
									·																		$\bot$	
	$\overline{h}$					208.11	/																					
RELINGUISH	<u>1 U</u>	<u>*)</u>			-	Date: 2001/ Time: 200	RECEIVED BY: (Signature)				Date: Time:				- 1.		LED B			<u></u>	7/1	SE			Date: Time:		241	
RELINQUISHED	<b>ب</b> ا - ا					Date: Time:	RECEIVED BY: (Signature)				Date: Time:				-   °	FED	EX			BUS					rbill HER:	-		
RELINQUISHED		_				Date: Time:	RECEIVED BY: (Signature)				Date: Time:				_];		D DEL			PERS	ON:					sults b	ıy:	
ADDRESS	ORATORY:	STATE:		2	IONE:	ZIP:	RECEIVED BY: (Signature)	$\frac{2}{11}$		Ś	٢	2'	.20	>		I	K	Tav	1012	2					RL Au	JSH Cl nhorize	harges ed:	
SAMPLE CONDI		RECEIVED:	Ð	>		REMARKS: II total 717H	RECEIVED BY: (Signature) () DATE: 3,28, DATE: 3,28, My/Ky	, run derg		54r-		1	Run		- 1 + 0^ - 1 × (* 1	rds.	10 x	-5+	TPI Kg	7, ; 740	tf - dr	nte l TP t	r s	17E 4~	<del>م د</del> مر	;*«~~ 5	<i>.</i>	50 -5/

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

An	alvs	sis F	lec	31	Je	est of Ch	ain of Custo	dv F	le	CC	r	d								PAG	E:	11		<u>_</u>	r:	~	
	<u> </u>		7			)		<u></u>					-				(Ci				REQ fy Me			<b>)</b> .)			•••
•		•	Ľ		L	1910 N. Big Midland, Te	<b>TECH</b> 9 Spring St. 9 • Fax (432) 682-3946				•			5 (Ext. to C35)	PAH 8270 RCRA Metals Ag As Ba Cd Cr Pb Hg Se	l Vr Pd Hg Se									SQ		
LIENT NAM	AE: COCI	,				SITE MANAC	BER: Nyuriz	VERS	T			VATIVE		TX1005	Ba Cd	Ba Cd			60/624	1/10/625					is, pH, T		
ROJECT N		,		JEC		IAME:		CONTAIL	ĩ	Τ	Τ	$\prod$			s Ag As	s Ag As	olatiles		3240/82	1. VOL 82 608			S N	(so)	s/Cattor		
LAB I.D. NUMBER	DATE	TIME	MATRIX	CUMF.	GHAB	Mouse Fidnal Fild Ce, SAM	NM PLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (	HNO3	ICE	NONE	BTEX 8021B	1 <sup>12</sup> H - 18015	PAH 8270 RCRA Metal	TCLP Metal	TCLP Semi V	RCI	GC.MS Vol.	GC.MS Sem PCB's 8080/	Pest. 808/608	Chloride	Gamma spe Ainha Bata (	PLM (Asbes	Major Anion		
2019:8	3/24		5		$\mathbf{x}$	AH 1 0-1	C.4 3FB	1	1	-	X		X	X	2		T					X					
43	1		171		1 I	942 0-1	0- 135.3	1		Ţ	17		X	X							,	$\left[ \right]$			ŀ		
910			Π		Π	7HZ 113	CS BEB				Π		X	X													
911					$\prod$	9430-1							X	X									Ι				
CIL		•••			Π	AH-3 1-1.5							X	X													
913					$\left( \right)$	AH 3 2-75							X	X	·												
914				$\bot$		AH 4 Di							X	X													
915			1/1		$\ $	AH-+1 1-15	) 						X	X								Ш					
916					Д	AH 4 Z'	<b>7</b> . 5	)						Ň		$\prod$				_	•	Щ					
SI MOLUSUED		<u>b</u>	4		7	AH 5 0	- / Z RECEIVED BY: (Signature)	4		Date			_Ц	М	SAME		V (D-				ŀ	1		Deter	ĽĮ,	2111	Ш
IELINQUISHED	1					Time:	RECEIVED BY: (Signature)			Time Date: Date: Time	:					LE SH	· ·			· · · · ·	/DE		AI	<i>Time:</i> RBILL	#:		
ELINQUISHED		re) -1167				Date:	RECEIVED BY: (Signature)	)		Date: Time				=	HAN	ID DEL		TACT	UPS	ON:			01		sults t	-	
DDRESS:		STATE:		у РНС	ONE	ZIP:	DATE: 3:128. 11		(E: _						<del>Or</del>	should	7	/ 1/ 1		7		15		Au	ISH Ci nhorizo Yes	harges ed:	No

	Analysis F	Rec	դս	est of Cha	in of Custod	y F	Re		or	d		_			· ·			LYSI	GE: S REC		<u>е                                    </u>	- <b>- 6</b>			-
К.(			Tį	1910 N. Big Midland, Tex	Spring St. as 79705				·					Cr Pb Hg	Vr Pd Hg								SO		
(a) (a) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c				SITE MANAGE	<b>२</b> :	8	Π						Š	1	וסו		/624	/625					H		
Image: Second and the second and th	<u> </u>	1000	150		117	AINE			MET	HOD				As E	As E	8	8260	8270					ions,		
Image: Second and a state of the second					3 703	INO	Ê					Λ		₽.	₹,	olatij	240/	Ş	8		. 19	8	Cat		
K(G(41) 3/24       S       X       AH C       0.1       I       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X       X	LAB I.D. IUMBER DATE TIME		Т	Fdd, C. N		NUMBER OF	FILTERED (Y	HCL		NONE		BTEX 8021B	TPH 8015 PAH 8270	RCRA Metals	TCLP Metals	TCLP Semi V	HCI GC.MS Vol. 8	GC.MS Semi	PCB's 8080/ Pest. 808/60	Chloride	Gamma Sper Aloha Beta (/	PLM (Asbest	Major Anions		
919       (14 - 7 - 0 - 1')         910       A+ 3 - 0 - 1'         910       A+ 4 - 0 - 1'         910       A+ 4 - 0 - 1'         910       A+ 9 - 1' <td>69418 3/24</td> <td></td> <td>X</td> <td>AHC DI</td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td>1</td> <td><math>\square</math></td> <td></td> <td>X</td> <td>╞</td> <td></td> <td></td> <td>╋</td> <td></td> <td></td> <td>Ā</td> <td>╈</td> <td></td> <td></td> <td></td> <td></td>	69418 3/24		X	AHC DI		1				1	$\square$		X	╞			╋			Ā	╈				
Clair       A H. G I. I.B.F.B.       I.B.F.B.         LINDUISHED BY, Gignature)       Date:		$\left  \right $	17	AH-7 0-1		1	Π		Τ	Τ		X	X				T	Π		1					T
LINQUISHED BY: (Signature)         Date:	Gido	M	Π	AH & 0-1					Τ			X	X			T		Π		X	T				T
LINODISHED By(Signature)         Date:		4		AH 9 0-1	I BEB							X	X				T	Π	1.	X				Ħ	T
Time:		Π							Τ		$\square$						Τ	Π		Π	Τ	Π			Τ
Time:			T					T	T						Π			Π			↑	$\square$		Ħ	T
Time:			T				Π		Τ	Τ		X	T			$\square$		Π				Π		Π	T
Time:							Π					X			Π						T				Τ
Time:			Τ			1			╈	$\top$	$\square$		1	Τ			T	$\top$			T	$\square$	1	$\prod$	T
Time:	1.5	TT	T	7 35 1	/		Π			Τ			T					Π		$\prod$	T	$\prod$			T
ELINQUISHED BY: (Signature)       Date:	ELINQUISHED Byg(Signapurg)				RECEIVED BY: (Signature)				_				- 5	AMPI	ED BY	: (Print	& Initia	<u>را (</u>	1DE				जग	<u></u>	
ELINQUISHED BY: (Signature)       Date:	LINQUISHED BY: (Signature)			Date:	RECEIVED BY: (Signature)		-	Dat	e:				\$			PED B					_		#:		
ECEIVING LABORATORY:     Itel     Itel     RECEIVED BY: (Signature)     Itel	ELINQUISHED BY: (Signature)			Date:	RECEIVED BY: (Signature)			Dat	e:				- 6-	MAN	D DELI		<u>v</u>	PS			то	_	ults hr		
ONTACT:	DRESS; / // /					5 P	7	)		 			=+ ` -	I	¥.	TAVO	112		-						
3. On what I've hered in hered in a second to Branches in desse services	MPLE CONDITION WHEN RECEIVED		PHON	E: I REMARKS:		<u>ד</u> ד <u>ו</u>	ME: .	->!·	., ]	R.	/3				- ; #7	57 - 1	27.	Ĩ	,			<u> </u>	Yes		

•

## **Summary Report**

Tetra Tech 1910 N. Big Spring Street Midland, TX 79705 Report Date: April 4, 2011

## Work Order: 11032822

Project Location:Eddy Co., NMProject Name:COG/Moose Fed. #23 TBProject Number:114-6400857

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
261908	AH-1 0-1' 0.5' BEB	soil	2011-03-24	00:00	2011-03-28
261909	AH-2 0-1' 0.5' BEB	soil	2011-03-24	00:00	2011-03-28
261910	AH-2 1-1.5' 0.5' BEB	soil	2011-03-24	00:00	2011-03-28
261911	AH-3 0-1'	soil	2011-03-24	00:00	2011-03-28
261912	AH-3 1-1.5'	soil	2011-03-24	00:00	2011-03-28
261913	AH-3 2-2.5'	soil	2011-03-24	00:00	2011-03-28
261914	AH-4 0-1'	soil	2011-03-24	00:00	2011-03-28
261915	AH-4 1-1.5'	soil	2011-03-24	00:00	2011-03-28
261916	AH-4 2-2.5'	soil	2011-03-24	00:00	2011-03-28
261917	AH-5 0-1'	soil	2011-03-24	00:00	2011-03-28
261918	AH-6 0-1'	soil	2011-03-24	00:00	2011-03-28
261919	AH-7 0-1'	soil	2011-03-24	00:00	2011-03-28
261920	AH-8 0-1'	soil	2011-03-24	00:00	2011-03-28
261921	AH-9 0-1' 1' BEB	soil	2011-03-24	00:00	2011-03-28

		]	BTEX		TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
261908 - AH-1 0-1' 0.5' BEB	15.6	148	97.2	165	1990	3190
261909 - AH-2 0-1' 0.5' BEB				1	929	632
261910 - AH-2 1-1.5' 0.5' BEB					78.8	64.9
261911 - AH-3 0-1'	21.3	165	130	212	11700	4870
261912 - AH-3 1-1.5'	27.7	160	113	183	8780	5020
261913 - AH-3 2-2.5'	< 0.0200	0.171	0.157	0.426	<50.0	7.26
261914 - AH-4 0-1'					3710	688
261915 - AH-4 1-1.5'				1	<50.0	28.1
261916 - AH-4 2-2.5'					<50.0	10.3
261917 - AH-5 0-1'	13.0	83.5	73.0	124	7300	3360
261918 - AH-6 0-1'					293	127
261919 - AH-7 0-1'					2770	156

continued ...

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data. Work Order: 11032822

... continued

		[	BTEX		TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
261920 - AH-8 0-1'	4.25	12.8	5.85	32.9	4090	1280
261921 - AH-9 0-1' 1' BEB	1				2290	1420

#### Sample: 261908 - AH-1 0-1' 0.5' BEB

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

#### Sample: 261909 - AH-2 0-1' 0.5' BEB

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		<200	mg/Kg	4.00

#### Sample: 261910 - AH-2 1-1.5' 0.5' BEB

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		<200	mg/Kg	4.00

#### Sample: 261911 - AH-3 0-1'

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		324	mg/Kg	4.00

#### Sample: 261912 - AH-3 1-1.5'

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		<200	mg/Kg	4.00

#### Sample: 261913 - AH-3 2-2.5'

Param	Flag	$\mathbf{Result}$	Units	$\mathbf{RL}$
Chloride		<200	mg/Kg	4.00

#### Sample: 261914 - AH-4 0-1'

Report Date: April 4, 2011	Work Order: 11032822	Pa	age Number: 3 of 3
Param Flag	Result	Units	RL
Chloride	<200	mg/Kg	4.00
Sample: 261915 - AH-4 1-1.5'			
Param Flag	Result	Units	$\mathbf{RL}$
Chloride	<200	mg/Kg	4.00
Sample: 261916 - AH-4 2-2.5'			
Param Flag	Result	Units	RL
Chloride	<200	mg/Kg	4.00
Sample: 261917 - AH-5 0-1'			
Param Flag	Result	Units	RL
Chloride	1570	mg/Kg	4.00
Sample: 261918 - AH-6 0-1'			
Param Flag	Result	Units	RL
Chloride	385	mg/Kg	4.00
Sample: 261919 - AH-7 0-1'			
Param Flag	Result	Units	RL
Chloride	547	mg/Kg	4.00
Sample: 261920 - AH-8 0-1'			
Param Flag	Result	Units	RL
Chloride	2270	mg/Kg	4.00
Sample: 261921 - AH-9 0-1' 1' BEB			
Param Flag	Result	Units	RL
Chloride	781	mg/Kg	4.00

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data.



 6701 Aberdeen Avenue, Suite 9
 Lubhock, Texas 79424

 200 East Sunset Road, Suite £
 El Paso, Texas 79922

 5002 Basin Street, Suite A1
 Midiand Texas 79703

 6015 Harris Parkway, Suite 110
 Ft Worth, Texas 76132

Luhhnck, Texas 79424 800+378+1295 El Paso, Texas 79922 888+588+3443 Midiand Texas 79703 Tt Worth, Texas 76132 E-Mail Tab@traceanalysis.com

HUB:

806 • 794 • 1296 FAX 800 915 • 585 • 3443 FAX 915 432 • 689 • 6301 FAX 432 817 • 201 • 5260

5 FAX 806+794+1298 8 FAX 915+585+4944 1 FAX 432+689+6313

**DBE:** VN 20657

## **NELAP** Certifications

Certifications

NCTRCA WFWB38444Y0909

1752439743100-86536

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317

**WBENC:** 237019

El Paso: T104704221-08-TX LELAP-02002

Midland: T104704392-08-TX

## Analytical and Quality Control Report

Tetra Tech 1910 N. Big Spring Street Midland, TX, 79705 Report Date: April 4, 2011

Work Order: 11032822

Project Location:Eddy Co., NMProject Name:COG/Moose Fed. #23 TBProject Number:114-6400857

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
261908	AH-1 0-1' 0.5' BEB	soil	2011-03-24	00:00	2011-03-28
261909	AH-2 0-1' 0.5' BEB	soil	2011-03-24	00:00	2011-03-28
261910	AH-2 1-1.5' 0.5' BEB	soil	2011-03-24	00:00	2011-03-28
261911	AH-3 0-1'	soil	2011-03-24	00:00	2011-03-28
261912	AH-3 1-1.5'	soil	2011-03-24	00:00	2011-03-28
261913	AH-3 2-2.5'	soil	2011-03-24	00:00	2011-03-28
261914	AH-4 0-1'	soil	2011-03-24	00:00	2011-03-28
261915	AH-4 1-1.5'	soil	2011-03-24	00:00	2011-03-28
261916	AH-4 2-2.5'	soil	2011-03-24	00:00	2011-03-28
261917	AH-5 0-1'	soil	2011-03-24	00:00	2011-03-28
261918	AH-6 0-1'	soil	2011-03-24	00:00	2011-03-28

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
261919	AH-7 0-1'	soil	2011-03-24	00:00	2011-03-28
261920	AH-8 0-1'	soil	2011-03-24	00:00	2011-03-28
261921	AH-9 0-1' 1' BEB	soil	2011-03-24	00:00	2011-03-28

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.

This report consists of a total of 32 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael april

Dr. Blair Leftwich, Director Dr. Michael Abel, Project Manager

**Standard Flags** 

 $\, B\,$  - The sample contains less than ten times the concentration found in the method blank.

## **Case Narrative**

Samples for project COG/Moose Fed. #23 TB were received by TraceAnalysis, Inc. on 2011-03-28 and assigned to work order 11032822. Samples for work order 11032822 were received intact at a temperature of 3.6 C.

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

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	67886	2011-04-01 at 11:35	80015	2011-04-02 at 14:30
Chloride (Titration)	SM 4500-Cl B	67767	2011-03-29 at 13:28	79936	2011-03-31 at 13:29
Chloride (Titration)	SM 4500-Cl B	67767	2011-03-29 at 13:28	79937	2011-03-31 at 13:30
Chloride (Titration)	SM 4500-Cl B	67767	2011-03-29 at 13:28	79938	2011-03-31 at 13:31
TPH DRO - NEW	S 8015 D	67823	2011-03-30 at 10:06	79924	2011-03-30 at 10:06
TPH DRO - NEW	S 8015 D	67893	2011-04-01 at 09:28	80023	2011-04-01 at 09:28
TPH GRO	S 8015 D	67886	2011-04-01 at 11:35	80016	2011-04-02 at 14:30

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 11032822 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.

Report Date: April 4, 2011	Work Order: 11032822	Page Number: 4 of 32
114-6400857	COG/Moose Fed. #23 TB	Eddy Co., NM

## **Analytical Report**

#### Sample: 261908 - AH-1 0-1' 0.5' BEB

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 80015 67886		Analytical M Date Analy Sample Prej	zed:	S 8021B 2011-04-02 2011-04-01		Prep Metho Analyzed B Prepared B	y: ME
			$\mathbf{RL}$					
Parameter	Flag		$\mathbf{Result}$		Units	Dil	ution	$\mathbf{RL}$
Benzene			15.6		mg/Kg		10	0.0200
Toluene	1		148		mg/Kg		10	0.0200
Ethylbenzene	2		97.2		mg/Kg		10	0.0200
Xylene	3		165		mg/Kg		10	0.0200
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ne (TFT)		11.2	mg/Kg	10	10.0	112	52.8 - 137
4-Bromofluor	obenzene (4-BFB)	4	37.8	mg/Kg	10	10.0	378	38.4 - 157

#### Sample: 261908 - AH-1 0-1' 0.5' BEB

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79936	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride			mg/Kg	50	4.00

#### Sample: 261908 - AH-1 0-1' 0.5' BEB

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical 1	Method: S 8015 D	Prep Method:	N/A
QC Batch:	79924	Date Analy	zed: 2011-03-30	Analyzed By:	kg
Prep Batch:	67823	Sample Pre	paration: 2011-03-30	Prepared By:	kg
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
DRO		1990	mg/Kg	1	50.0

<sup>1</sup>Estimated concentration value greater than standard range. <sup>2</sup>Estimated concentration value greater than standard range. <sup>3</sup>Estimated concentration value greater than standard range. <sup>4</sup>High surrogate recovery due to peak interference.

Report Date: April 4, 2011 114-6400857			Work Order: 11032822 COG/Moose Fed. #23 TB			Page Number: 5 of 32 Eddy Co., NM		
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
n-Tricosane	5	252	mg/Kg	1	100	252	70 - 130	

•

#### Sample: 261908 - AH-1 0-1' 0.5' BEB

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 80016 67886		Analytical Date Anal Sample Pr		S 8015 D 2011-04-02 2011-04-01		Prep Meth Analyzed I Prepared I	By: ME
			$\mathbf{RL}$					
Parameter	Flag		Result		Units	D	lution	$\mathbf{RL}$
GRO		· · · · · · · · · · · · · · · · · · ·	3190		mg/Kg		10	2.00
Surrogate		Flag	Result	Units	Dilution	Spike	Percent	Recovery Limits
0		riag				Amount	Recovery	
Trifluorotolue			11.7	mg/Kg	10	10.0	117	48.5 - 152
4-Bromofluor	obenzene (4-BFB)	6	61.3	mg/Kg	10	10.0	613	42 - 159

#### Sample: 261909 - AH-2 0-1' 0.5' BEB

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 79936 67767	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-03-31 2011-03-29	Prep Method: Analyzed By: Prepared By:	
Parameter	Flag	RL Result	Units	Dilution	RL
Chloride	8		mg/Kg	50	4.00

#### Sample: 261909 - AH-2 0-1' 0.5' BEB

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical M	Method: S 8015 D	Prep Method:	N/A
QC Batch:	79924	Date Analyz	zed: 2011-03-30	Analyzed By:	kg
Prep Batch:	67823	Sample Prep	paration: 2011-03-30	Prepared By:	kg
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
DRO		929	mg/Kg	1	50.0

<sup>5</sup>High surrogate recovery due to peak interference. <sup>6</sup>High surrogate recovery due to peak interference.

Report Date: April 4, 2011 114-6400857				Work Order: 11032822 COG/Moose Fed. #23 TB			Page Number: 6 of 32 Eddy Co., NM		
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits		
n-Tricosane	7	185	mg/Kg	1	100	185	70 - 130		
Sample: 26 Laboratory: Analysis: QC Batch: Prep Batch:	1 <b>909 - AH-2 (</b> Midland TPH GRO 80016 67886	)-1' 0.5' BEI	3 Analytical Mo Date Analyze Sample Prepa	d: 2011-0	4-02	Prep Met Analyzed Prepared	By: ME		

		$\mathbf{RL}$					
Parameter Flag	3	Result		Units	Γ	oilution	$\mathbf{RL}$
GRO		632		mg/Kg		1	2.00
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.58	mg/Kg	1	2.00	129	48.5 - 152
4-Bromofluorobenzene (4-BFB	) 8	10.6	mg/Kg	1	2.00	530	42 - 159

#### Sample: 261910 - AH-2 1-1.5' 0.5' BEB

Laboratory: Analysis:	Midland Chloride (Titration)	Analytical M		Prep Method:	•
QC Batch: Prep Batch:	79936 67767	Date Analyze Sample Prepa		Analyzed By: Prepared By:	
1 rep Datch.	01101	Dample 1 Tep	Manon. 2011-00-29	r repareu by:	AR
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		<200	mg/Kg	50	4.00

### Sample: 261910 - AH-2 1-1.5' 0.5' BEB

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical M	Method: S 8015 D	Prep Method:	N/A
QC Batch:	80023	Date Analyz	zed: 2011-04-01	Analyzed By:	kg
Prep Batch:	67893	Sample Pre	paration: 2011-04-01	Prepared By:	kg
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
DRO		78.8	mg/Kg	1	50.0

<sup>7</sup>High surrogate recovery due to peak interference. <sup>8</sup>High surrogate recovery due to peak interference.

Report Date: April 4, 2011 114-6400857				Order: 11032822 Moose Fed. #23	Page Number: 7 of 32 Eddy Co., NM		
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		116	mg/Kg	1	100	116	70 - 130

.

#### Sample: 261910 - AH-2 1-1.5' 0.5' BEB

Laboratory: Midland Analysis: TPH GRO QC Batch: 80016 Prep Batch: 67886			Analytical Date Anal Sample Pr		S 8015 D 2011-04-02 2011-04-01		Prep Meth Analyzed Prepared 1	By: ME
			$\mathbf{RL}$					
Parameter	Flag		$\mathbf{Result}$		Units	D	ilution	$\mathbf{RL}$
GRO			64.9		mg/Kg		1	2.00
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolu	ene (TFT)		2.18	mg/Kg	1	2.00	109	48.5 - 152
4-Bromofluor	obenzene (4-BFB)		2.93	mg/Kg	1	2.00	146	42 - 159

#### Sample: 261911 - AH-3 0-1'

Laboratory:	Midland							
Analysis:	BTEX		Analytical	Method:	S 8021B		Prep Meth	nod: S 5035
QC Batch:	80015		Date Analy	zed:	2011-04-02		Analyzed 1	By: ME
Prep Batch:	67886		Sample Pre	eparation:	2011-04-01		Prepared I	By: ME
			RL					
Parameter	Fla	g	Result		Units	Di	lution	$\mathbf{RL}$
Benzene			21.3		mg/Kg		20	0.0200
Toluene	9		165		mg/Kg		20	0.0200
Ethylbenzene	10		130		mg/Kg		20	0.0200
Xylene	11	<u></u>	212	······	mg/Kg		20	0.0200
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		22.1	mg/Kg	20	20.0	110	52.8 - 137
4-Bromofluor	obenzene (4-BFB)	12	62.2	mg/Kg	20	20.0	311	38.4 - 157

#### Sample: 261911 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79937	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

<sup>9</sup>Estimated concentration value greater than standard range. <sup>10</sup>Estimated concentration value greater than standard range. <sup>11</sup>Estimated concentration value greater than standard range. <sup>12</sup>High surrogate recovery due to peak interference.

Report Date: April 4, 2011 114-6400857					der: 11032822 se Fed. #23 TB	Page Number: 8 c Eddy Co.,		
		RL						
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$			
Chloride		324	mg/Kg	50	4.00			

#### Sample: 261911 - AH-3 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - N 79924 67823	EW	Date A	nalyzed:	S 8015 D 2011-03-30 2011-03-30	Prep M Analyz Prepare	. 0
			RL				
Parameter	F	ag	$\mathbf{Result}$	U	Inits	Dilution	RL
DRO			11700	mg	/Kg	5	50.0
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane	13	748	mg/Kg	5	100	748	70 - 130

#### Sample: 261911 - AH-3 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 80016 67886		Analytical Date Anal Sample Pr	yzed:	S 8015 D 2011-04-02 2011-04-01		Prep Meth Analyzed Prepared 1	By: ME
			$\mathbf{RL}$					
Parameter	Flag		$\mathbf{Result}$		Units	D	ilution	$\mathbf{RL}$
GRO			4870		mg/Kg		20	2.00
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		23.1	mg/Kg	20	20.0	116	48.5 - 152
4-Bromofluor	obenzene (4-BFB)	14	71.6	mg/Kg	20	20.0	358	42 - 159

#### Sample: 261912 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	80015	Date Analyzed:	2011-04-02	Analyzed By:	ME
Prep Batch:	67886	Sample Preparation:	2011-04-01	Prepared By:	ME

<sup>13</sup>High surrogate recovery due to peak interference.
 <sup>14</sup>High surrogate recovery due to peak interference.

Report Date: April 4, 2011 114-6400857				rk Order: 11 /Moose Fed.			Page Number: 9 of 32 Eddy Co., NM		
			$\mathbf{RL}$						
Parameter		Flag	Result		Units	1	Dilution	R	
Benzene			27.7		mg/Kg		50	0.020	
Toluene			160		mg/Kg		50	0.020	
Ethylbenzen	e		113		mg/Kg		50	0.020	
Xylene			183		mg/Kg		50	0.020	
						Spike	Percent	Recover	
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits	
Trifluorotolu	ene (TFT)		51.7	mg/Kg	50	50.0	103	52.8 - 13	
4-Bromofluor	robenzene (4-BE	B) <sup>15</sup>	88.3	mg/Kg	50	50.0	177	38.4 - 15	
Laboratory: Analysis: QC Batch: Prep Batch: Parameter Chloride		ation) lag	Date A	tical Method: Analyzed: e Preparatior	2011-03-3	31 29	Prep M Analyze Prepare Dilution 50	ed By: AR	
Sample: 26 Laboratory: Analysis: QC Batch: Prep Batch:	1 <b>912 - AH-3</b> 1 Midland TPH DRO - N 80023 67893		Date	rtical Method Analyzed: le Preparatio	2011-04-	01	Prep M Analyze Prepare	ed By: kg	
			RL						
Parameter	$\mathbf{F}$	ag	Result		Units		Dilution	R	
DRO	<u>.                                     </u>		8780		mg/Kg		5	50.	
			1			Spike	Percent	Recover	
Surrogate	Flag	$\mathbf{Result}$	Units	Dilutio		mount	Recovery	Limits	
n-Tricosane	16	587	mg/Kg	5		100	587	70 - 13	

#### Sample: 261912 - AH-3 1-1.5'

Laboratory: Analysis:	Midland TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	80016	Date Analyzed:	2011-04-02	Analyzed By:	
Prep Batch:	67886	Sample Preparation:	2011-04-01	Prepared By:	

<sup>15</sup>High surrogate recovery due to peak interference. <sup>16</sup>High surrogate recovery due to peak interference.

Report Date: April 4, 2011 114-6400857				rk Order: 11 /Moose Fed.		Page Number: 10 of 35 Eddy Co., NM		
Parameter	Flag		RL Result		Units	D	lution	RL
GRO			5020		mg/Kg		50	2.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (T) 4-Bromofluorobenze	·	17	55.2 99.7	mg/Kg mg/Kg	50 50	50.0 50.0	110 199	48.5 - 152 42 - 159

#### Sample: 261913 - AH-3 2-2.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 80015 67886			Analytical l Date Analy Sample Pre	zed:	S 8021B 2011-04-02 2011-04-01		Prep Meth Analyzed Prepared 1	By: ME
				$\mathbf{RL}$					
Parameter		Flag		$\mathbf{Result}$		Units	Di	lution	$\mathbf{RL}$
Benzene				< 0.0200		mg/Kg		1	0.0200
Toluene				0.171		mg/Kg		1	0.0200
Ethylbenzene	9			0.157		mg/Kg		1	0.0200
Xylene				0.426		mg/Kg		1	0.0200
							Spike	Percent	Recovery
Surrogate			Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)			2.00	mg/Kg	1	2.00	100	52.8 - 137
4-Bromofluor	obenzene (4-BF	B)	_	2.05	mg/Kg	1	2.00	102	38.4 - 157

#### Sample: 261913 - AH-3 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79937	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		<200	mg/Kg	50	4.00

#### Sample: 261913 - AH-3 2-2.5'

٠

<sup>17</sup>High surrogate recovery due to peak interference.

Report Date: April 4, 2011 114-6400857				rk Order: 1 /Moose Fed		Page Number: 11 of 32 Eddy Co., NM		
Parameter	Fla	۰	RL Result		Units		Dilution	RL
DRO	· · · · · ·		<50.0		mg/Kg		1	50.0
Surrogate	Flag	Result	Units	Dilu	tion	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		106	mg/Kg		L	100	106	70 - 130
Sample: 26	31913 - AH-3 2	·2.5'						
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 80016 67886		Analytical Date Anal Sample Pr		S 8015 D 2011-04-02 2011-04-01		Prep Met Analyzed Prepared	By: ME
Parameter	Fla	ıç	RL Result		Units		Dilution	$\mathbf{RL}$
GRO			7.26		mg/Kg		1	2.00
Surrogate		Flag	Result	Units	Dilution			Recovery Limits
Trifluorotolu 4-Bromofluo	ene (TFT) robenzene (4-BFI	3)	2.06 2.35	mg/Kg mg/Kg	1	2.00 2.00	103 118	48.5 - 152 42 - 159
Sample: 26	1914 - AH-4 0-	-1'						
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titra 79937 67767	tion)	Date A	tical Metho Analyzed: e Preparati	2011-0		Prep M Analyze Prepare	d By: AR

# RLParameterFlagResultUnitsDilutionRLChloride<200</td>mg/Kg504.00

#### Sample: 261914 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	79924	Date Analyzed:	2011-03-30	Analyzed By:	kg
Prep Batch:	67823	Sample Preparation:	2011-03-30	Prepared By:	kg

Report Date 114-6400857	: April 4, 2011		Work Order: 11032822 COG/Moose Fed. #23 TB				Page Number: 12 of 3 Eddy Co., NM		
<b>D</b>			RL		<b>TT</b> 14			DI	
Parameter	Flag	<u> </u>	Result		Units		Dilution	RL	
DRO			3710		mg/Kg		1	50.0	
						Spike	Percent	Recovery	
Surrogate	Flag	Result	Units	Dilu	tion	Amount	Recovery	Limits	
n-Tricosane	18	340	mg/Kg			100	340	70 - 130	
Sample: 26	1914 - AH-4 0-1	<b>_</b> ,							
Laboratory:	Midland								
Analysis:	TPH GRO		Analytical		S 8015 D		Prep Met		
QC Batch:	80016		Date Anal		2011-04-02		Analyzed		
Prep Batch:	67886		Sample Pi	reparation:	2011-04-01		Prepared	By: ME	
			RL						
Parameter	Flag	5	Result		Units		Dilution	RL	
GRO			688		mg/Kg		1	2.00	
						Spike	Percent	Recovery	
Surrogate		Flag	Result	Units	Dilution			Limits	
Trifluorotolue	ene (TFT)		2.10	mg/Kg	1	2.00	105	48.5 - 152	
4-Bromofluor	obenzene (4-BFB)	) 19	10.6	mg/Kg	1	2.00	530	42 - 159	
Sample: 26 Laboratory: Analysis:	1915 - AH-4 1-1 Midland Chloride (Titrati		Analy	tical Metho	d: SM 456	00-Cl B	Prep M	ethod: N/A	
QC Batch:	79937			Analyzed:	2011-03		Analyze		
Prep Batch:	67767		Sampl	e Preparati	on: 2011-03	3-29	Prepare	•	
			$\mathbf{RL}$						
Parameter	Flag		Result		Units		Dilution	RL	
Chloride		·	<200		mg/Kg		50	4.00	

Laboratory:	Midland					
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D		Prep Method:	N/A
QC Batch:	80023	Date Analyzed:	2011-04-01		Analyzed By:	kg
Prep Batch:	67893	Sample Preparation	: 2011-04-01	•	Prepared By:	kg

continued ...

<sup>18</sup>High surrogate recovery due to peak interference. <sup>19</sup>High surrogate recovery due to peak interference.

Report Date: A 114-6400857	rt Date: April 4, 2011 400857			Work Order: 11032822 COG/Moose Fed. #23 TB			Page Number: 13 of 32 Eddy Co., NM		
sample 261915	continued								
			$\mathbf{RL}$						
Parameter	F	Flag		Units		Dilution	RL		
			RL						
Parameter	$\mathbf{F}$	lag	Result	Units		Dilution	$\mathbf{RL}$		
DRO			<50.0	mg/Kg		1	50.0		
					Spike	Percent	Recovery		
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits		
n-Tricosane		109	mg/Kg	1	100	109	70 - 130		

#### սբ

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 80016 67886		Analytical Date Anal Sample Pr		S 8015 D 2011-04-02 2011-04-01		Prep Meth Analyzed Prepared	By: ME
			$\mathbf{RL}$					
Parameter	Flag		$\mathbf{Result}$		Units	D	ilution	$\mathbf{RL}$
GRO			28.1		mg/Kg		1	2.00
a .		-	<b>D</b>	<b>TT T</b> .		Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolu	ene (TFT)		2.05	mg/Kg	1	2.00	102	48.5 - 152
4-Bromofluor	obenzene (4-BFB)		2.57	mg/Kg	1	2.00	128	42 - 159

#### Sample: 261916 - AH-4 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79937	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		<200	mg/Kg	50	4.00

Report Date 114-6400857	oort Date: April 4, 2011 -6400857			Work Order: 11032822 COG/Moose Fed. #23 TB			Page Number: 14 of 32 Eddy Co., NM		
Sample: 26	1916 - AH-4 2	2-2.5'							
Laboratory:	Midland								
Analysis:	TPH DRO - NEW		Analyti	cal Method:	S 8015 D	Prep M	fethod: N/A		
QC Batch:	80023		Date A	nalyzed:	2011-04-01	Analyz	ed By: kg		
Prep Batch:	67893		Sample	Preparation:	2011-04-01	Prepar	ed By: kg		
			RL						
Parameter	$\mathbf{F}$	lag	$\mathbf{Result}$		Units	Dilution	$\mathbf{RL}$		
DRO		·····	<50.0	m	g/Kg	1	50.0		
					Spike	Percent	Recovery		
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits		
n-Tricosane		107	mg/Kg	1	100	107	70 - 130		

#### Sample: 261916 - AH-4 2-2.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 80016 67886		Analytical Date Anal Sample Pr		S 8015 D 2011-04-02 2011-04-01		Prep Metl Analyzed Prepared	By: ME
			$\mathbf{RL}$					
Parameter	Flag		$\mathbf{Result}$		Units	D	lution	$\mathbf{RL}$
GRO	······································	· · · · · · · · · · · · · · · · · · ·	10.3		mg/Kg		1	2.00
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		1.57	mg/Kg	1	2.00	78	48.5 - 152
4-Bromofluor	obenzene (4-BFB)		1.62	mg/Kg	1	2.00	81	42 - 159

#### Sample: 261917 - AH-5 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 80015 67886		Analytical Method: Date Analyzed: Sample Preparation:	S 8021B 2011-04-02 2011-04-01	Prep Method: Analyzed By: Prepared By:	S 5035 ME ME
			RL			
Parameter		Flag	Result	Units	Dilution	$\mathbf{RL}$
Benzene	· · · · · · · · · · · · · · · · · · ·		13.0	mg/Kg	50	0.0200
Toluene			83.5	mg/Kg	50	0.0200
Ethylbenzene			73.0	mg/Kg	50	0.0200
Xylene			124	mg/Kg	50	0.0200

Report Date: April 4, 2011	Work Order: 11032822					Page Number: 15 of 32		
114-6400857	COG/Moose Fed. #23 TB					Eddy Co., NM		
Surrogate	Flag	$\operatorname{Result}$	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT)	20	52.2	mg/Kg	50	50.0	104	52.8 - 137	
4-Bromofluorobenzene (4-BFB)		80.2	mg/Kg	50	50.0	160	38.4 - 157	

#### Sample: 261917 - AH-5 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 79937 67767	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-03-31 2011-03-29	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		1570	mg/Kg	100	4.00

#### Sample: 261917 - AH-5 0-1'

Laboratory: Analysis:	Midland TPH DRO - N	₩	Analyti	cal Method:	S 8015 D	Prep M	lethod: N/A
QC Batch:	80023		<b>0</b>		2011-04-01	Analyz	ed By: kg
Prep Batch:	67893		Sample	Preparation:	2011-04-01	Prepare	ed By: kg
			RL				
Parameter	Flag		Result		Units	Dilution	$\mathbf{RL}$
DRO			7300	m	g/Kg	5	50.0
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane	21	482	mg/Kg	5	100	482	70 - 130

#### Sample: 261917 - AH-5 0-1'

GRO		3360	mg/Kg	50	2.00
Parameter	Flag	RL Result	Units	Dilution	$\mathbf{RL}$
Prep Batch:	67886	Sample Preparation:		<b>v v</b>	
Analysis: QC Batch:	TPH GRO 80016	Analytical Method: Date Analyzed:	S 8015 D 2011-04-02	Prep Method: Analyzed By:	
Laboratory:		A		<b>D</b> . <b>M</b> (1 . 1	d roor

<sup>20</sup>High surrogate recovery due to peak interference. <sup>21</sup>High surrogate recovery due to peak interference.

Report Date: April 4, 2011 114-6400857			rk Order: 11 /Moose Fed.	Page Number: 16 of 32 Eddy Co., NM			
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)	22	55.8 84.4	mg/Kg mg/Kg	50 50	50.0 50.0	112 169	48.5 - 152 42 - 159

#### Sample: 261918 - AH-6 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 79937 67767	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-03-31 2011-03-29	Prep Method: Analyzed By: Prepared By:	AR
		$\mathbf{RL}$			
Parameter	$\mathbf{Flag}$	Result	Units	Dilution	$\mathbf{RL}$
Chloride		385 1	mg/Kg	50	4.00

#### Sample: 261918 - AH-6 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - N 79924 67823	IEW	Analytical Method:S 8015 DDate Analyzed:2011-03-30Sample Preparation:2011-03-30		Prep M Analyz Prepare		
Parameter	F	lag	RL Result	-	Jnits	Dilution	RL
DRO	· · · · · · · · · · · · · · · · · · ·		293	mg	;/Kg	1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	23	142	mg/Kg	1	100	142	70 - 130

#### Sample: 261918 - AH-6 0-1'

GRO		127	mg/Kg	1	2.00
Parameter	Flag	RL Result	Units	Dilution	$\mathbf{RL}$
Prep Batch:	67886	Sample Preparation:	2011-04-01	<b>v v</b>	ME
Laboratory: Analysis: QC Batch:	Midland TPH GRO 80016	Analytical Method: Date Analyzed:	S 8015 D 2011-04-02	Prep Method: Analyzed By:	S 5035 ME

<sup>22</sup>High surrogate recovery due to peak interference.
 <sup>23</sup>High surrogate recovery due to peak interference.

Report Date: April 4, 2011 114-6400857	Work Order: 11032822 COG/Moose Fed. #23 TB					Page Number: 17 of 32 Eddy Co., NM		
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT)		2.51	mg/Kg	1	2.00	126	48.5 - 152	
4-Bromofluorobenzene (4-BFB)		2.73	mg/Kg	1	2.00	136	42 - 159	

#### Sample: 261919 - AH-7 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 79937 67767	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-03-31 2011-03-29	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		547	mg/Kg	50	4.00

#### Sample: 261919 - AH-7 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - N 79924 67823	IEW	Date A	cal Method: nalyzed: Preparation:	S 8015 D 2011-03-30 2011-03-30	Prep M Analyze Prepare	ed By: kg
Parameter	F	ag	RL Result	1	Units	Dilution	$\mathbf{RL}$
DRO			2770		g/Kg	1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	24	329	mg/Kg	1	100	329	70 - 130

#### Sample: 261919 - AH-7 0-1'

GRO		156	mg/Kg	1	2.00
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	67886	Sample Preparation:	2011-04-01	Prepared By:	ME
QC Batch:	80016	Date Analyzed:	2011-04-02	Analyzed By:	ME
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
Laboratory:	Midland				

`

<sup>24</sup>High surrogate recovery due to peak interference.

Report Date: April 4, 2011 114-6400857		Work Order: 11032822 COG/Moose Fed. #23 TB					Page Number: 18 of 32 Eddy Co., NM		
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits		
Trifluorotoluene (TFT)		2.00	mg/Kg	1	2.00	100	48.5 - 152		
4-Bromofluorobenzene (4-BFB)		2.47	mg/Kg	1	2.00	124	42 - 159		

#### Sample: 261920 - AH-8 0-1'

Laboratory:	Midland							
Analysis:	BTEX		Analytical i	Method:	S 8021B		Prep Metl	nod: S 5035
QC Batch:	80015		Date Analy	zed:	2011-04-02		Analyzed	By: ME
Prep Batch:	67886		Sample Pre	paration:	2011-04-01		Prepared	By: ME
			$\mathbf{RL}$					
Parameter	Fla	g	Result		Units	Di	lution	$\mathbf{RL}$
Benzene			4.25		mg/Kg		20	0.0200
Toluene			12.8		mg/Kg		20	0.0200
Ethylbenzene	9		5.85		mg/Kg		20	0.0200
Xylene			32.9		mg/Kg		20	0.0200
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		21.0	mg/Kg	20	20.0	105	52.8 - 137
4-Bromofluor	obenzene (4-BFB)		27.0	mg/Kg	20	20.0	135	38.4 - 157

#### Sample: 261920 - AH-8 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (Titration) 79937	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-03-31 2011-03-29	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		2270	mg/Kg	100	4.00

#### Sample: 261920 - AH-8 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	79924	Date Analyzed:	2011-03-30	Analyzed By:	kg
Prep Batch:	67823	Sample Preparation:	2011-03-30	Prepared By:	kg

Report Date: April 4, 2011 114-6400857			Work Order: 11032822 COG/Moose Fed. #23 TB			Page Number: 19 of 32 Eddy Co., NM		
Parameter	F	lag	$\operatorname{RL}$ Result	Un	its	Dilution	RL	
DRO			4090	mg/l	Kg	1	50.0	
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
n-Tricosane	25	381	mg/Kg	1	100	381	70 - 130	

#### Sample: 261920 - AH-8 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 80016 67886		Analytical Date Anal Sample Pr		S 8015 D 2011-04-02 2011-04-01		Prep Metl Analyzed Prepared	By: ME
			$\mathbf{RL}$					
Parameter	Flag		$\mathbf{Result}$		Units	D	lution	$\mathbf{RL}$
GRO			1280		mg/Kg		20	2.00
						Spike	Percent	Recovery
Surrogate		Flag	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	Limits
Trifluorotolu	ene (TFT)		22.0	mg/Kg	20	20.0	110	48.5 - 152
4-Bromofluor	obenzene (4-BFB)		26.9	mg/Kg	20	20.0	134	42 - 159

#### Sample: 261921 - AH-9 0-1' 1' BEB

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 79938 67767	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-C1 B 2011-03-31 2011-03-29	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		781	mg/Kg	50	4.00

#### Sample: 261921 - AH-9 0-1' 1' BEB

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	79924	Date Analyzed:	2011-03-30	Analyzed By:	kg
Prep Batch:	67823	Sample Preparation:	2011-03-30	Prepared By:	kg
····					

continued ...

<sup>25</sup>High surrogate recovery due to peak interference.

Report Date: 114-6400857	: April 4, 2011	2011 Work Order: 11032822 COG/Moose Fed. #23 TB					Page Number: 20 of 3 Eddy Co., NI				
sample 26192	21 continued										
			$\mathbf{RL}$								
Parameter	Fla	g	Result		Units	<u></u>	Dilution	RL			
			$\mathbf{RL}$								
Parameter	Fla	g	Result		Units		Dilution	RL			
DRO			2290		mg/Kg		1	50.0			
						Spike	Percent	Recovery			
Surrogate	Flag	Result	Units	Dilu	tion	Amount	Recovery	Limits			
n-Tricosane		332	mg/Kg			100	332	70 - 130			
- Laboratory:	1921 - AH-9 0- Midland		Anotation	Math - J.	S 0015 D		D	had. Stopp			
Analysis:	TPH GRO		Analytical 2		S 8015 D		Prep Met				
QC Batch:	80016 67886		Date Analy Sample Pre		2011-04-02		Analyzed				
Prep Batch:	07660		Sample Fre	paration:	2011-04-01	-	Prepared	DY: ME			
			$\mathbf{RL}$								
Parameter	Fla	g	Result		Units		Dilution	RL			
GRO	<u> </u>		1420		mg/Kg		10	2.00			
~ .			<b></b>			Spike	Percent	Recovery			
Surrogate		Flag	Result	Units	Dilution		Recovery	Limits			
Trifluorotolue Bromofluor	obenzene (4-BFE	27	10.3 25.4	mg/Kg mg/Kg	10 10	10.0 10.0	103 254	48.5 - 152 42 - 159			
		<u>.                                    </u>			10		20 *	12 100			
Method Bla	ank $(1)$ QC	Batch: 79924									
QC Batch:	79924		Date Anal		011-03-30			zed By: kg			
Prep Batch:	67823		QC Prepa	ration: 2	011-03-30		Prepa	red By: kg			
Parameter		Flag		MDL Result		Un		RL			
DRO				<15.7		mg/	'Kg	50			
						Spike	Percent	Recovery			
3	Dla -	Denville	TT	<b>D</b> :1	L'an	A	D	T :			
Surrogate n-Tricosane	Flag	Result 121	Units mg/Kg	Dilu 1		Amount 100	Recovery 121	Limits 70 - 130			

<sup>26</sup>High surrogate recovery due to peak interference.
<sup>27</sup>High surrogate recovery due to peak interference.

Report Date: April 4, 114-6400857	2011	Work Order: 11032822 COG/Moose Fed. #23 TB				21 of 32 o., NM		
Method Blank (1)	QC Batch: 79936							
QC Batch: 79936 Prep Batch: 67767		Date Analyzed: QC Preparatior		-03-31 -03-29		Analyz Prepar		
		-	MDI					
Parameter	Flag		MDL Lesult		Units			$\mathbf{RL}$
Chloride			<3.85		mg/Kg			4
Method Blank (1)	QC Batch: 79937							
QC Batch: 79937		Date Analyzed:	2011-	-03-31		Analyz		AR
Prep Batch: 67767		QC Preparation	n: 2011-	-03-29		Prepar	ed By:	AR
		1	MDL					
Parameter	Flag		esult		Units			$\mathbf{RL}$
Chloride		<	<3.85		mg/Kg			4
Method Blank (1) QC Batch: 79938 Prep Batch: 67767		Date Analyzed: QC Preparation	n: 2011-	-03-31 -03-29		Analyz Prepar		AR AR
Parameter	Flag		MDL .esult		Units			RL
Chloride	riag		3.85		mg/Kg			4
Method Blank (1)	QC Batch: 80015	<b>D</b> . <b>1</b> . 1	2011					
QC Batch: 80015 Prep Batch: 67886		Date Analyzed: QC Preparation				Analyze Prepare		ME ME
1 10p Daton, 01000				V T V I		Trepare	.u 19.	171.4.1
			MDL		<b>TT</b> •			٦ĩ
Parameter Benzene	Flag		Result <0.0118		Units mg/Kg		·	RL 0.02
Toluene			0.00600		mg/Kg mg/Kg			0.02
Ethylbenzene			0.00850		mg/Kg			0.02
Xylene			0.00613		mg/Kg			0.02
<b>a</b>		<b>. .</b>			Spike	Percent		overy
Surrogate	Flag			Dilution	Amount	Recovery		mits
Trifluorotoluene (TFT) 4-Bromofluorobenzene			/Kg /Kg	1 1	2.00 2.00	89 86		5 - 122 - 124
- Dromonuorobenzene		1.10 Illg/	-16		2.00		00.4	- 104

114-6400857		rk Order: 11032 /Moose Fed. #:	Page Nu	Page Number: 22 of 32 Eddy Co., NM			
Method Blank (1)	QC Batch: 80016						
QC Batch: 80016		Date Ana	lyzed: 2011-0	04-02		Analy	yzed By: ME
Prep Batch: 67886		QC Prepa	ration: 2011-0	)4-01		Prepa	ared By: ME
			MDL				
Parameter	Flag		Result		Uni		RL
GRO			< 0.753		mg/1	Kg	2
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TF		1.88	mg/Kg	1	2.00	94	67.6 - 150
4-Bromofluorobenzen	1e (4-BFB)	1.66	mg/Kg	1	2.00	83	52.4 - 130
Parameter DRO	Flag		MDL Result <15.7		Unit mg/I		RL 50
,,,_,,,,,,,,,,,,,,,,,,,,,,		TT			pike	Percent	Recovery
Surrogate F n-Tricosane	Plag Result 130	Units mg/Kg	Dilution 1		ount	Recovery 130	Limits 70 - 130
		0/_0					
Laboratory Contro	ol Spike (LCS-1)						
	ol Spike (LCS-1)	Date Ana QC Prep.					lyzed By: kg bared By: kg
Laboratory Contro QC Batch: 79924 Prep Batch: 67823	L	QC Prepa	aration: 2011-	03-30 Spike	Matriz	Prep x	pared By: kg Rec.
Laboratory Contro QC Batch: 79924 Prep Batch: 67823 Param	LC Res	QC Prepa CS sult Ur	aration: 2011- nits Dil.	03-30 Spike Amount	Result	Prep x t Rec.	pared By: kg Rec. Limit
Laboratory Contro QC Batch: 79924 Prep Batch: 67823 Param DRO	L	QC Prep. CS sult Ur 56 mg	aration: 2011- hits Dil. /Kg 1	03-30 Spike Amount 250	Result	Prep x t <u>Rec.</u> 7 102	pared By: kg Rec.
Laboratory Contro QC Batch: 79924 Prep Batch: 67823 Param DRO	L( Res 25	QC Prep. CS sult Ur 56 mg	aration: 2011- hits Dil. /Kg 1	03-30 Spike Amount 250 e and spike Matrix	Result <15.7 duplicate re	Prep x t <u>Rec.</u> 7 102	pared By: kg Rec. Limit

.

.

		2011 Work Order: 11032822 COG/Moose Fed. #23 TB							Page Number: 23 of 3 Eddy Co., NM				
control spikes continu	.ed												
-	LCS	LCSD			Spike	LCS	LCS	SD	Rec.				
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Re	c	Limit				
	LCS	LCSD			Spike	LCS	LC	SD	Rec.				
Surrogate	Result	Result	Units	Dil.	Amount	Rec.			Limit				
n-Tricosane	126	122	mg/Kg	1	100	126	12		70 - 130				
Laboratory Contro	l Spike (LC	S-1)											
QC Batch: 79936		D	ate Analyzed:	2011-03-3	1		An	alyzed B	v: AR				
Prep Batch: 67767			C Preparation:	2011-03-2				epared B	-				
		LCS			<b>S</b> miles	Mat			Rec.				
Param		Result	Units	Dil.	Spike Amount	Mat Res		lec.	Limit				
Chloride		96.8	mg/Kg	1	100	<3.		97	85 - 118				
Percent recovery is ba	used on the sr												
	wood on the op					pilcate ic							
5		LCSD	<b>T D</b>	Spike	Matrix	-	Rec.		RPD				
Param Chloride		Result	Units Dil.	Amount	Result	Rec.	Limit		Limi				
			ng/Kg 1	100	<3.85	104	85 - 115	7	20				
Percent recovery is ba Laboratory Contro			D IS DASED ON	ine spike al	ia spike auj	plicate le	Suit.						
QC Batch: 79937		D	ate Analyzed:	2011-03-3	1		An	alyzed B	y: AR				
Prep Batch: 67767			C Preparation:	2011-03-2	9			epared B					
		LCS			Spike	Mat	rix		Rec.				
Param		Result		Dil.	Amount	Res		lec.	Limit				
Chloride		97.2	mg/Kg	1	100	<3.		97	85 - 115				
Percent recovery is ba	sed on the sp	ike result. Rl	PD is based on t	he spike ar	nd spike dug	olicate re	sult.						
		LCSD		Spike	Matrix	_	Rec.		RPD				
-			Units Dil.	Amount	Result	Rec.	Limit	RPD	Limit				
			na/ka 1	100	< 3.85	103	85 - 115	6	ואי				
Param Chloride Percent recovery is ba			ng/Kg 1						20				

QC Batch:	79938	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	QC Preparation:	2011-03-29	Prepared By:	AR

Report Date: April 4, 2011 114-6400857		Work Order: 11032822 COG/Moose Fed. #23 TB						Page Number: 24 Eddy Co.			
	LC				Spike		Matrix			Rec.	
Param	Res		Units	Dil.	Amou		Result	Rec	_	Limit	
Chloride	97.	6	mg/Kg	1	100		<3.85	98		85 - 115	
Percent recovery is based on the s	spike result.	RPD is l	based c	on the spike	and spike	duplicate	e result.				
	LCSD			Spike	Matri	v	Б	lec.		RPD	
Param	Result	Units	Dil	-	-			imit	RPD	Limit	
Chloride	103	mg/Kg		100	<3.85			- 115	5	20	
Percent recovery is based on the s											
Laboratory Control Spike (L	CS-1)										
QC Batch: 80015		Date An	alyzed	: 2011-04	-02			Analy	zed By	: ME	
Prep Batch: 67886		QC Prep			-01				red By		
	LCS	1			Spike	М	atrix			Rec.	
Param	Resu		Jnits	Dil.	Amount		sult	Rec.		Limit	
Benzene	1.70		g/Kg	1	2.00		.0118	85		.9 - 108	
Toluene	1.76		g/Kg	1	2.00		00600	88		.9 - 107	
Ethylbenzene	1.91		g/Kg	1	2.00		00850	96		.4 - 107	
Xylene	5.75		g/Kg	1	6.00		00613	96		.1 - 107	
Percent recovery is based on the s	spike result.	RPD is l	based c	on the spike	and spike	duplicate	e result.				
	LCSD			Spike	Matrix		R	lec.		RPD	
Param	Result	Units	Dil.	Amount	Result	Rec.		imit	RPD	Limit	
Benzene	1.76	mg/Kg	1	2.00	< 0.0118			- 108	4	20	
Toluene	1.81	mg/Kg	1	2.00	< 0.0060	) 90	81.9	- 107	3	20	
Ethylbenzene	1.96	mg/Kg	1	2.00	< 0.0085	) 98	78.4	- 107	3	20	
Xylene	5.89	mg/Kg	1	6.00	< 0.0061	3 98	79.1	- 107	2	20	
Percent recovery is based on the s	spike result.	RPD is l	based o	on the spike	and spike	luplicate	e result.				
	LCS	LC	SD		S	pike	LCS	LCSD	)	Rec.	
Surrogate	Resu	lt Res	ult	Units		nount	Rec.	Rec.		Limit	
Trifluorotoluene (TFT)	1.74	1.	51	mg/Kg	1 2	2.00	87	76	70	.2 - 114	
4-Bromofluorobenzene (4-BFB)	1.84	1.	59	mg/Kg	1 .	2.00	92	80	69	.8 - 121	
Laboratory Control Spike (LG QC Batch: 80016 Prep Batch: 67886	CS-1)	Date An QC Prep							zed By red By		
	T C	2			Spike	Ма	ıtrix			Rec.	
	1.4.2										
Param	LCS Resu		Units	Dil.	Amount		sult	Rec.		Limit	

Report Date: April 114-6400857	4, 2011 				ler: 110328 e Fed. #23					Page Nu		25 of 32 Co., NM
Percent recovery is b	ased on the s	pike result.	RPD is	based o	n the spike	and spil	ke dup	olicate r	esult			
		LCSD			Spike	Mati	ix		R	lec.		RPD
Param		Result	Units	Dil.	Amount	Resu	lt	Rec.	Li	imit	RPD	Limit
GRO		16.8	mg/Kg	1	20.0	<0.7	53	84	60.9	- 95.4	5	20
Percent recovery is b	ased on the s	pike result.	RPD is	based o	n the spike	and spil	ke dur	olicate r	esult			
		LCS	S LC	SD			Spik	~	LCS	LCSE	<b>`</b>	Rec.
Surrogate		Resu		sult	Units	Dil.	Amou		Rec.	Rec.		Limit
Frifluorotoluene (TF	T)	2.03			mg/Kg	1	2.00		102	84		.9 - 142
Bromofluorobenzer		1.93			mg/Kg	1	2.00		96	80		8.2 - 132
C Batch: 80023 Prep Batch: 67893	ol Spike (LC	2 <b>S-1</b> )	Date A QC Pre								lyzed E ared B	• •
		LC	S			Spike	e	Matri	x			Rec.
Param		Resu	ılt I	Jnits	Dil.	Amou		Resul	t	Rec.	Ι	imit
DRO		282	2 m	ıg/Kg	1	250		<15.	7	113	47.5	- 144.1
Percent recovery is b	based on the s	pike result.	RPD is	based of	n the spike	and spil	ke dur	licate r	esult			
		LCSD			G11	- 			n			חחח
Param		Result	Units	Dil.	Spike Amount	Matri Resul		lec.		ec. mit	RPD	RPD Limit
DRO		278	mg/Kg	<u></u>	250	<15.				144.1	$\frac{\Gamma}{1}$	20
Percent recovery is b	ased on the si	·····										
010000010000001, 10 0				oubou of	ii iiio spino	-	-					
	LCS	LCSD		•.	<b>D</b> .1	Spil		LC:		LCSD		Rec.
urrogate -Tricosane	Result 126	Result 124		nits ;/Kg		Amor 100		Rec 126		Rec. 124		Limit 70 - 130
Aatrix Spike (MS 2C Batch: 79924		Sample: 26		<u> </u>			, 	120			yzed E	
Prep Batch: 67823					n: 2011-03							y: kg
		MS				Spike		Matri				Rec.
aram		Resu		Jnits	Dil.	Amou	nt	Resul		Rec.		imit
DRO		242	×	g/Kg	1	250		<15.7		97	11.7	- 152.3
ercent recovery is b	pased on the sj		RPD is l	based of		_	-	licate r				_
		MSD Besult	IIn:40	D:1	Spike	Matri				ec.	מתת	RPD
Param DRO		Result 233	Units mg/Kg	Dil. 1	Amount 250	Resul <15.7		ec.		mit 152.3	$\frac{\text{RPD}}{4}$	Limit 20
					2511	15.5					л	• • • •

Report Date: April 4 114-6400857	l, 2011				r: 11032822 Fed. #23 T				age 100	ımber: Eddy	Co., NM
Surrogate	${ m MS}$ Result	MSD Result	T.	Jnits	Dil.	Spike	MS Rec		MSD Rec.		Rec. Limit
n-Tricosane	121	126		g/Kg	<u></u>	Amount 100	121		126		70 - 130
<b>Matrix Spike (MS</b> - QC Batch: 79936	-1) Spiked	Sample: 2	61910 Date Ar	o hurodu	2011-03-3	1			Anal	yzed B	v: AR
Prep Batch: 67767			QC Pre	paration:	2011-03-3	9				ared B	y: AR
D		М		<b>T</b> T •/	D'1	Spike	Mat		ъ		Rec.
Param Chloride		Res 996		Units	Dil. 100	Amount 10000	Res <3		Rec 100		Limit 80 - 120
	1			mg/Kg					100	,	00 - 120
Percent recovery is ba	ased on the sp	ike result.	КРО 15	based on	tne spike ar	ia spike du	pucate re	esuit.			
		MSD			Spike	Matrix		Rec			RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Lim		RPD	Limit
		10200	mg/Kg	: 100	10000	< 385	102	80 - 1	120	2	20
Chloride Percent recovery is ba Matrix Spike (MS- QC Batch: 79937 Prep Batch: 67767	-		RPD is 61920 Date Ar	based on	2011-03-3	1	plicate re	esult.		yzed B	
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937	-	ike result. Sample: 20	RPD is 61920 Date Ar QC Prej	based on	-	1 9	-			yzed B ared B	y: AR
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937 Prep Batch: 67767	-	ike result. Sample: 26 M	RPD is 61920 Date Ar QC Prej S	based on nalyzed: paration:	2011-03-3 2011-03-2	1 9 Spike	Mat	orix	Prepa	ared B	y: AR Rec.
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937 Prep Batch: 67767 Param	-	ike result. Sample: 24 M Res	RPD is 61920 Date Ar QC Pre S ult	based on nalyzed: paration: Units	2011-03-3 2011-03-2 Dil.	1 9 Spike Amount	Mat Res	orix pult		ared B	y: AR
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937 Prep Batch: 67767 Param Chloride	1) Spiked	ike result. Sample: 24 M <u>Res</u> 122	RPD is 61920 Date Ar QC Prej S ult 00 1	based on nalyzed: paration: Units mg/Kg	2011-03-3 2011-03-2 Dil. 100	1 9 Spike Amount 10000	Mat Res 22	orix ult70	Prepa Rec	ared B	y: AR Rec. Limit
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937 Prep Batch: 67767 Param Chloride	1) Spiked	ike result. Sample: 24 M Res 122 ike result.	RPD is 61920 Date Ar QC Prej S ult 00 1	based on nalyzed: paration: Units mg/Kg	2011-03-3 2011-03-2 Dil. 100 the spike ar	1 9 Amount 10000 1d spike du	Mat Res 22	orix ult 70 esult.	Prepa Rec 99	ared B	y: AR Rec. Limit 80 - 120
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937 Prep Batch: 67767 Param Chloride Percent recovery is ba	1) Spiked	ike result. Sample: 24 M <u>Res</u> 122	RPD is 61920 Date Ar QC Prej S ult 00 1	based on nalyzed: paration: Units mg/Kg	2011-03-3 2011-03-2 Dil. 100	1 9 Amount 10000 1d spike duj Matrix	Mat Res 22	orix ult 70 esult. Rec	Prepa Rec 99	ared B	y: AR Rec. Limit 80 - 120 RPD
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937 Prep Batch: 67767 Param Chloride Percent recovery is ba Param	1) Spiked	ike result. Sample: 24 M Res 122 ike result. MSD	RPD is 61920 Date Ar QC Prej S ult 00 RPD is	based on nalyzed: paration: Units mg/Kg based on Dil.	2011-03-3 2011-03-2 Dil. 100 the spike ar Spike	1 9 Amount 10000 1d spike du	Mat Res 22' plicate re	orix ult 70 esult.	Prepa Rec 99	ared B	y: AR Rec. Limit 80 - 120
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937 Prep Batch: 67767 Param Chloride Percent recovery is ba Param Chloride Percent recovery is ba	-1) Spiked	ike result. Sample: 24 M Res 122 ike result. MSD Result 12500 ike result.	RPD is 61920 Date Ar QC Prej S ult 00 RPD is MD is MD is RPD is	based on nalyzed: paration: Units mg/Kg based on Dil. 100	2011-03-3 2011-03-2 Dil. 100 the spike ar Spike Amount 10000	1 9 Amount 10000 1d spike duy Matrix Result 2270	Mat Res 22' plicate re <u>Rec.</u> 102	rix ult 70 esult. Rec Limi 80 - 1	Prepa Rec 99	RPD	y: AR Rec. Limit 80 - 120 RPD Limit
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937 Prep Batch: 67767 Param Chloride Percent recovery is ba Param Chloride Percent recovery is ba Matrix Spike (MS-	-1) Spiked	ike result. Sample: 2 M Res 122 ike result. MSD Result 12500	RPD is 61920 Date Ar QC Prej S ult 00 RPD is mg/Kg RPD is 51933	based on nalyzed: paration: Units mg/Kg based on Dil. 100 based on f	2011-03-3 2011-03-2 Dil. 100 the spike ar Spike Amount 10000 the spike ar	Spike Amount 10000 Id spike duj Matrix Result 2270 Id spike duj	Mat Res 22' plicate re <u>Rec.</u> 102	rix ult 70 esult. Rec Limi 80 - 1	Prepa Rec 99	RPD 2	y: AR Rec. Limit 80 - 120 RPD Limit 20
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937	-1) Spiked	ike result. Sample: 24 M Res 122 ike result. MSD Result 12500 ike result.	RPD is 61920 Date Ar QC Prej S ult 00 1 RPD is mg/Kg RPD is 61933 Date Ar	based on nalyzed: paration: Units mg/Kg based on Dil. 100 based on f	2011-03-3 2011-03-2 Dil. 100 the spike ar Spike Amount 10000	1 9 Amount 10000 1d spike duj Matrix Result 2270 1d spike duj	Mat Res 22' plicate re <u>Rec.</u> 102	rix ult 70 esult. Rec Limi 80 - 1	Prepa Rec 99  it 20	RPD	y: AR Rec. Limit 80 - 120 RPD Limit 20 y: AR
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937 Prep Batch: 67767 Param Chloride Percent recovery is ba Param Chloride Percent recovery is ba Matrix Spike (MS- QC Batch: 79938	-1) Spiked	ike result. Sample: 24 M Res 122 ike result. MSD Result 12500 ike result.	RPD is 61920 Date Ar QC Prej S ult 00 RPD is mg/Kg RPD is 61933 Date Ar QC Prej	based on nalyzed: paration: Units mg/Kg based on Dil. 100 based on t nalyzed:	2011-03-3 2011-03-2 Dil. 100 the spike ar Spike Amount 10000 the spike ar 2011-03-3	1 9 Amount 10000 1d spike duj Matrix Result 2270 1d spike duj	Mat Res 22' plicate re <u>Rec.</u> 102	rix sult 70 sult. Rec Limi 80 - 1 sult.	Prepa Rec 99  it 20	RPD 2	y: AR Rec. Limit 80 - 120 RPD Limit 20 y: AR
Percent recovery is ba Matrix Spike (MS- QC Batch: 79937 Prep Batch: 67767 Param Chloride Percent recovery is ba Param Chloride Percent recovery is ba Matrix Spike (MS- QC Batch: 79938	-1) Spiked	ike result. Sample: 24 M Res 122 ike result. MSD Result 12500 ike result. Sample: 26	RPD is 61920 Date Ar QC Prej S ult 00 1 RPD is mg/Kg RPD is 61933 Date Ar QC Prej S ult	based on nalyzed: paration: Units mg/Kg based on Dil. 100 based on t nalyzed:	2011-03-3 2011-03-2 Dil. 100 the spike ar Spike Amount 10000 the spike ar 2011-03-3	Spike Amount 10000 Id spike duj Matrix Result 2270 Id spike duj	Mat Res 22' plicate re <u>Rec.</u> 102 plicate re	rix rult 70 esult. 80 - 1 esult.	Prepa Rec 99  it 20	RPD 2 yzed B ared B	y: AR Rec. Limit 80 - 120 RPD Limit 20 y: AR y: AR

.

Report Date: April 4, 2011 114-6400857	<b></b>			r: 11032822 Fed. #23 T			Page 1	27 of 32 Co., NM	
Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10300	mg/Kg	100	10000	<385	103	80 - 120	3	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: 261925

QC Batch:	80015	Date Analyzed:	2011-04-02	Analyzed By:	ME
Prep Batch:	67886	QC Preparation:	2011-04-01	Prepared By:	ME

		MS			Spike	Matrix		Rec.
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene	28	1.61	mg/Kg	1	2.00	< 0.0118	80	80.5 - 112
Toluene	29	1.70	mg/Kg	1	2.00	0.1724	76	82.4 - 113
Ethylbenzene		1.72	mg/Kg	1	2.00	< 0.00850	86	83.9 - 114
Xylene	30	5.25	mg/Kg	1	6.00	0.552	78	84 - 114

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene	1.74	mg/Kg	1	2.00	< 0.0118	87	80.5 - 112	8	20
Toluene	1.88	mg/Kg	1	2.00	0.1724	85	82.4 - 113	10	20
Ethylbenzene	1.96	mg/Kg	1	2.00	< 0.00850	98	83.9 - 114	13	20
Xylene	5.97	mg/Kg	1	6.00	0.552	90	84 - 114	13	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.87	2.28	mg/Kg	1	2	94	114	41.3 - 117
4-Bromofluorobenzene (4-BFB)	2.12	2.41	mg/Kg	1	2	106	120	35.5 - 129

#### Matrix Spike (MS-1) Spiked Sample: 261891

QC Batch: Prep Batch:	80016 67886		Analyzed: Preparation:	2011-04 2011-04			•	ed By: ME ed By: ME
Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		19.5	mg/Kg	1	20.0	< 0.753	98	61.8 - 114

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

<sup>28</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>29</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>30</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

Report Date: April 4, 2011 114-6400857				ler: 1103282 e Fed. #23			Pa		r: 28 of 32 y Co., NM
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit		
GRO	21.1	mg/Kg	1	20.0	< 0.753	106	61.8 - 1	.14 8	20
Percent recovery is based on th	e spike result.	RPD is b	ased or	n the spike a	and spike	duplicate	result.		
	М	S M	$\mathbf{SD}$			Spike	MS	MSD	Rec.
Surrogate	Res	ult Re	sult	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	2.4		49	mg/Kg	1	2	122	124	50 - 162
4-Bromofluorobenzene (4-BFB)	2.2	29 2.	35	mg/Kg	1	2	114	118	50 - 162
Matrix Spike (MS-1) Spi QC Batch: 80023 Prep Batch: 67893	ked Sample: 2	261916 Date Ar QC Prej						Analyzed Prepared	-
	MS	S			Spike	Mat	rix		Rec.
Param	Rest		nits	Dil.	Amount	Res	ult R	lec.	Limit
DRO	28	5 mį	g/Kg	1	250	<15	5.7 1	.14 1	1.7 - 152.3
Percent recovery is based on th	e spike result.	RPD is b	ased or	n the spike a	and spike	duplicate	result.		
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPI	) Limit
DRO	275	mg/Kg	1	250	<15.7	110	11.7 - 15	2.3 4	20
Percent recovery is based on th	e spike result.	RPD is b	ased or	n the spike a	and spike	duplicate	result.		
MS	MSD				Spike	I	мs	MSD	Rec.
Surrogate Resul			nits	Dil.	Amoun	t R	lec.	Rec.	Limit
n-Tricosane 117	119	mg	/Kg	1	100	1	.17	119	70 - 130
Standard (CCV-1) QC Batch: 79924		Date An	alyzed:	2011-03-3	80			Analyzed	By: kg
		CCVs		CVs	CCVs		Percent		
		True		ound	Percent		Recovery		Date
	nits g/Kg	Conc. 250		onc.	Recover	у	Limits		Analyzed
	/ 1/	10511	e .	258	103		80 - 120		2011-03-30

QC Batch: 79924

.

Date Analyzed: 2011-03-30

Analyzed By: kg

Report Dat 114-640085	te: April 4, 20 7			rk Order: 11032 Moose Fed. #1		Page N	umber: 29 of 3 Eddy Co., NM
			$\rm CCVs$	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	258	103	80 - 120	2011-03-30
Standard	(CCV-3)						
QC Batch:	79924		Date Ana	alyzed: 2011-0	3-30	An	alyzed By: kg
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO	1 145	mg/Kg	250	272	109	80 - 120	2011-03-3
QC Batch:	19930		Date Ana ICVs True	lyzed: 2011-03 ICVs Found	ICVs Percent	Ana Percent Recovery	yzed By: AR Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2011-03-3
Standard QC Batch:	(CCV-1) 79936		Date Ana	lyzed: 2011-03	3-31	Anal	yzed By: AR
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	97.9	98	85 - 115	2011-03-3
Standard	(ICV-1)						
QC Batch:	79937		Date Ana	lyzed: 2011-03	3-31	Anal	yzed By: AR
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
	Flag	Units	Conc. 100	Conc.	Recovery	Limits	Analyzed
Param Chloride		mg/Kg		99.5	100	85 - 115	2011-03-31

QC Batch: 79937

Date Analyzed: 2011-03-31

Analyzed By: AR

umber: 30 of 3 Eddy Co., NM	Page Ni		Order: 110328 oose Fed. #23			e: April 4, 2011	Report Date 114-6400857
Date Analyzed	Percent Recovery Limits	CCVs Percent Recovery	CCVs Found Conc.	CCVs True Conc.	Units	Flag	Param
2011-03-3	85 - 115	101	101	100	mg/Kg		Chloride
						ICV-1)	Standard (I
yzed By: AR	Anal	1	zed: 2011-03-3	Date Analy		79938	QC Batch:
	Percent	ICVs	ICVs	ICVs			
Date	Recovery	Percent	Found	True			
Analyzed	Limits	Recovery	Conc.	Conc.	Units	Flag	Param
2011-03-31	85 - 115	100	99.9	100	mg/Kg		Chloride
						CCV-1)	Standard (
yzed By: AR	Analy	1	zed: 2011-03-3	Date Analy		79938	QC Batch:
	Percent	CCVs	CCVs	CCVs			
Date	Recovery	Percent	Found	True			
Analyzed	Limits	Recovery	Conc.	Conc.	Units	Flag	Param
2011-03-31	85 - 115	100	100	100	mg/Kg		Chloride
						CCV-1)	Standard (
vzed By: ME	Analy	2	ed: 2011-04-(	Date Analy		80015	QC Batch:
	Percent	CCVs	CCVs	CCVs			
Date	Recovery	Percent	Found	True			
Analyzed	Limits	Recovery	Conc.	Conc.	Units	Flag	Param
2011-04-02	80 - 120	87	0.0871	0.100	mg/Kg		Benzene
2011-04-02	80 - 120	89	$0.0894 \\ 0.0981$	0.100	mg/Kg		Toluene
2011-04-02 2011-04-02	80 - 120 80 - 120	98 98	0.0981	0.100 0.300	mg/Kg mg/Kg	е	Ethylbenzene Xylene
2011 04 02						CCV-2)	Standard (
							QC Batch:
vzed By: ME	Analy	2	ed: 2011-04-(	Date Analy		80015	
·	Percent	CCVs	CCVs	CCVs		80015	
Date	Percent Recovery	CCVs Percent	CCVs Found	CCVs True			-
Date Analyzed	Percent Recovery Limits	CCVs Percent Recovery	CCVs Found Conc.	CCVs True Conc.	Units	80015 Flag	Param
Date Analyzed 2011-04-02	Percent Recovery Limits 80 - 120	CCVs Percent Recovery 88	CCVs Found Conc.	CCVs True Conc. 0.100	mg/Kg		Benzene
Date Analyzed	Percent Recovery Limits	CCVs Percent Recovery	CCVs Found Conc.	CCVs True Conc.		Flag	

114-640085	te: April 4, 201 57	1		( Order: 110328 Moose Fed. #2		Page N	umber: 31 of 32 Eddy Co., NM
standard co	ontinued						
			CCVs	CCVs	CCVs	Percent	_
<b>n</b>		<b>T</b> T <b>.</b>	True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Xylene		mg/Kg	0.300	0.294	98	80 - 120	2011-04-02
Standard	(CCV-3)						
QC Batch:	80015		Date Analy	yzed: 2011-04-	02	Anal	yzed By: ME
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0872	87	80 - 120	2011-04-02
Toluene		mg/Kg	0.100	0.0887	89	80 - 120	2011-04-02
Ethylbenze	ne	mg/Kg	0.100	0.0935	94	80 - 120	2011-04-02
Xylene		mg/Kg	0.300	0.282	94	80 - 120	2011-04-02
Standard	(CCV-1)						
QC Batch:	80016		Date Analy	/zed: 2011-04-	02	Anal	yzed By: ME
QC Batch:	80016		Date Analy CCVs	vzed: 2011-04- CCVs	02 CCVs	Anal Percent	yzed By: ME
QC Batch:	80016		,				yzed By: ME Date
Param	80016 Flag	Units	CCVs	CCVs	CCVs	Percent	-
		Units mg/Kg	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param GRO	Flag		CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Param GRO Standard	Flag (CCV-2)		CCVs True Conc.	CCVs Found Conc. 1.05	CCVs Percent Recovery 105	Percent Recovery Limits 80 - 120	Date Analyzed
Param GRO Standard	Flag (CCV-2)		CCVs True Conc. 1.00	CCVs Found Conc. 1.05	CCVs Percent Recovery 105	Percent Recovery Limits 80 - 120	Date Analyzed 2011-04-02
Param GRO Standard	Flag (CCV-2)		CCVs True Conc. 1.00 Date Analy	CCVs Found Conc. 1.05 vzed: 2011-04-	CCVs Percent Recovery 105	Percent Recovery Limits 80 - 120 Anal	Date Analyzed 2011-04-02
Param GRO Standard QC Batch:	Flag (CCV-2)		CCVs True Conc. 1.00 Date Analy CCVs	CCVs Found Conc. 1.05 vzed: 2011-04- CCVs	CCVs Percent Recovery 105 02 CCVs	Percent Recovery Limits 80 - 120 Analy Percent	Date Analyzed 2011-04-02 yzed By: ME
Param GRO Standard QC Batch: Param	Flag (CCV-2) 80016	mg/Kg	CCVs True Conc. 1.00 Date Analy CCVs True	CCVs Found Conc. 1.05 vzed: 2011-04- CCVs Found	CCVs Percent Recovery 105 02 CCVs Percent	Percent Recovery Limits 80 - 120 Analy Percent Recovery	Date Analyzed 2011-04-02 yzed By: ME Date
Param GRO Standard QC Batch: Param GRO	Flag (CCV-2) 80016 Flag	mg/Kg Units	CCVs True Conc. 1.00 Date Analy CCVs True Conc.	CCVs Found Conc. 1.05 zed: 2011-04- CCVs Found Conc.	CCVs Percent Recovery 105 02 02 CCVs Percent Recovery	Percent Recovery Limits 80 - 120 Analy Percent Recovery Limits	Date Analyzed 2011-04-02 yzed By: ME Date Analyzed
Param GRO Standard QC Batch: Param GRO Standard	Flag (CCV-2) 80016 Flag (CCV-3)	mg/Kg Units	CCVs True Conc. 1.00 Date Analy CCVs True Conc. 1.00	CCVs Found Conc. 1.05 zed: 2011-04- CCVs Found Conc.	CCVs Percent Recovery 105 02 02 CCVs Percent Recovery 120	Percent Recovery Limits 80 - 120 Analy Percent Recovery Limits 80 - 120	Date Analyzed 2011-04-02 yzed By: ME Date Analyzed
Param GRO Standard QC Batch: Param GRO Standard	Flag (CCV-2) 80016 Flag (CCV-3)	mg/Kg Units	CCVs True Conc. 1.00 Date Analy CCVs True Conc. 1.00 Date Analy	CCVs Found Conc. 1.05 vzed: 2011-04- CCVs Found Conc. 1.20	CCVs Percent Recovery 105 02 02 CCVs Percent Recovery 120	Percent Recovery Limits 80 - 120 Analy Percent Recovery Limits 80 - 120 Analy	Date Analyzed 2011-04-02 yzed By: ME Date Analyzed 2011-04-02
Param GRO Standard QC Batch: Param GRO Standard	Flag (CCV-2) 80016 Flag (CCV-3)	mg/Kg Units	CCVs True Conc. 1.00 Date Analy CCVs True Conc. 1.00 Date Analy CCVs	CCVs Found Conc. 1.05 vzed: 2011-04- CCVs Found Conc. 1.20 vzed: 2011-04- CCVs	CCVs Percent Recovery 105 02 02 CCVs Percent Recovery 120 02 02 CCVs	Percent Recovery Limits 80 - 120 Analy Percent Recovery Limits 80 - 120 Analy Percent	Date Analyzed 2011-04-02 yzed By: ME Date Analyzed 2011-04-02 yzed By: ME
Param	Flag (CCV-2) 80016 Flag (CCV-3)	mg/Kg Units	CCVs True Conc. 1.00 Date Analy CCVs True Conc. 1.00 Date Analy	CCVs Found Conc. 1.05 vzed: 2011-04- CCVs Found Conc. 1.20	CCVs Percent Recovery 105 02 02 CCVs Percent Recovery 120	Percent Recovery Limits 80 - 120 Analy Percent Recovery Limits 80 - 120 Analy	Date Analyzed 2011-04-02 yzed By: ME Date Analyzed 2011-04-02

Report Da 114-640085	te: April 4, 20	)11		ork Order: 11032 /Moose Fed. #		Page Number: 32 of 32 Eddy Co., NM		
Standard	(CCV-2)							
QC Batch:	80023		Date An	alyzed: 2011-0	4-01	Ana	alyzed By: kg	
			$\mathrm{CCVs}$	CCVs	$\mathrm{CCVs}$	Percent		
			True	Found	Percent	Recovery	Date	
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
DRO		mg/Kg	250	262	105	80 - 120	2011-04-01	
			CCVs True Conc.	CCVs Found	CCVs Percent	Percent Recovery Limits	Date	
Param	Flag	Units		Conc.	Recovery		Analyzed	
Param DRO	Flag	Units mg/Kg	250	298	119	80 - 120	Analyzed 2011-04-01	
DRO	(CCV-4)			298	119	80 - 120		
DRO Standard	(CCV-4)		250	298	119	80 - 120	2011-04-01	
DRO Standard	(CCV-4) 80023		250 Date An	298 alyzed: 2011-0	119	80 - 120 Ana	2011-04-01	
DRO Standard	(CCV-4)		250 Date An CCVs	298 alyzed: 2011-0 CCVs	119 14-01 CCVs	80 - 120 Ana Percent	2011-04-01 alyzed By: kg	

X	Wo#:11032822	<u>(</u>	~
Analysis F	Request of Chain of Cust	ody Record	PAGE: OF: 2
			ANALYSIS REQUEST (Circle or Specify Method No.)
	<b>TETRA TECH</b> 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946		L K1005 (Ext to C35) a Cd Cr Pb Hg Se a Cd Vr Pd Hg Se a Cd Vr Pd Hg Se ACA Vr Pd Hg Se ACA Vr Pd Hg Se ACA Vr Pd Hg Se ACA Vr Pd Hg Se
CLIENT NAME:	SITE MANAGER: I.K. Tovarez	PRESERVATIVE	TX1005 TX1005 Ba Cd 80/623 270/625
PROJECT NO.: 114-6400857	PROJECT NAME: COGI MODSK Federal #23 TB		MOD5 8 Ag As 8 Ag As 8 240/828 608 1. Vol. 821 608 8 Au1 1. Cation 1. Cation
LAB I.D. NUMBER DATE TIME ZOI I	Edd, G, NM SAMPLE IDENTIFICATION	NUMBER OF CO FILTERED (YM) HCL HNO3 ICE NONE	BTEX 8021B BTEX 8021B PAH 8270 PAH 8270 PAH 8270 PAH 8270 TCLP Metals Ag As Ba C TCLP Volatiles TCLP Semi volatiles TCLP Semi volatiles RCI GC.MS Vol. 8240/6260 GC.MS Semi. Vol. 8270/626 GC.MS Semi. Vol. 8270/626 GC.MS Semi. Vol. 8270/626 PCB's 808/608 PCB's 8
26/908 3/24	S X AH-1 0-1 0.5 BEB	1 X	X
909	AH-2 0-1 0.5 BEI3		
910	AH-2 1-1.5 0.5 IBEB		
911	AH-3 0-1'		
912	AH-3 1-1.5'		
913	AH-3 2'-2.5		
914	AH-4 0-1'		
915	AH-4 1-1.5'		
916	AH-4 2- 2.5'		
41776	AH-5 0-1		
RELINQUISHED BY (Signature)	Date:RECEIVED BY: (Signature) Time:RECEIVED BY: (Signature) Data:RECEIVED BY: (Signature)	Date: Time: Date:	SAMPLED BY: (Print & Initial)         JY/DE         Date:            SAMPLE SNIPPED BY: (Circle)         ANDRULL 4
	Time:	Тілте:	SAMPLE SHIPPED BY: (Circle) AIRBILL #:     FEDEX
RELINQUISHED BY: (Signature)	Date: RECEIVED BY: (Signature)	Date:	TETRA TECH CONTACT PERSON: Results by:
RECEIVING LABORATORY: "7960 ADDRESS: " CITY: "716 LABOR STATE: CONTACT: STATE:	77         ZIP:	 	- The Tavartz RUSH Charges Authorized: Yes Na
SAMPLE CONDITION WHEN ABCEIVED.	D REMARKS:	Juni 1 Jan BTE	EX of Shiphest TPH, IL total BIEX exceeds 50mg/, me exceeds 10 mg/log run deeper samples

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

	,		ć	$\varkappa$	SL	Ň	日	£;	۱lc	sz	128	કે∂	29	-	~~																				î <sup>-</sup>	••		
An	alys	sis F	Re	20	11)	69	st c	)f	Ch	ai	in	of		ust	od	V	Re	2	:0	rc	1									PAG	E:		2		OF	:	Ζ	
			7	1		1									<u> </u>	<b>y</b> •					A						{Ci		NALY or S					Vo.)				
							19 <sup>.</sup> Mie	10 N dlan	I. Big id, Te	g Sp exas	re pring s 797 ax (43	g St. 705	t <b>.</b>	16									5 (Ext. to C35)			d Vr Pd Hg Se										SOL		
CLIENT NAM	AE: DG						s		IANAG							NERS		P		ERV		/E	TX1005			BaC			60/624	629/0/						ions, pH, TDS		
<b>PROJECT N</b>		7	PF		ECT		10072	Fed.	ral	23	TO	5				CONTAIL	Ŕ									is Ag As	Volatiles		8240/82	4, VOI. 82 /608	8		ý	Air)	_13	3		
LAB I.D. NUMBER	DATE ZGN	TIME	MATRIX	COMP	GRAB		E	:dd.y	-				ATION			NUMBER OF CONTAINERS	FILTERED (Y/N)	FCL	HN03	ICE	NONE		OTEX 8021E	PAH 8270	RCRA Metals Ag	TCLP Metals	TCLP Semi Votatiles	RCI	GC.MS Vol. 8240/8260/624	PCB'A BOBD/608	Pest. 808/608	Chonge	Gamma Spec.	Alpha Beta (	PLM (Asbeatos	Major Anions/		
261918	3124		3		X	A	H-L		<u>, '</u>							1				X			X	ĺ								X						
919	(		$\ $		$\square$	A	1-7		0-1														X									X						
990			$\prod$			A	<u> 4 - 8</u>		0-1	'													X									X						
921	¥		4		J	A	1-9		0-	<u>.'</u>		<u>, '</u>	BEB	\$		4							X									X						
																																					$\square$	
																			$\downarrow$				$\bot$										Ц					
																		_	_				$\bot$											_	╞			
									·····										_			$\square$	$\bot$				<u> </u>								$\downarrow$	_	$\square$	
																		_													-					⊥	$\square$	
RELINGUISU	2,9	$\sim$				Date		- Pa	<del>6./</del>	./_	ECENTE	-0 BV-	(Signatur	<u></u>				Ţ	ate:							D BY	(Brin		dial)	Ļ				Dat		510	$\prod$	ĻĹ
RELINQUISHED	1 U					Time	r	Ž	:2	2 L			: (Signatur					Ta	me: 10:									_	Circle)	7/1	7Ē			Tim	NO:			
RELINQUISHED						Time				_			(Signatur						ne: ste:						EDE	DELI	ERE	2	BUS UPS					THE				
RECEIVING LAB	ORATORY:	STATE:		-		Тітн								~	$\sim$	<u>ج</u>	$\overline{\Delta}$		me:					4		ECH			PERS	ON:						its by: H Chai orized		
SAMPLE CONDI	TION WHEN I		e	_ PI	HONE		REMAI	aks: æl	TIPH	DATE	E	5 119	Signature) 3 - 2 My	, /×1	rm di	 	SAR	اح	_	77	.U Run Bi	ß	167 6 ~ 17		<i>h</i> ,	<u>.</u>	(* ) 	TPI		cf - d	107P	T f	370 541	57	CX.	'es		No . U

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

# **Summary Report**

Ike Tavarez Tetra Tech 1910 N. Big Spring Street Midland, TX 79705

286967

Project Location:	Eddy Co., NM		
Project Name:	COG/Moose Fed.	#23	TB
Project Number:	114-6400857		

CS-4 Bottom Hole 2' (AH-9)

Date Time Date Description Sample Matrix Taken Taken Received CS-1 North (AH-1) 286946 soil 2012-01-13 00:00 2012-01-19 CS-1 South (AH-1) 286947 soil 2012-01-13 00:00 2012-01-19 CS-1 East (AH-1) 286948 soil 2012-01-13 00:00 2012-01-19 CS-1 Bottom Hole 1' (AH-1) 286949 soil 2012-01-13 00:00 2012-01-19 T-1 2' (AH-1) 286950 soil 2012-01-13 00:00 2012-01-19 286952 CS-2 North (AH-5) soil 2012-01-13 00:00 2012-01-19 CS-2 South (AH-5) 286953 soil 2012-01-13 00:00 2012-01-19 CS-2 Bottom Hole 3' (AH-5) 286954 soil 2012-01-13 2012-01-19 00:00 CS-3 North (AH-8) 286958 2012-01-13 soil 00:00 2012-01-19 CS-3 South (AH-8) 286959 2012-01-13 soil 00:00 2012-01-19 CS-3 Bottom Hole 1' (AH-8) 286960 soil 2012-01-13 00:00 2012-01-19 286961 T-3 2' (AH-8) soil 2012-01-13 00:00 2012-01-19 T-3 4' (AH-8) 286962 soil 2012-01-13 00:00 2012-01-19 286964 CS-4 North (AH-9) soil 2012-01-13 00:00 2012-01-19 286965 CS-4 South (AH-9) soil 2012-01-13 00:00 2012-01-19 CS-4 West (AH-9) 286966 soil 2012-01-13 00:00 2012-01-19

		]	BTEX		TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
286946 - CS-1 North (AH-1)	< 0.0200	< 0.0200	< 0.0200	< 0.0200	<50.0	2.84
286947 - CS-1 South (AH-1)	<0.100	2.05	5.78	<b>21.5</b>	607	727
286948 - CS-1 East (AH-1)	<0.100	< 0.100	< 0.100	0.221	2780	101
286949 - CS-1 Bottom Hole 1' (AH-1)	<0.100	1.07	6.31	16.7	664	454
286950 - T-1 2' (AH-1)	< 0.0200	< 0.0200	< 0.0200	<0.0200	<50.0	5.09
286952 - CS-2 North (AH-5)	< 0.0200	< 0.0200	< 0.0200	< 0.0200	<50.0	3.64
286953 - CS-2 South (AH-5)	<0.0200	< 0.0200	< 0.0200	< 0.0200	744	66.6
286954 - CS-2 Bottom Hole 3' (AH-5)	0.465	12.3	11.5	24.8	951	512

soil

2012-01-13

continued ....

2012-01-19

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data.

Report Date: January 26, 2012

Work Order: 12012003

00:00

 $\ldots$  continued

		]	BTEX		TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
286958 - CS-3 North (AH-8)	< 0.0200	< 0.0200	< 0.0200	< 0.0200	112	8.97
286959 - CS-3 South (AH-8)	<0.0200	< 0.0200	< 0.0200	< 0.0200	151	10.2
286960 - CS-3 Bottom Hole 1' (AH-8)	< 0.0200	< 0.0200	< 0.0200	< 0.0200	65.8	9.78
286961 - T-3 2' (AH-8)	3.39	48.8 Je	21.2	64.5	1420	697
286962 - T-3 4' (AH-8)	0.412	4.27	1.73	5.45		
286964 - CS-4 North (AH-9)	< 0.0200	< 0.0200	< 0.0200	< 0.0200		
286965 - CS-4 South (AH-9)	< 0.0200	< 0.0200	< 0.0200	<0.0200		1
286966 - CS-4 West (AH-9)	< 0.0200	< 0.0200	< 0.0200	< 0.0200		
286967 - CS-4 Bottom Hole 2' (AH-9)	<0.100	0.381	0.383	1.46		

#### Sample: 286952 - CS-2 North (AH-5)

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		<200	mg/Kg	4

#### Sample: 286953 - CS-2 South (AH-5)

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		<200	mg/Kg	4

#### Sample: 286954 - CS-2 Bottom Hole 3' (AH-5)

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		222	mg/Kg	4

#### Sample: 286958 - CS-3 North (AH-8)

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		710	mg/Kg	4

#### Sample: 286959 - CS-3 South (AH-8)

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		1310	mg/Kg	4

Sample: 286960 - CS-3 Bottom Hole 1' (AH-8)

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data.

Report Date: Janu	ary 26, 2012	Work Order: 12012003	Page	Number: 3 of 3
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		573	mg/Kg	4
Sample: 286961 Param	- T-3 2' (AH-8) Flag	Result	Units	RL
Chloride		375	mg/Kg	4



 200 Exist Sunset fload Suite E
 El Paso, Texas 79922

 5002 Pasin Street, Suite A1
 Midland, Texas 79703

 6015 Harris Parkivay, Suite 110
 El Worth, Toxas 76132

ELPASO, Texas 79922 888+688+3443 Midland, Texas 79703 T Worth, Texas 76132 E-Mail, Tab@traceanatysis.com

443 915•585•3443 F4 432•689•6301 F4 817•201•5260

FAX 000-734-1250 8443 FAX 915+585+4944 0301 FAX 432+689+6313 5260

# Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

# Analytical and Quality Control Report

Ike Tavarez Tetra Tech 1910 N. Big Spring Street Midland, TX, 79705

Report Date: January 26, 2012

Work Order: 12012003

Project Location:Eddy Co., NMProject Name:COG/Moose Fed. #23 TBProject Number:114-6400857

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
286946	CS-1 North (AH-1)	soil	2012-01-13	00:00	2012-01-19
286947	CS-1 South (AH-1)	soil	2012-01-13	00:00	2012-01-19
286948	CS-1 East (AH-1)	soil	2012-01-13	00:00	2012-01-19
286949	CS-1 Bottom Hole 1' (AH-1)	soil	2012-01-13	00:00	2012-01-19
286950	T-1 2' (AH-1)	soil	2012-01-13	00:00	2012-01-19
286952	CS-2 North (AH-5)	soil	2012-01-13	00:00	2012-01-19
286953	CS-2 South (AH-5)	soil	2012-01-13	00:00	2012-01-19
286954	CS-2 Bottom Hole 3' (AH-5)	soil	2012-01-13	00:00	2012-01-19
286958	CS-3 North (AH-8)	soil	2012-01-13	00:00	2012-01-19
286959	CS-3 South (AH-8)	soil	2012-01-13	00:00	2012-01-19
286960	CS-3 Bottom Hole 1' (AH-8)	soil	2012-01-13	00:00	2012-01-19
286961	T-3 2' (AH-8)	soil	2012-01-13	00:00	2012-01-19
286962	T-3 4' (AH-8)	soil	2012-01-13	00:00	2012-01-19
286964	CS-4 North (AH-9)	soil	2012-01-13	00:00	2012-01-19
286965	CS-4 South (AH-9)	soil	2012-01-13	00:00	2012-01-19
286966	CS-4 West (AH-9)	soil	2012-01-13	00:00	2012-01-19
286967	CS-4 Bottom Hole 2' (AH-9)	soil	2012-01-13	00:00	2012-01-19

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.

This report consists of a total of 43 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael abel

Dr. Blair Leftwich, Director Dr. Michael Abel, Project Manager

# **Report Contents**

Case Narrative	5
Analytical Report	6
Sample 286946 (CS-1 North (AH-1))	6
Sample 286947 (CS-1 South (AH-1))	7
Sample 286948 (CS-1 East (AH-1))	8
Sample 286949 (CS-1 Bottom Hole 1' (AH-1))	9
	10
	11
	13
	14
	16
	17
	19
	20
	22
	22
	23
	23
Sample 286967 (CS-4 Bottom Hole 2' (AH-9))	24
Method Blanks	25
	25
	25
•	25
	26
•	26
	26
	27
	27
$\mathcal{Q} \mathcal{O} \text{ Datch } 0 0 0 4 4 1 1 1 1 1 1 1 1$	21
	28
	28
	28
	29
QC Batch 87979 - LCS (1)	29
	30
$\gamma - \gamma$	30
QC Batch 88083 - LCS (1)	31
QC Batch 88084 - LCS (1)	31
QC Batch 87961 - MS (1)	32
	32
	33
	33
	34
	34

Page 3 of 43

	35 35
Calibration Standards	37
QC Batch 87961 - CCV (1)	37
	37
	37
•	37
•	37
	38
	38
	38
	39
	39
	39
	39
	40
	40
	40
	40
	41
	41
	41
	41
	•••
Appendix	43
	43
	43
	43
	43

.

# **Case Narrative**

Samples for project COG/Moose Fed. #23 TB were received by TraceAnalysis, Inc. on 2012-01-19 and assigned to work order 12012003. Samples for work order 12012003 were received intact at a temperature of 4.1 C.

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

		Prep	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	$\operatorname{Batch}$	Date
BTEX	S 8021B	74695	2012-01-20 at 09:00	87963	2012-01-23 at 10:00
BTEX	S 8021B	74696	2012-01-20 at 09:00	87979	2012-01-23 at 10:23
BTEX	S 8021B	74757	2012-01-24 at 09:00	88045	2012-01-24 at 15:55
Chloride (Titration)	SM 4500-Cl B	74739	2012-01-24 at 08:56	88083	2012-01-25 at 16:03
Chloride (Titration)	SM 4500-Cl B	74793	2012-01-24 at 10:05	88084	2012-01-26 at 12:06
TPH DRO - NEW	S 8015 D	74693	2012-01-20 at 09:00	87961	2012-01-21 at 01:08
TPH GRO	S 8015 D	74695	2012-01-20 at 09:00	87964	2012-01-23 at 10:00
TPH GRO	S 8015 D	74696	2012-01-20 at 09:00	87980	2012-01-23 at 10:26

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 12012003 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.

Report Date: January 26, 2012 114-6400857

#### Work Order: 12012003 COG/Moose Fed. #23 TB

# **Analytical Report**

#### Sample: 286946 - CS-1 North (AH-1)

Laboratory: Midland Analysis: BTEX QC Batch: 87963 Prep Batch: 74695	Date Analyzed:			2012-0	S 8021B 2012-01-23 2012-01-20			hod: S 5035 By: DA By: DA
				$\mathbf{RL}$				
Parameter	Flag	Cert		Result	U	nits	Dilution	$\mathbf{RL}$
Benzene	υ	1		< 0.0200	mg/	'Kg	1	0.0200
Toluene	υ	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	Fla	g Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.05	mg/Kg	1	2.00	102	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.83	mg/Kg	1	2.00	92	70.6 - 179

#### Sample: 286946 - CS-1 North (AH-1)

Laboratory:	Midland									
Analysis:	TPH DRO - NH	EW	An	alytical Met	hod: S 801	5 D	Prep M	lethod:	N/A	
QC Batch:			Da	te Analyzed	: 2012-	-01-21	Analyz	Analyzed By:		
Prep Batch:	74693		Sar	nple Prepar	ation: 2012-	01-20	-	ed By:	tc	
					RL					
Parameter		Flag	Cert	R	esult	Units	Dilution		RL	
DRO		U	1	<	<50.0	mg/Kg	1		50.0	
		<b>a</b> .			-	Spike	Percent	Reco	•	
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Lin	nits	
n-Tricosane			85.8	mg/Kg	1	100	86	53.5 -	147.1	

#### Sample: 286946 - CS-1 North (AH-1)

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	87964	Date Analyzed:	2012-01-23	Analyzed By:	DA
Prep Batch:	74695	Sample Preparation:	2012-01-20	Prepared By:	DA

Report Date: January 26, 2012 114-6400857			C	Work O COG/Mo	Page Number: 7 of 43 Eddy Co., NM					
Parameter	Flag		Cert		RL Result	Un	its	Dilution	$\mathbf{RL}$	
GRO			1	·	2.84	mg/Kg		1	2.00	
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)		<u>~</u>		2.12 1.79	mg/Kg mg/Kg	1 1	2.00 2.00	106 90	30 - 134.6 22.4 - 149	

# Sample: 286947 - CS-1 South (AH-1)

Laboratory: Midland Analysis: BTEX QC Batch: 87979 Prep Batch: 74696		Ι	Date Ana	l Method: lyzed: reparation	2012-0	S 8021B 2012-01-23 2012-01-21			hod: S 5035 By: DA By: DA
					$\mathbf{RL}$				
Parameter	Flag		Cert		Result	Un	its	Dilution	$\mathbf{RL}$
Benzene	U		1	•••••••••••••••••••••••••••••••••••••••	< 0.100	mg/l	Kg	5	0.0200
Toluene			1		2.05	mg/l	Kg	5	0.0200
Ethylbenzene			1		5.78	mg/l	Kg	5	0.0200
Xylene			1		21.5	mg/1	Kg	5	0.0200
							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				4.96	mg/Kg	5	5.00	99	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)	Qar	Qør		9.40	mg/Kg	5	5.00	188	70.6 - 179

#### Sample: 286947 - CS-1 South (AH-1)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - NE 87961 74693	W	Da	alytical Me te Analyzeo nple Prepa	l: 201	)15 D 2-01-21 2-01-20	Analyz		N/A tc tc
Parameter		Flag	Cert	F	RL Result	Units	Dilution		RL
DRO			1		607	mg/Kg	1		50.0
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recov Limi	•
n-Tricosane			111	mg/Kg	1	100	111	53.5 - 1	47.1

Report Date: January 26, 2012 114-6400857		C	Work Ord OG/Moos	Page Number: 8 of 43 Eddy Co., NM						
Sample: 286947 - CS-1 Sout	th (AF	I-1)								
Laboratory: Midland Analysis: TPH GRO QC Batch: 87980 Prep Batch: 74696			Analytical Method:S 8015 DDate Analyzed:2012-01-23Sample Preparation:2012-01-21					Prep Method: S 5035 Analyzed By: DA Prepared By: DA		
					$\mathbf{RL}$					
Parameter	Flag		Cert	]	Result	Uni	ts	Dilution	$\mathbf{RL}$	
GRO	·		1		727	mg/K	g	5	2.00	
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)	Qar	Qsr		5.09 8.96	mg/Kg mg/Kg	5 5	5.00 5.00	102 179	30 - 134.6 22.4 - 149	

#### Sample: 286948 - CS-1 East (AH-1)

.

Laboratory:MidlandAnalysis:BTEXQC Batch:87979Prep Batch:74696		Analytical Method: Date Analyzed: Sample Preparation:		2012-0	S 8021B 2012-01-23 2012-01-21			hod: S 5035 By: DA By: DA
				RL				
Parameter	Flag	Cert		Result	Uı	nits	Dilution	$\mathbf{RL}$
Benzene	υ	1		< 0.100	mg/	Kg	5	0.0200
Toluene	U	1		< 0.100	mg/		5	0.0200
Ethylbenzene	U	1		< 0.100	mg/	Kg	5	0.0200
Xylene		1		0.221	mg/	Kg	5	0.0200
_						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			4.63	mg/Kg	5	5.00	93	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			4.51	mg/Kg	5	5.00	90	70.6 - 179

#### Sample: 286948 - CS-1 East (AH-1)

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	87961	Date Analyzed:	2012-01-21	Analyzed By:	tc
Prep Batch:	74693	Sample Preparation:	2012-01-20	Prepared By:	tc

Report Date: January 26, 2012 114-6400857			2	C	Work Orde OG/Moose	Page Number: 9 of 43 Eddy Co., NM			
Parameter			Flag	Cert	Re	RL esult	Units	Dilution	RL
DRO				1	2	780	mg/Kg	1	50.0
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		192	mg/Kg	1	100	192	53.5 - 147.1

# Sample: 286948 - CS-1 East (AH-1)

Laboratory:MidlandAnalysis:TPH GROQC Batch:87980Prep Batch:74696		Date Ar	cal Methoo nalyzed: Preparatio	2012-	01-23		Prep Meth Analyzed I Prepared F	By: DA
				RL				
Parameter	Flag	Cert		Result	Uni	ts	Dilution	$\mathbf{RL}$
GRO	·	1		101	mg/ł	۲g	5	2.00
Surrogate	Fla	ag Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0	4.86	mg/Kg	5	5.00	97	30 - 134.6
4-Bromofluorobenzene (4-BFB)			4.45	mg/Kg	5	5.00	89	22.4 - 149

# Sample: 286949 - CS-1 Bottom Hole 1' (AH-1)

Laboratory:MidlandAnalysis:BTEXQC Batch:87979Prep Batch:74696		Date Ana	al Method alyzed: Preparation	2012-0	)1-23		Prep Met Analyzed Prepared	By: DA
				$\mathbf{RL}$				
Parameter	Flag	Cert		Result	Ur	nits	Dilution	$\mathbf{RL}$
Benzene	υ	1		< 0.100	mg/	Kg	5	0.0200
Toluene		1		1.07	mg/	Kg	5	0.0200
Ethylbenzene		1		6.31	mg/	Kg	5	0.0200
Xylene		1	····	16.7	mg/	Kg	5	0.0200
						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			4.51	mg/Kg	5	5.00	90	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			7.91	mg/Kg	5	5.00	158	70.6 - 179

Report Date: January 26, 2012	Work Order: 12012003	Page Number: 10 of 43
114-6400857	COG/Moose Fed. #23 TB	Eddy Co., NM

### Sample: 286949 - CS-1 Bottom Hole 1' (AH-1)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - NI 87961 74693	ΞW	Da	alytical Me te Analyzec mple Prepar	l:	S 8015 2012-0 2012-0	01-21	Analyz	Method: zed By: red By:	N/A tc tc
					$\mathbf{RL}$					
Parameter		Flag	$\operatorname{Cert}$	R	lesult		Units	Dilution		$\mathbf{RL}$
DRO			1		664		mg/Kg	1		50.0
Surrogate	Flag	Cert	Result	Units	Dilu	tion	Spike Amount	Percent Recovery	Reco Lin	overy nits
n-Tricosane			112	mg/Kg	1		100	112	53.5 -	147.1

#### Sample: 286949 - CS-1 Bottom Hole 1' (AH-1)

Laboratory: Midland Analysis: TPH GRO QC Batch: 87980 Prep Batch: 74696		Ι	Date An	al Method alyzed: Preparatio	2012-0	1-23		Prep Meth Analyzed E Prepared E	By: DA
					RL				
Parameter	Flag		Cert	]	Result	Uni	ts	Dilution	$\mathbf{RL}$
GRO			1		454	mg/K	g	5	2.00
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)				4.62	mg/Kg	5	5.00	92	30 - 134.6
4-Bromofluorobenzene (4-BFB)	Qst	Qar		10.6	mg/Kg	5	5.00	212	22.4 - 149

# Sample: 286950 - T-1 2' (AH-1)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 87979 74696		Analytical Me Date Analyze Sample Prepa	d: 2012-01-2	-	Prep Method: Analyzed By: Prepared By:	S 5035 DA DA
				$\mathbf{RL}$			
Parameter		Flag	Cert	Result	Units	Dilution	RL
Benzene		υ	1	< 0.0200	mg/Kg	1	0.0200
Toluene		υ	1	< 0.0200	mg/Kg	1	0.0200
Ethylbenzene	e	U	1	<0.0200	mg/Kg	1	0.0200

continued ...

Report Date: January 26, 2012 114-6400857				0	-	rder: 1201 ose Fed. #				Page Nu		11 of 43 Co., NM
sample 2869	50 continued											
_				<b>a</b> .		RL						
Parameter	<u> </u>	Flag		Cert		Result		Units		Dilution		RL
Xylene		U		1		< 0.0200		mg/Kg	5	1		0.0200
Surrogate			Flag	Cert	Result	Units	Diluti	ion /	Spike Amount	Percent		covery
Trifluorotolu	ene (TET)		riag	Cert	2.10	mg/Kg	<u></u> 1		2.00	Recovery 105		- 143.1
	robenzene (4-BFB)				1.94	mg/Kg	1		2.00 2.00	105 97		- 143.1 5 - 179
Sample: 28	6950 - T-1 2' (A	H-1)										
oumpie. 20												
Laboratory:	Midland											
Analysis:	TPH DRO - NEV	W			alytical N		S 8015			Prep M		•
QC Batch:	87961				te Analyz		2012-01			Analyz	-	tc
Prep Batch:	74693			581	mple Prep	paration:	2012-01	-20		Prepare	ed By:	tc
						$\mathbf{RL}$						
Parameter		Flag		Cert		Result		Units		Dilution		RL
DRO		U		1		<50.0		mg/Kg	5	1		50.0
								Spik	e	Percent	Rec	overy
Surrogate	Flag	Cert	R	lesult	Units	Dilu	tion	Amou	int	Recovery	Li	mits
n-Tricosane				93.6	mg/Kg		1	100		94	53.5	- 147.1
Sample: 28 Laboratory: Analysis:	<b>6950 - T-1 2' (A</b> Midland TPH GRO	.H-1)		Analyt:	cal Metho	λ. αρη	15 D			Dr 1/-4	hod.	Q EDDE
QC Batch:	87980			Date Ar			-01-23			Prep Met Analyzed		S 5035 DA
Prep Batch:	74696				Preparati		-01-25			Prepared		DA DA
						RL				-	-	
Parameter		Flag		Cert		Result		Units		Dilution		RL
GRO		·····		1		5.09		mg/Kg		1		2 00

GRO	1			5.09	mg/I	۲g	1	2.00
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.20	mg/Kg	1	2.00	110	30 - 134.6
4-Bromofluorobenzene (4-BFB)			1.96	mg/Kg	1	2.00	98	22.4 - 149

Report Date: January 26, 2012	Work Order: 12012003	Page Number: 12 of 43
114-6400857	COG/Moose Fed. $#23$ TB	Eddy Co., NM

### Sample: 286952 - CS-2 North (AH-5)

Laboratory: Midland Analysis: BTEX QC Batch: 87979 Prep Batch: 74696		Date Ana	al Method alyzed: Preparatio	2012-0	)1-23		Prep Met Analyzed Prepared	By: DA
				$\operatorname{RL}$				
Parameter	Flag	Cert		Result	U	nits	Dilution	$\mathbf{RL}$
Benzene	υ	1	•	< 0.0200	mg/	'Kg	1	0.0200
Toluene	U	1		< 0.0200	mg/	ΊKg	1	0.0200
Ethylbenzene	U	1		< 0.0200	mg/	'Kg	1	0.0200
Xylene	υ	1	•	<0.0200	mg/	'Kg	1	0.0200
Surrogate	Flag	; Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	1	2.00	100	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	70.6 - 179

# Sample: 286952 - CS-2 North (AH-5)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 88083 74739	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-01-25 2012-01-24	Prep Method: Analyzed By: Prepared By:	ÁR.
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride	υ		<200	mg/Kg	50	4.00

#### Sample: 286952 - CS-2 North (AH-5)

n-Tricosane			89.9	mg/Kg	1	100	90	53.5 -	147.1
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Reco Lin	overy nits
DRO		υ	1	<	(50.0	mg/Kg	1		50.0
Parameter		Flag	Cert	R	RL esult	Units	Dilution	_	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - NEW 87961 74693		Dat	alytical Met te Analyzed nple Prepar	: 2012-	15 D -01-21 -01-20	Prep Method: Analyzed By: Prepared By:		N/A tc tc

Report Date: January 26, 2012 114-6400857		C		der: 120120 se Fed. #2			Page Number: 13 of 43 Eddy Co., NM		
Sample: 286952 - CS-2 Nort	th (AH-5)								
Laboratory:MidlandAnalysis:TPH GROQC Batch:87980Prep Batch:74696		Date An	al Metho alyzed: Preparati	2012-0	01-23		Prep Meth Analyzed I Prepared F	By: DA	
				$\mathbf{RL}$					
Parameter	Flag	Cert		$\mathbf{Result}$	Un	its	Dilution	$\mathbf{RL}$	
GRO		1		3.64	mg/I	ζg	1	2.00	
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)			2.08 1.84	mg/Kg mg/Kg	1 1	2.00 2.00	104 92	30 - 134.6 22.4 - 149	

#### Sample: 286953 - CS-2 South (AH-5)

Laboratory: Midland Analysis: BTEX QC Batch: 87979 Prep Batch: 74696		Analytica Date Ana Sample F	5	2012-0	)1-23		Prep Met Analyzed Prepared	By: DA
				RL				
Parameter	Flag	Cert		Result	U	nits	Dilution	$\mathbf{RL}$
Benzene	υ	1		< 0.0200	mg/	ΊKg	1	0.0200
Toluene	U	1		< 0.0200	mg/	̈́Kg	1	0.0200
Ethylbenzene	υ	1		< 0.0200	mg/	ΊKg	1	0.0200
Xylene	U	1		< 0.0200	mg/	Kg	1	0.0200
Surrogate	Flag	g Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.98	mg/Kg	1	2.00	99	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.01	mg/Kg	1	2.00	100	70.6 - 179

#### Sample: 286953 - CS-2 South (AH-5)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88083	Date Analyzed:	2012-01-25	Analyzed By:	AR
Prep Batch:	74739	Sample Preparation:	2012-01-24	Prepared By:	AR

Report Date: January 114-6400857	y 26, 2012		rk Order: 1201200 /Moose Fed. #23	Page Number: 14 of 43 Eddy Co., NM		
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride	υ		<200	mg/Kg	50	4.00

# Sample: 286953 - CS-2 South (AH-5)

Laboratory:	Midland								
Analysis:	TPH DRO - NE	W	An	alytical Me	thod: S 80	15 D	Prep M	lethod: N/A	
QC Batch:	87961		Da	te Analyzed	l: 2012	-01-21	Analyzed By: tc		
Prep Batch:	74693		Sa	mple Prepa	ration: 2012	-01-20	Prepar	ed By: tc	
					RL				
Parameter		Flag	Cert	F	Result	Units	Dilution	$\mathbf{RL}$	
DRO			1		744	mg/Kg	1	50.0	
_						Spike	Percent	Recovery	
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits	
n-Tricosane			130	mg/Kg	1	100	130	53.5 - 147.1	

### Sample: 286953 - CS-2 South (AH-5)

Laboratory:MidlandAnalysis:TPH GROQC Batch:87980Prep Batch:74696		Date Ar	cal Methoo aalyzed: Preparatio	2012-0	)1-23		Prep Meth Analyzed E Prepared E	By: DA
				$\mathbf{RL}$				
Parameter	Flag	Cert		Result	Uni	its	Dilution	$\mathbf{RL}$
GRO		1		66.6	mg/I	ζg	1	2.00
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	riag	Jert	2.09				104	30 - 134.6
				mg/Kg	1	2.00		
4-Bromofluorobenzene (4-BFB)			2.23	mg/Kg	1	2.00	112	22.4 - 149

# Sample: 286954 - CS-2 Bottom Hole 3' (AH-5)

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	87979	Date Analyzed:	2012-01-23	Analyzed By:	DA
Prep Batch:	74696	Sample Preparation:	2012-01-21	Prepared By:	DA

;

Report Date: January 26, 2012 114-6400857		Work Order: 12012003 COG/Moose Fed. #23 TB						Page Number: 15 of 43 Eddy Co., NM		
-		<i>a</i> .		RL	•-					
Parameter	Flag	Cert		Result	Un		Dilution			
Benzene		1		0.465	mg/	Kg	5	0.0200		
Toluene		1		12.3	mg/	Kg	5	0.0200		
Ethylbenzene		1		11.5	mg/	Kg	5	0.0200		
Xylene	. <u></u>	1		24.8	mg/	Kg	5	0.0200		
						Spike	Percent	Recovery		
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits		
Trifluorotoluene (TFT)			4.65	mg/Kg	5	5.00	93	82.8 - 143.1		
4-Bromofluorobenzene (4-BFB)			8.06	mg/Kg	5	5.00	161	70.6 - 179		

# Sample: 286954 - CS-2 Bottom Hole 3' (AH-5)

Chloride			222	mg/Kg	50	4.00
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Prep Batch:	74739	Sample :	Preparation:	2012-01-24	Prepared By:	AR
QC Batch:	88083	Date An	alyzed:	2012-01-25	Analyzed By:	AR
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland					

#### Sample: 286954 - CS-2 Bottom Hole 3' (AH-5)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - NH 87961 74693	EW	Da	Analytical Method: Date Analyzed: Sample Preparation:		S 8015 D 2012-01-21 2012-01-20		Prep Method: Analyzed By: Prepared By:		N/A tc tc
<b>5</b> .			<b>a</b> .	-	RL					
Parameter		Flag	Cert	ł	Result		Units	Dilution		RL
DRO			1		951		mg/Kg	1		50.0
Surrogate	Flag	Cert	Result	Units	Dilı	ition	Spike Amount	Percent Recovery		overy nits
n-Tricosane			117	mg/Kg		1	100	117	53.5 -	147.1

# Sample: 286954 - CS-2 Bottom Hole 3' (AH-5)

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	87980	Date Analyzed:	2012-01-23	Analyzed By:	DA
Prep Batch:	74696	Sample Preparation:	2012-01-21	Prepared By:	DA

Report Date: January 26, 2012 114-6400857				er: 120120 e Fed. #23	• -		Page Number: 16 of 43 Eddy Co., NM		
Parameter	Flag		Cert	]	RL Result	Uni	ts	Dilution	RL
GRO		1			512	mg/Kg		5	2.00
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)	Qør	Qer		$\begin{array}{c} 4.86\\ 10.2 \end{array}$	mg/Kg mg/Kg	5 5	5.00 5.00	97 204	30 - 134.6 22.4 - 149

# Sample: 286958 - CS-3 North (AH-8)

Laboratory: Midland Analysis: BTEX QC Batch: 87979 Prep Batch: 74696		Date An	al Method alyzed: Preparation	2012-0	)1-23		Prep Met Analyzed Prepared	By: DA
		-	·	$\mathbf{RL}$			-	-
Parameter	Flag	Cert		Result	U	nits	Dilution	$\mathbf{RL}$
Benzene	U	1	<	< 0.0200	mg/	′Kg	1	0.0200
Toluene	U	1	<	<0.0200	mg/		1	0.0200
Ethylbenzene	υ	I	<	<0.0200	mg/		1	0.0200
Xylene	U	1	<	<0.0200	mg/		1	0.0200
<b>7</b>		~				Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.98	mg/Kg	1	2.00	99	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.86	mg/Kg	1	2.00	93	70.6 - 179

# Sample: 286958 - CS-3 North (AH-8)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 88084 74793	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-01-26 2012-01-24	Prep Method: Analyzed By: Prepared By:	AR
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			710	mg/Kg	50	4.00

Report Date 114-6400857	: January 26, 201	C	Work Ord OG/Moose			Page Number: 17 of 43 Eddy Co., NM					
Sample: 28	6958 - CS-3 No	orth (AH-	8)								
Laboratory:	Midland										
Analysis:	5			Analytical Method:			5 D	Prep Method: N/A			
QC Batch:	87961		Dat	Date Analyzed: 2012-01-21			01-21	Analyzed By: tc			
Prep Batch:	74693		San	nple Prepa	ration:	2012-	01-20	Prepar	red By:	tc	
					$\mathbf{RL}$						
Parameter		Flag	Cert	F	Result		Units	Dilution		$\mathbf{RL}$	
DRO			1		112		mg/Kg	1		50.0	
							Spike	Percent	Reco	overy	
Surrogate	Flag	Cert	Result	Units	Dilı	ition	Amount	Recovery		nits	
n-Tricosane	······································		97.4	mg/Kg		1	100	97	53.5 -	147.1	

#### Sample: 286958 - CS-3 North (AH-8)

Laboratory: Midland Analysis: TPH GRO QC Batch: 87980 Prep Batch: 74696		Date A	cal Method nalyzed: Preparatio	2012-	01-23		Prep Meth Analyzed I Prepared I	By: DA
				$\mathbf{RL}$				
Parameter	Flag	Cert	]	Result	Un	its	Dilution	$\mathbf{RL}$
GRO		1		8.97	mg/l	Кg	1	2.00
Surrogate	Flag	g Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.09	mg/Kg	1	2.00	104	30 - 134.6
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	22.4 - 149

#### Sample: 286959 - CS-3 South (AH-8)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 87979 74696		Analytical Me Date Analyze Sample Prepa	d: 2012-01-	23	Prep Method: Analyzed By: Prepared By:	S 5035 DA DA
				RL			
Parameter		Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Benzene		υ	1	< 0.0200	mg/Kg	1	0.0200
Toluene		υ	1	< 0.0200	mg/Kg	1	0.0200
Ethylbenzene	e	U	1	<0.0200	mg/Kg	1	0.0200

continued ...

Report Date 114-6400857	t Date: January 26, 2012 00857				rder: 1201 ose Fed. #			0	Page Number: 18 of 43 Eddy Co., NM		
sample 2869	59 continued										
					$\mathbf{RL}$						
Parameter		Flag	Cert		Result		Units	Dilution		RL	
Xylene		υ	1		< 0.0200	n	ng/Kg	1		0.0200	
							Spike	Percent	Rec	overy	
Surrogate		Fl	ag Cert	Result	Units	Dilutio	-			nits	
Trifluorotolu	ene (TFT)			2.05	mg/Kg	1	2.00	102	82.8 -	143.1	
4-Bromofluor	robenzene (4-BI	FB)		1.91	mg/Kg	1	2.00	96	70.6	- 179	
Sample: 28	6959 - CS-3 S	outh (AH-8	8)								
Laboratory:	Midland										
Analysis:	Chloride (Titr	ation)		lytical M		SM 4500-			fethod:	N/A	
QC Batch:	88084			e Analyze		2012-01-2			ed By:	AR	
Prep Batch:	74793		Sam	ple Prep	aration:	2012-01-2	4	Prepar	ed By:	AR	
					$\mathbf{RL}$						
Parameter		Flag	Cert		Result		Units	Dilution		$\mathbf{RL}$	
Chloride					1310	n	ng/Kg	100		4.00	
Sample: 28 Laboratory: Analysis: QC Batch: Prep Batch:	6 <b>959 - CS-3 S</b> Midland TPH DRO - M 87961 74693		Ana	alytical N te Analyz nple Prep	sed:	S 8015 D 2012-01-2 2012-01-2	21	Prep M Analyz Prepar	ed By:	N/A tc tc	
Parameter		Flag	Cert		RL Result		TT	Dilur		DΤ	
DRO		r tag			151		Units 1g/Kg	Dilution 1		RL 50.0	
			1	·····	101	1	-5/5	<b>1</b>		00.0	
							Spike	Percent		overy	
Surrogate n-Tricosane	Flag	Cert	Result 98.4	Units mg/Kg			Spike Amount 100	Percent Recovery 98	Lir	overy nits 147.1	

# Sample: 286959 - CS-3 South (AH-8)

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	87980	Date Analyzed:	2012-01-23	Analyzed By:	DA
Prep Batch:	74696	Sample Preparation:	2012-01-21	Prepared By:	DA

Report Date: January 26, 2012 114-6400857			С	Work Or OG/Moo	Page Number: 19 of 43 Eddy Co., NM				
Parameter	Flag		Cert		RL Result	Uni	its	Dilution	$\mathbf{RL}$
GRO			1		10.2	mg/I	٢g	1	2.00
Surrogate	I	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)				2.14 1.90	mg/Kg mg/Kg	1 1	$\begin{array}{c} 2.00\\ 2.00\end{array}$	107 95	30 - 134.6 22.4 - 149

### Sample: 286960 - CS-3 Bottom Hole 1' (AH-8)

Laboratory:MidlandAnalysis:BTEXQC Batch:87979Prep Batch:74696		Date Ana	al Method alyzed: Preparatio	2012-0	01-23		Prep Met Analyzed Prepared	By: DA
				RL				
Parameter	Flag	Cert		Result	U	nits	Dilution	$\mathbf{RL}$
Benzene	υ	1		< 0.0200	mg/	′Kg	1	0.0200
Toluene	υ	1		< 0.0200	mg/	′Kg	1	0.0200
Ethylbenzene	U	1		< 0.0200	mg/	′Kg	1	0.0200
Xylene	υ	1	··	<0.0200	mg/	′Kg	1	0.0200
						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			2.07	mg/Kg	1	2.00	104	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	70.6 - 179

# Sample: 286960 - CS-3 Bottom Hole 1' (AH-8)

Laboratory: Analysis: QC Batch: Prep Batch:	Analysis: Chloride (Titration)		al Method: alyzed: Preparation:	SM 4500-Cl B 2012-01-26 2012-01-24	Prep Method: Analyzed By: Prepared By:	AR
Parameter	Flag	Cert	RL Result	Units	Dilution	$\mathbf{RL}$
Chloride			573	mg/Kg	50	4.00

Report Date: January 26, 2012	Work Order: 12012003	Page Number: 20 of 43
114-6400857	COG/Moose Fed. #23 TB	Eddy Co., NM

# Sample: 286960 - CS-3 Bottom Hole 1' (AH-8)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - NH 87961 74693	EW	Da	alytical Met te Analyzed nple Prepar	: 2012	15 D -01-21 -01-20	Prep Method: Analyzed By: Prepared By:		N/A tc tc
					$\mathbf{RL}$				
Parameter		Flag	Cert	R	esult	Units	Dilution		RL
DRO			1		65.8	mg/Kg	1		50.0
						Spike	Percent		overy
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Lin	nits
n-Tricosane			99.0	mg/Kg	1	100	99	53.5 -	147.1

# Sample: 286960 - CS-3 Bottom Hole 1' (AH-8)

Laboratory: Midland Analysis: TPH GRO QC Batch: 87980 Prep Batch: 74696		Date Ar	cal Metho nalyzed: Preparati	2012-	01-23		Prep Meth Analyzed H Prepared H	By: DA
				$\mathbf{RL}$				
Parameter	Flag	Cert		Result	Un	its	Dilution	$\mathbf{RL}$
GRO		1		9.78	mg/I	۲g	1	2.00
Surrogate	Fla	g Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.12	mg/Kg	1	2.00	106	30 - 134.6
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	22.4 - 149

# Sample: 286961 - T-3 2' (AH-8)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 87979 74696		Analytical Me Date Analyzeo Sample Prepar	l: 2012-01	-23	Prep Method: Analyzed By: Prepared By:	S 5035 DA DA
				$\mathbf{RL}$			
Parameter		Flag	Cert	$\mathbf{Result}$	Units	Dilution	$\mathbf{RL}$
Benzene			1	3.39	mg/Kg	5	0.0200
Toluene		Je	1	48.8	mg/Kg	5	0.0200
Ethylbenzene	e	····	1	21.2	mg/Kg	5	0.0200

continued ...

Report Date 114-6400857	Date:         January 26, 2012         Work Order:         12012           0857         COG/Moose Fed. #2							÷	Page Number: 21 c Eddy Co.,		
sample 2869	61 continued										
						$\mathbf{RL}$					
Parameter		Flag	5	Cert		Result		nits	Dilution		RL
Xylene				1		64.5	mg/	Kg	5		0.0200
								Spike	Percent	Rec	overy
Surrogate			Flag	Cert	Result	Units	Dilution	Amount	Recovery		nits
Trifluorotolu	ene (TFT)	Qsr	Qar		4.02	mg/Kg		5.00	80		143.1
	robenzene (4-BFB)		-		6.74	mg/Kg		5.00	135		- 179
Laboratory: Analysis: QC Batch: Prep Batch: Parameter Chloride	6961 - T-3 2' (A) Midland Chloride (Titratic 88084 74793	·		Date	lytical M > Analyze ple Prepa	ed:		B nits /Kg	Prep M Analyzz Prepare Dilution 50	ed By:	N/A AR AR RL 4.00
Sample: 28	6961 - T-3 2' (Al	H-8)									
Laboratory:	Midland										
Laboratory: Analysis:	TPH DRO - NEW	V			alytical N		S 8015 D		Prep M		N/A
Laboratory: Analysis: QC Batch:	TPH DRO - NEW 87961	V		Dat	e Analyz	ed:	2012-01-21		Analyze	ed By:	tc
Laboratory: Analysis: QC Batch:	TPH DRO - NEW	Į		Dat		ed:				ed By:	
Laboratory: Analysis: QC Batch:	TPH DRO - NEW 87961	Į		Dat	e Analyz	ed:	2012-01-21		Analyze	ed By:	tc
Laboratory: Analysis: QC Batch: Prep Batch: Parameter	TPH DRO - NEW 87961	V Flag		Dat	e Analyz	ed: paration:	2012-01-21 2012-01-20	nits	Analyze	ed By:	tc
Laboratory: Analysis: QC Batch: Prep Batch: Parameter	TPH DRO - NEW 87961			Dat San	e Analyz	ed: paration: RL	2012-01-21 2012-01-20 U	nits /Kg	Analyze Prepare	ed By:	tc tc
Laboratory: Analysis: QC Batch: Prep Batch: Parameter DRO	TPH DRO - NEW 87961			Dat San Cert	e Analyz	ed: paration: RL Result	2012-01-21 2012-01-20 U mg	/Kg	Analyze Prepare Dilution	ed By: ed By:	tc tc RL 50.0
Laboratory: Analysis: QC Batch: Prep Batch: Parameter	TPH DRO - NEW 87961		Re	Dat San Cert	e Analyz	ed: paration: RL Result	2012-01-21 2012-01-20 U mg	/Kg Spike	Analyze Prepare Dilution 1	ed By: ed By: Reco	tc tc RL

# Sample: 286961 - T-3 2' (AH-8)

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	87980	Date Analyzed:	2012-01-23	Analyzed By:	DA
Prep Batch:	74696	Sample Preparation:	2012-01-21	Prepared By:	DA

Report Date: January 26, 2012 114-6400857		Work Order: 12012003 COG/Moose Fed. #23 TB					÷	ber: 22 of 43 ddy Co., NM	
_					RL				
Parameter	Flag		Cert		Result	Un		Dilution	
GRO			1		697	mg/	Kg	5	2.00
							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				4.28	mg/Kg	5	5.00	86	30 - 134.6
4-Bromofluorobenzene (4-BFB)	Qar	Qsr		9.44	mg/Kg	5	5.00	189	22.4 - 149
Laboratory: Midland									
Laboratory:MidlandAnalysis:BTEXQC Batch:88045Prep Batch:74757		D	ate Ana	l Method: lyzed: reparation	S 8021F 2012-01 : 2012-01	24		Prep Meth Analyzed I Prepared I	By: tc
Analysis: BTEX QC Batch: 88045		D	ate Ana	lyzed:	2012-01	24		Analyzed l	By: tc
Analysis: BTEX QC Batch: 88045	Flag	D	ate Ana	lyzed: reparation	2012-01 : 2012-01	24	ts	Analyzed l	By: tc
Analysis: BTEX QC Batch: 88045 Prep Batch: 74757	Flag	D	ate Ana ample P	lyzed: reparation	2012-01 : 2012-01 RL	-24 -24 Uni mg/K	g	Analyzed I Prepared I	By: tc By: tc
Analysis: BTEX QC Batch: 88045 Prep Batch: 74757 Parameter Benzene Toluene	Flag	D	ate Ana ample P Cert	lyzed: reparation	2012-01 : 2012-01 RL Result 0.412 4.27	24 24 Uni	g	Analyzed I Prepared I Dilution	By: tc By: tc RL 0.0200 0.0200
Analysis: BTEX QC Batch: 88045 Prep Batch: 74757 Parameter Benzene Toluene Ethylbenzene	Flag	D	ate Ana ample P Cert	lyzed: reparation	2012-01 : 2012-01 RL Result 0.412 4.27 1.73	-24 -24 	g g g	Analyzed I Prepared I Dilution 1 1 1	By: tc By: tc <u>RL</u> 0.0200 0.0200 0.0200
Analysis: BTEX QC Batch: 88045 Prep Batch: 74757 Parameter Benzene Toluene	Flag	D	ate Ana ample P Cert	lyzed: reparation	2012-01 : 2012-01 RL Result 0.412 4.27	-24 -24 	g g g	Analyzed I Prepared I Dilution 1 1	By: tc By: tc RL 0.0200 0.0200
Analysis: BTEX QC Batch: 88045 Prep Batch: 74757 Parameter Benzene Toluene Ethylbenzene	Flag	D	ate Ana ample P Cert 1 1	lyzed: reparation	2012-01 : 2012-01 RL Result 0.412 4.27 1.73	-24 -24 	g g g	Analyzed I Prepared I Dilution 1 1 1	By: tc By: tc <u>RL</u> 0.0200 0.0200 0.0200
Analysis: BTEX QC Batch: 88045 Prep Batch: 74757 Parameter Benzene Toluene Ethylbenzene		D	ate Ana ample P Cert 1 1	lyzed: reparation	2012-01 : 2012-01 RL Result 0.412 4.27 1.73	-24 -24 	ଞ ଞ ଞ	Analyzed I Prepared I Dilution 1 1 1 1	By: tc By: tc 0.0200 0.0200 0.0200 0.0200 0.0200
Analysis: BTEX QC Batch: 88045 Prep Batch: 74757 Parameter Benzene Toluene Ethylbenzene Xylene		D Sa	ate Ana ample P Cert 1 1 1	lyzed: reparation	2012-01 2012-01 RL Result 0.412 4.27 1.73 5.45	-24 L-24 mg/k mg/k mg/k mg/k	g g g Spike	Analyzed I Prepared I Dilution 1 1 1 1 2 Percent	By: tc By: tc 0.0200 0.0200 0.0200 0.0200 0.0200 Recovery

# Sample: 286964 - CS-4 North (AH-9)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 87979 74696		Analytical Mo Date Analyze Sample Prepa	d: 2012-01-2	-	Prep Method: Analyzed By: Prepared By:	
,				$\mathbf{RL}$			
Parameter		Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Benzene		υ	1	< 0.0200	mg/Kg	1	0.0200
Toluene		U	1	< 0.0200	mg/Kg	1	0.0200
Ethylbenzene	e	υ	1	< 0.0200	mg/Kg	1	0.0200
Xylene		U	1	< 0.0200	mg/Kg	1	0.0200

Report Date: January 26, 2012 114-6400857		Work Order: 12012003 COG/Moose Fed. #23 TB						Page Number: 23 of 43 Eddy Co., NM		
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits		
Trifluorotoluene (TFT)			2.05	mg/Kg	1	2.00	102	82.8 - 143.1		
4-Bromofluorobenzene (4-BFB)			1.95	mg/Kg	1	2.00	98	70.6 - 179		

# Sample: 286965 - CS-4 South (AH-9)

,

Laboratory:MidlandAnalysis:BTEXQC Batch:87979Prep Batch:74696		Date Ana	al Method alyzed: Preparatio	2012-0	)1-23		Prep Met Analyzed Prepared	By: DA
				$\mathbf{RL}$				
Parameter	Flag	Cert		Result	U	nits	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/	-	1	0.0200
						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			2.02	mg/Kg	1	2.00	101	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	70.6 - 179

# Sample: 286966 - CS-4 West (AH-9)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 87979 74696		Date Ana	al Method alyzed: Preparatio	2012-0	01-23		Prep Met Analyzed Prepared	By: DA
					$\mathbf{RL}$				
Parameter		Flag	Cert		Result	Uı	nits	Dilution	$\mathbf{RL}$
Benzene		υ	1	•	< 0.0200	mg/	Kg	1	0.0200
Toluene		υ	1		< 0.0200	mg/		1	0.0200
Ethylbenzene		U	1		< 0.0200	mg/		1	0.0200
Xylene	<u>.</u>	UU	1		<0.0200	mg/		1	0.0200
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolue	ene (TFT)			2.02	mg/Kg	1	2.00	101	82.8 - 143.1
						contr	nued		

Report Date: January 26, 2012 114-6400857	Work Order: 12012003 COG/Moose Fed. #23 TB		Ŷ	nber: 24 of 43 Eddy Co., NM
sample continued		Spike	Percent	Recovery

						opino	2 02 00010	100001015
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	70.6 - 179

### Sample: 286967 - CS-4 Bottom Hole 2' (AH-9)

Laboratory:MidlandAnalysis:BTEXQC Batch:87979Prep Batch:74696		Date Ana	al Method: alyzed: Preparation	2012-0	)1-23		Prep Met Analyzed Prepared	By: DA
				$\mathbf{RL}$				
Parameter	Flag	Cert		Result	Ur	nits	Dilution	RL
Benzene	U	1		< 0.100	mg/	Kg	5	0.0200
Toluene		1		0.381	mg/	Kg	5	0.0200
Ethylbenzene		1		0.383	mg/	Kg	5	0.0200
Xylene		1		1.46	mg/	Kg	5	0.0200
						Spike	Percent	Recovery
Surrogate	Flag	Cert	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			4.60	mg/Kg	5	5.00	92	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			5.12	mg/Kg	5	5.00	102	70.6 - 179

Report Date: January 26, 2012 114-6400857

# Method Blanks

Method Blank (1)

QC Batch: 87963

QC Batch:	87961			Date	Analyzed:	2012-01-21		Ana	lyzed By: tc
Prep Batch:	74693			QC P	reparation:	2012-01-20		Prej	pared By: tc
	,						MDL		
Parameter			$\mathbf{F}$	lag	Cert	R	lesult	Units	RI
DRO					1	<	<14.5	mg/Kg	50
							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	$\mathbf{Units}$	Dilution	Amount	Recovery	Limits
n-Tricosane				82.0	mg/Kg	1	100	82	52.7 - 133.8

QC Batch: 87963		Date /	Analyzed:	2012-01	-23		Analy	zed By: I	DA
Prep Batch: 74695			reparation:		-				DA
					MDL				
Parameter	Flag		Cert		Result		Units	]	RL
Benzene			1		< 0.0118		mg/Kg	C	0.02
Toluene			1		< 0.00600		mg/Kg	C	0.02
Ethylbenzene			1		< 0.00850		mg/Kg	0	0.02
Xylene			1		< 0.00613		mg/Kg	0	0.02
						Spike	Percent	Recove	ery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits	s
Trifluorotoluene (TFT)			1.80	mg/Kg	1	2.00	90	65.9 - 11	11.8
4-Bromofluorobenzene (4-BFB)			1.37	mg/Kg	1	2.00	68	48.4 - 12	23.1

Method Blank (1)	QC Batch: 87964	
QC Batch: 87964	Date Analyzed:	Analyzed By: DA
Prep Batch: 74695	QC Preparation:	Prepared By: DA

Report Date: January 26, 2012 114-6400857	Work Order: 12012003 COG/Moose Fed. #23 TB						Page Number: 26 of 43 Eddy Co., NM		
					MDL				
Parameter	Flag		Cert		$\mathbf{Result}$		Units	$\mathbf{RL}$	
GRO			1		0.983		mg/Kg	2	
						Spike	Percent	Recovery	
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery		
Trifluorotoluene (TFT)	<u>×</u>		1.87	mg/Kg	1	2.00	94	67.6 - 150	
4-Bromofluorobenzene (4-BFB)			1.38	mg/Kg	1	2.00	69	52.4 - 130	
Method Blank (1) QC Batch: QC Batch: 87979 Prep Batch: 74696	87979		.nalyzed: eparation:	2012-01- 2012-01-				ed By: DA ed By: DA	
Description	121		<b>G</b> (		MDL		TT 11	DI	
ParameterBenzene	Flag		Cert		Result <0.0118		Units	RL 0.02	
Toluene			1		< 0.00100		mg/Kg mg/Kg	0.02	
Ethylbenzene			1		< 0.00850		mg/Kg	0.02	
Xylene			1		< 0.00613		mg/Kg	0.02	
						Spike	Percent	Recovery	
-	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits	
			1.73	mg/Kg	1	2.00	86	65.9 - 111.8	
Surrogate Trifluorotoluene (TFT)				0, 0					

QC Batch: 87980 Prep Batch: 74696			nalyzed: eparation:	2012-01-2 2012-01-2			Analyze Prepare	d By: DA d By: DA
Parameter	Flag		Cert		MDL Result		Units	RL
GRO			1		2.04		mg/Kg	2
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.83	mg/Kg	1	2.00	92	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.46	mg/Kg	1	2.00	73	52.4 - 130

Report Date: January 26 114-6400857	5, 2012	(			er: 12012003 9 Fed. #23 TB			Page Number: 27 of 43 Eddy Co., NM		
Method Blank (1)	QC Batch: 88045									
QC Batch: 88045		Date	Analyzed:	2012-02	2012-01-24			Analyzed By: tc		
Prep Batch: 74757		QC P	reparation:	2012-02	1-24		Prep	ared By: tc		
					MDL					
Parameter	Flag		Cert		$\mathbf{Result}$		Units	$\mathbf{RL}$		
Benzene			1		< 0.0118		mg/Kg	0.02		
Toluene			1		< 0.00600		mg/Kg	0.02		
Ethylbenzene			1		< 0.00850		mg/Kg	0.02		
Xylene			1		< 0.00613		mg/Kg	0.02		
						Spike	Percent	Recovery		
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits		
Trifluorotoluene (TFT)			1.83	mg/Kg	1	2.00	92	65.9 - 111.8		
4-Bromofluorobenzene (4-	BFB)		1.48	mg/Kg	1	2.00	74	48.4 - 123.1		

QC Batch: 88083 Prep Batch: 74739		Date Analyzed: QC Preparation:		Analyzed By: Prepared By:	
			MDL		
Parameter	Flag	Cert	Result	Units	$\mathbf{RL}$
Chloride			<3.85	mg/Kg	4

Method Blank (1)	QC Batch: 88084
------------------	-----------------

QC Batch: Prep Batch:	88084 74793		Date Analyzed: QC Preparation:		Analyzed By Prepared By		
				MDL			
Parameter		Flag	Cert	Result	Units	$\mathbf{RL}$	
Chloride				<3.85	mg/Kg	4	

Report Date: January 26, 2012 114-6400857

# Laboratory Control Spikes

### Laboratory Control Spike (LCS-1)

QC Batch: 87961			Date	e Analyz	ed: 2	012-01-21				Ana	lyzed E	Sy: tc
Prep Batch: 74693			QC	Preparat	ion: 2	012-01-20				Pre	pared B	By: tc
			I	CS			Spike	Ma	atrix		F	Rec.
Param		F	C Re	esult	Units	Dil.	Amount	Re	$\operatorname{sult}$	Rec.	L	imit
DRO			1	196	mg/Kg	1	250	<1	14.5	78	64.5	- 146.9
	a on the shire	resu	$\mathbf{R}$ . $\mathbf{R}\mathbf{P}\mathbf{D}$	is dased	on the	spike and	spike aup	licate r	esuit.			
Percent recovery is base	a on the spike		LCSD			Spike	Matrix		R	ec.		RPD
-	r on the spike			Units	Dil.	Spike Amount	Matrix Result	Rec.		ec. mit	RPD	
Param	-		LCSD					Rec. 82	Li		RPD 4	
Param DRO	F		LCSD Result 204	Units mg/Kg	Dil.	Amount 250	Result <14.5	82	Liı 64.5 -	mit		Limit
Param DRO	F	C 1 resu	LCSD Result 204	Units mg/Kg is based	Dil.	Amount 250	Result <14.5	82	Lin 64.5 - esult.	mit	4	Limit
Param	F d on the spike	C 1 resul	LCSD Result 204 It. RPD	Units mg/Kg is based	Dil.	Amount 250	Result <14.5 spike dup	82 licate r	Lin 64.5 - esult. 5 I	mit 146.9	4 F	Limit 20

### Laboratory Control Spike (LCS-1)

QC Batch:	87963	Date Analyzed:	2012-01-23	Analyzed By:	DA
Prep Batch:	74695	QC Preparation:	2012-01-20	Prepared By:	DA

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		1	1.91	mg/Kg	1	2.00	< 0.0118	96	77.4 - 121.7
Toluene		1	1.84	mg/Kg	1	2.00	< 0.00600	92	88.6 - 121.6
Ethylbenzene		1	1.71	mg/Kg	1	2.00	<0.00850	86	74.3 - 117.9
Xylene		1	5.14	mg/Kg	1	6.00	< 0.00613	86	73.4 - 118.8

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	1.95	mg/Kg	1	2.00	< 0.0118	98	77.4 - 121.7	2	20
Toluene		1	1.87	mg/Kg	1	2.00	< 0.00600	94	88.6 - 121.6	2	20
Ethylbenzene		1	1.75	mg/Kg	1	2.00	< 0.00850	88	74.3 - 117.9	2	20
Xylene		1	5.24	mg/Kg	1	6.00	<0.00613	87	73.4 - 118.8	2	20

Report Date: January 26, 2012 114-6400857		Work Order: 12012003 COG/Moose Fed. #23 TB								Page Number: 29 o Eddy Co.,			
_					CSD			Spike		CS	LCSD		lec.
Surrogate					lesult	Units	Dil.	Amou		lec.	Rec.		imit
Trifluorotoluene (TFT)					1.72	mg/Kg	1	2.00		83 70	86		- 116.7
4-Bromofluorobenzene (4-BFB)			<u>1</u>	.56	1.57	mg/Kg	1	2.00		78	78	00.2	- 132.1
Laboratory Control Spike (I	CS-	1)											
QC Batch: 87964			D٤	ate Analy	zed:	2012-01-23	3				Analy	zed By:	DA
Prep Batch: 74695				C Prepar		2012-01-20						red By:	
				-							-		
		_	_	LCS				spike	Mat				lec.
Param		F	<u> </u>	Result	Unit			nount	Res		Rec.		mit
GRO			1	15.6	mg/ł	Kg 1		20.0	<0.'	753	78	60.9	- 105.4
Percent recovery is based on the	spik	e res	ult. RP	PD is bas	ed on th	he spike an	ıd spik	æ duplic	cate re	sult.			
			LCSE	)		Spike	Ma	atrix		F	Rec.		RPD
Param	$\mathbf{F}$	С	Resul		s Dil				Rec.		imit	RPD	Limit
GRO		1	15.1	mg/F	Kg 1	20.0				60.9	- 105.4	3	20
Percent recovery is based on the	spik	e res	ult. RF	D is bas	ed on tl	ne spike an	ld spik	æ duplic	cate re	sult.			
			т	LCS	LCSD		-	Spik	20	LCS	LCSI	<b>)</b>	Rec.
Surrogate					Result	Units	Dil.	Amou		Rec.			imit
Trifluorotoluene (TFT)				1.83	1.84	mg/Kg	$\frac{2}{1}$	2.0		92	92		9 - 142
4-Bromofluorobenzene (4-BFB)				1.40	1.45	mg/Kg	1	2.0		70	72		2 - 132
Laboratory Control Spike (I QC Batch: 87979 Prep Batch: 74696	CS-	1)		ate Analy C Prepar		2012-01-23 2012-01-20						zed By: red By:	
				LCS			Sp	ike	Matr	rix		R	lec.
Param		F	C I	Result	Units			ount	Resu		Rec.	Li	mit
Benzene			1	2.05	mg/Kg		2.0		< 0.01		102		- 121.7
Toluene			1	1.94	mg/Kg				< 0.00		97		- 121.6
Ethylbenzene			1	1.82	mg/Kg				< 0.00		91		- 117.9
Xylene			1	5.42	mg/K		6.0		<0.00		90	73.4	- 118.8
Percent recovery is based on the	spik	e res	ult. RP	'D is bas	ed on tł	ie spike an	d spik	e duplic	ate re	sult.			
			LCSD		•	Spike	Ma	trix		I	Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Re	sult I	Rec.	$\mathbf{L}$	imit	RPD	Limit
Benzene		1	212	mg/K	or 1	2.00	<0.	0118	106	77 1	191 7	3	20

mg/Kg

1

2.00

< 0.0118

106

77.4 - 121.7

3

20

.

2.12

1

Benzene

continued ...

Report Date: January 26, 2012	Work Order: 12012003	Page Number: 30 of 43
114-6400857	COG/Moose Fed. #23 TB	Eddy Co., NM

control spikes continued ...

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Toluene		1	2.00	mg/Kg	1	2.00	< 0.00600	100	88.6 - 121.6	3	20
Ethylbenzene		1	1.91	mg/Kg	1	2.00	< 0.00850	96	74.3 - 117.9	5	20
Xylene		1	5.65	mg/Kg	1	6.00	< 0.00613	94	73.4 - 118.8	4	20

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

Surrogate	LCS Result	$\begin{array}{c} { m LCSD} \\ { m Result} \end{array}$	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.99	1.98	mg/Kg	1	2.00	100	99	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.75	1.81	mg/Kg	1	2.00	88	90	56.2 - 132.1

### Laboratory Control Spike (LCS-1)

QC Batch:	87980	Date Analyzed:	2012-01-23	Analyzed By:	DA
Prep Batch:	74696	QC Preparation:	2012-01-20	Prepared By:	DA

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO		1	16.2	mg/Kg	1	20.0	<0.753	81	60.9 - 105.4

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	$\mathbf{Limit}$	RPD	Limit
GRO		1	16.8	mg/Kg	1	20.0	<0.753	84	60.9 - 105.4	4	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	$\operatorname{Result}$	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.78	1.90	mg/Kg	1	2.00	89	95	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.54	1.59	mg/Kg	1	2.00	77	80	56.2 - 132

### Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch:	88045 74757			Date Ana QC Prepa	U	2012-01-2 2012-01-2				yzed By: tc pared By: tc
Param		F	С	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene			1	1.93	mg/Kg	: 1	2.00	< 0.0118	96	77.4 - 121.7

continued ...

Report Date: January 26, 2012	Work Order: 12012003	Page Number: 31 of 43
114-6400857	COG/Moose Fed. #23 TB	Eddy Co., NM

control spikes continued ...

control opines controlada			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	$\mathbf{Result}$	Rec.	Limit
Toluene		1	1.81	mg/Kg	1	2.00	< 0.00600	90	88.6 - 121.6
Ethylbenzene		1	1.68	mg/Kg	1	2.00	< 0.00850	84	74.3 - 117.9
Xylene		1	4.99	mg/Kg	1	6.00	< 0.00613	83	73.4 - 118.8

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	$\mathbf{Limit}$	RPD	Limit
Benzene		1	1.98	mg/Kg	1	2.00	< 0.0118	99	77.4 - 121.7	3	20
Toluene		1	1.86	mg/Kg	1	2.00	< 0.00600	93	88.6 - 121.6	3	20
Ethylbenzene		1	1.75	mg/Kg	1	2.00	< 0.00850	88	74.3 - 117.9	4	20
Xylene		1	5.18	mg/Kg	1	6.00	< 0.00613	86	73.4 - 118.8	4	20

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

	LCS	LCSD			Spike	$\mathbf{LCS}$	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.75	1.93	mg/Kg	1	2.00	88	96	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.69	1.84	mg/Kg	1	2.00	84	92	56.2 - 132.1

### Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch:	88083 74739			te Analyzed: C Preparation					Analyzed B Prepared B	•	
Param		न	С	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	

1 010111	1	Ŷ	icouit	Omos		mound	Insult	Iuc.	Lillio	
Chloride			94.8	mg/Kg	1	100	<3.85	95	85 - 115	

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			104	mg/Kg	1	100	<3.85	104	85 - 115	9	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:	88084	Date Analyzed:	2012-01-26	Analyzed By:	AR
Prep Batch:	74793	QC Preparation:	2012-01-24	Prepared By:	$\mathbf{AR}$

Report Date: January 26, 2012 114-6400857						: 12012003 Fed. #23 7			Page N		32 of 43 Co., NM
Param		F	С	LCS Result				nt Re		ec.	Rec. Limit
Chloride				95.7	mg/		100			96	85 - 115
Percent recovery is based on the	spike	e resi	ılt. RI	PD is ba	sed on the	e spike and	l spike dupl	icate rest	ult.		
			LCS	SD		Spike	e Matrix		Rec.		RPD
Param	$\mathbf{F}$	С	Res		nits Di	-			Limit	RPD	Limit
Chloride			10	4 mg	/Kg 1	100	<3.85	104	85 - 115	8	20
Percent recovery is based on the	spike	e resi	ılt. RI	PD is bas	sed on the	e spike and	l spike dupl	icate rest	ult.		
Matrix Spike (MS-1) Spike QC Batch: 87961 Prep Batch: 74693	ed Sa	mple		58 Date Ana 2C Prepa	-	2012-01-21 2012-01-20				alyzed l pared I	-
			-	-		· · · · · · · · · · · · · · · · · · ·				1	<b>J</b>
_				MS			Spike	Matri			Rec.
		$\mathbf{F}$	С	$\mathbf{Result}$	Units	Dil.	Amount	Resu			Limit
Param		<u> </u>			/						
DRO			1	285	mg/Kg	g1	250	<14.	5 114	38.8	3 - 153.3
										38.8	3 - 153.3
DRO			ılt. RF	PD is bas		spike and	spike dupl		ult.	38.8	
DRO Percent recovery is based on the	spike	e resi	ılt. RH MSD	PD is bas	sed on the	spike and Spike	spike dupl Matrix	icate resu	ılt. Rec.		RPD
DRO Percent recovery is based on the Param		e rest	ılt. RF MSD Resul	PD is bas	sed on the	spike and Spike Amount	spike dupl Matrix Result	icate resu Rec.	ılt. Rec. Limit	RPD	RPD Limit
DRO Percent recovery is based on the Param DRO	spike F	e rest	ılt. RF MSD Resul 281	PD is bas t Unit mg/I	sed on the ts Dil. Kg 1	spike and Spike Amount 250	spike dupl Matrix Result <14.5	icate rest Rec. 112 38	ılt. Rec. Limit 8.8 - 153.3		RPD
DRO	spike F	e rest	ılt. RF MSD Resul 281	PD is bas t Unit mg/I	sed on the ts Dil. Kg 1	spike and Spike Amount 250	spike dupl Matrix Result <14.5	icate rest Rec. 112 38	ılt. Rec. Limit 8.8 - 153.3	RPD	RPD Limit
DRO Percent recovery is based on the Param DRO	spike F	e rest C 1 e rest	ılt. RF MSD Resul 281	PD is bas t Unit mg/I PD is bas	sed on the ts Dil. Kg 1	spike and Spike Amount 250	spike dupl Matrix Result <14.5	icate rest Rec. 112 38	ılt. Rec. Limit 8.8 - 153.3	RPD 1	RPD Limit
DRO Percent recovery is based on the Param DRO Percent recovery is based on the	spike F spike	e resu C 1 e resu	ılt. RF MSD Resul 281 ılt. RF M	PD is bas t Unit mg/I PD is bas	sed on the ts Dil. Kg 1	spike and Spike Amount 250	spike dupl Matrix Result <14.5 spike dupl	Rec. 112 38 icate resu	ılt. Rec. Limit 8.8 - 153.3 ılt.	RPD 1	RPD Limit 20
DRO Percent recovery is based on the Param DRO Percent recovery is based on the Surrogate	spike F spike M	e resu C 1 e resu (S sult	ılt. RF MSD Resul 281 ılt. RF M	PD is bas t Unit mg/I PD is bas SD sult	and on the $\frac{1}{\sqrt{g}}$ Dil. $\frac{1}{\sqrt{g}}$ Bill and $\frac{1}{\sqrt{g}}$ Directly on the set on the set on the set of	e spike and Spike Amount 250 e spike and	spike dupl Matrix Result <14.5 spike dupl Spike	icate resu Rec. 112 38 icate resu MS	ılt. Rec. Limit 3.8 - 153.3 ılt. MSD	RPD 1	RPD Limit 20 Rec.
DRO Percent recovery is based on the Param DRO Percent recovery is based on the Surrogate n-Tricosane	spike F spike M Res 86	e resu C 1 e resu S sult 5.5	ult. RF MSD Resul 281 ult. RF MS Res 90 : 28686 Da	PD is bas t Unit mg/I PD is bas SD sult 0.1	$\frac{1}{\sqrt{g}} = \frac{1}{1}$	e spike and Spike Amount 250 spike and Dil.	spike dupl Matrix Result <14.5 spike dupl Spike Amount	icate resu Rec. 112 33 icate resu MS Rec.	ılt. Rec. Limit 8.8 - 153.3 ılt. MSD Rec. 90	RPD 1	RPD Limit 20 Rec. Limit 5 - 149.8
DRO Percent recovery is based on the Param DRO Percent recovery is based on the Surrogate n-Tricosane Matrix Spike (MS-1) Spike QC Batch: 87963	F spike M Res 86	e resu C 1 e resu Sult 5.5	ilt. RF MSD Resul 281 ilt. RF MS Res 90 : 28686 Q0	PD is bas t Unit mg/I PD is bas SD sult 0.1 64 64 ate Anal: C Prepar	sed on the <u>Kg 1</u> sed on the <u>Units</u> mg/Kg yzed: 2 vation: 2	e spike and Spike Amount 250 spike and Dil. 1 012-01-23	spike dupl Matrix Result <14.5 spike dupl Spike Amount	Rec. 112 33 icate resu MS Rec. 86	ılt. Rec. Limit 8.8 - 153.3 ılt. MSD Rec. 90 90	RPD 1 I 54.6 yzed By ared By	RPD Limit 20 Rec. Limit 5 - 149.8 y: DA y: DA Rec.
DRO Percent recovery is based on the Param DRO Percent recovery is based on the Surrogate n-Tricosane Matrix Spike (MS-1) Spike QC Batch: 87963 Prep Batch: 74695	F spike M Res 86	e resu C 1 e resu S sult 5.5	ilt. RF MSD Resul 281 ilt. RF MS Res 90 : 28686 Q0	PD is bas t Unit mg/I PD is bas SD sult 0.1 64 ate Anal: C Prepar MS Result	sed on the <u>Kg</u> 1 sed on the <u>Units</u> mg/Kg yzed: 2 vation: 2 Units	e spike and Spike Amount 250 spike and Dil. 1 012-01-23	spike dupl Matrix Result <14.5 spike dupl Spike Amount 100 Spike Amount	Rec. 112 33 icate resu MS Rec. 86 Matrix Result	Ilt. Rec. Limit 8.8 - 153.3 Ilt. MSD Rec. 90 90 Anal Prep	RPD 1 I 54.6 yzed By ared By	RPD Limit 20 Rec. Limit 5 - 149.8 y: DA y: DA y: DA Rec. Limit
DRO Percent recovery is based on the Param DRO Percent recovery is based on the Surrogate n-Tricosane Matrix Spike (MS-1) Spike QC Batch: 87963 Prep Batch: 74695	F spike M Res 86	e resu C 1 e resu Sult 5.5	ilt. RF MSD Resul 281 ilt. RF MS Res 90 : 28686 Q0	PD is bas t Unit mg/I PD is bas SD sult 0.1 64 64 ate Anal: C Prepar MS Result 2.05	sed on the $\frac{1}{\sqrt{g}}$ 1 $\frac{1}{\sqrt{g}}$ 1 $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$	e spike and Spike Amount 250 e spike and Dil. 1 012-01-23 012-01-20	spike dupl Matrix Result <14.5 spike dupl Spike Amount 100 Spike Amount 2.00	Rec. 112 33 icate resu MS Rec. 86 Matriz Result <0.011	ult. Rec. Limit 8.8 - 153.3 ult. MSD Rec. 90 4 Anal Prep x t Rec. 8 102	RPD 1 I 54.6 yzed By ared By I 69.4	RPD Limit 20 Rec. Limit 5 - 149.8 y: DA y: DA y: DA Rec. Limit 4 - 123.6
DRO Percent recovery is based on the Param DRO Percent recovery is based on the Surrogate n-Tricosane Matrix Spike (MS-1) Spike QC Batch: 87963 Prep Batch: 74695 Param Benzene Toluene	F spike M Res 86	e resu C 1 e resu Sult 5.5	ult. RF MSD Resul 281 ult. RF MS Res 90 :: 28680 Da Q0 C	PD is bas t Unit mg/I PD is bas SD sult 0.1 64 64 ate Anal: C Prepar MS Result 2.05 2.00	sed on the Sed on the Sed on the Units mg/Kg yzed: 2 ation: 2 Units mg/Kg mg/Kg mg/Kg	e spike and Spike Amount 250 spike and Dil. 1 012-01-23 012-01-20 Dil. 1 1	spike dupl Matrix Result <14.5 spike dupl Spike Amount 100 Spike Amount 2.00 2.00	Rec. 112 33 icate resu MS Rec. 86 Matrix Result <0.011 <0.0066	ult. Rec. Limit 8.8 - 153.3 ult. MSD Rec. 90 90 Anal Prep k t Rec. 8 102 00 100	RPD 1 I 54.0 yzed By ared By I 69.4 75.4	RPD Limit 20 Rec. Limit 3 - 149.8 y: DA y: DA y: DA V: DA Rec. Limit 4 - 123.6 4 - 134.3
DRO Percent recovery is based on the Param DRO Percent recovery is based on the Surrogate n-Tricosane Matrix Spike (MS-1) Spike QC Batch: 87963 Prep Batch: 74695	F spike M Res 86	e resu C 1 e resu Sult 5.5	Lilt. RF MSD Resul 281 Lilt. RF MS Res 90 90 .: 28680 Da Q0 	PD is bas t Unit mg/I PD is bas SD sult 0.1 64 64 ate Anal: C Prepar MS Result 2.05	sed on the $\frac{1}{\sqrt{g}}$ 1 $\frac{1}{\sqrt{g}}$ 1 $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$ $\frac{1}{\sqrt{g}}$	e spike and Spike Amount 250 spike and Dil. 1 012-01-23 012-01-20 Dil. 1	spike dupl Matrix Result <14.5 spike dupl Spike Amount 100 Spike Amount 2.00	Rec. 112 33 icate resu MS Rec. 86 Matriz Result <0.011	ult. Rec. Limit 8.8 - 153.3 ult. MSD Rec. 90 90 Anal Prep k t Rec. 8 102 00 100 50 103	RPD 1 1 54.0 yzed B; ared By I 69.4 75.4 58.8	RPD Limit 20 Rec. Limit 5 - 149.8 y: DA y: DA y: DA Rec. Limit

Report Date: January 26, 2012 114-6400857					Work O OG/Mo							Page Nu		33 of 43 Co., NM
			MSD			S	Spike	M	latrix		]	Rec.		RPD
Param	F	С	Result	Un	its D	il. A	mount	R	lesult	Rec.	L	Jimit	RPD	Limit
Benzene		1	2.04	mg/	/Kg	1	2.00	<(	0.0118	102	69.4	- 123.6	0	20
Toluene		ı	1.99	mg/	/Kg	1	2.00	<0	.00600	100		- 134.3	0	<b>20</b>
Ethylbenzene		1	2.05	mg/	/Kg	1	2.00	<0	.00850	102	58.8	- 133.7	0	20
Xylene		1	6.12	mg/	/Kg	1	6.00	_<0	.00613	102	57 -	- 134.2	1	20
Percent recovery is based on the	spik	e res	ult. RPI	D is ł	pased or	n the s	pike an	ıd sp	ike dup	licate	result.			
			M	ſS	MSD				$\mathbf{S}_{\mathbf{I}}$	oike	MS	MSD	F	lec.
Surrogate			Re	$\operatorname{sult}$	Resul	t U	nits	Dil	. Am	ount	Rec.	Rec.	$\mathbf{L}$	imit
Trifluorotoluene (TFT)			2.	06	2.02	mg	g/Kg	1		2	103	101	79.4	- 141.1
4-Bromofluorobenzene (4-BFB)			1.	96	1.93		g/Kg	1		2	98	96	71	- 167
Prep Batch: 74695			QC	te An Prep	paration		2-01-23 2-01-20					Prepa	red By:	DA
		F		Prep MS		: 201	2-01-20	)	Spike		Matrix Result			Rec.
Param		F		Prep MS Resu	lt I	: 201 Units		)	Amou		Result		I	Rec. Jimit
Param GRO	spik		C	Prep MS Resu 18.1	lt l l n	: 201 Units ng/Kg	2-01-20 Dil		Amour 20.0	it	Result 2.84	Rec.	I	Rec.
Param GRO	spike		C	Prep MS Resu 18.1	lt l l n	: 201 Units ng/Kg	2-01-20 Dil 1 pike an	) 	Amour 20.0 ike dup	it	Result 2.84 result.	Rec.	I	Rec.
Param GRO Percent recovery is based on the	spiko		C 1 ult. RPI	MS Resu 18.1 D is b	lt l l n	: 201 Units ng/Kg	2-01-20 Dil	)  .d sp	Amour 20.0	it	Result 2.84 result.	Rec. 76	I	Rec. Jimit 8 - 114
Prep Batch: 74695 Param GRO Percent recovery is based on the Param GRO	-	e res	C 1 ult. RPI MSD	MS Resu 18.1 D is b	lt n n	units units ng/Kg n the s	2-01-20 Dil 1 pike an Spike	)  .d sp	Amour 20.0 ike dup Matrix	licate	Result 2.84 result.	Rec.	I 61.	Rec. Jimit 8 - 114 RPD
Param GRO Percent recovery is based on the Param	F	e res C	C ult. RPI MSD Result 19.2	MS Resu 18.1 D is b U m	lt n based or Juits g/Kg	Units Ig/Kg the s Dil. 1	2-01-20 Dil pike an Spike Amoun 20.0	) id sp e nt	Amour 20.0 ike dup Matrix Result 2.84	nt olicate Rec 82	Result 2.84 result. 2. I 61.4	Rec. 76 Rec.	I 61. RPD	Rec. Jimit 8 - 114 RPD Limit
Param GRO Percent recovery is based on the Param GRO	F	e res C	C 1 ult. RPI MSD Result 19.2 ult. RPI	MS Resu 18.1 D is b U m	lt n based or Juits g/Kg	$\frac{\text{Units}}{\log/\text{Kg}}$	2-01-20 Dil pike an Spike Amoun 20.0	) id sp e nt	Amour 20.0 ike dup Matrix Result 2.84 ike dup	nt olicate Rec 82	Result 2.84 result. 2. I 61.4	Rec. 76 Rec.	I 61. RPD 6	Rec. Jimit 8 - 114 RPD Limit
Param GRO Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate	F	e res C	C ult. RPI MSD Result 19.2 ult. RPI	MS Resu 18.1 D is b D is b	lt n pased or Jnits g/Kg pased or MSD Result	Units ng/Kg a the s Dil. 1 a the s	2-01-20 Dil pike an Spike Amoun 20.0	) id sp e nt	Amour 20.0 ike dup Matrix Result 2.84 ike dup Sp	licate Rec 82	Result 2.84 result. . I 61. result.	Rec. 76 Rec. Jimit 8 - 114	I 61. RPD 6	Rec. Jimit 8 - 114 RPD Limit 20
Param GRO Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate Trifluorotoluene (TFT)	F	e res C	C 1 ult. RPI MSD Result 19.2 ult. RPI M Res	MS Resu 18.1 D is b U D is b IS	lt m based or Units g/Kg based or MSD	units ng/Kg h the sp Dil. 1 h the sp t U	2-01-20 Dil 1 pike an Spike Amoun 20.0 pike an	) 	Amour 20.0 ike dup Matrix Result 2.84 ike dup Sp Am	nt dicate Rec 82 dicate	Result 2.84 result. . L 61.4 result. MS	Rec. 500 500 500 500 500 500 500 500 500 50	I 61. RPD 6 R Li	Rec. Jimit 8 - 114 RPD Limit 20
Param GRO Percent recovery is based on the Param GRO Percent recovery is based on the	F	e res C	C ult. RPI MSD Result 19.2 ult. RPI M Res 2.	MS Resu 18.1 D is b U mi D is b Sult	lt n pased or Jnits g/Kg pased or MSD Result	units ng/Kg n the s Dil. 1 n the sp t U mg	2-01-20 Dil 1 pike an Spike Amour 20.0 pike an nits	) d sp e nt d sp.	Amour 20.0 ike dup Matrix Result 2.84 ike dup Sp Am	it dicate Rec 82 licate sike ount	Result 2.84 result. 2. 1 61.4 result. MS Rec.	Rec. Jimit 8 - 114 MSD Rec.	I 61. RPD 6 R Li 29.4	Rec. Jimit 8 - 114 RPD Limit 20 Lec. mit
Param GRO Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)	F	C 1 e res	C ult. RPI MSD Result 19.2 ult. RPI M Res 2. 1.9 2. 1.9 2. 2. 1.9 2. 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 2. 1.9 1.9 2. 1.9 2. 1.9 1.9 2. 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.	MS Resu 18.1 D is t D is t Sult 11 96	lt n based or Juits g/Kg based or MSD Result 2.18	units ng/Kg n the sp Dil. 1 n the sp t U mg mg	2-01-20 Dil 1 pike an Spike Amoun 20.0 pike an nits t/Kg	) d sp ant d sp Dil. 1	Amour 20.0 ike dup Matrix Result 2.84 ike dup Sp Am	nt Nicate Rec 82 Nicate Nike ount 2	Result 2.84 result. . I 61 result. MS Rec. 106	Rec. Jimit 8 - 114 MSD Rec. 109 97	I 61. RPD 6 R Li 29.4	Rec. .imit 8 - 114 RPD Limit 20 Lec. mit - 161.7 - 162

_	_	~	MS			Spike	Matrix	_	Rec.
Param	F	$\mathbf{C}$	$\mathbf{Result}$	$\mathbf{Units}$	Dil.	Amount	$\mathbf{Result}$	Rec.	Limit
Benzene		1	1.97	mg/Kg	1	2.00	< 0.0118	98	69.4 - 123.6

continued ...

Report Date: January 26, 2012	Work Order: 12012003	Page Number: 34 of 43
114-6400857	COG/Moose Fed. #23 TB	Eddy Co., NM

matrix spikes continued ...

mumu spines communa			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Limit
Toluene		1	1.92	mg/Kg	1	2.00	< 0.00600	96	75.4 - 134.3
Ethylbenzene		1	1.96	mg/Kg	1	2.00	< 0.00850	98	58.8 - 133.7
Xylene		1	5.84	mg/Kg	1	6.00	< 0.00613	97	57 - 134.2

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

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	2.02	mg/Kg	1	2.00	< 0.0118	101	69.4 - 123.6	2	20
Toluene		1	1.96	mg/Kg	1	2.00	< 0.00600	98	75.4 - 134.3	2	20
Ethylbenzene		1	1.99	mg/Kg	1	2.00	< 0.00850	100	58.8 - 133.7	2	20
Xylene		1	5.88	mg/Kg	1	6.00	<0.00613	98	57 - 134.2	1	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	$\mathbf{Result}$	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	2.03	2.03	mg/Kg	1	2	102	102	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.01	1.93	mg/Kg	1	2	100	96	71 - 167

### Matrix Spike (MS-1) Spiked Sample: 286952

QC Batch:	87980	Date Analyzed:	2012-01-23	Analyzed By:	DA
Prep Batch:	74696	QC Preparation:	2012-01-20	Prepared By:	DA

			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO		1	19.2	mg/Kg	1	20.0	3.64	78	61.8 - 114

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

			MSD			Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO		1	20.4	mg/Kg	1	20.0	3.64	84	61.8 - 114	6	20

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	$\mathbf{Result}$	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	2.15	2.18	mg/Kg	1	2	108	109	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	1.99	2.02	mg/Kg	1	2	100	101	37.3 - 162

Report Date: January 26, 2012 114-6400857						er: 1201200 Fed. #23					Page Nu	mber: 3 Eddy C	
Matrix Spike (MS-1) Spike	ed S	ampi	le: 2871	.12									
QC Batch: 88045 Prep Batch: 74757				Date Ana QC Prepa		2012-01-2 2012-01-2						lyzed B bared B	
				MS			Spi	ke	Ма	trix			lec.
Param		F	С	Result	Units		Amo			sult	Rec.		mit
Benzene			1	2.10	mg/K		2.0			0118	105		- 123.6
Toluene			1	2.02	mg/Kį		2.0			0600	101		- 134.3
Ethylbenzene			1	2.06	mg/K	-	2.0			00850	103		- 133.7
Xylene			1	6.16	mg/K	g <u>1</u>	6.0	00	<0.0	00613	103	57 -	134.2
Percent recovery is based on the	spik	te res	sult. Rl	PD is ba	sed on th	ne spike an	d spik	e dupl	icate 1	result.			
			MSD			Spike	Ma	$\operatorname{trix}$		F	Rec.		RPD
Param	$\mathbf{F}$	С	Result	t Units	s Dil.	Amount	Res	ult	Rec.	$\mathbf{L}$	imit	RPD	Limit
Benzene		1	2.06	mg/K	lg 1	2.00	<0.0	)118	103	69.4	- 123.6	2	20
Toluene		1	1.97	mg/K	lg 1	2.00	<0.0	0600	98	75.4	- 134.3	2	20
Ethylbenzene		1	2.01	mg/K	lg 1	2.00	<0.0	0850	100	58.8	- 133.7	<b>2</b>	20
Xylene		1	5.98	mg/K	g 1	6.00	<0.0	0613	100	57 -	- 134.2	3	20
Percent recovery is based on the	- spił	te res	sult. R	PD is ba	sed on th	ne spike an	d spik	e dupl	icate 1	result.			
				MS	MSD			Spi	ike	MS	MSD	R	lec.
Surrogate					Result	Units	Dil.	Amo		Rec.	Rec.		mit
Trifluorotoluene (TFT)				2.03	2.11	mg/Kg	1	2		102	106		- 141.1
4-Bromofluorobenzene (4-BFB)				2.03	2.04	mg/Kg	1	2		102	100		- 167
Matrix Spike (MS-1) Spike	d S	ampl	e: 2869	54									
QC Batch: 88083 Prep Batch: 74739				ate Anal C Prepa		2012-01-25 2012-01-24						zed By: red By:	
Param		F	С	MS Result	Unit			pike 10unt	Re	atrix esult	Rec.	Li	lec. mit
Chloride				10300	mg/k	(g 100	10	0000	<	385	101	79.4	- 120.6
Percent recovery is based on the	spik	e res	ult. RI	PD is bas	sed on th	ie spike an	d spike	e dupl	icate 1	result.			

			MSD			Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	$\mathbf{Result}$	Rec.	Limit	RPD	Limit
Chloride			10700	mg/Kg	100	10000	<385	105	79.4 - 120.6	4	20

Report Date: January 26, 114-6400857	2012					12012003 `ed. #23 T			ł	Page Nu		36 of 43 Co., NM
Matrix Spike (MS-1)	Spiked S	ampl	e: 28696	L								
QC Batch: 88084			Dat	e Analyz	ed: 20	012-01-26				Analy	zed By	: AR
Prep Batch: 74793			QC	Prepara	tion: 20	012-01-24				Prepa	red By	: AR
				MS			Spike	Ma	atrix		F	lec.
Param		$\mathbf{F}$	C I	Result	Units	Dil.	Amount	Re	esult	Rec.	$\mathbf{L}_{i}$	imit
Chloride				11500	mg/Kg	100	10000	1	530	100	79.4	- 120.6
Percent recovery is based o	n the spik	te res	ult. RPI	) is base	d on the	spike and	spike dup	licate 1	result.			
			MSD			Spike	Matrix		R	ec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Liı	mit	RPD	Limit
Chloride			12000	mg/Kg	<u>; 100</u>	10000	1530	105	79.4 -	120.6	4	20

Report Date: January 26, 2012 114-6400857 Work Order: 12012003 COG/Moose Fed. #23 TB

# **Calibration Standards**

Standard (CCV-1)

QC Batch:	87961			Date	Analyzed:	2012-01-21		Analyzed By: tc		
					CCVs	CCVs	CCVs	Percent		
					True	Found	Percent	Recovery	Date	
Param	F	'lag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
DRO			1	mg/Kg	250	208	83	80 - 120	2012-01-21	

### Standard (CCV-2)

QC Batch:	87961			Date	Analyzed:	2012-01-21		Ana	lyzed By: tc
					CCVs	CCVs	CCVs	Percent	
					True	Found	Percent	Recovery	Date
Param	F	lag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO			1	mg/Kg	250	211	84	80 - 120	2012-01-21

### Standard (CCV-3)

QC Batch:	87961			Date	Analyzed:	2012-01-21		Analyzed By: tc		
					CCVs	CCVs	CCVs	Percent		
					True	Found	Percent	Recovery	Date	
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
DRO			1	mg/Kg	250	204	82	80 - 120	2012-01-21	

### Standard (CCV-4)

QC Batch:	87961		Date	Analyzed:	2012-01-21		Analyzed By: tc		
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date	
Param	Fla	g Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
DRO		1	mg/Kg	250	213	85	80 - 120	2012-01-21	

Report Date: January 26 114-6400857		Vork Order: G/Moose F	Page Number: 38 of 43 Eddy Co., NM								
Standard (CCV-2)											
QC Batch: 87963			Date Ana	lyzed: 201	Analyzed By: DA						
				CCVs	CCVs	CCVs	Percent				
				True	Found	Percent	Recovery	Date			
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed			
Benzene		1	mg/Kg	0.100	0.102	102	80 - 120	2012-01-23			
Toluene		1	mg/Kg	0.100	0.0977	98	80 - 120	2012-01-23			
Ethylbenzene		1	mg/Kg	0.100	0.0893	89	80 - 120	2012-01-23			
Xylene		1	mg/Kg	0.300	0.266	89	80 - 120	2012-01-23			

### Standard (CCV-3)

QC Batch: 87963			Analy	Analyzed By: DA				
				$\rm CCVs$	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/Kg	0.100	0.102	102	80 - 120	2012-01-23
Toluene		1	mg/Kg	0.100	0.0972	97	80 - 120	2012-01-23
Ethylbenzene		1	mg/Kg	0.100	0.0921	92	80 - 120	2012-01-23
Xylene		1	mg/Kg	0.300	0.276	92	80 - 120	2012-01-23

### Standard (CCV-2)

QC Batch:	87964		Date	Analyzed:	2012-01-23		Analyzed By: DA		
				CCVs	CCVs	CCVs	Percent		
				True	Found	Percent	Recovery	Date	
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
GRO		1	mg/Kg	1.00	0.924	92	80 - 120	2012-01-23	

### Standard (CCV-3)

QC Batch:	87964		Date	Analyzed:	2012-01-23		Analy	zed By: DA
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	1.18	118	80 - 120	2012-01-23

Report Date: January 114-6400857	26, 2012	<u></u>		Vork Order: G/Moose F	Page Number: 39 of 43 Eddy Co., NM			
Standard (CCV-1)								
QC Batch: 87979			Date Ana	alyzed: 201	Analyzed By: DA			
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/Kg	0.100	0.104	104	80 - 120	2012-01-23
Toluene		1	mg/Kg	0.100	0.100	100	80 - 120	2012-01-23
Ethylbenzene		1	mg/Kg	0.100	0.0958	96	80 - 120	2012-01-23
Xylene		1	mg/Kg	0.300	0.284	95	80 - 120	2012-01-23

### Standard (CCV-2)

QC Batch: 87979			Analyzed By: DA					
				CCVs	$\mathbf{CCVs}$	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	$\mathbf{Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/Kg	0.100	0.105	105	80 - 120	2012-01-23
Toluene		1	mg/Kg	0.100	0.101	101	80 - 120	2012-01-23
Ethylbenzene		1	mg/Kg	0.100	0.0921	92	80 - 120	2012-01-23
Xylene		1	mg/Kg	0.300	0.275	92	80 - 120	2012-01-23

### Standard (CCV-3)

QC Batch: 87979			Date Ana	alyzed: 201	Analyzed By: DA			
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/Kg	0.100	0.103	103	80 - 120	2012-01-23
Toluene		1	mg/Kg	0.100	0.0983	98	80 - 120	2012-01-23
Ethylbenzene		1	mg/Kg	0.100	0.0920	92	80 - 120	2012-01-23
Xylene		1	mg/Kg	0.300	0.274	91	80 - 120	2012-01-23

Standard (CCV-1)

QC Batch: 87980

Date Analyzed: 2012-01-23

Analyzed By: DA

Report Date: 114-6400857	January 26, 2	2012		Work Or COG/Mod	Page Number: 40 of 43 Eddy Co., NM					
Param GRO	Flag	Cert	Units mg/Kg	CCVs True Conc.	CCVs Found Conc. 1.05	CCVs Percent Recovery 105	Percent Recovery Limits 80 - 120	Date Analyzed 2012-01-23		
					1.00	100	00 - 120			
Standard (C	CCV-2)									
QC Batch: 8	37980		Date Analyzed: 2012-01-23				Analy	Analyzed By: DA		
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed		
GRO		1	mg/Kg	1.00	0.886	<u>89</u>	80 - 120	2012-01-23		
Standard (C	CCV-3)									
QC Batch: 8	37980		Date	Analyzed:	2012-01-23		Analy	zed By: DA		
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date		
Param GRO	Flag	Cert	Units mg/Kg	Conc. 1.00	Conc. 0.841	Recovery 84	Limits 80 - 120	Analyzed 2012-01-23		

### Standard (CCV-2)

QC Batch: 88045			Date An	alyzed: 20	12-01-24		Anal	yzed By: tc
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
	1 165							
Benzene		1	mg/Kg	0.100	0.100	100	80 - 120	2012-01-24
Toluene		1	mg/Kg	0.100	0.0951	95	80 - 120	2012-01-24
Ethylbenzene		1	mg/Kg	0.100	0.0867	87	80 - 120	2012-01-24
Xylene		1	mg/Kg	0.300	0.258	86	80 - 120	2012-01-24

### Standard (CCV-3)

QC Batch: 88045

Date Analyzed: 2012-01-24

Analyzed By: tc

Report Date: Janu 114-6400857	uary 26, 2012			Vork Order: G/Moose F	12012003 ed. #23 TB		0	mber: 41 of 43 Eddy Co., NM
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.101	101	80 - 120	2012-01-24
Toluene		1	mg/Kg	0.100	0.0941	94	80 - 120	2012-01-24
Ethylbenzene		1	mg/Kg	0.100	0.0880	88	80 - 120	2012-01-24
Xylene	· · · · · · · · · · · · · · · · · · ·	1	mg/Kg	0.300	0.262	87	80 - 120	2012-01-24

### Standard (ICV-1)

QC Batch:	88083			Date A	Analyzed:	2012-01-25		Analy	zed By: AR
					ICVs	ICVs	ICVs	Percent	
					True	Found	Percent	Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	99.1	99	85 - 115	2012-01-25

### Standard (CCV-1)

QC Batch:	88083			Date A	Analyzed:	2012-01-25		Analy	zed By: AR
					CCVs True	CCVs Found	CCVs	Percent Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	101	101	85 - 115	2012-01-25

### Standard (ICV-1)

QC Batch:	88084			Date A	nalyzed:	2012-01-26		Analy	zed By: AR
					ICVs	ICVs	ICVs	Percent	
					True	Found	Percent	Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	101	101	85 - 115	2012-01-26

### Standard (CCV-1)

QC Batch: 88084

Date Analyzed: 2012-01-26

Analyzed By: AR

Report Date: . 114-6400857	January 26, 20	012	(		r: 12012003 Fed. #23 T	В	0	mber: 42 of 43 Eddy Co., NM
_		~		CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	99.4	99	85 - 115	2012-01-26

`

Work Order: 12012003 COG/Moose Fed. #23 TB Page Number: 43 of 43 Eddy Co., NM

# Appendix

## **Report Definitions**

NameDefinitionMDLMethod Detection LimitMQLMinimum Quantitation LimitSDLSample Detection Limit

### Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-11-3	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.
- 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

## Attachments

The scanned attachments will follow this page.

Please note, each attachment may consist of more than one page.

#12012000

.

An	alvs	sis F	Re	a	Ŭ	est c	of Cha	ain of (	Custody		e	cc	orc	1									PAC	GE:		7		OF:	3	
			<u> </u>	7			···· <u></u> <u>_</u>													(Cir	. –			REC			Vo.)	100		
						191 Mic (432	10 N. Big 3 dland, Tex 1) 682-4559 •	<b>TECH</b> Spring St. (as 79705 Fax (432) 682-	3946							5 (Ext to C35)		а Ъ Р	d Vr Pd Hg Se									DS		
CLIENT NAM	VE:	7				SI	TE MANAGE	R: Tavare		<b>VERS</b>	T		SER		Έ	TX1005		Ba	Ba Cd			60/624	70/625					s, pH, 1		
PROJECT N			PR	OJE					······································	CONTAIN	ε ε	T	Γ	Π		MON		s Ag As	s Ag As	volatiles		3240/82	. Vol. 82	808		6	Air)	s/Catior		
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB		<u>Lovst Fed</u> Eddy Cu <sub>l</sub> SAMPL	レア E IDENTIFICATI	ON	NUMBER OF CONTAINERS	HLIERED (Y	HNO3	ЭС	NONE	TTV 00041	TPH R015	PAH 8270	RCRA Metals Ag /	TCLP Metals /	TCLP Semi V	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi	PCB's 8080/608 Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	Major Anions/Cations, pH, TDS		
286946	1/3		6		X	CS-1	North		(AH-1)	1		1	X			XXX	1								Ī					
947	/					(5-1	South		(AH-1)	$\Pi$	Τ		Π			ĸу														
948						(5-1	East		(AH-1)						1	KX														
949						05-1	Bottom H	olz 1	(AH-1)							XX														
950						T- 1	z'		(AH-1)						/	xχ														
951						7-1	4'		(AH-1)																					
952						CS-7	North		(AH-5)							ĸγ									X					
953					$\int$	(5-2	South		(AH-5)						7	( )*									X					
954						C5-Z	Bottom	Holz 3'	(AH-5)				N		7	$\langle   \rangle$									X					
955	V					7-2	114	ala	(AH-5)	V			Y																	
RELINQUISHED		/h	Ž		5	Date: Time: Date:	1572	RECEIVED BY: (Sig	-			Date: Time: Date:	-14	1/// /25	í				ed by E shif				R	9			Dat Tim	e:		
RELINQUISHED						Time:		RECEIVED BY: (Sig				Time: Date:						FEDE			$\sim$	8US					AIRBII OTHEI			
RECEIVING LAP	BORATORY			×		Time:		RECEIVED BY: (Signa	-			Time:			<u>.</u>			TRA	TECH	CONT	~			-				Results NUSH C Nuthorz	harges	
	Into	at				REMAI	rks: fotal TPI	DATE:	ico my/icy n	in Ohr	per	- J	irp	115	ť,	k p	,d5	B7 10	EX D	1 Ke	(++ 0		50 dei		11	5 5a-	- - - DI	175	17-2-	No
	Please	fill out all	l copi	ies	- 1	aboratory r	etains Yellow	copy - Return	Orginal copy to Te	tra Tec	:h • 5	Pro	lect I	Mana		retai	ns F	Pink	сору	_7	1000	ounti	ing	rece	ives	Go	ld co	ру.		

# 12012003

•

Δη	alvs	is F	20	a	114	aet		F C	ha	in c	\f (	Custod	V F	26	5		d		T								PA	GE:		2		0	F:	3	,
	arys			Ч		531							<b>y</b> •					l 	-					(C				S RE cify				)			
			ľ		R	J	1910 Midl (432) (	) N. E and, 582-45	ig S Texa 59 • F	<b>FEC</b> pring 5 is 7970 Fax (432	St. 05	3946								05 (Ext. to C35)		£	Vr Pd Hg				5						TDS		
CLIENT NAM	ae: COG						SITE	EMAN TIG	AGER: Tavi	arez			VERS		PF		ERV/	ATIVE D		1XI		æ	B			60/62	29/0/5						Hd 'st		
<b>PROJECT N</b>		7	PR	IOJI	ECT	NAME:	Muus	e Fr	L #	23			CONTAIL	ÎV,		T		T		MOD TX1005		ls Ag As	ls Ag As	les Volatiles		8240/82	ıi. Vol. 82	/608	3	l g	(Air)	stos)	is/Catior		
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP:	GRAB				1	IDENTI		אכ	NUMBER OF CONTAINERS	FILTERED (Y/N)	НСГ	HNO3	EO.	NONE		<b>TPH 8015</b>	٨æ	RCRA Metals Ag	TCLP Mets	TCLP Semi Vol	RCI	GC.MS Vol.	GC.MS Sen	PCB's 8080/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS		
956	V13		3		X	1-1	2	6				(AH-5)	1				X	T	T		T		T	T	T	T			T			Π			
951	1/13					7-7	, -	8'				(AH-5)					1				Τ														
958	1/10					65-	3	No	rth			(AH-8)								NK									X						
939	1/13					(5-	3	Sor	th			(AH-8)							λ	X									)	<					
960						<u>cs-</u> :	3	Bo	ttom	hole	۱'	(AH-8)							K	X									/						
961			$\square$			7-3	5	2	1			(AH-8)								X									X						
962						7-3	>	ч	1			(AH-B)																							
963						T-2	, L	10	I			(AH-5)																							
964						(45-	Ц	No	rth			(AH-4)				$\ $			/>	(															
95	¥7		¥		*	<u> </u>	4	500			,	CAH-9	V						,   <i>į</i>																
RELINQUISHED		2-1	Þ	fe_		Date: Time: Date:	<u>//</u>	417 55	_ /	<u> </u>	a				Ti	ate:// me:	16	8	Ĺ		_	MPL					. 1	P(-	·	_	π	ate: ime:			
RELINQUISHED	_					Time:				RECIEIVED					Tin	me:						EEDE HAND	*	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2	(Circi BU: UP:	s				AIRI OTH	31LL # IER: _	k		
RELINQUISHED	. •					Date: _ Time: _	<u> </u>			RECEIVED						ate: _ me: _						TRA	FECF	CON	TAC	T PEP	SON					Res	ults by	<i>r</i> :	
RECEIVING LAE ADDRESS: CITY:	tend		- <u></u>	-7/ Pt	IONE	ZI	P:			CEIVED B	Y: (Signat	ure)	 TI	ME:								-	cle	4	14	VG. 1	47	-					SH Chu horizei Yes	arges d:	No
SAMPLE COND	ITION WHEN	RECEIVED:					EMARK	S:	<u></u>																							L			

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

•

				#	1201	2003																						
An	alvs	is F	le	au	est c	of Cha	in of C	ustodv	'R	e	co	rc	1	T							PAG		3		0	F:	3	
			<u> </u>											-				(0			YSIS Speci				.)			
					19 <sup>-</sup> Mi	l 0 N. Big S Iland, Texa		46							05 (Ext. to C35)	DA HO	Cd Vr Pd Hg Se									TDS		
	ЛЕ: ЭСЛ				s	TE MANAGER IK: Two	1: 		ERS		PRES	ERV			TX1005	1.5	8 8			\$0/624	70/625					s, pH,		
PROJECT N	0.:		PRC	JECI	NAME:				ONTAIN	╞	$\square$					4	Ag As		latiles	40/826	Vol. 82			T		Cation		
LAB I.D. NUMBER	00857 DATE 2012		MATRIX	COMP. GRAB	(06 1	<u>Touse</u> Fid Eddy SAMPLE	Q, NM IDENTIFICATION	1	NUMBER OF CONTAINERS		HNO3	ICE	NONE	BTEX 8021B	ധി	PAH 8270 PCPA Metate	TCLP Metals Ag As E	TCLP Volatiles	TCLP Semi Volatiles RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625 DCD's pren/508	Pest. 808/608	Chloride)	Gamma Spec. Aloha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS		
Ndo	1/13				C5-4	Wist		(AH-9)	Til			X		Ň			T					T	Π					
967	4,7				CS-4		- Hole 2'	(AH-9)	1/1	T				X								T			Π			
968	43				T-4	ч'		(AH-9)	11	T									T	Τ					Π			
969					T-4	Ľ		(AH-9)												T								
970					7-4	8'		(AH-9)	$\mathbb{T}$	T			1			T			Τ	1	$\prod$			T			Π	
911	<b>V</b>				7-4	10		(AH-9)	1	1		Ą						Π										
							•																					
							A					, )																
RELINQUISHED		m	Ø	}	Time:	11112	RECEIVES BY Signat	-				בדי #	न्मू • डे	<u>5</u> -	_				rint &		ZG,	7			Date: Time:			
RELINQUISHED					Date: Time:		RECEIVED BY: (Signat				Date: Time:					FE	DEX ND DI			BU					781LL 'HER:	#:		I
RELINQUISHED					Date: Time:		RECEIVED BY: (Signat				Date: Time:										S ISON:					sults by	7	
ADDRESS:	llan d	STATE:	7	PHON	ZiP:		ATE:	<del></del>	TIME						-		Ī	T Ka		Tan	avQ	-			RU Aut	SH Chi thorize Yes		No
SAMPLE COND	TION WHEN				REMA													<u> </u>		<del>.</del> ,					- <b>L</b>			

•

--

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

## **Summary Report**

Ike Tavarez Tetra Tech 1910 N. Big Spring Street Midland, TX 79705

Report Date: February 8, 2012

Work Order: 12013120

Project Location:Eddy Co., NMProject Name:COG/Moose Fed. #23 TBProject Number:114-6400857

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
287910	CS-3 Bottomhole 2'	soil	2012-01-30	00:00	2012-01-31

	· · · · · · · · · · · · · · · · · · ·	]	BTEX	
	Benzene	Toluene	Ethylbenzene	Xylene
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
287910 - CS-3 Bottomhole 2'	< 0.0200	< 0.0200	<0.0200	< 0.0200



200 East Sunset Road, Suite E 5002 Pasin Street, Suite A1 6015 Harris Parkway, Suite 110 - Ft. Worth, Texas 76132

NCTRCA DBE

El Paso, Texas 79922 Midland, Texas 79703

NELAP

E-Mail Jab@traceanalysis.com

915+585+3443 FAX 915+585+4944 432 • 689 • 630 i FAX 432+689+6313 817+201+5260

Kansas

Oklahoma ISO 17025

## Analytical and Quality Control Report

Certifications

DoD LELAP

Ike Tavarez Tetra Tech 1910 N. Big Spring Street Midland, TX, 79705

HUB

WBE

Report Date: February 8, 2012

Work Order: 12013120 

Project Location: Eddy Co., NM **Project Name:** COG/Moose Fed. #23 TB **Project Number:** 114-6400857

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
287910	CS-3 Bottomhole 2'	soil	2012-01-30	00:00	2012-01-31

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.

This report consists of a total of 9 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael 4

Dr. Blair Leftwich, Director Dr. Michael Abel, Project Manager

# Report Contents

3
<b>4</b> 4
<b>5</b> 5
<b>6</b> 6 6
<b>8</b> 8 8
9 9 9 9 9

# Case Narrative

Samples for project COG/Moose Fed. #23 TB were received by TraceAnalysis, Inc. on 2012-01-31 and assigned to work order 12013120. Samples for work order 12013120 were received intact at a temperature of 6.0 C.

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

		Prep	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	74984	2012-02-03 at 09:15	88313	2012-02-03 at 16:56

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 12013120 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.

Report Date: February 8, 2012 114-6400857

Work Order: 12013120 COG/Moose Fed. #23 TB Page Number: 4 of 9 Eddy Co., NM

# Analytical Report

### Sample: 287910 - CS-3 Bottomhole 2'

Laboratory: Midland Analysis: BTEX QC Batch: 88313 Prep Batch: 74984		Date Ana	al Method alyzed: Preparatio	2012-0	2-03		Prep Met Analyzed Prepared	By: tc
				$\mathbf{RL}$				
Parameter	Flag	Cert		Result	Ui	nits	Dilution	$\mathbf{RL}$
Benzene	U	1		< 0.0200	mg/	Kg	1	0.0200
Toluene	υ	1		<0.0200	mg/	Kg	1	0.0200
Ethylbenzene	U	1		<0.0200	mg/	Kg	1	0.0200
Xylene	υ	1	·	<0.0200	mg/	Kg	1	0.0200
Surrogate	Flag	c Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	1 106	<u> </u>	2.08	mg/Kg	1	2.00	104	75 - 135.4
4-Bromofluorobenzene (4-BFB)			1.92	mg/Kg	1	2.00	104 96	63.6 - 158.9

Report Date: February 8, 2012 114-6400857

# Method Blanks

Method Blank (1)	QC Batch: 88313							
QC Batch: 88313		Date	Analyzed:	2012-02	-03		Anal	yzed By: tc
Prep Batch: 74984		QC P	reparation:	2012-02	-03		Prep	ared By: tc
					MDL			
Parameter	Flag		Cert		Result		Units	$\mathbf{RL}$
Benzene			1		< 0.00470		mg/Kg	0.02
Toluene			1		<0.00980		mg/Kg	0.02
Ethylbenzene			1		< 0.00500		mg/Kg	0.02
Xylene	· · · · · · · · · · · · · · · · · · ·		1		< 0.0170		mg/Kg	0.02
						Spike	Percent	Recovery
Surrogate	$\mathbf{Flag}$	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	1	2.00	98	78 - 113.6
4-Bromofluorobenzene (4-E	BFB)			mg/Kg	1	2.00	82	55.9 - 112.4

Report Date: February 8, 2012 114-6400857

# Laboratory Control Spikes

### Laboratory Control Spike (LCS-1)

QC Batch:	88313	Date Analyzed:	2012-02-03	Analyzed By:	$\mathbf{tc}$
Prep Batch:	74984	QC Preparation:	2012-02-03	Prepared By:	tc

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		1	2.27	mg/Kg	1	2.00	< 0.00470	114	86.5 - 118.9
Toluene		1	2.19	mg/Kg	1	2.00	< 0.00980	110	84.7 - 112.5
Ethylbenzene		1	2.10	mg/Kg	1	2.00	< 0.00500	105	79.4 - 108.9
Xylene		1	6.28	mg/Kg	1	6.00	< 0.0170	105	79.5 - 108.9

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	$\mathbf{Result}$	Rec.	Limit	RPD	Limit
Benzene		1	2.17	mg/Kg	1	2.00	< 0.00470	108	86.5 - 118.9	4	20
Toluene		3	2.14	mg/Kg	1	2.00	<0.00980	107	84.7 - 112.5	2	20
Ethylbenzene		1	2.05	mg/Kg	1	2.00	< 0.00500	102	79.4 - 108.9	2	<b>20</b>
Xylene		1	6.10	mg/Kg	1	6.00	<0.0170	102	79.5 - 108.9	3	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	$\mathbf{Result}$	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	2.10	2.03	mg/Kg	1	2.00	105	102	73.9 - 117
4-Bromofluorobenzene (4-BFB)	1.92	1.86	mg/Kg	1	2.00	96	93	70.4 - 119

#### Matrix Spike (MS-1) Spiked Sample: 288061

QC Batch:	88313			Date Ana	lyzed: 20	012-02-0	3		Anal	yzed By: tc
Prep Batch:	74984			QC Prepa	aration: 2	012-02-0	3		Prep	ared By: tc
				MS			Spike	Matrix		Rec.
Param		F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene			1	2.38	mg/Kg	1	2.00	< 0.00470	119	69.3 - 159.2
Toluene			1	2.40	mg/Kg	1	2.00	<0.00980	120	68.7 - 157
Ethylbenzene	е		1	2.48	mg/Kg	1	2.00	< 0.00500	124	71.6 - 158.2
Xylene			1	7.41	mg/Kg	1	6.00	< 0.0170	124	70.8 - 159.8

Report Date: February 8, 2012 114-6400857	Work Order: 12013120 COG/Moose Fed. #23 TB									Page Number: 7 of 9 Eddy Co., NM			
Param	F	С	MSD Result	Units	Dil.	Spike Amount		trix sult	Rec.		lec. mit	RPD	RPD Limit
Benzene		1	2.43	mg/Kg	1	2.00	<0.0	)0470	122	69.3	- 159.2	2	20
Toluene		1	2.45	mg/Kg	1	2.00	<0.0	0980	122	68.7	- 157	2	20
Ethylbenzene		1	2.55	mg/Kg	1	2.00	<0.0	0500	128	71.6	- 158.2	3	20
Xylene		1	7.63	mg/Kg	1	6.00	<0.0	0170	127	70.8	- 159.8	3	20
Percent recovery is based on the	spik	e re	sult. RPI	D is based	l on tl	ne spike an	d spik	e dupl	icate 1	result.			·
			Μ	IS M	SD			$\mathbf{Spi}$	ike	MS	MSD	F	lec.
Surrogate			Re	sult Re	sult	Units	Dil.	Amo	ount	Rec.	Rec.	$\mathbf{L}$	imit
Trifluorotoluene (TFT)			2.	11 2	.10	mg/Kg	1	2	;	106	105	71.4	- 133.9
4-Bromofluorobenzene (4-BFB)			2.	03 2	.04	mg/Kg	1	2	;	102	102	72.6	- 144.1

Report Date: February 8, 2012 114-6400857 Work Order: 12013120 COG/Moose Fed. #23 TB Page Number: 8 of 9 Eddy Co., NM .

# **Calibration Standards**

Standard (CCV-1)

QC Batch: 88313			Date An	Analyzed By: tc				
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/Kg	0.100	0.0912	91	80 - 120	2012-02-03
Toluene		1	mg/Kg	0.100	0.0877	88	80 - 120	2012-02-03
Ethylbenzene		1	mg/Kg	0.100	0.0857	86	80 - 120	2012-02-03
Xylene		1	mg/Kg	0.300	0.256	85	80 - 120	2012-02-03

### Standard (CCV-2)

QC Batch: 88313			Date An	alyzed: 20	Analyzed By:						
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date			
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed			
Benzene		1	mg/Kg	0.100	0.105	105	80 - 120	2012-02-03			
Toluene		1	mg/Kg	0.100	0.102	102	80 - 120	2012-02-03			
Ethylbenzene		1	mg/Kg	0.100	0.0985	98	80 - 120	2012-02-03			
Xylene		1	mg/Kg	0.300	0.293	98	80 - 120	2012-02-03			

Work Order: 12013120 COG/Moose Fed. #23 TB Page Number: 9 of 9 Eddy Co., NM

# Appendix

## **Report Definitions**

NameDefinitionMDLMethod Detection LimitMQLMinimum Quantitation LimitSDLSample Detection Limit

### Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-11-3	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.
- 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

### Attachments

\*

The scanned attachments will follow this page.

Please note, each attachment may consist of more than one page.

	. ·			1		5													_						-				`. 		
Analysis Request of Chain of Custody Record									PAGE: 1 C 1													I									
										-					(Circ						No.)	)									
						1910 Midl	TRA N. Big and, Te: 582-4559	Spring xas 79	g St.	ô							5 (Ext. to C35)		Cd Cr Pb Hg Se									The	2		
CLIENT NAME: SITE MANAGER:								PRESERVATIVE						TX1005		Ba S	5		Neal	0/625					7	E					
PROJECT	<u> </u>	<u>(</u>	TPF	ROJE	СТ	NAME:	Eke T	AVACE	2		ITAINE	-	1-			-	ļ		S S	2	lies	/aca/	1.827					1			
	00857					laste fed	×23				С О	ÎΣ				k	8015 MOD.		als Ac		Volat	POAL	5   S ie	0/608	8	90.	<b>A</b>	stos)	Š S		
LAB I.D. NUMBER	DATE	TIME	1.		GRAB				TIFICATION		NUMBER OF CONTAINERS	FILTERED (Y/N) HCI	HN03	ICE	NONE	ALL COLOR		PAH 8270	RCRA Metals Ag As Ba C	TCLP Volat	TCLP Semi Volatiles	RCI GC MS Vici 8240/8260/624	GC.MS Sei	PCB's 8081	Pest. 808/608	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos) Maior Anione/Cations of	Major Atiro		
287910	1/30		5		×	cs <b>3</b>	Batte	m el.l.	. 2'	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	1					Ì	K			T		T	Τ					$\square$		$\prod$	
1	1.7.10-							En Ener												Τ		T	Τ						Τ	Π	Τ
	<u> </u>	[												$\uparrow$		1				T	Π	1	T					$\square$	T	Π	Τ
										·····			T				Τ		1	T		Ť		T						Π	T
		[					<u> </u>		······································				$\uparrow$			1				T		1	T					T		FT	Τ
<u></u>		[			1			<u></u>	**************************************		Π		T	$\uparrow$		1	T			Ť		┦	╎			T				$\square$	T
					1					<u></u>	$\square$		╎	$\uparrow$			T			1	[]	╈	$\uparrow$								$\uparrow$
					1					······		-	T	1			╈		Ť			1	T			╧					1-
					T							1	T			1	╈			1	$\uparrow \uparrow$	1				1				[]	T
			Π		1	<u></u>							╞	1		1			1	1	$\dagger$	╧	T			T		T			+
RELINQUISHED	BY: (Signatu	re)	<b>a</b> l				12	RECEIV	ED BY: (Signature	ahret			Date:	-7	130/1	<del>7</del>		SAI	APLEC	BY:	(Print &	k Initu	si) 6 /	<u>ا</u> ۔۔۔	 Tc	-		nte:		0/12	
RELINQUISHED BY: (Signature)										$\overline{}$		SAL	MPLE : EDEX	SHIP	PED BY	ń (Cir	cle) US				AIRB	HLL #:_									
RELINQUISHED BY: (Signature)									AAND OELAVERED UPS OTHER:     TETRA TECH CONTACT PERSON:     Results by:									ts by:													
RECEIVING LABORATORY: RECEIVED BY: (Signature)										The Tavarzz RUSH Charges Authorized:										jes											
CITY: CONTACT: SAMPLE COND	ITION WHEN		Ð	PH	ONE:	REMARKS	an t	date:	$n_{n}$	<u> </u>	TIM	IE:								4								Ye		N	_
$L_{2}(2)$	ne		1			INC	ull s	WN	Indle	and																				<u></u>	ok .

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.