

SITE INFORMATION

Report Type: Closure Report

General Site Information:

Site:	Amoco Fed #3					
Company:	Cimarex Energy					
Section, Township and Range	Sec 27	T 26 S	R 29E			
Lease Number:	API 30-015-24535					
County:	Eddy County					
GPS:	32.01194° N			103.96888° W		
Surface Owner:	Ross Ranch					
Mineral Owner:						
Directions:	From the Texas and New Mexico border, travel North on highway 285 for 3.75 miles, turn east and travel on Whitehorn rd for 4.0 miles to the Pecos River crossing, continue Southeast on the main lease road for 4.0 miles. At the Y take the right lease road and then stay to the left over the cattle guard. Continue South for 0.38 miles then curve to the East for 0.26 miles. Turn right and travel South for 0.40 miles to location.					

Release Data:

Date Released:	6/10/2013 <i>2RP-1682</i>	6/30/2013 <i>2RP-1710</i>
Type Release:	Produced Water	Produced Water
Source of Contamination:	Illegal Dump	Illegal Dump
Fluid Released:	120+ bbls	120+ bbls
Fluids Recovered:	0 bbls	0 bbls

Official Communication:

Name:	Terry Ainsworth	Ike Tavaréz
Company:	Cimarex Energy	Tetra Tech
Address:	600 Marienfield	4001 N. Big Spring
City:	Midland Texas, 79701	Midland, Texas
Phone number:	(575) 390-1388	(432) 682-4559
Fax:		
Email:	tainsworth@cimarex.com	ike.tavarez@tetrattech.com

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	
WellHead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
Total Ranking Score:		10

Acceptable Soil RRAL (mg/kg)		
Benzene	Total BTEX	TPH
10	50	1,000

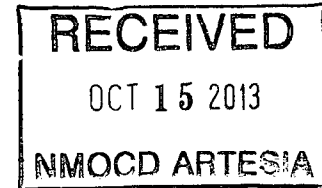
RECEIVED
 OCT 15 2013
 NMOCD ARTESIA



TETRA TECH

October 8, 2013

Mr. Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210



**Re: Closure Report for the Cimarex Energy, Amoco Federal #3, Section 27,
Township 26 South, Range 29 East, Eddy County, New Mexico.**

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by Cimarex Energy (Cimarex) to assess releases that occurred at the Amoco Federal #3, located in Section 27, Township 26 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.01194°, W 103.96888°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141s Initial Reports, two illegal dumps were discovered on June 10, 2013 and June 30, 2013, and both released approximately one hundred and twenty plus (120+) barrels of produced water from a vacuum truck. None of the released fluids were recovered. All of the fluids remained on the well pad. The first spill affected an area of approximately 60' x 40' and 20' x 80'. After the first spill was remediated, a second release occurred in an area measuring approximately 60' x 50' and 20' x 50' on the pad and overlapped a portion of the first spill. The initial C-141's forms are enclosed in Appendix A.

Groundwater

The New Mexico State Engineer's Office database and USGS database did not show any wells in Section 27, however, the USGS database showed a wells in Section 5 with reported depths to water of 75' and 78' below ground surface (bgs). In addition, it appears the majority of the shallow groundwater may be limited to the alluvial sand and gravel deposits in the vicinity of the Pecos River Draw. A topographical map showing the groundwater elevations, The New Mexico State Engineer, and USGS water well reports are shown in Appendix B.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com



Regulatory

A risk-based evaluation was performed for the Site in accordance with the 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 1,000 mg/kg.

Spill Assessment and Remediation

1st Spill

Prior excavating the spill area, Tetra Tech installed four (4) trenches (T-1, T-2, T-3 and T-4) using a backhoe to assess impacted soils on June 17, 2013. Selected samples were analyzed for chlorides using a field titration kit. Based on the field results, the area was excavated to the appropriate depths. The trench samples were analyzed for chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results summarized in Table 1. The trench locations are shown on Figure 3 of Spill 1.

Referring to Table 1, all trench samples (T-1, T-2, T-3, and T-4) had elevated chloride levels at 2' below surface with chloride readings ranging from 7,170 mg/kg to 17,800 mg/kg. The chloride levels declined with depth and at approximately 4' below surface the highest chloride level in the trenches of 540 mg/kg.

Remediation and Sampling

On June 17, 2013 Tetra Tech supervised the removal of the impacted materials as highlighted (green) in Table 1 and shown on Spill 1 Figure 4. The areas of CS-1, CS-2, and CS-3 were excavated to a depth of approximately 3.0' below surface. The area of CS-4 was excavated to a depth of 4.0' below surface.

Once the spill area was excavated, Tetra Tech collected confirmation samples from the excavation bottoms and sidewalls and analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Confirmation samples are summarized in Table 1.

Referring to Table 1, chloride concentrations were detected in the area of T-2 (north wall and east wall) with concentrations of 2,550 mg/kg and 3,070 mg/kg, respectively. The north wall was excavated near a closed reserve pit and the concentration appear be influenced by the reserve pit. In addition, the east wall could not be excavated safely due to the close proximity of the well.



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The excavated areas were backfilled with clean material to grade and approximately 460 cubic yards were hauled to proper disposal.

2nd Spill

Remediation and Sampling

On June 31, 2013, Tetra Tech was contacted to remediate a second release (Spill 2) on the pad. Tetra Tech supervised the removal of the impacted materials as highlighted (green) in Table 2 and shown on Figure 2 (Spill 2). The excavation depth ranged for 2' to 4' below surface. The area of CS-3 was excavated to approximately 2.0' below surface. The areas of CS-1 and CS-5 were excavated to a depth of approximately 3.0' below surface. The areas of CS-2 and CS-4 were excavated to a depth of approximately 4.0' below surface.

Once excavated, Tetra Tech collected confirmation samples for the excavation bottoms and sidewalls 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 results of the sampling are summarized in Table 2. The sampling locations are shown on Figure 3 (Spill 2).

Based on the field data, a backhoe trench (T-1) was installed in the area of CS-4 to define the chloride extents. Confirmation samples were sent to the lab to be analyzed for chlorides by EPA method 300.0.

Referring to Table 2, none of the samples exceeded the RRAL for TPH or BTEX. In the sidewalls areas of CS-3 and CS-4, the area showed chloride concentrations of 1,720 mg/kg and 3,130 mg/kg, respectively. These areas could not be excavated safely due to the close proximity of the well. The remaining chlorides concentrations do not appear to an environmental concern.

In addition, the T-1 samples did show declining chloride concentrations with depth. However, a chloride spike was detected at 10' of 1,120 mg/kg and rapidly declined to 311 mg/kg at 12' below surface. The chloride concentration at 8' below surface above the chloride spike was 129 mg/kg, therefore it was determined that the 10' sample may have been cross-contaminated from the upper soils.

Based on the results, the excavated areas were backfilled with clean material to grade and approximately 920 cubic yards were hauled to proper disposal.



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Conclusions

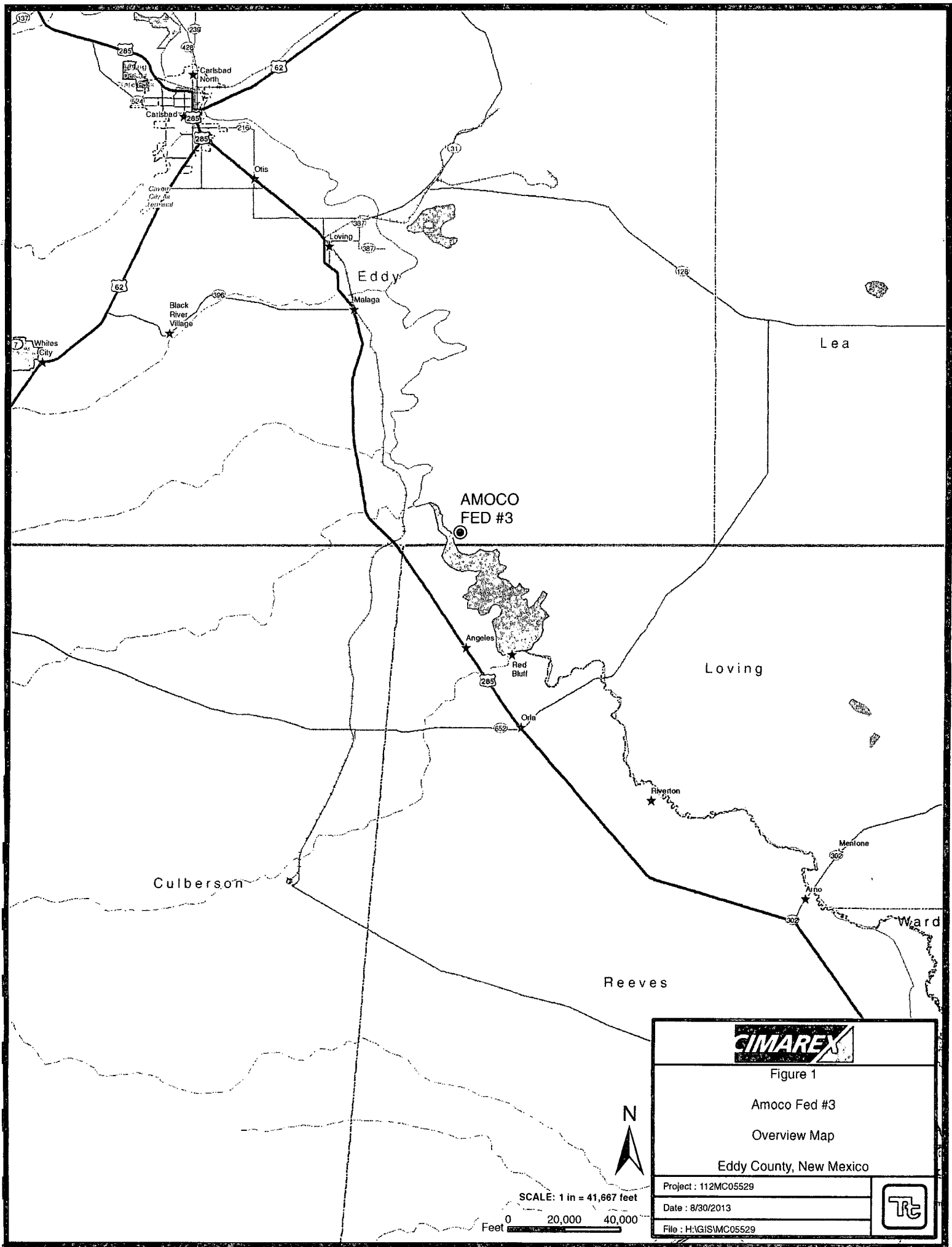
Based on the remediation activities performed at this location, Cimarex requests closure for this site. The C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

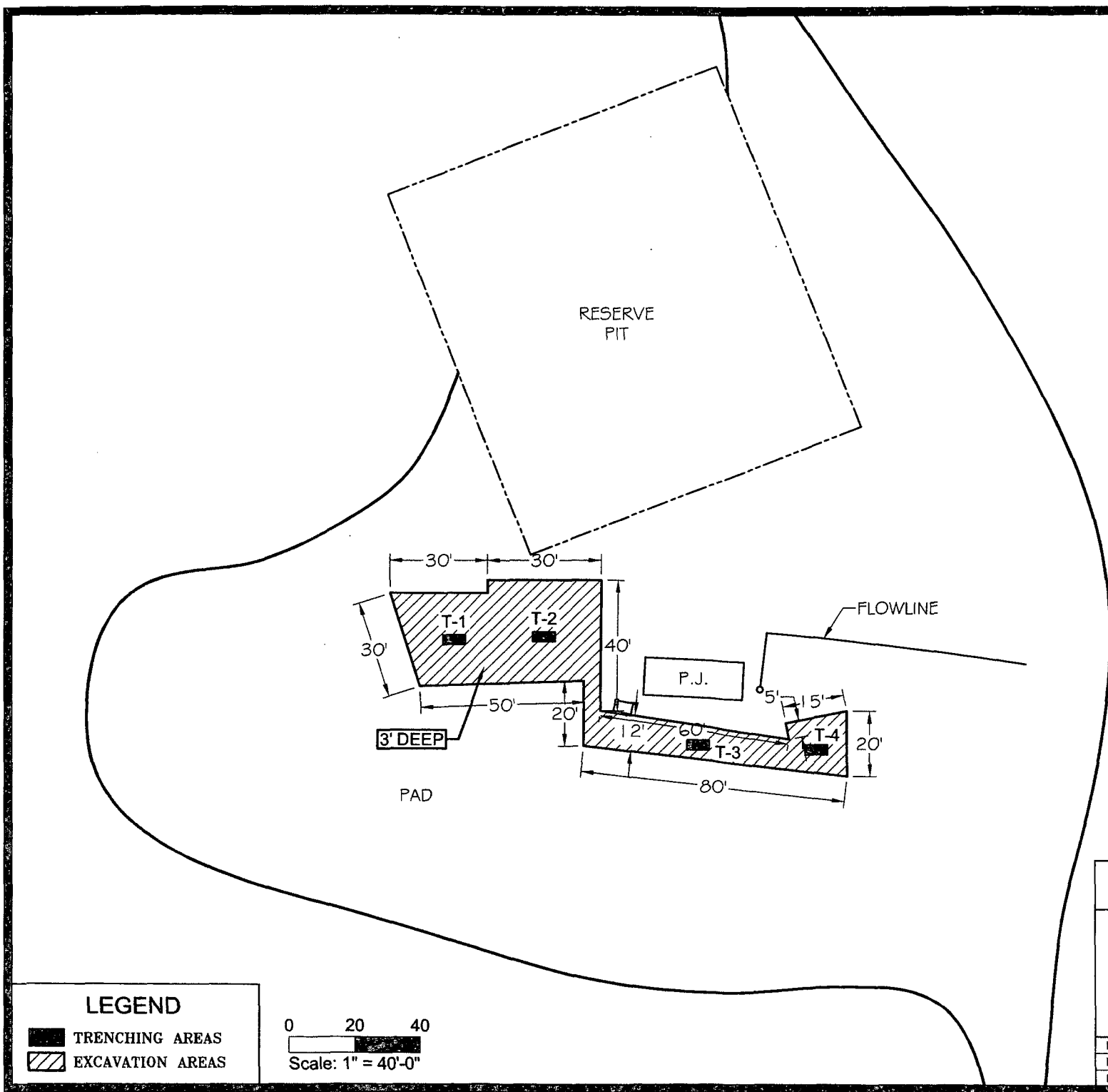
Respectfully submitted,
TETRA TECH

Mike Tavaraz
Senior Project Manager

cc: Terry Ainsworth – Cimarex
Johnny Titsworth - Cimarex
Christine Alderman - Cimarex

Figures





LEGEND

-  TRENCHING AREAS
-  EXCAVATION AREAS

0 20 40
Scale: 1" = 40'-0"



Figure 3

Amoco Fed #3

Excavation Map Spill 1

Eddy County, New Mexico

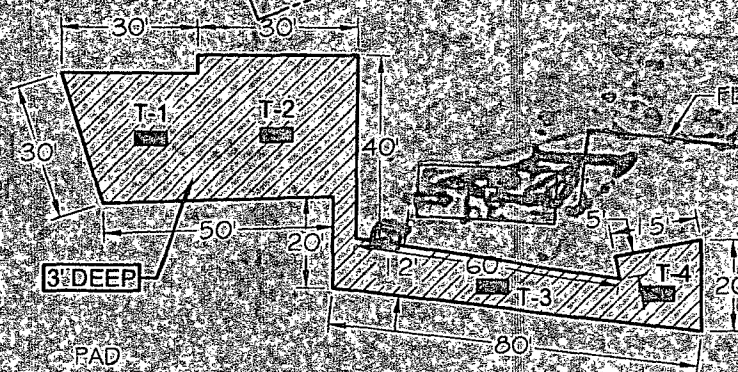
Project: 112MC05529

Date: 8/30/2013

File: H:\CIMAREX\112MC05529\AMOCO FED #3



NORTH



LEGEND

- TRENCHING AREAS
- EXCAVATION AREAS



Figure 3

Amoco Fed #3

Excavation Aerial Map Spill 1

Eddy County, New Mexico

Project: 112MC05529

Date: 8/30/2013

File: H:\CIMAREX\112MC05529\AMOCO FED #3

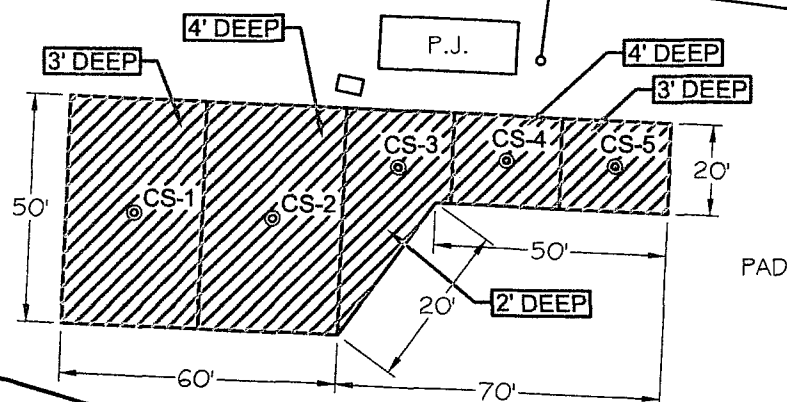


NORTH



RESERVE
PIT

FLOWLINE



LEGEND

- © CONFIRMATION SAMPLE AREAS
- ▨ EXCAVATION AREAS

0 20 40
Scale: 1" = 40'-0"



Figure 3

Amoco Fed #3

Excavation Map Spill 2

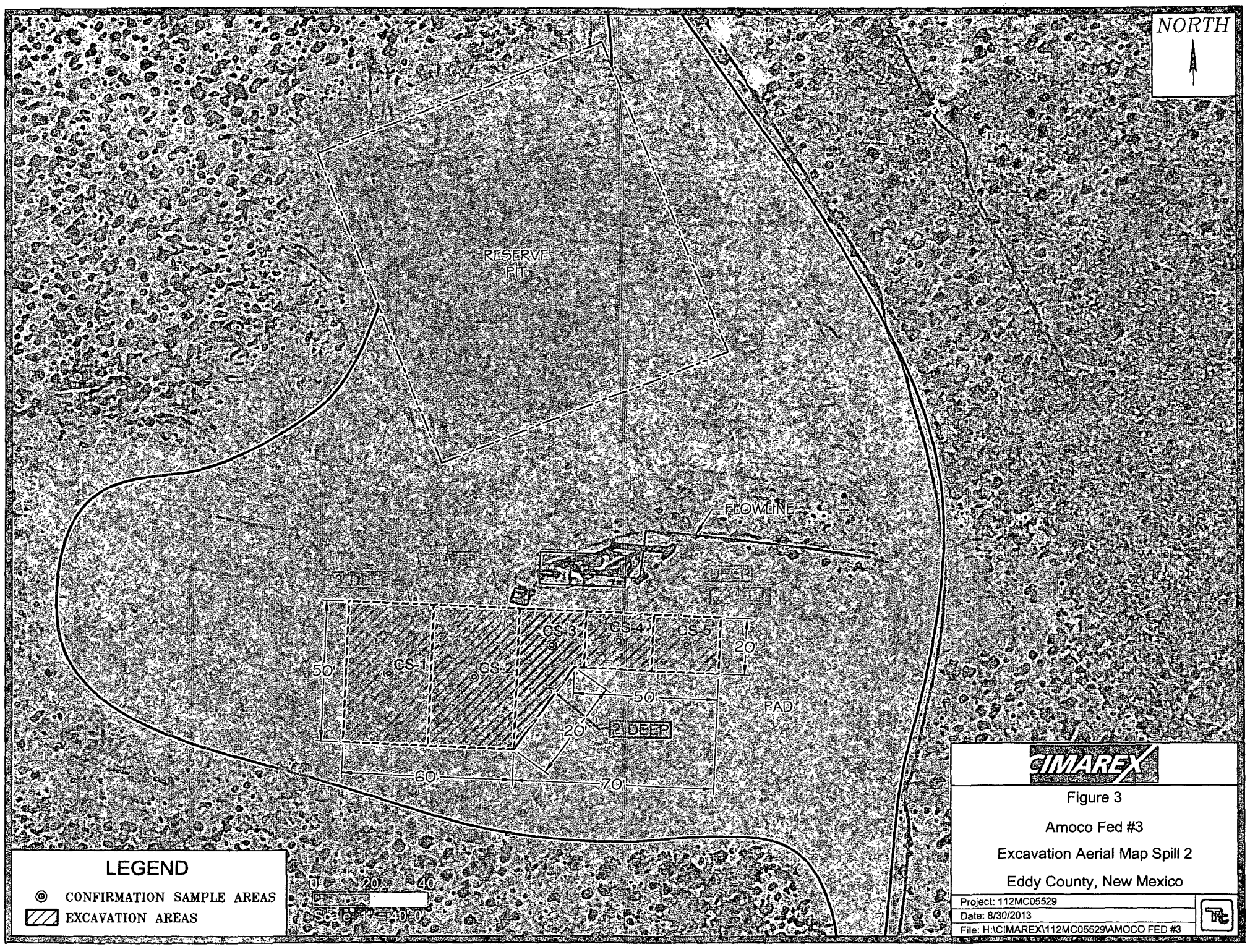
Eddy County, New Mexico

Project: 112MC05529

Date: 8/30/2013

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LEGEND

⊙ CONFIRMATION SAMPLE AREAS

▨ EXCAVATION AREAS



CIMAREX

Figure 3

Amoco Fed #3

Excavation Aerial Map Spill 2

Eddy County, New Mexico

Project: 112MC05529

Date: 8/30/2013

File: H:\CIMAREX\112MC05529\AMOCO FED #3

Tables

Table 1 - 1st Spill
Cimarex
Amoco Federal #3
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Excavation Bottom Depth (in)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
T-1	6/17/2013	surface	3-6		X	-			-	-	-	-	-	17,800
	"	2	"		X	-			-	-	-	-	-	3,170
	"	4	"	X		-	-	-	-	-	-	-	-	249
	"	6	"	X		-	-	-	-	-	-	-	-	335
CS-1 North Wall	6/20/2013	-	-	X		5.32	<50.0	5.32	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	800
CS-1 South Wall	"	-	-	X		5.46	<50.0	5.46	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	695
CS-1 West Wall	"	-	-	X		5.60	<50.0	5.60	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	476
CS-1 Bottom Hole	"	3	-	X		5.49	<50.0	5.49	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,190
T-2	6/17/2013	surface	3-6		X	-			-	-	-	-	-	12,500
	"	2	"		X	-			-	-	-	-	-	2,690
	"	4	"	X		-	-	-	-	-	-	-	-	490
	"	6	"	X		-	-	-	-	-	-	-	-	330
CS-2 North Wall	6/20/2013	-	-	X		5.48	311	316	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,550
CS-2 South Wall	"	-	-	X		5.53	<50.0	5.53	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	466
CS-2 East Wall	"	-	-	X		5.28	<50.0	5.28	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	3,070
CS-2 Bottom Hole	"	3	-	X		5.23	<50.0	5.23	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	547
T-3	6/17/2013	surface	3-6		X	-			-	-	-	-	-	9,170
	"	2	"		X	-			-	-	-	-	-	2,040
	"	4	"	X		-	-	-	-	-	-	-	-	198
	"	6	"	X		-	-	-	-	-	-	-	-	495
	"	8	"	X		-	-	-	-	-	-	-	-	651
CS-3 North Wall	6/20/2013	-	-	X		5.38	<50.0	5.38	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	919
CS-3 South Wall	"	-	-	X		5.25	<50.0	5.25	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	838
CS-3 West Wall	"	-	-	X		5.57	<50.0	5.57	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	201
CS-3 Bottom Hole	"	3	-	X		5.37	<50.0	5.37	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	550

Table 1 - 1st Spill
Cimarex
Amoco Federal #3
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Excavation Bottom Depth (in)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
T-4	6/17/2013	surface	3-6		X	-	-	-	-	-	-	-	-	7,170
	"	2	"		X	-	-	-	-	-	-	-	-	1,830
	"	4	"	X		-	-	-	-	-	-	-	-	540
	"	6	"	X		-	-	-	-	-	-	-	-	333
	"	8	"	X		-	-	-	-	-	-	-	-	221
CS-4 North Wall	6/20/2013	-	-	X		5.46	<50.0	5.46	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	775
CS-4 South Wall	"	-	-	X		5.24	<50.0	5.24	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	373
CS-4 East Wall	"	-	-	X		5.47	<50.0	5.47	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	210
CS-4 Bottom Hole	"	3	-	X		5.38	<50.0	5.38	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	488

(-)

Not Analyzed
Excavated Horizons

Table 2 - 2nd Spill
Cimarex
Amoco Federal #3
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	BEB (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
CS-1 North Wall	7/31/2013	-	-	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	136
CS-1 South Wall	"	-	-	X		7.80	<50.0	7.80	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	538
CS-1 West Wall	"	-	-	X		6.88	<50.0	6.88	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	161
CS-1 Bottom Hole	"	3	-	X		6.75	<50.0	6.75	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	141
CS-2 North Wall	7/31/2013	-	-	X		4.19	311	4.19	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	80.4
CS-2 South Wall	"	-	-	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	266
CS-2 Bottom Hole	"	4	-	X		4.36	<50.0	4.36	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	171
CS-3 North Wall	7/31/2013	-	-	X		4.14	<50.0	4.14	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,720
CS-3 South Wall	"	-	-	X		4.26	<50.0	4.26	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	463
CS-3 Bottom Hole	"	2	-	X		4.24	<50.0	4.24	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	236
CS-4 North Wall	7/31/2013	-	-	X		4.26	<50.0	4.26	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	3,130
CS-4 South Wall	"	-	-	X		4.19	<50.0	4.19	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	722
CS-4 Bottom Hole	"	4	-	X		4.00	<50.0	4.00	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	494
T-1 (CS-4)	7/31/2013	5	1	X		-	-	-	-	-	-	-	-	440
	"	6	2	X		-	-	-	-	-	-	-	-	425
	"	8	4	X		-	-	-	-	-	-	-	-	129
	"	10	6	X		-	-	-	-	-	-	-	-	1,120
	"	12	8	X		-	-	-	-	-	-	-	-	311
	"	14	10	X		-	-	-	-	-	-	-	-	183
CS-5 North Wall	7/31/2013	-	-	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	529
CS-5 South Wall	"	-	-	X		4.13	<50.0	4.13	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	417
CS-5 East Wall	"	-	-	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	204
CS-5 Bottom Hole	"	2	-	X		4.03	<50.0	4.03	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	233

(-) Not Analyzed

Photos

Cimarex Energy
Amoco Fed #3
Eddy County, New Mexico
1st Spill



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View South - T-1, Sample Trench.

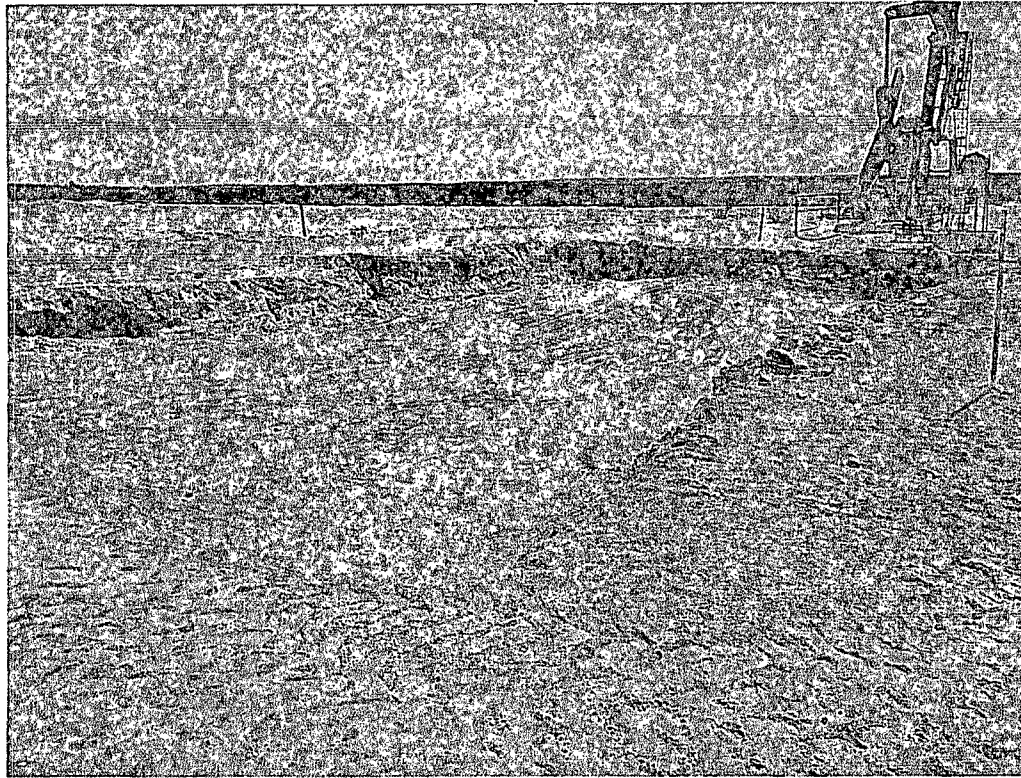


View West - T-3, Sampling Trench.

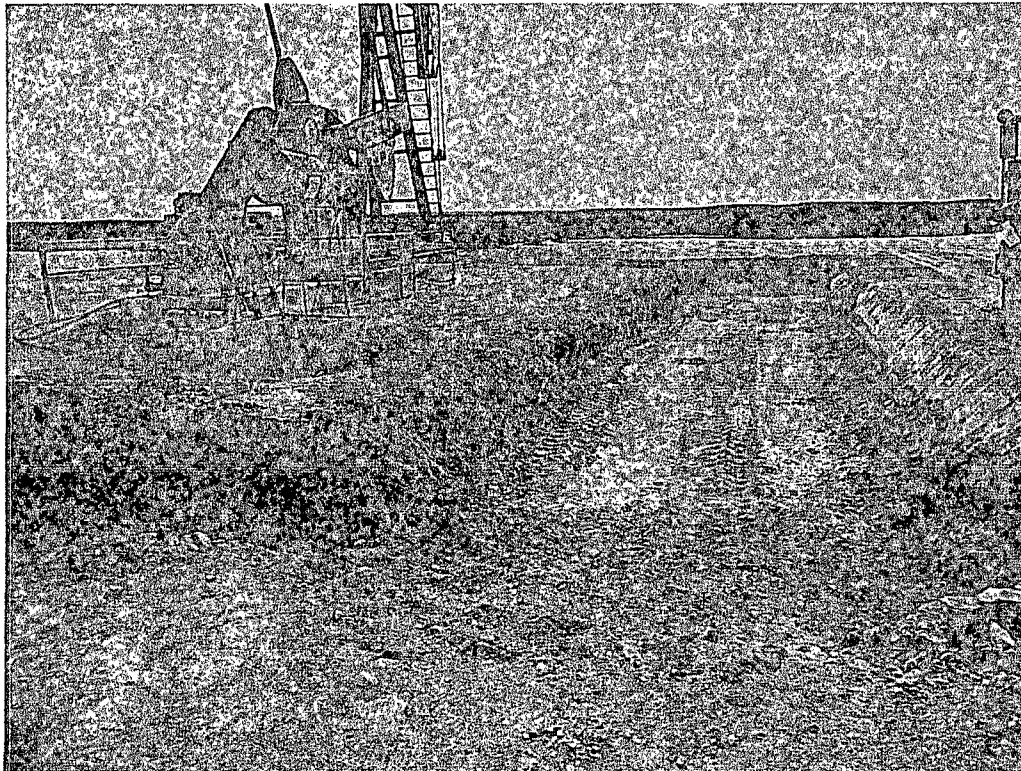
Cimarex Energy
Amoco Fed #3
Eddy County, New Mexico
1st Spill



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View Northeast - Excavation and CS-1 and CS-2 Sample Locations.

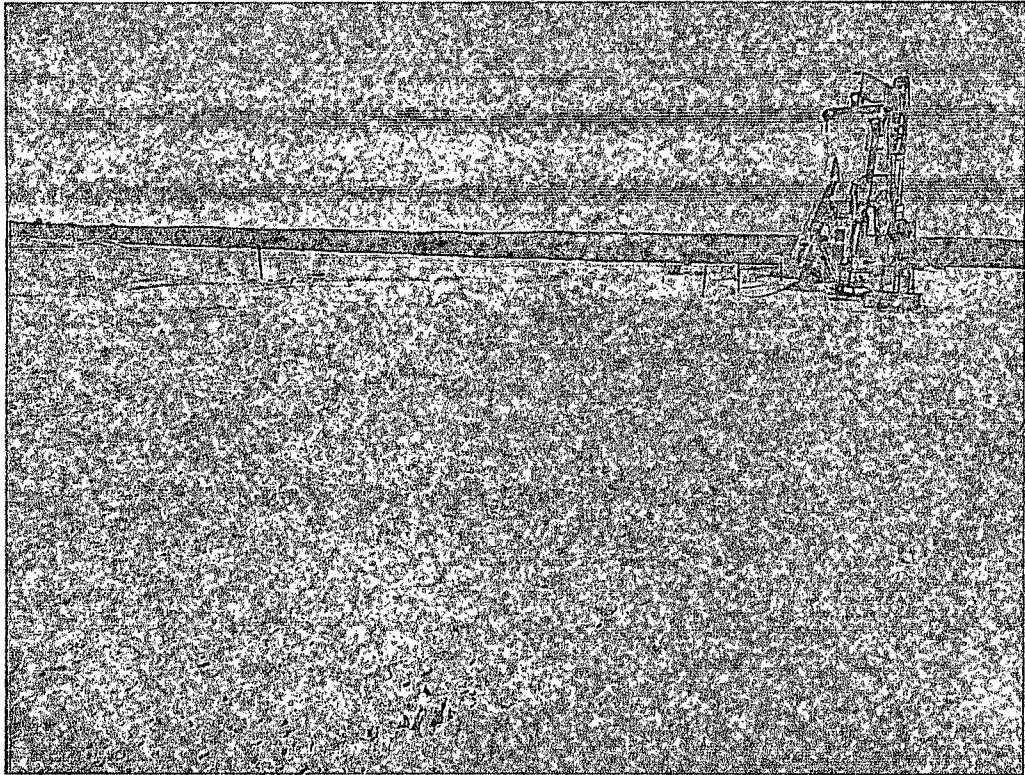


View East - Excavation and CS-3 and CS-4 Sample Locations.

Cimarex Energy
Amoco Fed #3
Eddy County, New Mexico
1st Spill



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View Northeast - Backfill of 1st Spill.

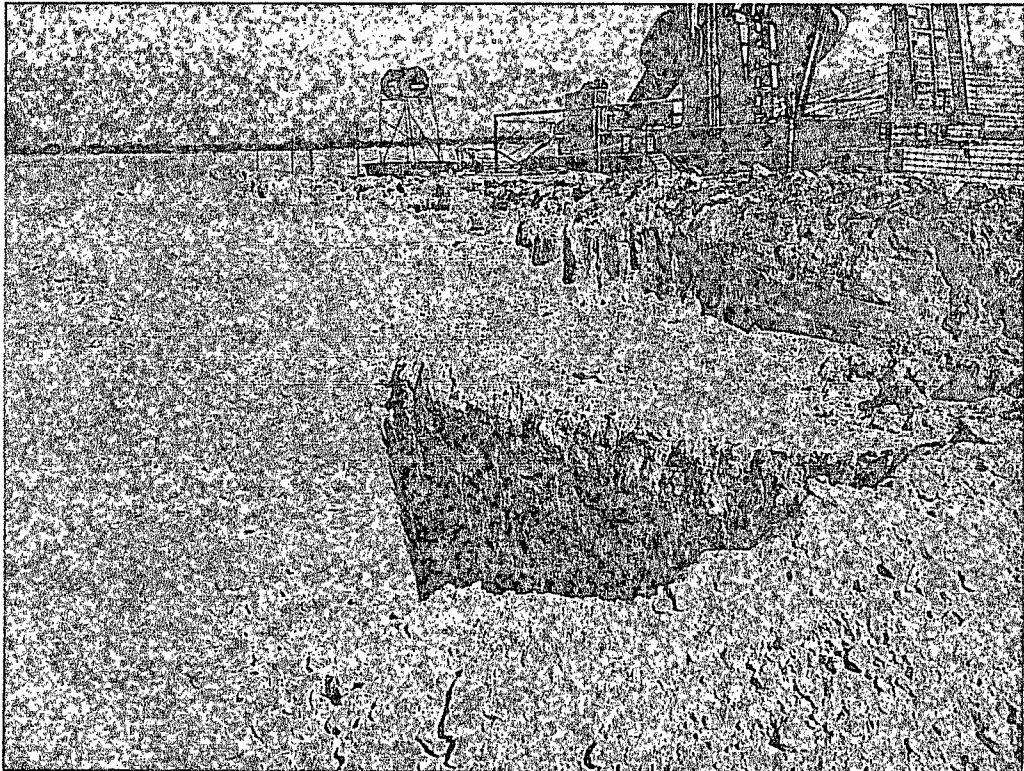
Cimarex Energy
Amoco Fed #3
Eddy County, New Mexico
2nd Spill



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View East - Excavation of 2nd Spill and CS-1, CS-2, CS-3, CS-4, and CS-5 Sample Locations.



View Northwest - T-1 Sampling Trench in area of CS-4.

Cimarex Energy
Amoco Fed #3
Eddy County, New Mexico
2nd Spill



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View Northeast - Backfill of 2nd Spill.



View East - Backfill of 2nd Spill.

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Cimarex Energy	Contact	Terry D. Ainsworth
Address	600 Marienfeld Midland, TX 79701	Telephone No.	(575) 390-1388
Facility Name	Amoco Fed #3	Facility Type	Pumping well
Surface Owner	Ross Ranch	Mineral Owner	
		Lease No.	

LOCATION OF RELEASE

Unit Letter	Section 27	Township 26S	Range 29E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
-------------	---------------	-----------------	--------------	---------------	------------------	---------------	----------------	----------------

Latitude 32 00' 43" Longitude 103 58' 08"
32.01194 103.96888

NATURE OF RELEASE

Type of Release	Produce water	Volume of Release	120+	Volume Recovered	0
Source of Release	looks like a vacuum truck put its load on the ground here	Date and Hour of Occurrence	Evening of the 9th	Date and Hour of Discovery	6/10/13 4PM
Was Immediate Notice Given?	☐ Yes ☒ No ☐ Not Required	If YES, To Whom?			
By Whom?		Date and Hour			
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.			
If a Watercourse was Impacted, Describe Fully.*					
Describe Cause of Problem and Remedial Action Taken.*					
Describe Area Affected and Cleanup Action Taken.* We will dig it up until the ground is not contaminated – haul contaminated soil to Lea Land LLC					

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: Terry D. Ainsworth		Approved by District Supervisor:	
Title: Senior Production Foreman	Approval Date:	Expiration Date:	
E-mail Address: tainsworth@cimarex.com	Conditions of Approval:		Attached ☐
Date: 6/11/2013 Phone: 575-390-1388			

* Attach Additional Sheets If Necessary

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

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Cimarex Energy	Contact	Terry D. Ainsworth
Address	600 Marienfeld Midland, TX 79701	Telephone No.	(575) 390-1388
Facility Name	Amoco Fed #3	Facility Type	Pumping well
Surface Owner	Ross Ranch	Mineral Owner	
		Lease No.	

LOCATION OF RELEASE

Unit Letter	Section 27	Township 26S	Range 29E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
-------------	---------------	-----------------	--------------	---------------	------------------	---------------	----------------	----------------

Latitude 32 00' 43" Longitude 103 58' 08"

NATURE OF RELEASE

Type of Release	Produce water	Volume of Release	120+	Volume Recovered	0
Source of Release	looks like a vacuum truck put its load on the ground here AGAIN	Date and Hour of Occurrence	Evening of the 30	Date and Hour of Discovery	6/30/13 4PM
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	BLM		
By Whom?		Date and Hour			
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Describe Area Affected and Cleanup Action Taken.*

We will dig it up until the ground is not contaminated – haul contaminated soil to Lea Land LLC

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.

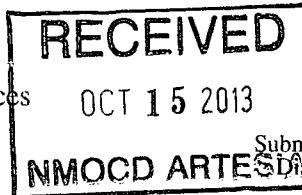
OIL CONSERVATION DIVISION

Signature:	Approved by District Supervisor:		
Printed Name: Terry D. Ainsworth			
Title: Senior Production Foreman	Approval Date:	Expiration Date:	
E-mail Address: tainsworth@cimarex.com	Conditions of Approval:		Attached ☐
Date: 7/1/2013 Phone: 575-390-1388			

Attach Additional Sheets If Necessary

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

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505



Form C-141
Revised October 10, 2003
Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company Cimarex Energy	Contact Terry Ainsworth	
Address 600 Marienfeld Midland, TX 79701	Telephone No. (575) 390-1388	
Facility Name Amoco Fed #3	Facility Type Pumping Well	
Surface Owner: Ross Ranch	Mineral Owner	Lease No.

LOCATION OF RELEASE

Unit Letter	Section 27	Township 26S	Range 29E	Feet from the	North/South Line	Feet from the	East/West Line	County
-------------	---------------	-----------------	--------------	---------------	------------------	---------------	----------------	--------

Latitude N 32.01194° Longitude W 103.96888°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 120+ bbls	Volume Recovered 0 bbls
Source of Release: Illegal Dump	Date and Hour of Occurrence 6/09/13 & 6/30/13	Date and Hour of Discovery 6/10/13 4pm & 6/30/13 4pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? BLM	
By Whom? Josh Russo	Date and Hour 3/15/10 4:59 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

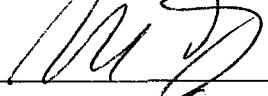
N/A

Describe Cause of Problem and Remedial Action Taken.*

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech excavated site and collected confirmation samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal at Lea Land LLC. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

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: Ike Tavarez <i>(Agent for Cimarex)</i>		Approved by District Supervisor:	
Title: Project Manager		Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com		Conditions of Approval:	
Date: 09/17/13 Phone: (432) 682-4559		Attached ☐	

Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
Cimarex - Amoco Fed #3
Eddy County, New Mexico

25 South 28 East					
6	5	4	35	3	2
	59				
7	8	9	10	11	12
18	17	16	15	48	14
67			49		
19	20	21	22	23	24
	96				
30	29	28	27	26	40
	15	90			
31	32	33	34	35	36
					40

25 South 29 East					
6	5	4	3	2	1
40					
7	8	9	10	11	12
18	17	16	15	14	13
			40		
19	20	21	22	23	24
			60		
30	29	28	27	26	25
30					
31	32	115	33	34	35

25 South 30 East					
6	5	4	3	2	295
7	264	8	9	295	
18	17	16	15	14	390
19	20	21	265	22	23
30	29	28	27	26	25
		268			
31	32	33	34	35	36

26 South 28 East					
6	5	4	3	2	120
				21	
7	8	9	10	11	12
18	17	16	15	14	13
			120	56	
19	20	21	22	23	24
			120		
30	29	28	27	26	25
31	32	33	34	35	36

26 South 29 East					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
		125			
19	20	21	22	57	23
			69		
30	29	28	27	Site	26
31	32	33	34	35	36

26 South 30 East					
6	5	179	4	3	2
	180				
7	8	9	10	11	12
18	17	16	15	14	13
		172			
19	20	21	22	23	24
30	29	28	27	26	25
					180
31	32	33	34	35	36

-  New Mexico State Engineers Well Reports
-  USGS Well Reports
-  Geology and Groundwater Conditions in Southern Eddy, County, NM
-  NMOCD - Groundwater Data
-  Field water level
-  New Mexico Water and Infrastructure Data System

Appendix C

Summary Report

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

Report Date: July 1, 2013

Work Order: 13062540

Project Location: Eddy Co., NM
Project Name: Cimarex/Amoco Fed. #3
Project Number: 112MC05529

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
333214	T-1 0'	soil	2013-06-17	00:00	2013-06-25
333215	T-1 2'	soil	2013-06-17	00:00	2013-06-25
333216	T-1 4'	soil	2013-06-17	00:00	2013-06-25
333217	T-1 6'	soil	2013-06-17	00:00	2013-06-25
333218	T-2 0'	soil	2013-06-17	00:00	2013-06-25
333219	T-2 2'	soil	2013-06-17	00:00	2013-06-25
333220	T-2 4'	soil	2013-06-17	00:00	2013-06-25
333221	T-2 6'	soil	2013-06-17	00:00	2013-06-25
333222	T-3 0'	soil	2013-06-17	00:00	2013-06-25
333223	T-3 2'	soil	2013-06-17	00:00	2013-06-25
333224	T-3 4'	soil	2013-06-17	00:00	2013-06-25
333225	T-3 6'	soil	2013-06-17	00:00	2013-06-25
333226	T-3 8'	soil	2013-06-17	00:00	2013-06-25
333227	T-4 0'	soil	2013-06-17	00:00	2013-06-25
333228	T-4 2'	soil	2013-06-17	00:00	2013-06-25
333229	T-4 4'	soil	2013-06-17	00:00	2013-06-25
333230	T-4 6'	soil	2013-06-17	00:00	2013-06-25
333231	T-4 8'	soil	2013-06-17	00:00	2013-06-25

Sample: 333214 - T-1 0'

Param	Flag	Result	Units	RL
Chloride		17800	mg/Kg	4

Sample: 333215 - T-1 2'

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.

Param	Flag	Result	Units	RL
Chloride		3170	mg/Kg	4

Sample: 333216 - T-1 4'

Param	Flag	Result	Units	RL
Chloride		249	mg/Kg	4

Sample: 333217 - T-1 6'

Param	Flag	Result	Units	RL
Chloride		335	mg/Kg	4

Sample: 333218 - T-2 0'

Param	Flag	Result	Units	RL
Chloride		12500	mg/Kg	4

Sample: 333219 - T-2 2'

Param	Flag	Result	Units	RL
Chloride		2690	mg/Kg	4

Sample: 333220 - T-2 4'

Param	Flag	Result	Units	RL
Chloride		490	mg/Kg	4

Sample: 333221 - T-2 6'

Param	Flag	Result	Units	RL
Chloride		330	mg/Kg	4

Sample: 333222 - T-3 0'

Param	Flag	Result	Units	RL
Chloride		9170	mg/Kg	4

Sample: 333223 - T-3 2'

Param	Flag	Result	Units	RL
Chloride		2040	mg/Kg	4

Sample: 333224 - T-3 4'

Param	Flag	Result	Units	RL
Chloride		198	mg/Kg	4

Sample: 333225 - T-3 6'

Param	Flag	Result	Units	RL
Chloride		495	mg/Kg	4

Sample: 333226 - T-3 8'

Param	Flag	Result	Units	RL
Chloride		651	mg/Kg	4

Sample: 333227 - T-4 0'

Param	Flag	Result	Units	RL
Chloride		7170	mg/Kg	4

Sample: 333228 - T-4 2'

Param	Flag	Result	Units	RL
Chloride		1830	mg/Kg	4

Sample: 333229 - T-4 4'

Param	Flag	Result	Units	RL
Chloride		540	mg/Kg	4

Sample: 333230 - T-4 6'

Param	Flag	Result	Units	RL
Chloride		333	mg/Kg	4

Sample: 333231 - T-4 8'

Param	Flag	Result	Units	RL
Chloride		221	mg/Kg	4

Summary Report

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

Report Date: July 3, 2013

Work Order: 13062538

Project Location: Eddy Co., NM
Project Name: Cimarex/Amoco Fed. #3
Project Number: 112MC05529

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
333195	CS-1 (T-1) North Wall	soil	2013-06-20	00:00	2013-06-25
333196	CS-1 (T-1) South Wall	soil	2013-06-20	00:00	2013-06-25
333197	CS-1 (T-1) West Wall	soil	2013-06-20	00:00	2013-06-25
333198	CS-1 (T-1) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25
333199	CS-2 (T-2) North Wall	soil	2013-06-20	00:00	2013-06-25
333200	CS-2 (T-2) South Wall	soil	2013-06-20	00:00	2013-06-25
333201	CS-2 (T-2) East Wall	soil	2013-06-20	00:00	2013-06-25
333202	CS-2 (T-2) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25
333203	CS-3 (T-3) North Wall	soil	2013-06-20	00:00	2013-06-25
333204	CS-3 (T-3) South Wall	soil	2013-06-20	00:00	2013-06-25
333205	CS-3 (T-3) West Wall	soil	2013-06-20	00:00	2013-06-25
333206	CS-3 (T-3) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25
333207	CS-4 (T-4) North Wall	soil	2013-06-20	00:00	2013-06-25
333208	CS-4 (T-4) South Wall	soil	2013-06-20	00:00	2013-06-25
333209	CS-4 (T-4) East Wall	soil	2013-06-20	00:00	2013-06-25
333210	CS-4 (T-4) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
333195 - CS-1 (T-1) North Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.32
333196 - CS-1 (T-1) South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.46
333197 - CS-1 (T-1) West Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.60
333198 - CS-1 (T-1) Bottom Hole 3'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.49
333199 - CS-2 (T-2) North Wall	<0.0200	<0.0200	<0.0200	<0.0200	311	5.48
333200 - CS-2 (T-2) South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.53
333201 - CS-2 (T-2) East Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.28
333202 - CS-2 (T-2) Bottom Hole 3'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.23
333203 - CS-3 (T-3) North Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.38

continued ...

... continued

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
333204 - CS-3 (T-3) South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.25
333205 - CS-3 (T-3) West Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.57
333206 - CS-3 (T-3) Bottom Hole 3'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.37
333207 - CS-4 (T-4) North Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.46
333208 - CS-4 (T-4) South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.24
333209 - CS-4 (T-4) East Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.47
333210 - CS-4 (T-4) Bottom Hole 3'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.38

Sample: 333195 - CS-1 (T-1) North Wall

Param	Flag	Result	Units	RL
Chloride		800	mg/Kg	4

Sample: 333196 - CS-1 (T-1) South Wall

Param	Flag	Result	Units	RL
Chloride		695	mg/Kg	4

Sample: 333197 - CS-1 (T-1) West Wall

Param	Flag	Result	Units	RL
Chloride		476	mg/Kg	4

Sample: 333198 - CS-1 (T-1) Bottom Hole 3'

Param	Flag	Result	Units	RL
Chloride		1190	mg/Kg	4

Sample: 333199 - CS-2 (T-2) North Wall

Param	Flag	Result	Units	RL
Chloride		2550	mg/Kg	4

Sample: 333200 - CS-2 (T-2) South Wall

Param	Flag	Result	Units	RL
Chloride		466	mg/Kg	4

Sample: 333201 - CS-2 (T-2) East Wall

Param	Flag	Result	Units	RL
Chloride		3070	mg/Kg	4

Sample: 333202 - CS-2 (T-2) Bottom Hole 3'

Param	Flag	Result	Units	RL
Chloride		547	mg/Kg	4

Sample: 333203 - CS-3 (T-3) North Wall

Param	Flag	Result	Units	RL
Chloride		919	mg/Kg	4

Sample: 333204 - CS-3 (T-3) South Wall

Param	Flag	Result	Units	RL
Chloride		838	mg/Kg	4

Sample: 333205 - CS-3 (T-3) West Wall

Param	Flag	Result	Units	RL
Chloride		201	mg/Kg	4

Sample: 333206 - CS-3 (T-3) Bottom Hole 3'

Param	Flag	Result	Units	RL
Chloride		550	mg/Kg	4

Sample: 333207 - CS-4 (T-4) North Wall

Param	Flag	Result	Units	RL
Chloride		775	mg/Kg	4

Sample: 333208 - CS-4 (T-4) South Wall

Param	Flag	Result	Units	RL
Chloride		373	mg/Kg	4

Sample: 333209 - CS-4 (T-4) East Wall

Param	Flag	Result	Units	RL
Chloride		210	mg/Kg	4

Sample: 333210 - CS-4 (T-4) Bottom Hole 3'

Param	Flag	Result	Units	RL
Chloride		488	mg/Kg	4



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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: July 1, 2013

Work Order: 13062540

Project Location: Eddy Co., NM
Project Name: Cimarex/Amoco Fed. #3
Project Number: 112MC05529

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

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
333214	T-1 0'	soil	2013-06-17	00:00	2013-06-25
333215	T-1 2'	soil	2013-06-17	00:00	2013-06-25
333216	T-1 4'	soil	2013-06-17	00:00	2013-06-25
333217	T-1 6'	soil	2013-06-17	00:00	2013-06-25
333218	T-2 0'	soil	2013-06-17	00:00	2013-06-25
333219	T-2 2'	soil	2013-06-17	00:00	2013-06-25
333220	T-2 4'	soil	2013-06-17	00:00	2013-06-25
333221	T-2 6'	soil	2013-06-17	00:00	2013-06-25
333222	T-3 0'	soil	2013-06-17	00:00	2013-06-25
333223	T-3 2'	soil	2013-06-17	00:00	2013-06-25
333224	T-3 4'	soil	2013-06-17	00:00	2013-06-25
333225	T-3 6'	soil	2013-06-17	00:00	2013-06-25
333226	T-3 8'	soil	2013-06-17	00:00	2013-06-25
333227	T-4 0'	soil	2013-06-17	00:00	2013-06-25
333228	T-4 2'	soil	2013-06-17	00:00	2013-06-25
333229	T-4 4'	soil	2013-06-17	00:00	2013-06-25
333230	T-4 6'	soil	2013-06-17	00:00	2013-06-25
333231	T-4 8'	soil	2013-06-17	00:00	2013-06-25

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 19 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink, reading "Michael Abel". The signature is written in a cursive, flowing style.

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

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Sample 333219 (T-2 2')	7
Sample 333220 (T-2 4')	7
Sample 333221 (T-2 6')	8
Sample 333222 (T-3 0')	8
Sample 333223 (T-3 2')	8
Sample 333224 (T-3 4')	8
Sample 333225 (T-3 6')	9
Sample 333226 (T-3 8')	9
Sample 333227 (T-4 0')	9
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Case Narrative

Samples for project Cimarex/Amoco Fed. #3 were received by TraceAnalysis, Inc. on 2013-06-25 and assigned to work order 13062540. Samples for work order 13062540 were received intact at a temperature of 3.6 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	86906	2013-06-25 at 13:37	102688	2013-06-28 at 13:49
Chloride (Titration)	SM 4500-Cl B	86906	2013-06-25 at 13:37	102724	2013-07-01 at 13:26
Chloride (Titration)	SM 4500-Cl B	86906	2013-06-25 at 13:37	102725	2013-07-01 at 13:26

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 13062540 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.

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Analytical Report

Sample: 333214 - T-1 0'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-06-28	Analyzed By:	AR
QC Batch:	102688	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			17800	mg/Kg	10	4.00

Sample: 333215 - T-1 2'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-06-28	Analyzed By:	AR
QC Batch:	102688	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3170	mg/Kg	10	4.00

Sample: 333216 - T-1 4'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-06-28	Analyzed By:	AR
QC Batch:	102688	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			249	mg/Kg	5	4.00

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Sample: 333217 - T-1 6'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-06-28	Analyzed By:	AR
QC Batch:	102688	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			335	mg/Kg	5	4.00

Sample: 333218 - T-2 0'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-07-01	Analyzed By:	AR
QC Batch:	102724	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			12500	mg/Kg	10	4.00

Sample: 333219 - T-2 2'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-07-01	Analyzed By:	AR
QC Batch:	102724	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2690	mg/Kg	10	4.00

Sample: 333220 - T-2 4'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-07-01	Analyzed By:	AR
QC Batch:	102724	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			490	mg/Kg	5	4.00

Sample: 333221 - T-2 6'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 102724 Date Analyzed: 2013-07-01 Analyzed By: AR
Prep Batch: 86906 Sample Preparation: 2013-06-25 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			330	mg/Kg	5	4.00

Sample: 333222 - T-3 0'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 102724 Date Analyzed: 2013-07-01 Analyzed By: AR
Prep Batch: 86906 Sample Preparation: 2013-06-25 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			9170	mg/Kg	10	4.00

Sample: 333223 - T-3 2'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 102724 Date Analyzed: 2013-07-01 Analyzed By: AR
Prep Batch: 86906 Sample Preparation: 2013-06-25 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2040	mg/Kg	10	4.00

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Sample: 333224 - T-3 4'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-07-01	Analyzed By:	AR
QC Batch:	102724	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			198	mg/Kg	5	4.00

Sample: 333225 - T-3 6'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-07-01	Analyzed By:	AR
QC Batch:	102724	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			495	mg/Kg	5	4.00

Sample: 333226 - T-3 8'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-07-01	Analyzed By:	AR
QC Batch:	102724	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			651	mg/Kg	5	4.00

Sample: 333227 - T-4 0'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-07-01	Analyzed By:	AR
QC Batch:	102724	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			7170	mg/Kg	10	4.00

Sample: 333228 - T-4 2'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 102725
Prep Batch: 86906

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-07-01
Sample Preparation: 2013-06-25

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1830	mg/Kg	10	4.00

Sample: 333229 - T-4 4'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 102725
Prep Batch: 86906

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-07-01
Sample Preparation: 2013-06-25

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			540	mg/Kg	5	4.00

Sample: 333230 - T-4 6'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 102725
Prep Batch: 86906

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-07-01
Sample Preparation: 2013-06-25

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			333	mg/Kg	5	4.00

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Sample: 333231 - T-4 8'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-07-01	Analyzed By:	AR
QC Batch:	102725	Sample Preparation:	2013-06-25	Prepared By:	AR
Prep Batch:	86906				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			221	mg/Kg	5	4.00

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Method Blanks

Method Blank (1) QC Batch: 102688

QC Batch: 102688
Prep Batch: 86906

Date Analyzed: 2013-06-28
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 102724

QC Batch: 102724
Prep Batch: 86906

Date Analyzed: 2013-07-01
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 102725

QC Batch: 102725
Prep Batch: 86906

Date Analyzed: 2013-07-01
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

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

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 102688
Prep Batch: 86906

Date Analyzed: 2013-06-28
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2790	mg/Kg	1	2500	<3.85	112	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2650	mg/Kg	1	2500	<3.85	106	85 - 115	5	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: 102724
Prep Batch: 86906

Date Analyzed: 2013-07-01
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2600	mg/Kg	1	2500	<3.85	104	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2710	mg/Kg	1	2500	<3.85	108	85 - 115	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 102725
Prep Batch: 86906

Date Analyzed: 2013-07-01
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2630	mg/Kg	1	2500	<3.85	105	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2500	mg/Kg	1	2500	<3.85	100	85 - 115	5	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: 333217

QC Batch: 102688
Prep Batch: 86906

Date Analyzed: 2013-06-28
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2710	mg/Kg	5	2500	335	95	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2870	mg/Kg	5	2500	335	101	78.9 - 121	6	20

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

Matrix Spike (MS-1) Spiked Sample: 333227

QC Batch: 102724
Prep Batch: 86906

Date Analyzed: 2013-07-01
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			9330	mg/Kg	10	2500	7170	86	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			9650	mg/Kg	10	2500	7170	99	78.9 - 121	3	20

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

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Matrix Spike (MS-1) Spiked Sample: 333237

QC Batch: 102725
Prep Batch: 86906

Date Analyzed: 2013-07-01
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			5190	mg/Kg	10	2500	2920	91	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			5410	mg/Kg	10	2500	2920	100	78.9 - 121	4	20

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

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Calibration Standards

Standard (CCV-1)

QC Batch: 102688

Date Analyzed: 2013-06-28

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2013-06-28

Standard (CCV-2)

QC Batch: 102688

Date Analyzed: 2013-06-28

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.1	99	85 - 115	2013-06-28

Standard (CCV-1)

QC Batch: 102724

Date Analyzed: 2013-07-01

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-07-01

Standard (CCV-2)

QC Batch: 102724

Date Analyzed: 2013-07-01

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.8	100	85 - 115	2013-07-01

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Standard (CCV-1)

QC Batch: 102725

Date Analyzed: 2013-07-01

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.4	99	85 - 115	2013-07-01

Standard (CCV-2)

QC Batch: 102725

Date Analyzed: 2013-07-01

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2013-07-01

Appendix

Report Definitions

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

Laboratory Certifications

	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

Standard Flags

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

Attachments

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

13062540

Analysis Request of Chain of Custody Record

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**TETRA TECH**
 1910 N. Big Spring St.
 Midland, Texas 79705
 (432) 682-4559 • Fax (432) 682-3946

 ANALYSIS REQUEST
 (Circle or Specify Method No.)

CLIENT NAME: Cimrex			SITE MANAGER: Ike Tavares			NUMBER OF CONTAINERS	PRESERVATIVE METHOD				BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorides	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS	
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB		NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3																		ICE
PROJECT NO.: 11203529			PROJECT NAME: Cimrex - Amara Fed #3																									
			Eddy Co. NM																									
			SAMPLE IDENTIFICATION																									
224	6/17		S	X		T-3	4'																					
225						T-3	6'																					
226						T-3	8'																					
227						T-4	0'																					
228						T-4	2'																					
229						T-4	4'																					
230						T-4	6'																					
231						T-4	8'																					

RELINQUISHED BY: (Signature) Mason Kujawa	Date: 6-25-13 Time: 1030	RECEIVED BY: (Signature) Ike Tavares	Date: 6-25-13 Time: 1108	SAMPLED BY: (Print & Initial) MARCUS KUTAWSKI / MK	Date: 6-17-13 Time: 1108
RELINQUISHED BY: (Signature) Ike Tavares	Date: 6-25-13 Time: 1108	RECEIVED BY: (Signature) Ike Tavares	Date: 6-25-13 Time: 1108	SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS	AIRBILL #: _____ OTHER: _____
RECEIVING LABORATORY: TETRA TECH	ADDRESS: _____	CITY: Midland	STATE: TX	ZIP: _____	CONTACT: _____
RECEIVED BY: (Signature) Ike Tavares	DATE: _____	TIME: _____	TETRA TECH CONTACT PERSON: IKE TAVARES		
SAMPLE CONDITION WHEN RECEIVED: 3.6°			REMARKS: _____		

Please fill out all copies - Laboratory retains Yellow copy - Return Original 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: July 3, 2013

Work Order: 13062538

Project Location: Eddy Co., NM
Project Name: Cimarex/Amoco Fed. #3
Project Number: 112MC05529

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
333195	CS-1 (T-1) North Wall	soil	2013-06-20	00:00	2013-06-25
333196	CS-1 (T-1) South Wall	soil	2013-06-20	00:00	2013-06-25
333197	CS-1 (T-1) West Wall	soil	2013-06-20	00:00	2013-06-25
333198	CS-1 (T-1) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25
333199	CS-2 (T-2) North Wall	soil	2013-06-20	00:00	2013-06-25
333200	CS-2 (T-2) South Wall	soil	2013-06-20	00:00	2013-06-25
333201	CS-2 (T-2) East Wall	soil	2013-06-20	00:00	2013-06-25
333202	CS-2 (T-2) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25
333203	CS-3 (T-3) North Wall	soil	2013-06-20	00:00	2013-06-25
333204	CS-3 (T-3) South Wall	soil	2013-06-20	00:00	2013-06-25
333205	CS-3 (T-3) West Wall	soil	2013-06-20	00:00	2013-06-25
333206	CS-3 (T-3) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25
333207	CS-4 (T-4) North Wall	soil	2013-06-20	00:00	2013-06-25
333208	CS-4 (T-4) South Wall	soil	2013-06-20	00:00	2013-06-25
333209	CS-4 (T-4) East Wall	soil	2013-06-20	00:00	2013-06-25
333210	CS-4 (T-4) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
333195 - CS-1 (T-1) North Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.32
333196 - CS-1 (T-1) South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.46
333197 - CS-1 (T-1) West Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.60
333198 - CS-1 (T-1) Bottom Hole 3'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.49
333199 - CS-2 (T-2) North Wall	<0.0200	<0.0200	<0.0200	<0.0200	311	5.48
333200 - CS-2 (T-2) South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.53
333201 - CS-2 (T-2) East Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.28
333202 - CS-2 (T-2) Bottom Hole 3'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.23
333203 - CS-3 (T-3) North Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.38

continued ...

...continued

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
333204 - CS-3 (T-3) South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.25
333205 - CS-3 (T-3) West Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.57
333206 - CS-3 (T-3) Bottom Hole 3'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.37
333207 - CS-4 (T-4) North Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.46
333208 - CS-4 (T-4) South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.24
333209 - CS-4 (T-4) East Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.47
333210 - CS-4 (T-4) Bottom Hole 3'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	5.38

Sample: 333195 - CS-1 (T-1) North Wall

Param	Flag	Result	Units	RL
Chloride		800	mg/Kg	4

Sample: 333196 - CS-1 (T-1) South Wall

Param	Flag	Result	Units	RL
Chloride		695	mg/Kg	4

Sample: 333197 - CS-1 (T-1) West Wall

Param	Flag	Result	Units	RL
Chloride		476	mg/Kg	4

Sample: 333198 - CS-1 (T-1) Bottom Hole 3'

Param	Flag	Result	Units	RL
Chloride		1190	mg/Kg	4

Sample: 333199 - CS-2 (T-2) North Wall

Param	Flag	Result	Units	RL
Chloride		2550	mg/Kg	4

Sample: 333200 - CS-2 (T-2) South Wall

Param	Flag	Result	Units	RL
Chloride		466	mg/Kg	4

Sample: 333201 - CS-2 (T-2) East Wall

Param	Flag	Result	Units	RL
Chloride		3070	mg/Kg	4

Sample: 333202 - CS-2 (T-2) Bottom Hole 3'

Param	Flag	Result	Units	RL
Chloride		547	mg/Kg	4

Sample: 333203 - CS-3 (T-3) North Wall

Param	Flag	Result	Units	RL
Chloride		919	mg/Kg	4

Sample: 333204 - CS-3 (T-3) South Wall

Param	Flag	Result	Units	RL
Chloride		838	mg/Kg	4

Sample: 333205 - CS-3 (T-3) West Wall

Param	Flag	Result	Units	RL
Chloride		201	mg/Kg	4

Sample: 333206 - CS-3 (T-3) Bottom Hole 3'

Param	Flag	Result	Units	RL
Chloride		550	mg/Kg	4

Sample: 333207 - CS-4 (T-4) North Wall

Param	Flag	Result	Units	RL
Chloride		775	mg/Kg	4

Sample: 333208 - CS-4 (T-4) South Wall

Param	Flag	Result	Units	RL
Chloride		373	mg/Kg	4

Sample: 333209 - CS-4 (T-4) East Wall

Param	Flag	Result	Units	RL
Chloride		210	mg/Kg	4

Sample: 333210 - CS-4 (T-4) Bottom Hole 3'

Param	Flag	Result	Units	RL
Chloride		488	mg/Kg	4



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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: July 3, 2013

Work Order: 13062538

Project Location: Eddy Co., NM
Project Name: Cimarex/Amoco Fed. #3
Project Number: 112MC05529

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

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
333195	CS-1 (T-1) North Wall	soil	2013-06-20	00:00	2013-06-25
333196	CS-1 (T-1) South Wall	soil	2013-06-20	00:00	2013-06-25
333197	CS-1 (T-1) West Wall	soil	2013-06-20	00:00	2013-06-25
333198	CS-1 (T-1) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25
333199	CS-2 (T-2) North Wall	soil	2013-06-20	00:00	2013-06-25
333200	CS-2 (T-2) South Wall	soil	2013-06-20	00:00	2013-06-25
333201	CS-2 (T-2) East Wall	soil	2013-06-20	00:00	2013-06-25
333202	CS-2 (T-2) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25
333203	CS-3 (T-3) North Wall	soil	2013-06-20	00:00	2013-06-25
333204	CS-3 (T-3) South Wall	soil	2013-06-20	00:00	2013-06-25
333205	CS-3 (T-3) West Wall	soil	2013-06-20	00:00	2013-06-25
333206	CS-3 (T-3) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25
333207	CS-4 (T-4) North Wall	soil	2013-06-20	00:00	2013-06-25
333208	CS-4 (T-4) South Wall	soil	2013-06-20	00:00	2013-06-25
333209	CS-4 (T-4) East Wall	soil	2013-06-20	00:00	2013-06-25
333210	CS-4 (T-4) Bottom Hole 3'	soil	2013-06-20	00:00	2013-06-25

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 42 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

A handwritten signature in black ink that reads "Michael Abel". The signature is written in a cursive style with a large, stylized 'M' and 'A'.

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

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Case Narrative

Samples for project Cimarex/Amoco Fed. #3 were received by TraceAnalysis, Inc. on 2013-06-25 and assigned to work order 13062538. Samples for work order 13062538 were received intact at a temperature of 3.6 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	87043	2013-07-01 at 10:00	102748	2013-07-01 at 14:30
Chloride (Titration)	SM 4500-Cl B	86906	2013-06-25 at 13:37	102687	2013-06-28 at 13:47
Chloride (Titration)	SM 4500-Cl B	86906	2013-06-25 at 13:37	102688	2013-06-28 at 13:49
TPH DRO - NEW	S 8015 D	87074	2013-07-01 at 13:00	102788	2013-07-02 at 17:32
TPH GRO	S 8015 D	87040	2013-07-01 at 10:00	102744	2013-07-01 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 13062538 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: July 3, 2013
112MC05529

Work Order: 13062538
Cimarex/Amoco Fed. #3

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Eddy Co., NM

Analytical Report

Sample: 333195 - CS-1 (T-1) North Wall

Laboratory: Midland

Analysis: BTEX

QC Batch: 102748

Prep Batch: 87043

Analytical Method: S 8021B

Date Analyzed: 2013-07-01

Sample Preparation: 2013-07-01

Prep Method: S 5035

Analyzed By: KC

Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.88	mg/Kg	1	2.00	94	70 - 130

Sample: 333195 - CS-1 (T-1) North Wall

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 102687

Prep Batch: 86906

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-06-28

Sample Preparation: 2013-06-25

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			800	mg/Kg	5	4.00

Sample: 333195 - CS-1 (T-1) North Wall

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 102788

Prep Batch: 87074

Analytical Method: S 8015 D

Date Analyzed: 2013-07-02

Sample Preparation: 2013-07-01

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

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

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			80.7	mg/Kg	1	100	81	55.1 - 135.7

Sample: 333195 - CS-1 (T-1) North Wall

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 102744 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87040 Sample Preparation: 2013-07-01 Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.32	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.73	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			2.17	mg/Kg	1	2.00	108	70 - 130

Sample: 333196 - CS-1 (T-1) South Wall

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 102748 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87043 Sample Preparation: 2013-07-01 Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	70 - 130

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Eddy Co., NM

Sample: 333196 - CS-1 (T-1) South Wall

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 102687 Date Analyzed: 2013-06-28 Analyzed By: AR
Prep Batch: 86906 Sample Preparation: 2013-06-25 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			695	mg/Kg	5	4.00

Sample: 333196 - CS-1 (T-1) South Wall

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 102788 Date Analyzed: 2013-07-02 Analyzed By: CW
Prep Batch: 87074 Sample Preparation: 2013-07-01 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			108	mg/Kg	1	100	108	55.1 - 135.7

Sample: 333196 - CS-1 (T-1) South Wall

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 102744 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87040 Sample Preparation: 2013-07-01 Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO			5.46	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.72	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			2.18	mg/Kg	1	2.00	109	70 - 130

Report Date: July 3, 2013
112MC05529

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Sample: 333197 - CS-1 (T-1) West Wall

Laboratory: Midland

Analysis: BTEX

QC Batch: 102748

Prep Batch: 87043

Analytical Method: S 8021B

Date Analyzed: 2013-07-01

Sample Preparation: 2013-07-01

Prep Method: S 5035

Analyzed By: KC

Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.00	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.96	mg/Kg	1	2.00	98	70 - 130

Sample: 333197 - CS-1 (T-1) West Wall

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 102687

Prep Batch: 86906

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-06-28

Sample Preparation: 2013-06-25

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			476	mg/Kg	5	4.00

Sample: 333197 - CS-1 (T-1) West Wall

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 102788

Prep Batch: 87074

Analytical Method: S 8015 D

Date Analyzed: 2013-07-02

Sample Preparation: 2013-07-01

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			97.3	mg/Kg	1	100	97	55.1 - 135.7

Report Date: July 3, 2013
112MC05529

Work Order: 13062538
Cimarex/Amoco Fed. #3

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Sample: 333197 - CS-1 (T-1) West Wall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 102744
Prep Batch: 87040

Analytical Method: S 8015 D
Date Analyzed: 2013-07-01
Sample Preparation: 2013-07-01

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.60	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.79	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			2.30	mg/Kg	1	2.00	115	70 - 130

Sample: 333198 - CS-1 (T-1) Bottom Hole 3'

Laboratory: Midland
Analysis: BTEX
QC Batch: 102748
Prep Batch: 87043

Analytical Method: S 8021B
Date Analyzed: 2013-07-01
Sample Preparation: 2013-07-01

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	1	2.00	94	70 - 130

Sample: 333198 - CS-1 (T-1) Bottom Hole 3'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 102687
Prep Batch: 86906

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-06-28
Sample Preparation: 2013-06-25

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Report Date: July 3, 2013
112MC05529

Work Order: 13062538
Cimarex/Amoco Fed. #3

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1190	mg/Kg	5	4.00

Sample: 333198 - CS-1 (T-1) Bottom Hole 3'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 102788 Date Analyzed: 2013-07-02 Analyzed By: CW
Prep Batch: 87074 Sample Preparation: 2013-07-01 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			96.5	mg/Kg	1	100	96	55.1 - 135.7

Sample: 333198 - CS-1 (T-1) Bottom Hole 3'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 102744 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87040 Sample Preparation: 2013-07-01 Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO			5.49	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.75	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			2.25	mg/Kg	1	2.00	112	70 - 130

Sample: 333199 - CS-2 (T-2) North Wall

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 102748 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87043 Sample Preparation: 2013-07-01 Prepared By: KC

Report Date: July 3, 2013
112MC05529

Work Order: 13062538
Cimarex/Amoco Fed. #3

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.98	mg/Kg	1	2.00	99	70 - 130
4-Bromofluorobenzene (4-BFB)			1.94	mg/Kg	1	2.00	97	70 - 130

Sample: 333199 - CS-2 (T-2) North Wall

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 102687 Date Analyzed: 2013-06-28 Analyzed By: AR
Prep Batch: 86906 Sample Preparation: 2013-06-25 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2550	mg/Kg	10	4.00

Sample: 333199 - CS-2 (T-2) North Wall

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 102788 Date Analyzed: 2013-07-02 Analyzed By: CW
Prep Batch: 87074 Sample Preparation: 2013-07-01 Prepared By: CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	311	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			122	mg/Kg	1	100	122	55.1 - 135.7

Sample: 333199 - CS-2 (T-2) North Wall

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 102744 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87040 Sample Preparation: 2013-07-01 Prepared By: KC

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.48	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.79	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			2.22	mg/Kg	1	2.00	111	70 - 130

Sample: 333200 - CS-2 (T-2) South Wall

Laboratory: Midland

Analysis: BTEX

QC Batch: 102748

Prep Batch: 87043

Analytical Method: S 8021B

Date Analyzed: 2013-07-01

Sample Preparation: 2013-07-01

Prep Method: S 5035

Analyzed By: KC

Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.91	mg/Kg	1	2.00	96	70 - 130

Sample: 333200 - CS-2 (T-2) South Wall

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 102687

Prep Batch: 86906

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-06-28

Sample Preparation: 2013-06-25

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			466	mg/Kg	5	4.00

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Sample: 333200 - CS-2 (T-2) South Wall

Laboratory:	Midland		
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D
QC Batch:	102788	Date Analyzed:	2013-07-02
Prep Batch:	87074	Sample Preparation:	2013-07-01
		Prep Method:	N/A
		Analyzed By:	CW
		Prepared By:	CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			56.5	mg/Kg	1	100	56	55.1 - 135.7

Sample: 333200 - CS-2 (T-2) South Wall

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	102744	Date Analyzed:	2013-07-01
Prep Batch:	87040	Sample Preparation:	2013-07-01
		Prep Method:	S 5035
		Analyzed By:	KC
		Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		i	5.53	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.73	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			2.29	mg/Kg	1	2.00	114	70 - 130

Sample: 333201 - CS-2 (T-2) East Wall

Laboratory:	Midland		
Analysis:	BTEX	Analytical Method:	S 8021B
QC Batch:	102748	Date Analyzed:	2013-07-01
Prep Batch:	87043	Sample Preparation:	2013-07-01
		Prep Method:	S 5035
		Analyzed By:	KC
		Prepared By:	KC

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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Xylene	u	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.88	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	70 - 130

Sample: 333201 - CS-2 (T-2) East Wall

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 102687 Date Analyzed: 2013-06-28 Analyzed By: AR
Prep Batch: 86906 Sample Preparation: 2013-06-25 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3070	mg/Kg	10	4.00

Sample: 333201 - CS-2 (T-2) East Wall

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 102788 Date Analyzed: 2013-07-02 Analyzed By: CW
Prep Batch: 87074 Sample Preparation: 2013-07-01 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			86.5	mg/Kg	1	100	86	55.1 - 135.7

Sample: 333201 - CS-2 (T-2) East Wall

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 102744 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87040 Sample Preparation: 2013-07-01 Prepared By: KC

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.28	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.70	mg/Kg	1	2.00	85	70 - 130
4-Bromofluorobenzene (4-BFB)			2.16	mg/Kg	1	2.00	108	70 - 130

Sample: 333202 - CS-2 (T-2) Bottom Hole 3'

Laboratory: Midland

Analysis: BTEX

QC Batch: 102748

Prep Batch: 87043

Analytical Method: S 8021B

Date Analyzed: 2013-07-01

Sample Preparation: 2013-07-01

Prep Method: S 5035

Analyzed By: KC

Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.88	mg/Kg	1	2.00	94	70 - 130

Sample: 333202 - CS-2 (T-2) Bottom Hole 3'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 102687

Prep Batch: 86906

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-06-28

Sample Preparation: 2013-06-25

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			547	mg/Kg	5	4.00

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Sample: 333202 - CS-2 (T-2) Bottom Hole 3'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 102788 Date Analyzed: 2013-07-02 Analyzed By: CW
Prep Batch: 87074 Sample Preparation: 2013-07-01 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			83.2	mg/Kg	1	100	83	55.1 - 135.7

Sample: 333202 - CS-2 (T-2) Bottom Hole 3'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 102744 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87040 Sample Preparation: 2013-07-01 Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.23	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.71	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			2.12	mg/Kg	1	2.00	106	70 - 130

Sample: 333203 - CS-3 (T-3) North Wall

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 102748 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87043 Sample Preparation: 2013-07-01 Prepared By: KC

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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Xylene	u	i	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.92	mg/Kg	1	2.00	96	70 - 130

Sample: 333203 - CS-3 (T-3) North Wall

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 102687 Date Analyzed: 2013-06-28 Analyzed By: AR
Prep Batch: 86906 Sample Preparation: 2013-06-25 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			919	mg/Kg	5	4.00

Sample: 333203 - CS-3 (T-3) North Wall

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 102788 Date Analyzed: 2013-07-02 Analyzed By: CW
Prep Batch: 87074 Sample Preparation: 2013-07-01 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			85.1	mg/Kg	1	100	85	55.1 - 135.7

Sample: 333203 - CS-3 (T-3) North Wall

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 102744 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87040 Sample Preparation: 2013-07-01 Prepared By: KC

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.38	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.77	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			2.17	mg/Kg	1	2.00	108	70 - 130

Sample: 333204 - CS-3 (T-3) South Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 102748
Prep Batch: 87043

Analytical Method: S 8021B
Date Analyzed: 2013-07-01
Sample Preparation: 2013-07-01

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	1	2.00	94	70 - 130

Sample: 333204 - CS-3 (T-3) South Wall

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 102687
Prep Batch: 86906

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-06-28
Sample Preparation: 2013-06-25

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			838	mg/Kg	5	4.00

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Sample: 333204 - CS-3 (T-3) South Wall

Laboratory:	Midland		
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D
QC Batch:	102788	Date Analyzed:	2013-07-02
Prep Batch:	87074	Sample Preparation:	2013-07-01
		Prep Method:	N/A
		Analyzed By:	CW
		Prepared By:	CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			76.0	mg/Kg	1	100	76	55.1 - 135.7

Sample: 333204 - CS-3 (T-3) South Wall

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	102744	Date Analyzed:	2013-07-01
Prep Batch:	87040	Sample Preparation:	2013-07-01
		Prep Method:	S 5035
		Analyzed By:	KC
		Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.25	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.72	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			2.12	mg/Kg	1	2.00	106	70 - 130

Sample: 333205 - CS-3 (T-3) West Wall

Laboratory:	Midland		
Analysis:	BTEX	Analytical Method:	S 8021B
QC Batch:	102748	Date Analyzed:	2013-07-01
Prep Batch:	87043	Sample Preparation:	2013-07-01
		Prep Method:	S 5035
		Analyzed By:	KC
		Prepared By:	KC

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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Xylene	"	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.94	mg/Kg	1	2.00	97	70 - 130

Sample: 333205 - CS-3 (T-3) West Wall

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 102688 Date Analyzed: 2013-06-28 Analyzed By: AR
Prep Batch: 86906 Sample Preparation: 2013-06-25 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			201	mg/Kg	5	4.00

Sample: 333205 - CS-3 (T-3) West Wall

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 102788 Date Analyzed: 2013-07-02 Analyzed By: CW
Prep Batch: 87074 Sample Preparation: 2013-07-01 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			76.4	mg/Kg	1	100	76	55.1 - 135.7

Sample: 333205 - CS-3 (T-3) West Wall

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 102744 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87040 Sample Preparation: 2013-07-01 Prepared By: KC

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.57	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.72	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			2.18	mg/Kg	1	2.00	109	70 - 130

Sample: 333206 - CS-3 (T-3) Bottom Hole 3'

Laboratory: Midland

Analysis: BTEX

QC Batch: 102748

Prep Batch: 87043

Analytical Method: S 8021B

Date Analyzed: 2013-07-01

Sample Preparation: 2013-07-01

Prep Method: S 5035

Analyzed By: KC

Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	70 - 130

Sample: 333206 - CS-3 (T-3) Bottom Hole 3'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 102688

Prep Batch: 86906

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-06-28

Sample Preparation: 2013-06-25

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			550	mg/Kg	5	4.00

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Sample: 333206 - CS-3 (T-3) Bottom Hole 3'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 102788 Date Analyzed: 2013-07-02 Analyzed By: CW
Prep Batch: 87074 Sample Preparation: 2013-07-01 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			72.4	mg/Kg	1	100	72	55.1 - 135.7

Sample: 333206 - CS-3 (T-3) Bottom Hole 3'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 102744 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87040 Sample Preparation: 2013-07-01 Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.37	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.75	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			2.18	mg/Kg	1	2.00	109	70 - 130

Sample: 333207 - CS-4 (T-4) North Wall

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 102748 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87043 Sample Preparation: 2013-07-01 Prepared By: KC

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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Xylene	u	i	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	1	2.00	94	70 - 130

Sample: 333207 - CS-4 (T-4) North Wall

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 102688 Date Analyzed: 2013-06-28 Analyzed By: AR
Prep Batch: 86906 Sample Preparation: 2013-06-25 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			775	mg/Kg	5	4.00

Sample: 333207 - CS-4 (T-4) North Wall

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 102788 Date Analyzed: 2013-07-02 Analyzed By: CW
Prep Batch: 87074 Sample Preparation: 2013-07-01 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			98.6	mg/Kg	1	100	99	55.1 - 135.7

Sample: 333207 - CS-4 (T-4) North Wall

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 102744 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87040 Sample Preparation: 2013-07-01 Prepared By: KC

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.46	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.76	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			2.23	mg/Kg	1	2.00	112	70 - 130

Sample: 333208 - CS-4 (T-4) South Wall

Laboratory: Midland

Analysis: BTEX

QC Batch: 102748

Prep Batch: 87043

Analytical Method: S 8021B

Date Analyzed: 2013-07-01

Sample Preparation: 2013-07-01

Prep Method: S 5035

Analyzed By: KC

Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			1.82	mg/Kg	1	2.00	91	70 - 130

Sample: 333208 - CS-4 (T-4) South Wall

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 102688

Prep Batch: 86906

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-06-28

Sample Preparation: 2013-06-25

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			373	mg/Kg	5	4.00

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Sample: 333208 - CS-4 (T-4) South Wall

Laboratory:	Midland		
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D
QC Batch:	102788	Date Analyzed:	2013-07-02
Prep Batch:	87074	Sample Preparation:	2013-07-01
		Prep Method:	N/A
		Analyzed By:	CW
		Prepared By:	CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			83.8	mg/Kg	1	100	84	55.1 - 135.7

Sample: 333208 - CS-4 (T-4) South Wall

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	102744	Date Analyzed:	2013-07-01
Prep Batch:	87040	Sample Preparation:	2013-07-01
		Prep Method:	S 5035
		Analyzed By:	KC
		Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.24	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.74	mg/Kg	1	2.00	87	70 - 130
4-Bromofluorobenzene (4-BFB)			2.11	mg/Kg	1	2.00	106	70 - 130

Sample: 333209 - CS-4 (T-4) East Wall

Laboratory:	Midland		
Analysis:	BTEX	Analytical Method:	S 8021B
QC Batch:	102748	Date Analyzed:	2013-07-01
Prep Batch:	87043	Sample Preparation:	2013-07-01
		Prep Method:	S 5035
		Analyzed By:	KC
		Prepared By:	KC

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

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sample 333209 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Xylene	u	i	<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	70 - 130
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	70 - 130

Sample: 333209 - CS-4 (T-4) East Wall

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 102688 Date Analyzed: 2013-06-28 Analyzed By: AR
Prep Batch: 86906 Sample Preparation: 2013-06-25 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			210	mg/Kg	5	4.00

Sample: 333209 - CS-4 (T-4) East Wall

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 102788 Date Analyzed: 2013-07-02 Analyzed By: CW
Prep Batch: 87074 Sample Preparation: 2013-07-01 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			102	mg/Kg	1	100	102	55.1 - 135.7

Sample: 333209 - CS-4 (T-4) East Wall

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 102744 Date Analyzed: 2013-07-01 Analyzed By: KC
Prep Batch: 87040 Sample Preparation: 2013-07-01 Prepared By: KC

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5.47	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.79	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			2.21	mg/Kg	1	2.00	110	70 - 130

Sample: 333210 - CS-4 (T-4) Bottom Hole 3'

Laboratory: Midland
Analysis: BTEX
QC Batch: 102748
Prep Batch: 87043

Analytical Method: S 8021B
Date Analyzed: 2013-07-01
Sample Preparation: 2013-07-01

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			1.84	mg/Kg	1	2.00	92	70 - 130

Sample: 333210 - CS-4 (T-4) Bottom Hole 3'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 102688
Prep Batch: 86906

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-06-28
Sample Preparation: 2013-06-25

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			488	mg/Kg	5	4.00

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Sample: 333210 - CS-4 (T-4) Bottom Hole 3'

Laboratory:	Midland		
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D
QC Batch:	102788	Date Analyzed:	2013-07-02
Prep Batch:	87074	Sample Preparation:	2013-07-01
		Prep Method:	N/A
		Analyzed By:	CW
		Prepared By:	CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			103	mg/Kg	1	100	103	55.1 - 135.7

Sample: 333210 - CS-4 (T-4) Bottom Hole 3'

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	102744	Date Analyzed:	2013-07-01
Prep Batch:	87040	Sample Preparation:	2013-07-01
		Prep Method:	S 5035
		Analyzed By:	KC
		Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		i	5.38	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.76	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			2.18	mg/Kg	1	2.00	109	70 - 130

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Method Blanks

Method Blank (1) QC Batch: 102687

QC Batch: 102687
Prep Batch: 86906

Date Analyzed: 2013-06-28
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 102688

QC Batch: 102688
Prep Batch: 86906

Date Analyzed: 2013-06-28
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 102744

QC Batch: 102744
Prep Batch: 87040

Date Analyzed: 2013-07-01
QC Preparation: 2013-07-01

Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
GRO			5.40	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.73	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			2.21	mg/Kg	1	2.00	110	70 - 130

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Method Blank (1) QC Batch: 102748

QC Batch: 102748
Prep Batch: 87043

Date Analyzed: 2013-07-01
QC Preparation: 2013-07-01

Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00810	mg/Kg	0.02
Toluene		1	<0.00750	mg/Kg	0.02
Ethylbenzene		1	<0.00730	mg/Kg	0.02
Xylene		1	<0.00700	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			1.91	mg/Kg	1	2.00	96	70 - 130

Method Blank (1) QC Batch: 102788

QC Batch: 102788
Prep Batch: 87074

Date Analyzed: 2013-07-02
QC Preparation: 2013-07-01

Analyzed By: CW
Prepared By: CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<10.2	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			98.1	mg/Kg	1	100	98	55.1 - 135.7

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 102687
Prep Batch: 86906

Date Analyzed: 2013-06-28
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2720	mg/Kg	1	2500	<3.85	109	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2590	mg/Kg	1	2500	<3.85	104	85 - 115	5	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: 102688
Prep Batch: 86906

Date Analyzed: 2013-06-28
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2790	mg/Kg	1	2500	<3.85	112	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2650	mg/Kg	1	2500	<3.85	106	85 - 115	5	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: 102744
Prep Batch: 87040

Date Analyzed: 2013-07-01
QC Preparation: 2013-07-01

Analyzed By: KC
Prepared By: KC

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO			20.6	mg/Kg	1	20.0	<2.32	103	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO			21.3	mg/Kg	1	20.0	<2.32	106	70 - 130	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.71	1.61	mg/Kg	1	2.00	86	80	70 - 130
4-Bromofluorobenzene (4-BFB)	2.20	2.32	mg/Kg	1	2.00	110	116	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 102748
Prep Batch: 87043

Date Analyzed: 2013-07-01
QC Preparation: 2013-07-01

Analyzed By: KC
Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene			1.94	mg/Kg	1	2.00	<0.00810	97	70 - 130
Toluene			1.92	mg/Kg	1	2.00	<0.00750	96	70 - 130
Ethylbenzene			2.07	mg/Kg	1	2.00	<0.00730	104	70 - 130
Xylene			6.13	mg/Kg	1	6.00	<0.00700	102	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene			2.00	mg/Kg	1	2.00	<0.00810	100	70 - 130	3	20
Toluene			1.99	mg/Kg	1	2.00	<0.00750	100	70 - 130	4	20
Ethylbenzene			2.12	mg/Kg	1	2.00	<0.00730	106	70 - 130	2	20
Xylene			6.26	mg/Kg	1	6.00	<0.00700	104	70 - 130	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.90	1.92	mg/Kg	1	2.00	95	96	70 - 130
4-Bromofluorobenzene (4-BFB)	1.99	1.84	mg/Kg	1	2.00	100	92	70 - 130

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Laboratory Control Spike (LCS-1)

QC Batch: 102788
Prep Batch: 87074

Date Analyzed: 2013-07-02
QC Preparation: 2013-07-01

Analyzed By: CW
Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	243	mg/Kg	1	250	<10.2	97	66.9 - 119.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	235	mg/Kg	1	250	<10.2	94	66.9 - 119.9	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	123	122	mg/Kg	1	100	123	122	76.8 - 140.2

Matrix Spike (MS-1) Spiked Sample: 333204

QC Batch: 102687
Prep Batch: 86906

Date Analyzed: 2013-06-28
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3470	mg/Kg	5	2500	838	105	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			3360	mg/Kg	5	2500	838	101	78.9 - 121	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: 333217

QC Batch: 102688
Prep Batch: 86906

Date Analyzed: 2013-06-28
QC Preparation: 2013-06-25

Analyzed By: AR
Prepared By: AR

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Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2710	mg/Kg	5	2500	335	95	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2870	mg/Kg	5	2500	335	101	78.9 - 121	6	20

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

Matrix Spike (MS-1) Spiked Sample: 333195

QC Batch: 102744
Prep Batch: 87040

Date Analyzed: 2013-07-01
QC Preparation: 2013-07-01

Analyzed By: KC
Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO			16.1	mg/Kg	1	20.0	<2.32	80	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO			17.9	mg/Kg	1	20.0	<2.32	90	70 - 130	11	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.70	1.78	mg/Kg	1	2	85	89	70 - 130
4-Bromofluorobenzene (4-BFB)	2.26	2.32	mg/Kg	1	2	113	116	70 - 130

Matrix Spike (MS-1) Spiked Sample: 333195

QC Batch: 102748
Prep Batch: 87043

Date Analyzed: 2013-07-01
QC Preparation: 2013-07-01

Analyzed By: KC
Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene			1.95	mg/Kg	1	2.00	<0.00810	98	70 - 130
Toluene			1.94	mg/Kg	1	2.00	<0.00750	97	70 - 130
Ethylbenzene			2.08	mg/Kg	1	2.00	<0.00730	104	70 - 130
Xylene			6.10	mg/Kg	1	6.00	<0.00700	102	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.95	mg/Kg	1	2.00	<0.00810	98	70 - 130	0	20
Toluene		1	1.94	mg/Kg	1	2.00	<0.00750	97	70 - 130	0	20
Ethylbenzene		1	2.09	mg/Kg	1	2.00	<0.00730	104	70 - 130	0	20
Xylene		1	6.17	mg/Kg	1	6.00	<0.00700	103	70 - 130	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.98	1.87	mg/Kg	1	2	99	94	70 - 130
4-Bromofluorobenzene (4-BFB)	1.98	1.86	mg/Kg	1	2	99	93	70 - 130

Matrix Spike (MS-1) Spiked Sample: 333195

QC Batch: 102788
Prep Batch: 87074

Date Analyzed: 2013-07-02
QC Preparation: 2013-07-01

Analyzed By: CW
Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	101	mg/Kg	1	250	10.6	36	36.1 - 147.2

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	119	mg/Kg	1	250	10.6	43	36.1 - 147.2	16	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	80.4	81.2	mg/Kg	1	100	80	81	78.3 - 131.6

Calibration Standards

Standard (CCV-1)

QC Batch: 102687

Date Analyzed: 2013-06-28

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.6	100	85 - 115	2013-06-28

Standard (CCV-2)

QC Batch: 102687

Date Analyzed: 2013-06-28

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-06-28

Standard (CCV-1)

QC Batch: 102688

Date Analyzed: 2013-06-28

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2013-06-28

Standard (CCV-2)

QC Batch: 102688

Date Analyzed: 2013-06-28

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.1	99	85 - 115	2013-06-28

Report Date: July 3, 2013
112MC05529

Work Order: 13062538
Cimarex/Amoco Fed. #3

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Eddy Co., NM

Standard (CCV-1)

QC Batch: 102744

Date Analyzed: 2013-07-01

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.11	111	80 - 120	2013-07-01

Standard (CCV-2)

QC Batch: 102744

Date Analyzed: 2013-07-01

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.13	113	80 - 120	2013-07-01

Standard (CCV-3)

QC Batch: 102744

Date Analyzed: 2013-07-01

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.16	116	80 - 120	2013-07-01

Standard (CCV-1)

QC Batch: 102748

Date Analyzed: 2013-07-01

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.103	103	80 - 120	2013-07-01
Toluene		1	mg/kg	0.100	0.101	101	80 - 120	2013-07-01
Ethylbenzene		1	mg/kg	0.100	0.102	102	80 - 120	2013-07-01
Xylene		1	mg/kg	0.300	0.301	100	80 - 120	2013-07-01

Report Date: July 3, 2013
112MC05529

Work Order: 13062538
Cimarex/Amoco Fed. #3

Page Number: 39 of 42
Eddy Co., NM

Standard (CCV-2)

QC Batch: 102748

Date Analyzed: 2013-07-01

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.104	104	80 - 120	2013-07-01
Toluene		1	mg/kg	0.100	0.100	100	80 - 120	2013-07-01
Ethylbenzene		1	mg/kg	0.100	0.101	101	80 - 120	2013-07-01
Xylene		1	mg/kg	0.300	0.296	99	80 - 120	2013-07-01

Standard (CCV-3)

QC Batch: 102748

Date Analyzed: 2013-07-01

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0970	97	80 - 120	2013-07-01
Toluene		1	mg/kg	0.100	0.0951	95	80 - 120	2013-07-01
Ethylbenzene		1	mg/kg	0.100	0.0940	94	80 - 120	2013-07-01
Xylene		1	mg/kg	0.300	0.275	92	80 - 120	2013-07-01

Standard (CCV-1)

QC Batch: 102788

Date Analyzed: 2013-07-02

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	279	112	80 - 120	2013-07-02

Standard (CCV-2)

QC Batch: 102788

Date Analyzed: 2013-07-02

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	290	116	80 - 120	2013-07-02

Report Date: July 3, 2013
112MC05529

Work Order: 13062538
Cimarex/Amoco Fed. #3

Page Number: 40 of 42
Eddy Co., NM

Standard (CCV-3)

QC Batch: 102788

Date Analyzed: 2013-07-02

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO			mg/Kg	250	284	114	80 - 120	2013-07-02

Standard (CCV-4)

QC Batch: 102788

Date Analyzed: 2013-07-02

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO			mg/Kg	250	281	112	80 - 120	2013-07-02

Appendix

Report Definitions

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

Laboratory Certifications

	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-12-4	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 than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

Report Date: July 3, 2013
112MC05529

Work Order: 13062538
Cimarex/Amoco Fed. #3

Page Number: 42 of 42
Eddy Co., NM

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

13062538

Analysis Request of Chain of Custody Record

**TETRA TECH**

1910 N. Big Spring St.

Midland, Texas 79705

(432) 682-4559 • Fax (432) 682-3946

PAGE: 1 OF: 2

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

CIMAREX

SITE MANAGER:

IKE TAVAREZ

PROJECT NO.:

11205529

PROJECT NAME:

CIMAREX - Amoco Fed #3

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMPR

GRAB

Edley Co, NM

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

BTX 80215

CPL 8015 MOD

PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/624

GC/MS Semi. Vol. 8270/625

PCBs 8080/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

3395

6/20

S

X

CS-1 (T-1) North wall

1

X

X

X

X

196

197

198

199

200

201

202

Summary Report

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

Report Date: August 22, 2013

Work Order: 13081222

Project Location: Eddy Co., NM
Project Name: Cimarex/Amoco Fed. #3
Project Number: 112MC05529

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
338321	CS-1 North Wall	soil	2013-07-31	00:00	2013-08-12
338322	CS-1 South Wall	soil	2013-07-31	00:00	2013-08-12
338323	CS-1 West Wall	soil	2013-07-31	00:00	2013-08-12
338324	CS-1 Bottom Hole 3'	soil	2013-07-31	00:00	2013-08-12
338325	CS-2 North Wall	soil	2013-07-31	00:00	2013-08-12
338326	CS-2 South Wall	soil	2013-07-31	00:00	2013-08-12
338327	CS-2 Bottom Hole 4'	soil	2013-07-31	00:00	2013-08-12
338328	CS-3 North Wall	soil	2013-07-31	00:00	2013-08-12
338329	CS-3 South Wall	soil	2013-07-31	00:00	2013-08-12
338330	CS-3 Bottom Hole 2'	soil	2013-07-31	00:00	2013-08-12
338331	CS-4 North Wall	soil	2013-07-31	00:00	2013-08-12
338332	CS-4 South Wall	soil	2013-07-31	00:00	2013-08-12
338333	CS-4 Bottom Hole 4'	soil	2013-07-31	00:00	2013-08-12
338334	T-1 (CS-4)5' 1' BEB	soil	2013-07-31	00:00	2013-08-12
338335	T-1 (CS-4)6' 2' BEB	soil	2013-07-31	00:00	2013-08-12
338336	T-1 (CS-4)8' 4' BEB	soil	2013-07-31	00:00	2013-08-12
338337	T-1 (CS-4)10' 6' BEB	soil	2013-07-31	00:00	2013-08-12
338338	T-1 (CS-4)12' 8' BEB	soil	2013-07-31	00:00	2013-08-12
338339	T-1 (CS-4)14' 10' BEB	soil	2013-07-31	00:00	2013-08-12
338340	CS-5 North Wall	soil	2013-07-31	00:00	2013-08-12
338341	CS-5 South Wall	soil	2013-07-31	00:00	2013-08-12
338342	CS-5 East Wall	soil	2013-07-31	00:00	2013-08-12
338343	CS-5 Bottom Hole 2'	soil	2013-07-31	00:00	2013-08-12

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
338321 - CS-1 North Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00

continued ...

... continued

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
338322 - CS-1 South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	7.80
338323 - CS-1 West Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	6.88
338324 - CS-1 Bottom Hole 3'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	6.75
338325 - CS-2 North Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	4.19
338326 - CS-2 South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
338327 - CS-2 Bottom Hole 4'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	4.36
338328 - CS-3 North Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	4.14
338329 - CS-3 South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	4.26
338330 - CS-3 Bottom Hole 2'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	4.24
338331 - CS-4 North Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	4.26
338332 - CS-4 South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	4.19
338333 - CS-4 Bottom Hole 4'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	4.00
338340 - CS-5 North Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
338341 - CS-5 South Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	4.13
338342 - CS-5 East Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
338343 - CS-5 Bottom Hole 2'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	4.03

Sample: 338321 - CS-1 North Wall

Param	Flag	Result	Units	RL
Chloride		136	mg/Kg	4

Sample: 338322 - CS-1 South Wall

Param	Flag	Result	Units	RL
Chloride		538	mg/Kg	4

Sample: 338323 - CS-1 West Wall

Param	Flag	Result	Units	RL
Chloride		161	mg/Kg	4

Sample: 338324 - CS-1 Bottom Hole 3'

Param	Flag	Result	Units	RL
Chloride		141	mg/Kg	4

Sample: 338325 - CS-2 North Wall

Param	Flag	Result	Units	RL
Chloride		80.4	mg/Kg	4

Sample: 338326 - CS-2 South Wall

Param	Flag	Result	Units	RL
Chloride		266	mg/Kg	4

Sample: 338327 - CS-2 Bottom Hole 4'

Param	Flag	Result	Units	RL
Chloride		171	mg/Kg	4

Sample: 338328 - CS-3 North Wall

Param	Flag	Result	Units	RL
Chloride		1720	mg/Kg	4

Sample: 338329 - CS-3 South Wall

Param	Flag	Result	Units	RL
Chloride		463	mg/Kg	4

Sample: 338330 - CS-3 Bottom Hole 2'

Param	Flag	Result	Units	RL
Chloride		236	mg/Kg	4

Sample: 338331 - CS-4 North Wall

Param	Flag	Result	Units	RL
Chloride		3130	mg/Kg	4

Sample: 338332 - CS-4 South Wall

Param	Flag	Result	Units	RL
Chloride		722	mg/Kg	4

Sample: 338333 - CS-4 Bottom Hole 4'

Param	Flag	Result	Units	RL
Chloride		494	mg/Kg	4

Sample: 338334 - T-1 (CS-4)5' 1' BEB

Param	Flag	Result	Units	RL
Chloride		440	mg/Kg	4

Sample: 338335 - T-1 (CS-4)6' 2' BEB

Param	Flag	Result	Units	RL
Chloride		425	mg/Kg	4

Sample: 338336 - T-1 (CS-4)8' 4' BEB

Param	Flag	Result	Units	RL
Chloride		129	mg/Kg	4

Sample: 338337 - T-1 (CS-4)10' 6' BEB

Param	Flag	Result	Units	RL
Chloride		1120	mg/Kg	4

Sample: 338338 - T-1 (CS-4)12' 8' BEB

Param	Flag	Result	Units	RL
Chloride		311	mg/Kg	4

Sample: 338339 - T-1 (CS-4)14' 10' BEB

Param	Flag	Result	Units	RL
Chloride		183	mg/Kg	4

Sample: 338340 - CS-5 North Wall

Param	Flag	Result	Units	RL
Chloride		529	mg/Kg	4

Sample: 338341 - CS-5 South Wall

Param	Flag	Result	Units	RL
Chloride		417	mg/Kg	4

Sample: 338342 - CS-5 East Wall

Param	Flag	Result	Units	RL
Chloride		204	mg/Kg	4

Sample: 338343 - CS-5 Bottom Hole 2'

Param	Flag	Result	Units	RL
Chloride		233	mg/Kg	4



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(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: August 22, 2013

Work Order: 13081222

Project Location: Eddy Co., NM
Project Name: Cimarex/Amoco Fed. #3
Project Number: 112MC05529

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

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
338321	CS-1 North Wall	soil	2013-07-31	00:00	2013-08-12
338322	CS-1 South Wall	soil	2013-07-31	00:00	2013-08-12
338323	CS-1 West Wall	soil	2013-07-31	00:00	2013-08-12
338324	CS-1 Bottom Hole 3'	soil	2013-07-31	00:00	2013-08-12
338325	CS-2 North Wall	soil	2013-07-31	00:00	2013-08-12
338326	CS-2 South Wall	soil	2013-07-31	00:00	2013-08-12
338327	CS-2 Bottom Hole 4'	soil	2013-07-31	00:00	2013-08-12
338328	CS-3 North Wall	soil	2013-07-31	00:00	2013-08-12
338329	CS-3 South Wall	soil	2013-07-31	00:00	2013-08-12
338330	CS-3 Bottom Hole 2'	soil	2013-07-31	00:00	2013-08-12
338331	CS-4 North Wall	soil	2013-07-31	00:00	2013-08-12
338332	CS-4 South Wall	soil	2013-07-31	00:00	2013-08-12
338333	CS-4 Bottom Hole 4'	soil	2013-07-31	00:00	2013-08-12
338334	T-1 (CS-4)5' 1' BEB	soil	2013-07-31	00:00	2013-08-12
338335	T-1 (CS-4)6' 2' BEB	soil	2013-07-31	00:00	2013-08-12
338336	T-1 (CS-4)8' 4' BEB	soil	2013-07-31	00:00	2013-08-12
338337	T-1 (CS-4)10' 6' BEB	soil	2013-07-31	00:00	2013-08-12
338338	T-1 (CS-4)12' 8' BEB	soil	2013-07-31	00:00	2013-08-12

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
338339	T-1 (CS-4)14' 10' BEB	soil	2013-07-31	00:00	2013-08-12
338340	CS-5 North Wall	soil	2013-07-31	00:00	2013-08-12
338341	CS-5 South Wall	soil	2013-07-31	00:00	2013-08-12
338342	CS-5 East Wall	soil	2013-07-31	00:00	2013-08-12
338343	CS-5 Bottom Hole 2'	soil	2013-07-31	00:00	2013-08-12

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 49 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



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

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Sample 338336 (T-1 (CS-4)8' 4' BEB)	25
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Case Narrative

Samples for project Cimarex/Amoco Fed. #3 were received by TraceAnalysis, Inc. on 2013-08-12 and assigned to work order 13081222. Samples for work order 13081222 were received intact at a temperature of 4.6 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	88128	2013-08-13 at 06:00	104010	2013-08-14 at 10:58
Chloride (Titration)	SM 4500-Cl B	88138	2013-08-14 at 13:41	104082	2013-08-15 at 16:10
Chloride (Titration)	SM 4500-Cl B	88138	2013-08-14 at 13:41	104083	2013-08-15 at 16:11
Chloride (Titration)	SM 4500-Cl B	88138	2013-08-14 at 13:41	104084	2013-08-15 at 16:12
TPH DRO - NEW	S 8015 D	88125	2013-08-13 at 14:00	104004	2013-08-14 at 09:33
TPH GRO	S 8015 D	88170	2013-08-13 at 06:00	104057	2013-08-14 at 08:00
TPH GRO	S 8015 D	88187	2013-08-14 at 07:30	104077	2013-08-14 at 14:29

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 13081222 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.

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Analytical Report

Sample: 338321 - CS-1 North Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			1.96	mg/Kg	1	2.00	98	70 - 130

Sample: 338321 - CS-1 North Wall

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 104082
Prep Batch: 88138

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-08-15
Sample Preparation: 2013-08-14

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			136	mg/Kg	5	4.00

Sample: 338321 - CS-1 North Wall

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 104004
Prep Batch: 88125

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: N/A
Analyzed By: CW
Prepared By: CW

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

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			104	mg/Kg	1	100	104	76.3 - 192.6

Sample: 338321 - CS-1 North Wall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 104077
Prep Batch: 88187

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-14

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			2.12	mg/Kg	1	2.00	106	70 - 130

Sample: 338322 - CS-1 South Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

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

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Sample: 338322 - CS-1 South Wall

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-08-15	Analyzed By:	AR
QC Batch:	104082	Sample Preparation:	2013-08-14	Prepared By:	AR
Prep Batch:	88138				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			538	mg/Kg	5	4.00

Sample: 338322 - CS-1 South Wall

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2013-08-14	Analyzed By:	CW
QC Batch:	104004	Sample Preparation:	2013-08-13	Prepared By:	CW
Prep Batch:	88125				

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			111	mg/Kg	1	100	111	76.3 - 192.6

Sample: 338322 - CS-1 South Wall

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2013-08-14	Analyzed By:	KC
QC Batch:	104057	Sample Preparation:	2013-08-13	Prepared By:	KC
Prep Batch:	88170				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	1	7.80	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	70 - 130
4-Bromofluorobenzene (4-BFB)			1.80	mg/Kg	1	2.00	90	70 - 130

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Sample: 338323 - CS-1 West Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.07	mg/Kg	1	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	70 - 130

Sample: 338323 - CS-1 West Wall

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 104082
Prep Batch: 88138

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-08-15
Sample Preparation: 2013-08-14

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			161	mg/Kg	5	4.00

Sample: 338323 - CS-1 West Wall

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 104004
Prep Batch: 88125

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: N/A
Analyzed By: CW
Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			89.6	mg/Kg	1	100	90	76.3 - 192.6

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Sample: 338323 - CS-1 West Wall

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	104057	Date Analyzed:	2013-08-14
Prep Batch:	88170	Sample Preparation:	2013-08-13
		Prep Method:	S 5035
		Analyzed By:	KC
		Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	1	6.88	mg/Kg	1	4.00

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

Sample: 338324 - CS-1 Bottom Hole 3'

Laboratory:	Midland		
Analysis:	BTEX	Analytical Method:	S 8021B
QC Batch:	104010	Date Analyzed:	2013-08-14
Prep Batch:	88128	Sample Preparation:	2013-08-13
		Prep Method:	S 5035
		Analyzed By:	KC
		Prepared By:	KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)			1.93	mg/Kg	1	2.00	96	70 - 130

Sample: 338324 - CS-1 Bottom Hole 3'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	104082	Date Analyzed:	2013-08-15
Prep Batch:	88138	Sample Preparation:	2013-08-14
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			141	mg/Kg	5	4.00

Sample: 338324 - CS-1 Bottom Hole 3'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 104004 Date Analyzed: 2013-08-14 Analyzed By: CW
Prep Batch: 88125 Sample Preparation: 2013-08-13 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			106	mg/Kg	1	100	106	76.3 - 192.6

Sample: 338324 - CS-1 Bottom Hole 3'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 104057 Date Analyzed: 2013-08-14 Analyzed By: KC
Prep Batch: 88170 Sample Preparation: 2013-08-13 Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	1	6.75	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.95	mg/Kg	1	2.00	98	70 - 130

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Sample: 338325 - CS-2 North Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.00	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.98	mg/Kg	1	2.00	99	70 - 130

Sample: 338325 - CS-2 North Wall

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 104082
Prep Batch: 88138

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-08-15
Sample Preparation: 2013-08-14

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			80.4	mg/Kg	5	4.00

Sample: 338325 - CS-2 North Wall

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 104004
Prep Batch: 88125

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: N/A
Analyzed By: CW
Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			111	mg/Kg	1	100	111	76.3 - 192.6

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Sample: 338325 - CS-2 North Wall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 104057
Prep Batch: 88170

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	1	4.19	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			2.32	mg/Kg	1	2.00	116	70 - 130

Sample: 338326 - CS-2 South Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.94	mg/Kg	1	2.00	97	70 - 130

Sample: 338326 - CS-2 South Wall

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 104082
Prep Batch: 88138

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-08-15
Sample Preparation: 2013-08-14

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			266	mg/Kg	5	4.00

Sample: 338326 - CS-2 South Wall

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 104004 Date Analyzed: 2013-08-14 Analyzed By: CW
Prep Batch: 88125 Sample Preparation: 2013-08-13 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			102	mg/Kg	1	100	102	76.3 - 192.6

Sample: 338326 - CS-2 South Wall

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 104057 Date Analyzed: 2013-08-14 Analyzed By: KC
Prep Batch: 88170 Sample Preparation: 2013-08-13 Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	70 - 130
4-Bromofluorobenzene (4-BFB)			2.30	mg/Kg	1	2.00	115	70 - 130

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Sample: 338327 - CS-2 Bottom Hole 4'

Laboratory: Midland

Analysis: BTEX

QC Batch: 104010

Prep Batch: 88128

Analytical Method: S 8021B

Date Analyzed: 2013-08-14

Sample Preparation: 2013-08-13

Prep Method: S 5035

Analyzed By: KC

Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.09	mg/Kg	1	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB)			2.05	mg/Kg	1	2.00	102	70 - 130

Sample: 338327 - CS-2 Bottom Hole 4'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 104082

Prep Batch: 88138

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-08-15

Sample Preparation: 2013-08-14

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			171	mg/Kg	5	4.00

Sample: 338327 - CS-2 Bottom Hole 4'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 104004

Prep Batch: 88125

Analytical Method: S 8015 D

Date Analyzed: 2013-08-14

Sample Preparation: 2013-08-13

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			107	mg/Kg	1	100	107	76.3 - 192.6

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Sample: 338327 - CS-2 Bottom Hole 4'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 104057
Prep Batch: 88170

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	1	4.36	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			2.42	mg/Kg	1	2.00	121	70 - 130

Sample: 338328 - CS-3 North Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.02	mg/Kg	1	2.00	101	70 - 130
4-Bromofluorobenzene (4-BFB)			2.00	mg/Kg	1	2.00	100	70 - 130

Sample: 338328 - CS-3 North Wall

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 104082
Prep Batch: 88138

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-08-15
Sample Preparation: 2013-08-14

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1720	mg/Kg	5	4.00

Sample: 338328 - CS-3 North Wall

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 104004
Prep Batch: 88125

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: N/A
Analyzed By: CW
Prepared By: CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	36	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			103	mg/Kg	1	100	103	76.3 - 192.6

Sample: 338328 - CS-3 North Wall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 104057
Prep Batch: 88170

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	8	1	4.14	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.24	mg/Kg	1	2.00	112	70 - 130

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Sample: 338329 - CS-3 South Wall

Laboratory: Midland

Analysis: BTEX

QC Batch: 104010

Prep Batch: 88128

Analytical Method: S 8021B

Date Analyzed: 2013-08-14

Sample Preparation: 2013-08-13

Prep Method: S 5035

Analyzed By: KC

Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.01	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			2.09	mg/Kg	1	2.00	104	70 - 130

Sample: 338329 - CS-3 South Wall

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 104082

Prep Batch: 88138

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-08-15

Sample Preparation: 2013-08-14

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			463	mg/Kg	5	4.00

Sample: 338329 - CS-3 South Wall

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 104004

Prep Batch: 88125

Analytical Method: S 8015 D

Date Analyzed: 2013-08-14

Sample Preparation: 2013-08-13

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			103	mg/Kg	1	100	103	76.3 - 192.6

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Sample: 338329 - CS-3 South Wall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 104057
Prep Batch: 88170

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	1	4.26	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.26	mg/Kg	1	2.00	113	70 - 130

Sample: 338330 - CS-3 Bottom Hole 2'

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

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

Sample: 338330 - CS-3 Bottom Hole 2'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 104082
Prep Batch: 88138

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-08-15
Sample Preparation: 2013-08-14

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			236	mg/Kg	5	4.00

Sample: 338330 - CS-3 Bottom Hole 2'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 104004
Prep Batch: 88125

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: N/A
Analyzed By: CW
Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			95.0	mg/Kg	1	100	95	76.3 - 192.6

Sample: 338330 - CS-3 Bottom Hole 2'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 104057
Prep Batch: 88170

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	I	4.24	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			2.37	mg/Kg	1	2.00	118	70 - 130

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Sample: 338331 - CS-4 North Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)			2.03	mg/Kg	1	2.00	102	70 - 130

Sample: 338331 - CS-4 North Wall

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 104083
Prep Batch: 88138

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-08-15
Sample Preparation: 2013-08-14

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3130	mg/Kg	5	4.00

Sample: 338331 - CS-4 North Wall

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 104004
Prep Batch: 88125

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: N/A
Analyzed By: CW
Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			98.6	mg/Kg	1	100	99	76.3 - 192.6

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Sample: 338331 - CS-4 North Wall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 104057
Prep Batch: 88170

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	I	4.26	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			2.34	mg/Kg	1	2.00	117	70 - 130

Sample: 338332 - CS-4 South Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.01	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.86	mg/Kg	1	2.00	93	70 - 130

Sample: 338332 - CS-4 South Wall

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 104083
Prep Batch: 88138

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-08-15
Sample Preparation: 2013-08-14

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			722	mg/Kg	5	4.00

Sample: 338332 - CS-4 South Wall

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 104004 Date Analyzed: 2013-08-14 Analyzed By: CW
Prep Batch: 88125 Sample Preparation: 2013-08-13 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			79.7	mg/Kg	1	100	80	76.3 - 192.6

Sample: 338332 - CS-4 South Wall

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 104057 Date Analyzed: 2013-08-14 Analyzed By: KC
Prep Batch: 88170 Sample Preparation: 2013-08-13 Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	i	4.19	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.98	mg/Kg	1	2.00	99	70 - 130
4-Bromofluorobenzene (4-BFB)			2.13	mg/Kg	1	2.00	106	70 - 130

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Sample: 338333 - CS-4 Bottom Hole 4'

Laboratory: Midland

Analysis: BTEX

QC Batch: 104010

Prep Batch: 88128

Analytical Method: S 8021B

Date Analyzed: 2013-08-14

Sample Preparation: 2013-08-13

Prep Method: S 5035

Analyzed By: KC

Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.84	mg/Kg	1	2.00	92	70 - 130

Sample: 338333 - CS-4 Bottom Hole 4'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 104083

Prep Batch: 88138

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-08-15

Sample Preparation: 2013-08-14

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			494	mg/Kg	5	4.00

Sample: 338333 - CS-4 Bottom Hole 4'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 104004

Prep Batch: 88125

Analytical Method: S 8015 D

Date Analyzed: 2013-08-14

Sample Preparation: 2013-08-13

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			91.3	mg/Kg	1	100	91	76.3 - 192.6

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Sample: 338333 - CS-4 Bottom Hole 4'

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	104057	Date Analyzed:	2013-08-14
Prep Batch:	88170	Sample Preparation:	2013-08-13
		Prep Method:	S 5035
		Analyzed By:	KC
		Prepared By:	KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.88	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			2.13	mg/Kg	1	2.00	106	70 - 130

Sample: 338334 - T-1 (CS-4)5' 1' BEB

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	104083	Date Analyzed:	2013-08-15
Prep Batch:	88138	Sample Preparation:	2013-08-14
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			440	mg/Kg	5	4.00

Sample: 338335 - T-1 (CS-4)6' 2' BEB

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	104083	Date Analyzed:	2013-08-15
Prep Batch:	88138	Sample Preparation:	2013-08-14
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			425	mg/Kg	5	4.00

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Sample: 338336 - T-1 (CS-4)8' 4' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-08-15	Analyzed By:	AR
QC Batch:	104083	Sample Preparation:	2013-08-14	Prepared By:	AR
Prep Batch:	88138				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			129	mg/Kg	5	4.00

Sample: 338337 - T-1 (CS-4)10' 6' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-08-15	Analyzed By:	AR
QC Batch:	104083	Sample Preparation:	2013-08-14	Prepared By:	AR
Prep Batch:	88138				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1120	mg/Kg	10	4.00

Sample: 338338 - T-1 (CS-4)12' 8' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-08-15	Analyzed By:	AR
QC Batch:	104083	Sample Preparation:	2013-08-14	Prepared By:	AR
Prep Batch:	88138				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			311	mg/Kg	5	4.00

Sample: 338339 - T-1 (CS-4)14' 10' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-08-15	Analyzed By:	AR
QC Batch:	104083	Sample Preparation:	2013-08-14	Prepared By:	AR
Prep Batch:	88138				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			183	mg/Kg	5	4.00

Sample: 338340 - CS-5 North Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1	2.00	90	70 - 130

Sample: 338340 - CS-5 North Wall

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 104083
Prep Batch: 88138

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-08-15
Sample Preparation: 2013-08-14

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			529	mg/Kg	5	4.00

Sample: 338340 - CS-5 North Wall

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 104004
Prep Batch: 88125

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: N/A
Analyzed By: CW
Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			101	mg/Kg	1	100	101	76.3 - 192.6

Sample: 338340 - CS-5 North Wall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 104057
Prep Batch: 88170

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.85	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			2.17	mg/Kg	1	2.00	108	70 - 130

Sample: 338341 - CS-5 South Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.92	mg/Kg	1	2.00	96	70 - 130

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Sample: 338341 - CS-5 South Wall

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-08-15	Analyzed By:	AR
QC Batch:	104084	Sample Preparation:	2013-08-14	Prepared By:	AR
Prep Batch:	88138				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			417	mg/Kg	5	4.00

Sample: 338341 - CS-5 South Wall

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2013-08-14	Analyzed By:	CW
QC Batch:	104004	Sample Preparation:	2013-08-13	Prepared By:	CW
Prep Batch:	88125				

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			91.9	mg/Kg	1	100	92	76.3 - 192.6

Sample: 338341 - CS-5 South Wall

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2013-08-14	Analyzed By:	KC
QC Batch:	104057	Sample Preparation:	2013-08-13	Prepared By:	KC
Prep Batch:	88170				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	J	4.13	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.28	mg/Kg	1	2.00	114	70 - 130

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Sample: 338342 - CS-5 East Wall

Laboratory: Midland

Analysis: BTEX

QC Batch: 104010

Prep Batch: 88128

Analytical Method: S 8021B

Date Analyzed: 2013-08-14

Sample Preparation: 2013-08-13

Prep Method: S 5035

Analyzed By: KC

Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.83	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

Sample: 338342 - CS-5 East Wall

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 104084

Prep Batch: 88138

Analytical Method: SM 4500-Cl B

Date Analyzed: 2013-08-15

Sample Preparation: 2013-08-14

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			204	mg/Kg	5	4.00

Sample: 338342 - CS-5 East Wall

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 104004

Prep Batch: 88125

Analytical Method: S 8015 D

Date Analyzed: 2013-08-14

Sample Preparation: 2013-08-13

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			92.9	mg/Kg	1	100	93	76.3 - 192.6

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Sample: 338342 - CS-5 East Wall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 104057
Prep Batch: 88170

Analytical Method: S 8015 D
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.82	mg/Kg	1	2.00	91	70 - 130
4-Bromofluorobenzene (4-BFB)			2.06	mg/Kg	1	2.00	103	70 - 130

Sample: 338343 - CS-5 Bottom Hole 2'

Laboratory: Midland
Analysis: BTEX
QC Batch: 104010
Prep Batch: 88128

Analytical Method: S 8021B
Date Analyzed: 2013-08-14
Sample Preparation: 2013-08-13

Prep Method: S 5035
Analyzed By: KC
Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.98	mg/Kg	1	2.00	99	70 - 130
4-Bromofluorobenzene (4-BFB)			1.84	mg/Kg	1	2.00	92	70 - 130

Sample: 338343 - CS-5 Bottom Hole 2'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 104084
Prep Batch: 88138

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-08-15
Sample Preparation: 2013-08-14

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			233	mg/Kg	5	4.00

Sample: 338343 - CS-5 Bottom Hole 2'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 104004 Date Analyzed: 2013-08-14 Analyzed By: CW
Prep Batch: 88125 Sample Preparation: 2013-08-13 Prepared By: CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			104	mg/Kg	1	100	104	76.3 - 192.6

Sample: 338343 - CS-5 Bottom Hole 2'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 104057 Date Analyzed: 2013-08-14 Analyzed By: KC
Prep Batch: 88170 Sample Preparation: 2013-08-13 Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	i	4.03	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			2.12	mg/Kg	1	2.00	106	70 - 130

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Method Blanks

Method Blank (1) QC Batch: 104004

QC Batch: 104004
Prep Batch: 88125

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-13

Analyzed By: CW
Prepared By: CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	14.3	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			109	mg/Kg	1	100	109	64.1 - 164.4

Method Blank (1) QC Batch: 104010

QC Batch: 104010
Prep Batch: 88128

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-13

Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00810	mg/Kg	0.02
Toluene		1	<0.00750	mg/Kg	0.02
Ethylbenzene		1	<0.00730	mg/Kg	0.02
Xylene		1	<0.00700	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.86	mg/Kg	1	2.00	93	70 - 130

Method Blank (1) QC Batch: 104057

QC Batch: 104057
Prep Batch: 88170

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-13

Analyzed By: KC
Prepared By: KC

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Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	3.87	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.88	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.96	mg/Kg	1	2.00	98	70 - 130

Method Blank (1) QC Batch: 104077

QC Batch: 104077
Prep Batch: 88187

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-14

Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	3.95	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			2.04	mg/Kg	1	2.00	102	70 - 130

Method Blank (1) QC Batch: 104082

QC Batch: 104082
Prep Batch: 88138

Date Analyzed: 2013-08-15
QC Preparation: 2013-08-14

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 104083

QC Batch: 104083
Prep Batch: 88138

Date Analyzed: 2013-08-15
QC Preparation: 2013-08-14

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 104084

QC Batch: 104084
Prep Batch: 88138

Date Analyzed: 2013-08-15
QC Preparation: 2013-08-14

Analyzed By: AR
Prepared By: AR

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

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 104004
Prep Batch: 88125

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-13

Analyzed By: CW
Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	285	mg/Kg	1	250	14.3	108	53.8 - 129

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	265	mg/Kg	1	250	14.3	100	53.8 - 129	7	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	105	106	mg/Kg	1	100	105	106	61.3 - 170.4

Laboratory Control Spike (LCS-1)

QC Batch: 104010
Prep Batch: 88128

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-13

Analyzed By: KC
Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.11	mg/Kg	1	2.00	<0.00810	106	70 - 130
Toluene		1	2.17	mg/Kg	1	2.00	<0.00750	108	70 - 130
Ethylbenzene		1	2.23	mg/Kg	1	2.00	<0.00730	112	70 - 130
Xylene		1	6.63	mg/Kg	1	6.00	<0.00700	110	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.05	mg/Kg	1	2.00	<0.00810	102	70 - 130	3	20
Toluene		1	2.13	mg/Kg	1	2.00	<0.00750	106	70 - 130	2	20
Ethylbenzene		1	2.19	mg/Kg	1	2.00	<0.00730	110	70 - 130	2	20
Xylene		1	6.54	mg/Kg	1	6.00	<0.00700	109	70 - 130	1	20

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

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Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.98	1.90	mg/Kg	1	2.00	99	95	70 - 130
4-Bromofluorobenzene (4-BFB)	1.80	1.81	mg/Kg	1	2.00	90	90	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 104057
Prep Batch: 88170

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-13

Analyzed By: KC
Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.3	mg/Kg	1	20.0	3.87	92	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	19.2	mg/Kg	1	20.0	3.87	96	70 - 130	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.72	1.71	mg/Kg	1	2.00	86	86	70 - 130
4-Bromofluorobenzene (4-BFB)	2.05	2.05	mg/Kg	1	2.00	102	102	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 104077
Prep Batch: 88187

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-14

Analyzed By: KC
Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	20.1	mg/Kg	1	20.0	3.95	100	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	22.2	mg/Kg	1	20.0	3.95	111	70 - 130	10	20

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

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Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.71	1.73	mg/Kg	1	2.00	86	86	70 - 130
4-Bromofluorobenzene (4-BFB)	1.65	1.43	mg/Kg	1	2.00	82	72	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 104082
Prep Batch: 88138

Date Analyzed: 2013-08-15
QC Preparation: 2013-08-14

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2260	mg/Kg	1	2500	<3.85	90	89.7 - 115.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2350	mg/Kg	1	2500	<3.85	94	89.7 - 115.9	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 104083
Prep Batch: 88138

Date Analyzed: 2013-08-15
QC Preparation: 2013-08-14

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2580	mg/Kg	1	2500	<3.85	103	89.7 - 115.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2500	mg/Kg	1	2500	<3.85	100	89.7 - 115.9	3	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: 104084
Prep Batch: 88138

Date Analyzed: 2013-08-15
QC Preparation: 2013-08-14

Analyzed By: AR
Prepared By: AR

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2370	mg/Kg	1	2500	<3.85	95	89.7 - 115.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2480	mg/Kg	1	2500	<3.85	99	89.7 - 115.9	4	20

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

Matrix Spike (MS-1) Spiked Sample: 338321

QC Batch: 104004
Prep Batch: 88125

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-13

Analyzed By: CW
Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO			252	mg/Kg	1	250	<10.2	101	29 - 168.5

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO			285	mg/Kg	1	250	<10.2	114	29 - 168.5	12	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	103	101	mg/Kg	1	100	103	101	59.5 - 168.9

Matrix Spike (MS-1) Spiked Sample: 338331

QC Batch: 104010
Prep Batch: 88128

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-13

Analyzed By: KC
Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene			2.06	mg/Kg	1	2.00	<0.00810	103	70 - 130
Toluene			2.11	mg/Kg	1	2.00	<0.00750	106	70 - 130
Ethylbenzene			2.19	mg/Kg	1	2.00	<0.00730	110	70 - 130
Xylene			6.54	mg/Kg	1	6.00	<0.00700	109	70 - 130

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

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Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.05	mg/Kg	1	2.00	<0.00810	102	70 - 130	0	20
Toluene		1	2.10	mg/Kg	1	2.00	<0.00750	105	70 - 130	0	20
Ethylbenzene		1	2.19	mg/Kg	1	2.00	<0.00730	110	70 - 130	0	20
Xylene		1	6.54	mg/Kg	1	6.00	<0.00700	109	70 - 130	0	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.92	1.89	mg/Kg	1	2	96	94	70 - 130
4-Bromofluorobenzene (4-BFB)	1.87	1.85	mg/Kg	1	2	94	92	70 - 130

Matrix Spike (MS-1) Spiked Sample: 338331

QC Batch: 104057
Prep Batch: 88170

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-13

Analyzed By: KC
Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	14.6	mg/Kg	1	20.0	<2.32	73	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.0	mg/Kg	1	20.0	<2.32	75	70 - 130	3	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.71	1.69	mg/Kg	1	2	86	84	70 - 130
4-Bromofluorobenzene (4-BFB)	2.36	2.14	mg/Kg	1	2	118	107	70 - 130

Matrix Spike (MS-1) Spiked Sample: 337972

QC Batch: 104077
Prep Batch: 88187

Date Analyzed: 2013-08-14
QC Preparation: 2013-08-14

Analyzed By: KC
Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.7	mg/Kg	1	20.0	<2.32	88	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	17.2	mg/Kg	1	20.0	<2.32	86	70 - 130	3	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.78	1.76	mg/Kg	1	2	89	88	70 - 130
4-Bromofluorobenzene (4-BFB)	2.06	2.01	mg/Kg	1	2	103	100	70 - 130

Matrix Spike (MS-1) Spiked Sample: 338330

QC Batch: 104082
Prep Batch: 88138

Date Analyzed: 2013-08-15
QC Preparation: 2013-08-14

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2690	mg/Kg	5	2500	236	98	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2840	mg/Kg	5	2500	236	95	78.9 - 121	5	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: 338340

QC Batch: 104083
Prep Batch: 88138

Date Analyzed: 2013-08-15
QC Preparation: 2013-08-14

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2880	mg/Kg	5	2500	529	94	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Rec.	Rec. Limit	RPD	RPD Limit
Chloride			3070	mg/Kg	5	2500	529	102	78.9 - 121	6	20

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

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Matrix Spike (MS-1) Spiked Sample: 338475

QC Batch: 104084
Prep Batch: 88138

Date Analyzed: 2013-08-15
QC Preparation: 2013-08-14

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2270	mg/Kg	5	2500	<19.2	91	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2400	mg/Kg	5	2500	<19.2	96	78.9 - 121	6	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 104004

Date Analyzed: 2013-08-14

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	272	109	80 - 120	2013-08-14

Standard (CCV-2)

QC Batch: 104004

Date Analyzed: 2013-08-14

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	271	108	80 - 120	2013-08-14

Standard (CCV-3)

QC Batch: 104004

Date Analyzed: 2013-08-14

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	257	103	80 - 120	2013-08-14

Standard (CCV-4)

QC Batch: 104004

Date Analyzed: 2013-08-14

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	256	102	80 - 120	2013-08-14

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Standard (CCV-1)

QC Batch: 104010

Date Analyzed: 2013-08-14

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.110	110	80 - 120	2013-08-14
Toluene		1	mg/kg	0.100	0.112	112	80 - 120	2013-08-14
Ethylbenzene		1	mg/kg	0.100	0.111	111	80 - 120	2013-08-14
Xylene		1	mg/kg	0.300	0.330	110	80 - 120	2013-08-14

Standard (CCV-2)

QC Batch: 104010

Date Analyzed: 2013-08-14

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.112	112	80 - 120	2013-08-14
Toluene		1	mg/kg	0.100	0.110	110	80 - 120	2013-08-14
Ethylbenzene		1	mg/kg	0.100	0.108	108	80 - 120	2013-08-14
Xylene		1	mg/kg	0.300	0.326	109	80 - 120	2013-08-14

Standard (CCV-3)

QC Batch: 104010

Date Analyzed: 2013-08-14

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.109	109	80 - 120	2013-08-14
Toluene		1	mg/kg	0.100	0.110	110	80 - 120	2013-08-14
Ethylbenzene		1	mg/kg	0.100	0.108	108	80 - 120	2013-08-14
Xylene		1	mg/kg	0.300	0.322	107	80 - 120	2013-08-14

Standard (CCV-1)

QC Batch: 104057

Date Analyzed: 2013-08-14

Analyzed By: KC

Report Date: August 22, 2013
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Work Order: 13081222
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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.15	115	80 - 120	2013-08-14

Standard (CCV-2)

QC Batch: 104057

Date Analyzed: 2013-08-14

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.12	112	80 - 120	2013-08-14

Standard (CCV-3)

QC Batch: 104057

Date Analyzed: 2013-08-14

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.06	106	80 - 120	2013-08-14

Standard (CCV-1)

QC Batch: 104077

Date Analyzed: 2013-08-14

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.19	119	80 - 120	2013-08-14

Standard (CCV-2)

QC Batch: 104077

Date Analyzed: 2013-08-14

Analyzed By: KC

Report Date: August 22, 2013
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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.14	114	80 - 120	2013-08-14

Standard (CCV-3)

QC Batch: 104077

Date Analyzed: 2013-08-14

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.08	108	80 - 120	2013-08-14

Standard (CCV-1)

QC Batch: 104082

Date Analyzed: 2013-08-15

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.1	99	85 - 115	2013-08-15

Standard (CCV-2)

QC Batch: 104082

Date Analyzed: 2013-08-15

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2013-08-15

Standard (CCV-1)

QC Batch: 104083

Date Analyzed: 2013-08-15

Analyzed By: AR

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-08-15

Standard (CCV-2)

QC Batch: 104083

Date Analyzed: 2013-08-15

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.9	100	85 - 115	2013-08-15

Standard (CCV-1)

QC Batch: 104084

Date Analyzed: 2013-08-15

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-08-15

Standard (CCV-2)

QC Batch: 104084

Date Analyzed: 2013-08-15

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.7	100	85 - 115	2013-08-15

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-12-4	Midland

Standard Flags

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

Attachments

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

A simple hand-drawn smiley face consisting of two upward-curving lines for eyes and a wide, open-mouthed curve for a smile.