SITE INFORMATION

Report Type: Closure

General Site Information:

Site:	**Empire South Deep Unit #3**				
Company:	**COG Operating LLC**				
Section, Township and Range	**Unit N**	**Sec 31**	**T17S**	**R29E**	
Lease Number:	**(API#) 30-015-20685**				
County:	**Eddy County**				
GPS:	**32.78556° N**			**104.11508° W**	
Surface Owner:	State				
Mineral Owner:					
Directions:	From the intersection of Hwy 82 and Hwy 360, travel east on Hwy 82 for 3.5 miles, turn right onto lease road and travel 0.4 miles, continue straight for 0.9 miles, turn left and travel 0.3 miles to the site.				

Release Data:

Date Released:	4/14/2013
Type Release:	Produced Water and Oil
Source of Contamination:	Packing leak in the stuffing box
Fluid Released:	6 bbls Oil 30 bbls Produced Water
Fluids Recovered:	5 bbls Oil 28 bbls Produced Water

Official Communication:

Name:	Robert McNeill		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring
	600 W. Illinois Ave.		Suite 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 682-4559
Fax:	(432) 684-7137		
Email:	rmcneill@conchoresources.com		ike.tavarez@tetratech.com

Ranking Criteria

Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	10	
>100 ft.	0	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:	0

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	5,000

TETRA TECH

November 20, 2013

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

Re: Closure Report for the COG Operating LLC., Empire South Deep Unit #3, Well Site, Unit N, Section 31, Township 17 South, Range 29 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Empire South Deep Unit #3 located in Unit N, Section 31, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.78556°, W 103.11508°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on April 14, 2013, and released approximately thirty six (36) barrels of produced fluid from a packing leak in the stuffing box. To alleviate the problem, COG cleaned out the back pressure valve and replaced the packing. Thirty-three (33) barrels of standing fluids were recovered. The spill initiated on the well affecting an area on the pad approximately 75' X 150' and 25' x 75'. The initial C-141form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 31. According to the NMOCD groundwater map, the average depth to groundwater in this area is between 200' and 225' below surface. The groundwater data is shown in Appendix B.

Tetra Tech
4000 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 New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

On May 14, 2013, Tetra Tech personnel inspected and sampled the spill area. Seven (7) auger holes (AH-1 through AH-7) were installed using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, AH-7 exceeded the TPH RRAL but declined below regulatory level at 1-1.5' below surface. In addition, auger holes (AH-7 and AH-6) exceeded the RRAL for Total BTEX, but both declined below regulatory levels at 1-1.5' below surface.

Elevated chloride concentrations were detected in all auger holes (AH-1 through AH-7). Auger holes (AH-1, AH-4, AH-5, AH-6 and AH-7) showed a shallow impact and significantly declined at a depth of 1.5' below surface. The areas of AH-2 and AH-3 showed a deeper impact to the soils and declined to 871 mg/kg and 1,950 mg/kg at 2-2.5', respectively. Deeper samples were not collected due to the dense formation at the site.

Remedial Activities

On October 07, 2013, Tetra Tech began supervising the excavation of impacted materials as highlighted (green) on Table 1 and shown on Figure 4. Prior to excavating, trenches were installed to evaluate and define the chloride concentrations for the areas of AH-2 and AH-3. Based on the results, the impacted areas showed chloride concentrations of 1,030 mg/kg at 3.0' and 1,280 mg/kg at 3.5' below excavation bottom. Deeper samples could not be collected due to the dense formation. The areas of AH-1, AH-4, AH-5, AH-6 and AH-7 were excavated to a depth of approximately 1.0' below surface.

Approximately 440 yards of excavated soil was transported offsite for proper disposal and the areas will be backfilled with clean material to surface grade.

Conclusion

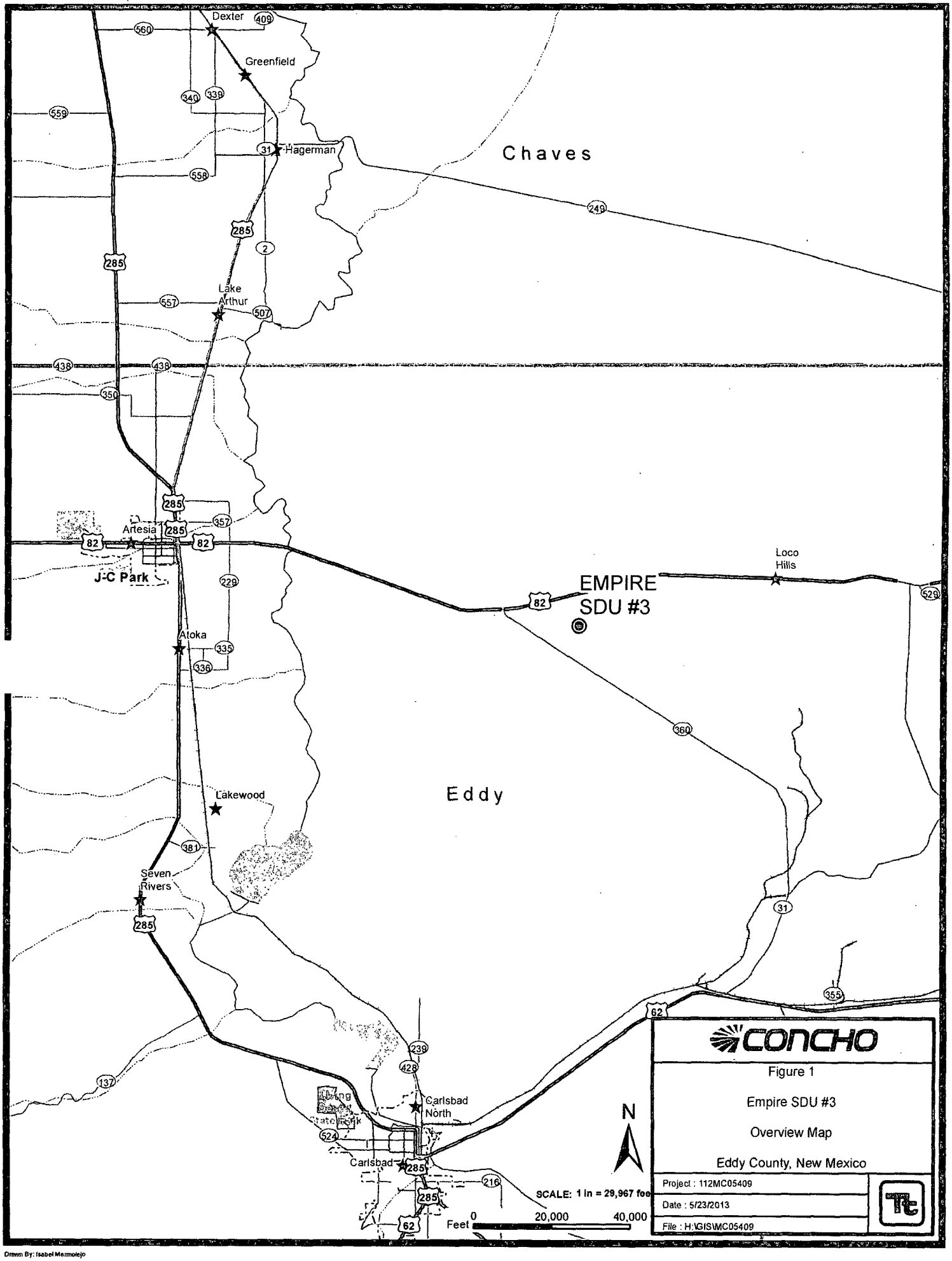
Based on the remedial actions taken, COG requests closure of the site. The Final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

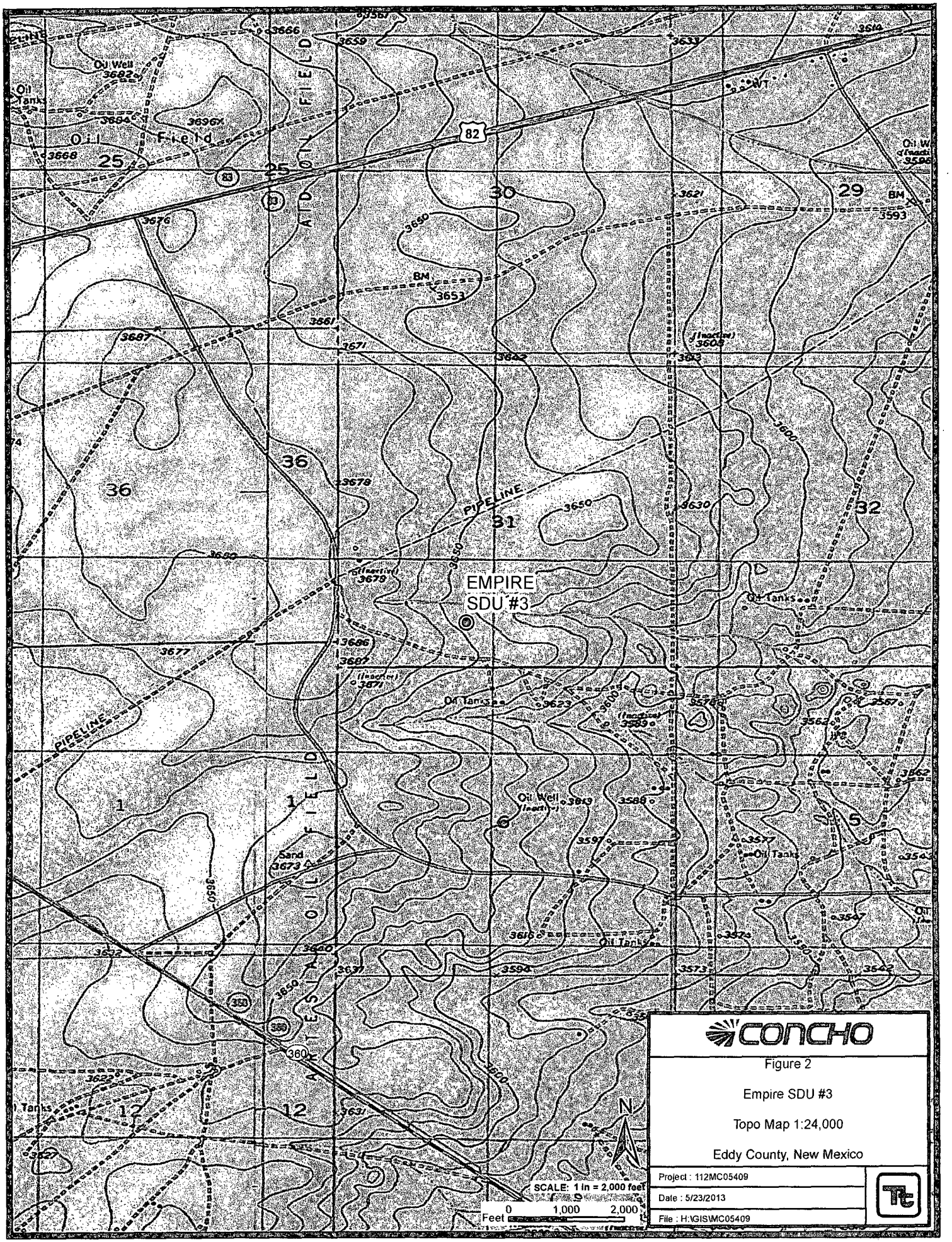
Marcus Kujawski
Staff Scientist

cc: Robert McNeill – COG

Figures



Drawn By: Isabel Marmolejo



CONCHO

Figure 2

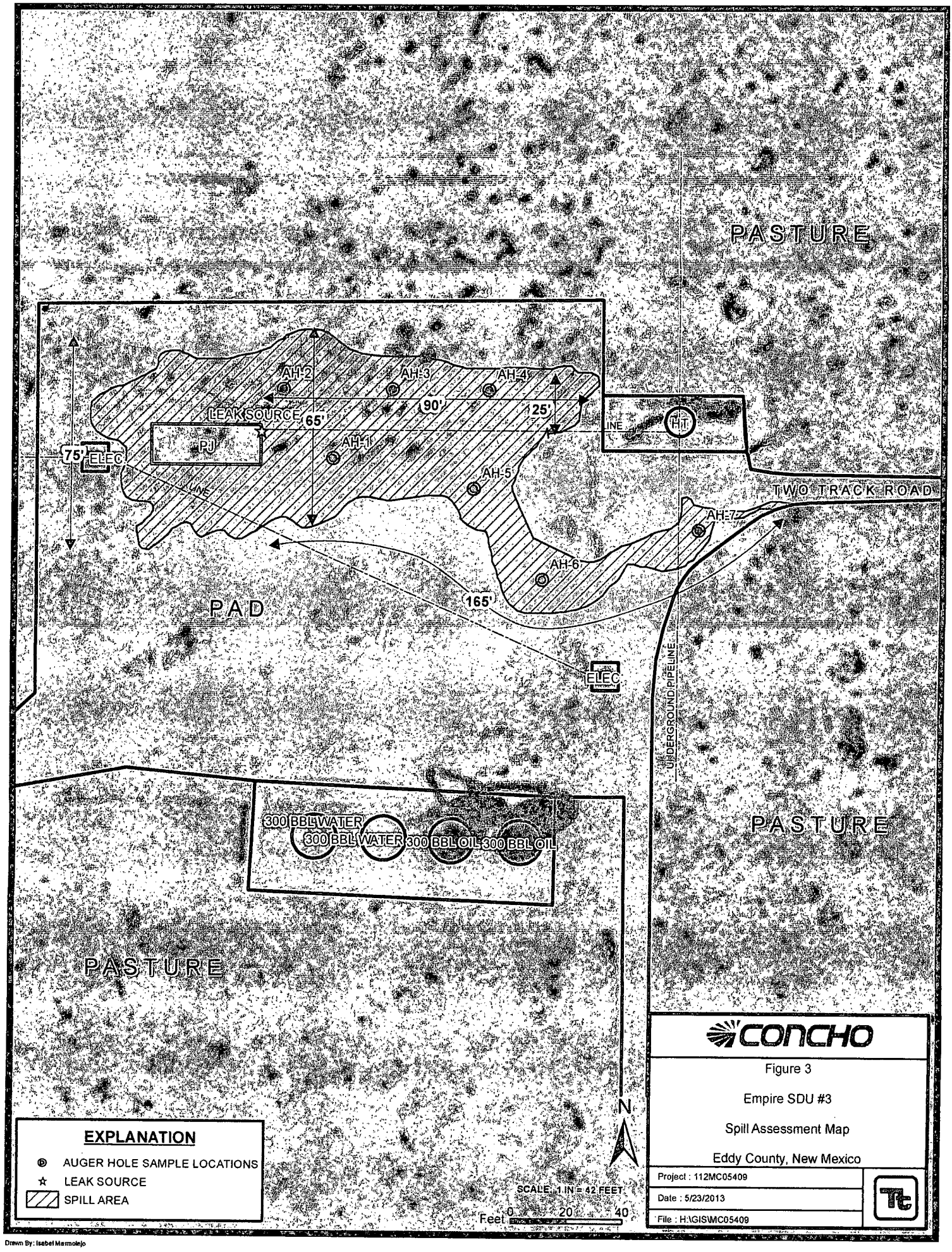
Empire SDU #3

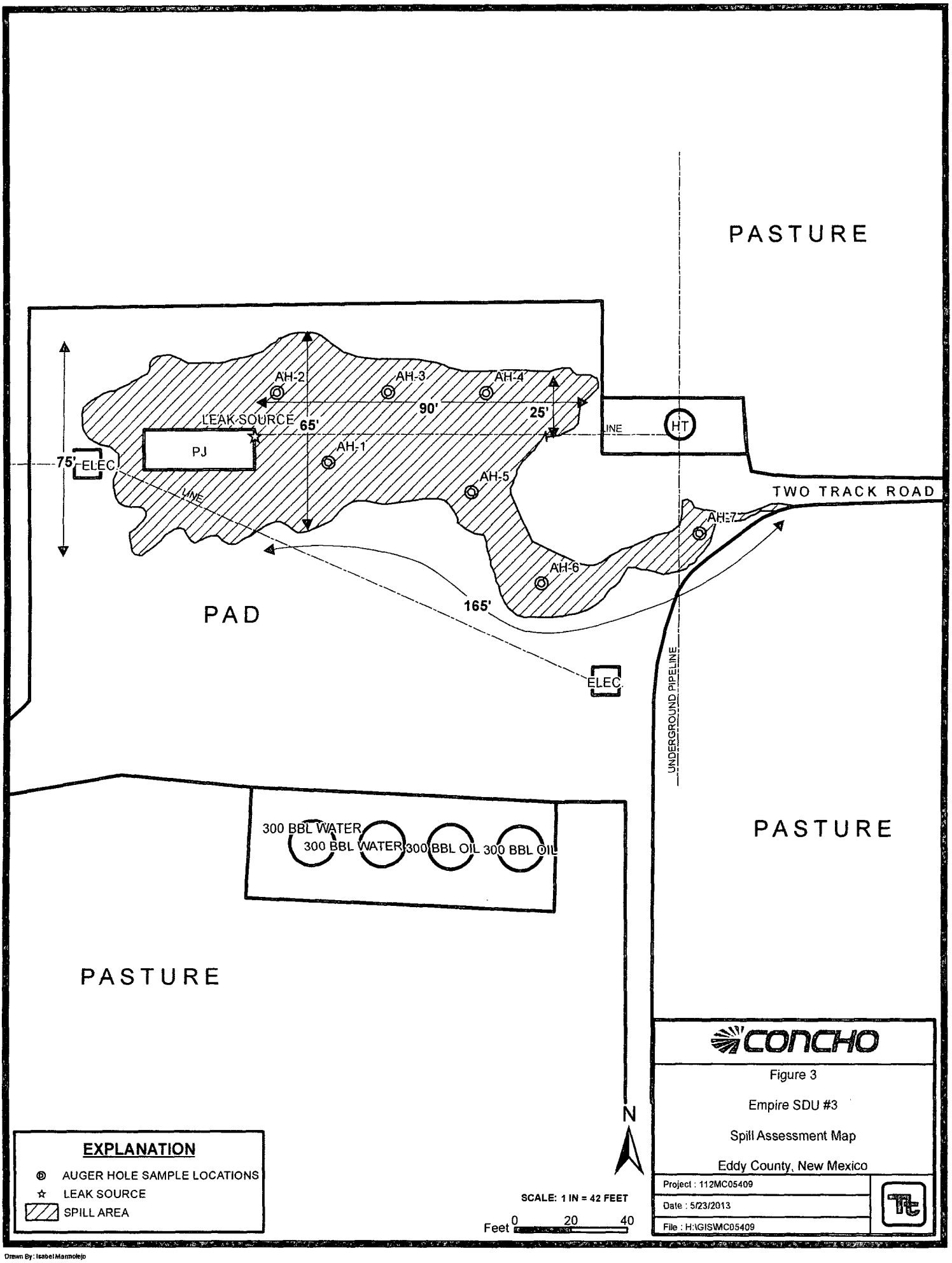
Topo Map 1:24,000

Eddy County, New Mexico

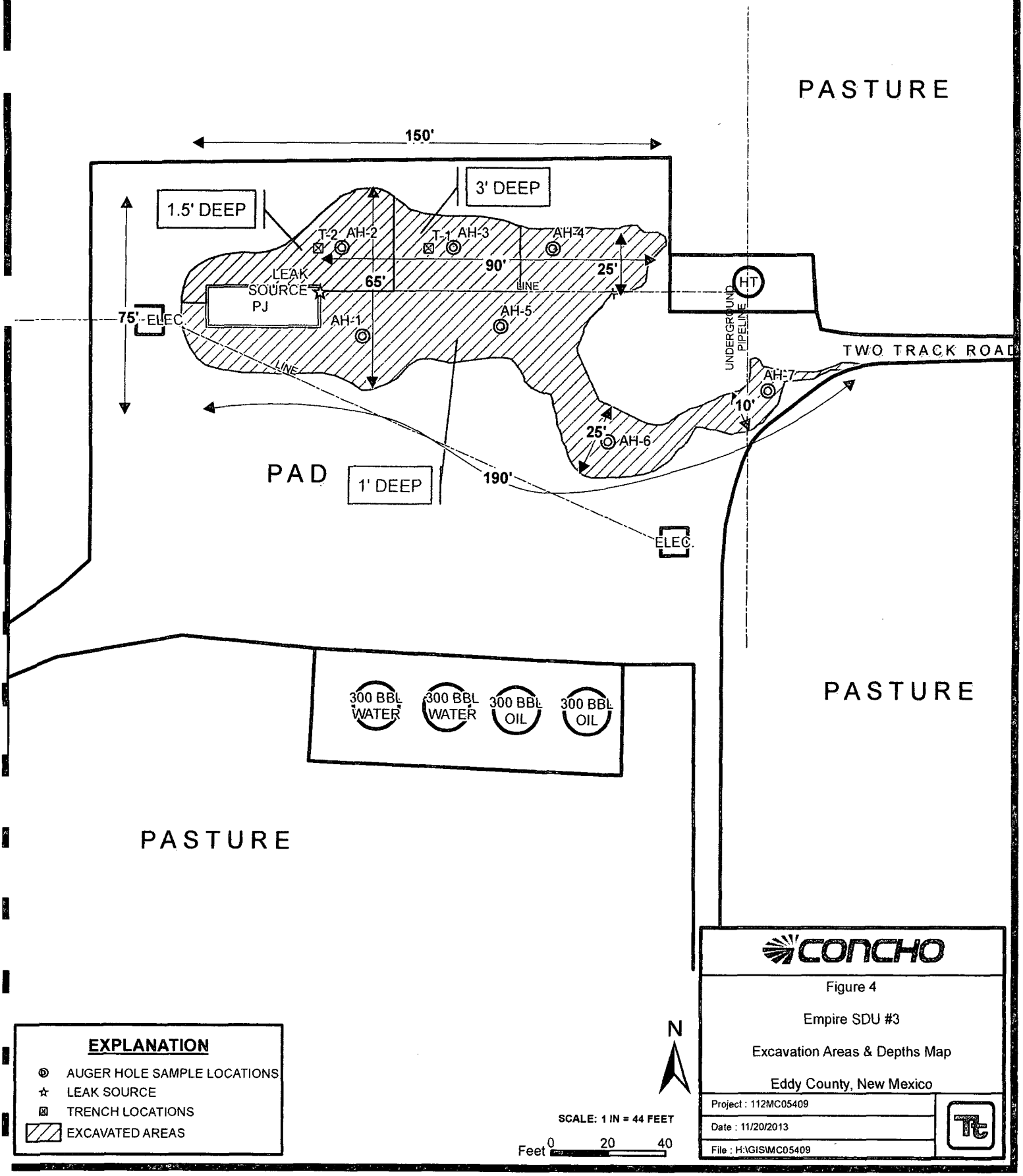
Project : 112MC05409	
Date : 5/23/2013	
File : H:\GIS\MC05409	

Drawn By: Isabel Manmolejo


PASTURE
AH-2
AH-3
AH-4
LEAK SOURCE
65'
90'
25'
PJ
AH-1
75'
ELEC
LINE
HT
AH-5
TWO TRACK ROAD
AH-7
AH-6
PAD
165'
ELEC
UNDERGROUND PIPELINE
300 BBL WATER
300 BBL WATER
300 BBL OIL
300 BBL OIL
PASTURE
PASTURE
N
SCALE: 1 IN = 42 FEET
Feet 0 20 40
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
LEAK SOURCE
SPILL AREA
CONCHO
Figure 3
Empire SDU #3
Spill Assessment Map
Eddy County, New Mexico
Project : 112MC05409
Date : 5/23/2013
File : H:\GIS\MC05409
Drawn By: Isabel Marmolejo



Drawn By: Isabel Manmolejo



wn By: jsabel Mamolejo

Tables

Table 1
COG Operating LLC.
Empire South Deep Unit #3
Eddy County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom Depth (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						
AH-1	5/14/2013	0-1	0		X	42.9	85.5	128	<0.0200	0.0893	1.07	2.24	3.40	4,650
	"	1-1.5	"	X		-	-	-	-	-	-	-	-	368
AH-2	5/14/2013	0-1	0		X	247	1,220	1,467	<0.100	1.69	6.69	14.0	22.4	10,400
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	6,450
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	871
T-2	9/16/2013	0	1.5		X	-	-	-	-	-	-	-	-	687
	"	1.0	2.0	X		-	-	-	-	-	-	-	-	2,210
	"	2.0	3.0	X		-	-	-	-	-	-	-	-	1,030
AH-3	5/14/2013	0-1	0		X	55.9	486	542	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	9,770
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	4,250
	"	2-2.5	"		X	-	-	-	-	-	-	-	-	1,950
T-1	9/16/2013	0	0		X	-	-	-	-	-	-	-	-	4,090
	"	1.5	2.0		X	-	-	-	-	-	-	-	-	1,230
	"	3.5	3.0		X	-	-	-	-	-	-	-	-	1,280
AH-4	5/14/2013	0-1	0		X	5.35	<50.0	5.35	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,480
	"	1-1.5	"	X		-	-	-	-	-	-	-	-	104
AH-5	5/14/2013	0-1	0		X	96.0	537	633	<0.100	0.516	1.66	5.26	7.44	1,080
	"	1-1.5	"	X		-	-	-	-	-	-	-	-	601

Table 1
COG Operating LLC.
Empire South Deep Unit #3
Eddy County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom Depth (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						
AH-6	5/15/2013	0-1	0		X	1,090	3,280	4,370	<0.0400	13.5	37.6	65.2	**116**	5,990
	"	1-1.5	"	X		-	-	-	<0.0200	<0.0200	0.263	0.363	0.626	547
AH-7	5/15/2013	0-1	0		X	2,000	8,690	**10,690**	<1.00	22.4	53.0	102	**177**	5,750
	"	1-1.5	"	X		350	774	1,124	<0.200	0.961	11.2	24.6	36.8	865
Background-1	9/16/2013	-	0	X		-	-	-	-	-	-	-	-	<20.0
	"	-	2.0	X		-	-	-	-	-	-	-	-	<20.0
	"	-	4.0	X		-	-	-	-	-	-	-	-	<20.0
	"	-	6.0	X		-	-	-	-	-	-	-	-	98.1
	"	-	8.0	X		-	-	-	-	-	-	-	-	284
	"	-	10.0	X		-	-	-	-	-	-	-	-	294

(-) Not Analyzed

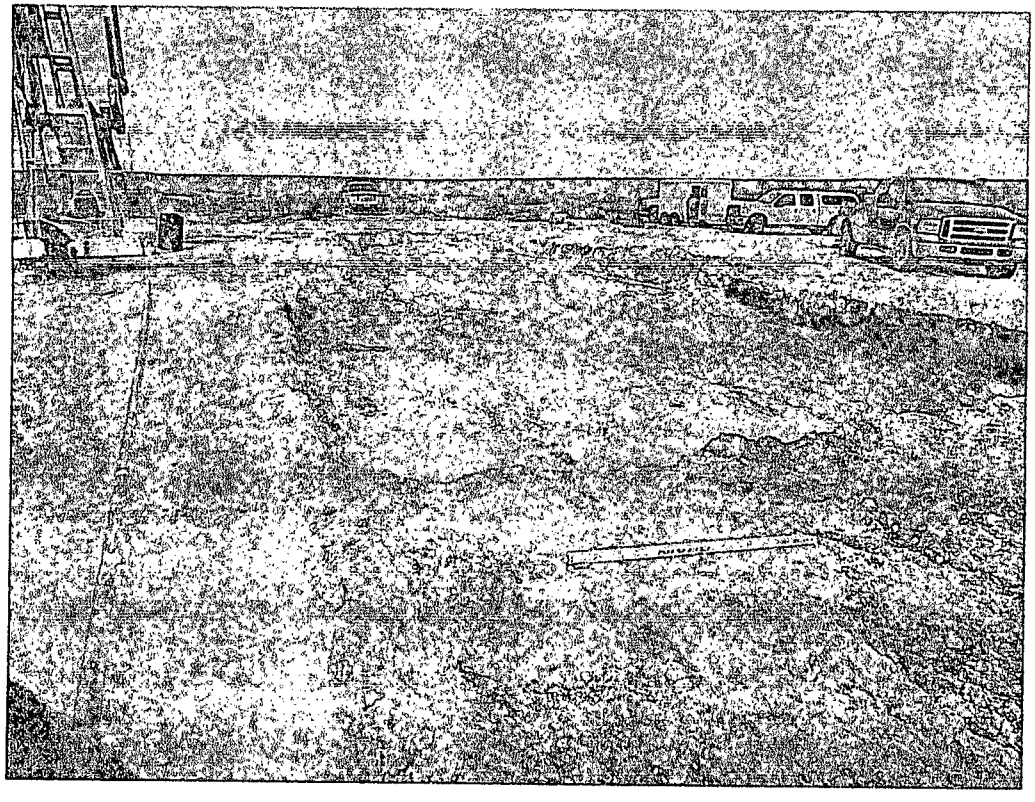
(BEB) Below Excavation Bottom

Excavation Depths

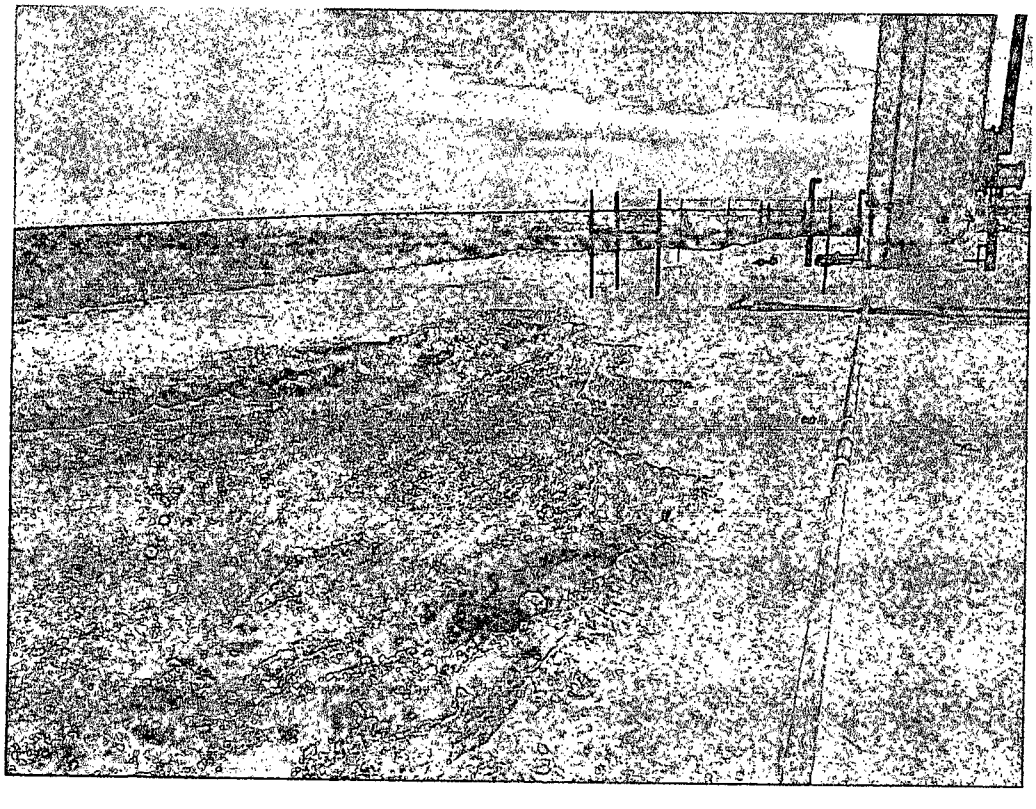
Photos

COG Operating LLC
Empire SDU #3
Eddy County, New Mexico

TETRA TECH



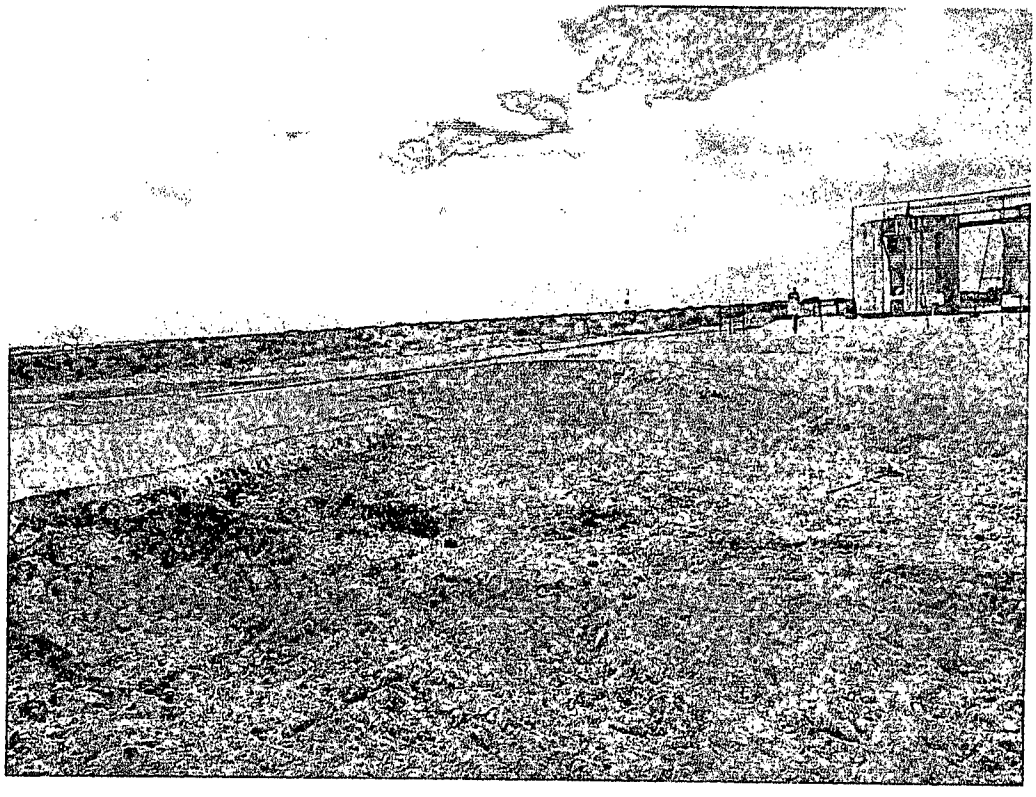
View East – AH-2 and AH-3 areas



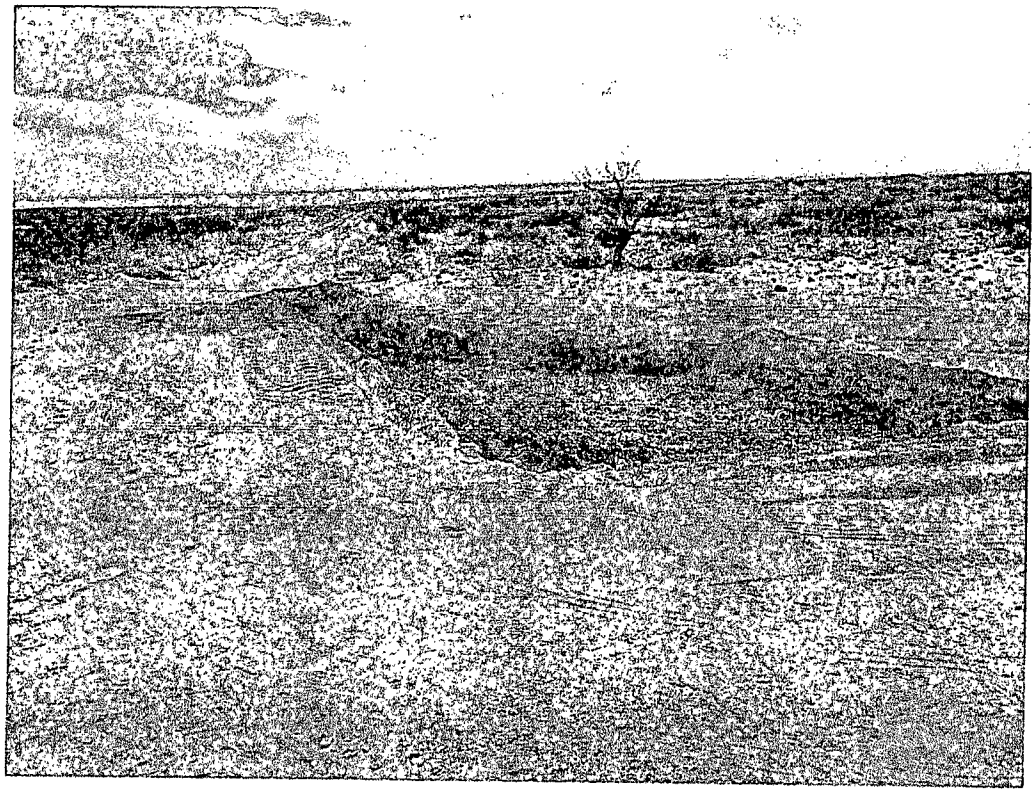
View East – AH-4 area at 1.0'

COG Operating LLC
Empire SDU #3
Eddy County, New Mexico

TETRA TECH



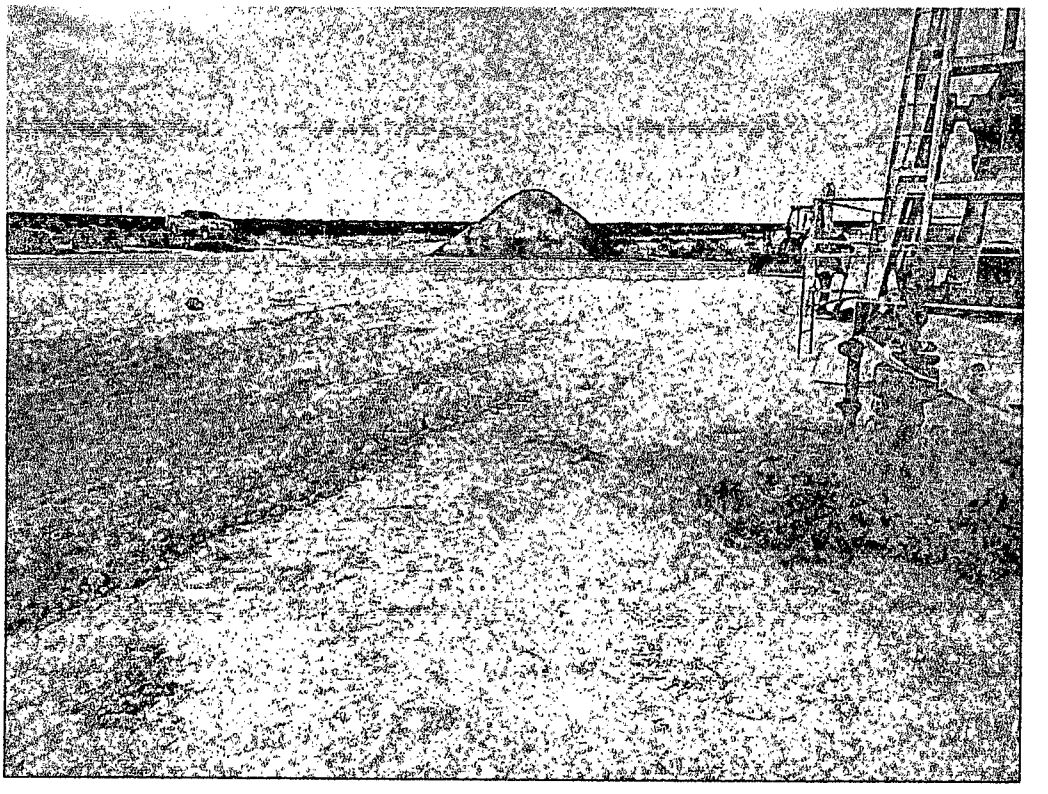
View Southwest – AH-5 and AH-6 areas at 1.0'



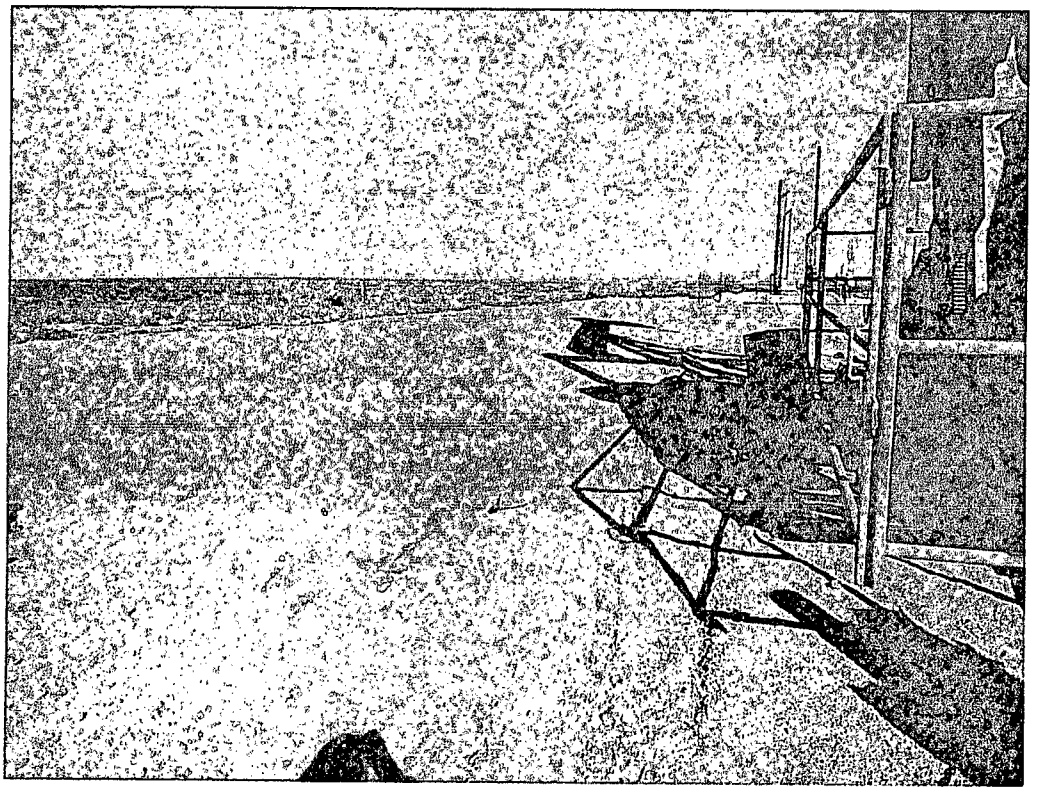
View West – AH-7 area at 1.0'

COG Operating LLC
Empire SDU #3
Eddy County, New Mexico

TETRA TECH



View East – AH-1 area backfilled



View West – AH-2, AH-3, and AH-4 areas backfilled

District I
625 N. French Dr., Hobbs, NM 88240
District II
301 W. Grand Avenue, Artesia, NM 88210
District III
000 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	COG OPERATING LLC	Contact	Pat Ellis
Address	600 West Illinois Avenue, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	EMPIRE SOUTH DEEP UNIT #003	Facility Type	WELL PAD

Surface Owner STATE	Mineral Owner	Lease No. (API#) 30-015-20685

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	31	17S	29E					EDDY

Latitude 32.78545 **Longitude** 104.11514

NATURE OF RELEASE

Type of Release Oil and produced water	Volume of Release 6bbls oil 30bbls produced water	Volume Recovered 5bbls oil 28bbls produced water
Source of Release Packing leak in stuffing box	Date and Hour of Occurrence 04-14-2013	Date and Hour of Discovery 04-14-2013 3:00pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher - NMOCD	
By Whom? Michelle Mullins	Date and Hour 04-15-2013 12:27pm	
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.*

The packing failed in the stuffing box due to plugged back pressure valve. Cleaned out the back pressure valve and replaced packing.

Describe Area Affected and Cleanup Action Taken.*

Initially 6bbls of oil and 30bbls of produced water were released due a packing leak on the stuffing box. We were able to recover 5bbls of oil and 28bbls of produced water with a vacuum truck. The spill was on location and the adjacent pasture. All free fluid has been recovered. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a work plan to the NMOCD for approval prior to any significant remediation work.

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: Robert Grubbs Jr.	Approved by District Supervisor:
Title: Senior Environmental Coordinator	Approval Date: / Expiration Date:
E-mail Address: rgrubbs@concho.com	Conditions of Approval: / Attached ☐
Date: 04-29-2013 Phone: 432-661-6601	

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 **COG Operating LLC**	Contact **Robert McNeill**
Address **600 W. Illinois Ave, Midland, Texas 79701**	Telephone No. **(432) 685-4332**
Facility Name **Empire South Deep Unit #3**	Facility Type **Well Pad**

Surface Owner: State	Mineral Owner	Lease No. (API#) 30-015-20685

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	31	17S	29E					

Latitude 32.78545° N **Longitude** 104.11514° W

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release 6 bbls of Oil, 30 bbls of Produced Water	Volume Recovered 5 bbls of Oil, 28 bbls of Produced Water
Source of Release: Packing leak in stuffing box	Date and Hour of Occurrence 4/14/2013	Date and Hour of Discovery 4/14/2013 3:00 pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Mike Bratcher - NMOCD**	
By Whom? Michelle Mullins	Date and Hour 4/15/2013 12:27 pm	
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.*

The packing failed in the stuffing box due to a plugged back pressure valve. Cleaned out the back pressure valve and replaced packing.

Describe Area Affected and Cleanup Action Taken.*

Initially 6bbls of oil and 30bbls of produced water were released due to a packing leak on the stuffing box. 5bbls of oil and 28bbls of produced water were recovered with a vacuum truck. The spill was on location and the adjacent pasture. Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. 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	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached ☐
Date: 11/19/2013 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG-Empire South Deep Unit #3
Eddy County, New Mexico

16 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21 **61**	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

16 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14 220 dry	13
19 **110**	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

16 South 30 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

17 South 28 East

6	5	4	3	2 **28**	1
7	8	9	10	11	12
18	17	16	15	14 **80**	13
19 **224**	20	21	22 **45** **79**	23	24
30	29	28	27	26	25
31	32	33	34	35 **258**	36

17 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 **76** **80**	23	24
30	29 **210** **208'**	28	27	26	25
31 SITE	32	33	34	35 153	36

17 South 30 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20 **80**	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

18 South 28 East

6	5	4 **108**	3	2	1
7 **49**	8 **81** **69**	9	10	11	12
18	17	16	15	14	13
19	20	21 **226**	22	23	24
30 **137**	29	28	27	26	25
31	32	33	34	35 **65**	36

18 South 29 East

6	5	4	3	2	1
7	8	9	10 **95**	11	12
18	17	16	15	14	13
19	20	21	22	23	24 **158**
30	29	28	27	26	25
31	32	33	34	35	36

18 South 30 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
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 Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX 79705

Report Date: May 29, 2013

Work Order: 13052005

Project Location: Eddy Co., NM
Project Name: COG/Empire SDU #3
Project #: 112MC05409

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
329747	AH-1 0-1'	soil	2013-05-14	00:00	2013-05-17
329748	AH-1 1-1.5'	soil	2013-05-14	00:00	2013-05-17
329749	AH-2 0-1'	soil	2013-05-14	00:00	2013-05-17
329750	AH-2 1-1.5'	soil	2013-05-14	00:00	2013-05-17
329751	AH-2 2-2.5'	soil	2013-05-14	00:00	2013-05-17
329752	AH-3 0-1'	soil	2013-05-14	00:00	2013-05-17
329753	AH-3 1-1.5'	soil	2013-05-14	00:00	2013-05-17
329754	AH-3 2-2.5'	soil	2013-05-14	00:00	2013-05-17
329755	AH-4 0-1'	soil	2013-05-14	00:00	2013-05-17
329756	AH-4 1-1.5'	soil	2013-05-14	00:00	2013-05-17
329757	AH-5 0-1'	soil	2013-05-14	00:00	2013-05-17
329758	AH-5 1-1.5'	soil	2013-05-14	00:00	2013-05-17
329759	AH-6 0-1'	soil	2013-05-15	00:00	2013-05-17
329760	AH-6 1-1.5'	soil	2013-05-15	00:00	2013-05-17
329761	AH-7 0-1'	soil	2013-05-15	00:00	2013-05-17
329762	AH-7 1-1.5'	soil	2013-05-15	00:00	2013-05-17

Sample - Field Code	BTEX Benzene (mg/Kg)	BTEX Toluene (mg/Kg)	BTEX Ethylbenzene (mg/Kg)	BTEX Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
329747 - AH-1 0-1'	<0.0200	**0.0893**	**1.07**	**2.24**	**85.5**	**42.9** Qs
329749 - AH-2 0-1'	<0.100 [1]	**1.69**	**6.69**	**14.0**	**1220**	**247** Qs
329752 - AH-3 0-1'	<0.0400 [2]	<0.0400	<0.0400	<0.0400	**486**	**55.9** Qs
329755 - AH-4 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	**5.35** Qs
329757 - AH-5 0-1'	<0.100 [3]	**0.516**	**1.66**	**5.26**	**537**	**96.0** Qs

continued ...

[1]Dilution due to hydrocarbons.
[2]Dilution due to hydrocarbons.
[3]Dilution due to hydrocarbons.

... continued

Sample - Field Code	BTEX Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
329759 - AH-6 0-1'	<0.400 [4]	**13.5**	**37.6**	**65.2**	**3280**	**1090** Qs
329760 - AH-6 1-1.5'	<0.0200	<0.0200	**0.263**	**0.363**		
329761 - AH-7 0-1'	<1.00 [5]	**22.4**	**53.0**	**102**	**8690**	**2000** Qs
329762 - AH-7 1-1.5'	<0.200 [6]	**0.961**	**11.2**	**24.6**	**774** Qs	**350** Qs

Sample: 329747 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**4650**	mg/Kg	4

Sample: 329748 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**368**	mg/Kg	4

Sample: 329749 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**10400**	mg/Kg	4

Sample: 329750 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**6450**	mg/Kg	4

Sample: 329751 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**871**	mg/Kg	4

Sample: 329752 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**9770**	mg/Kg	4

[4]Dilution due to hydrocarbons.
[5]Dilution due to hydrocarbons.
[6]Dilution due to hydrocarbons.

Sample: 329753 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**4250**	mg/Kg	4

Sample: 329754 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**1950**	mg/Kg	4

Sample: 329755 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		**1480**	mg/Kg	4

Sample: 329756 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**104**	mg/Kg	4

Sample: 329757 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		**1080**	mg/Kg	4

Sample: 329758 - AH-5 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**601**	mg/Kg	4

Sample: 329759 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		**5990**	mg/Kg	4

Sample: 329760 - AH-6 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**547**	mg/Kg	4

Sample: 329761 - AH-7 0-1'

Param	Flag	Result	Units	RL
Chloride		**5750**	mg/Kg	4

Sample: 329762 - AH-7 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**865**	mg/Kg	4

TRACEANALYSIS, INC.

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200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
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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: May 29, 2013

Work Order: 13052005

Project Location: Eddy Co., NM
Project Name: COG/Empire SDU #3
Project Number: COG/Empire SDU #3
Project #: 112MC05409

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
329747	AH-1 0-1'	soil	2013-05-14	00:00	2013-05-17
329748	AH-1 1-1.5'	soil	2013-05-14	00:00	2013-05-17
329749	AH-2 0-1'	soil	2013-05-14	00:00	2013-05-17
329750	AH-2 1-1.5'	soil	2013-05-14	00:00	2013-05-17
329751	AH-2 2-2.5'	soil	2013-05-14	00:00	2013-05-17
329752	AH-3 0-1'	soil	2013-05-14	00:00	2013-05-17
329753	AH-3 1-1.5'	soil	2013-05-14	00:00	2013-05-17
329754	AH-3 2-2.5'	soil	2013-05-14	00:00	2013-05-17
329755	AH-4 0-1'	soil	2013-05-14	00:00	2013-05-17
329756	AH-4 1-1.5'	soil	2013-05-14	00:00	2013-05-17
329757	AH-5 0-1'	soil	2013-05-14	00:00	2013-05-17
329758	AH-5 1-1.5'	soil	2013-05-14	00:00	2013-05-17
329759	AH-6 0-1'	soil	2013-05-15	00:00	2013-05-17
329760	AH-6 1-1.5'	soil	2013-05-15	00:00	2013-05-17
329761	AH-7 0-1'	soil	2013-05-15	00:00	2013-05-17
329762	AH-7 1-1.5'	soil	2013-05-15	00:00	2013-05-17

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 40 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

Report Contents

Case Narrative

Samples for project COG/Empire SDU #3 were received by TraceAnalysis, Inc. on 2013-05-17 and assigned to work order 13052005. Samples for work order 13052005 were received intact at a temperature of 3.8 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	86199	2013-05-25 at 18:00	101738	2013-05-26 at 18:17
BTEX	S 8021B	86209	2013-05-27 at 10:45	101749	2013-05-28 at 08:15
Chloride (Titration)	SM 4500-Cl B	86124	2013-05-22 at 10:39	101717	2013-05-24 at 11:17
Chloride (Titration)	SM 4500-Cl B	86124	2013-05-22 at 10:39	101718	2013-05-24 at 11:18
TPH DRO - NEW	S 8015 D	86150	2013-05-21 at 11:00	101673	2013-05-23 at 10:59
TPH DRO - NEW	S 8015 D	86185	2013-05-23 at 11:00	101713	2013-05-24 at 11:01
TPH GRO	S 8015 D	86200	2013-05-23 at 15:45	101739	2013-05-26 at 18:39
TPH GRO	S 8015 D	86203	2013-05-25 at 18:00	101742	2013-05-27 at 12:29

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 13052005 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 329747 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	101749	Date Analyzed:	2013-05-28	Analyzed By:	AH
Prep Batch:	86209	Sample Preparation:	2013-05-27	Prepared By:	AH

Parameter	Flag	Cert	Result	RL Result	Units	Dilution	RL
Benzene	U	1		<0.0200	mg/Kg	1	0.0200
Toluene		1		**0.0893**	mg/Kg	1	0.0200
Ethylbenzene		1		**1.07**	mg/Kg	1	0.0200
Xylene		1		**2.24**	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.81	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	2.94	mg/Kg	1	2.00	147	70 - 130

Sample: 329747 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101717	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Result	Units	Dilution	RL
Chloride				**4650**	mg/Kg	10	4.00

Sample: 329747 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101673	Date Analyzed:	2013-05-23	Analyzed By:	CW
Prep Batch:	86150	Sample Preparation:	2011-05-21	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Result	Units	Dilution	RL
DRO	B	1		**85.5**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	171	mg/Kg	1	100	171	55.1 - 135.7

Sample: 329747 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101739	Date Analyzed:	2013-05-26	Analyzed By:	AH
Prep Batch:	86200	Sample Preparation:	2013-05-23	Prepared By:	AH

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B,Qs	1	**42.9**	mg/Kg	1	4.00

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)	Qsr	Qsr	2.98	mg/Kg	1	2.00	149	70 - 130

Sample: 329748 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101717	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**368**	mg/Kg	5	4.00

Sample: 329749 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	101749	Date Analyzed:	2013-05-28	Analyzed By:	AH
Prep Batch:	86209	Sample Preparation:	2013-05-27	Prepared By:	AH

continued ...

sample 329749 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.100	mg/Kg	5	0.0200
Toluene		1	**1.69**	mg/Kg	5	0.0200
Ethylbenzene		1	**6.69**	mg/Kg	5	0.0200
Xylene		1	**14.0**	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			8.99	mg/Kg	5	10.0	90	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	13.6	mg/Kg	5	10.0	136	70 - 130

Sample: 329749 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101717	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**10400**	mg/Kg	10	4.00

Sample: 329749 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101673	Date Analyzed:	2013-05-23	Analyzed By:	CW
Prep Batch:	86150	Sample Preparation:	2011-05-21	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**1220**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	202	mg/Kg	1	100	202	55.1 - 135.7

Sample: 329749 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101739	Date Analyzed:	2013-05-26	Analyzed By:	AH
Prep Batch:	86200	Sample Preparation:	2013-05-23	Prepared By:	AH

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B,Qs	1	**247**	mg/Kg	10	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			16.9	mg/Kg	10	20.0	84	70 - 130
4-Bromofluorobenzene (4-BFB)			22.4	mg/Kg	10	20.0	112	70 - 130

Sample: 329750 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101717	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**6450**	mg/Kg	10	4.00

Sample: 329751 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101717	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**871**	mg/Kg	5	4.00

Sample: 329752 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	101749	Date Analyzed:	2013-05-28	Analyzed By:	AH
Prep Batch:	86209	Sample Preparation:	2013-05-27	Prepared By:	AH

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.31	mg/Kg	2	4.00	83	70 - 130
4-Bromofluorobenzene (4-BFB)			3.63	mg/Kg	2	4.00	91	70 - 130

Sample: 329752 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101717	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**9770**	mg/Kg	10	4.00

Sample: 329752 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101673	Date Analyzed:	2013-05-23	Analyzed By:	CW
Prep Batch:	86150	Sample Preparation:	2011-05-21	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	**486**	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		161	mg/Kg	1	100	161	55.1 - 135.7

Sample: 329752 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101739	Date Analyzed:	2013-05-26	Analyzed By:	AH
Prep Batch:	86200	Sample Preparation:	2013-05-23	Prepared By:	AH

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U,Qs	t	**55.9**	mg/Kg	10	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			18.4	mg/Kg	10	20.0	92	70 - 130
4-Bromofluorobenzene (4-BFB)			18.2	mg/Kg	10	20.0	91	70 - 130

Sample: 329753 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101717	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**4250**	mg/Kg	10	4.00

Sample: 329754 - AH-3 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101718	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1950**	mg/Kg	10	4.00

Sample: 329755 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	101749	Date Analyzed:	2013-05-28	Analyzed By:	AH
Prep Batch:	86209	Sample Preparation:	2013-05-27	Prepared By:	AH

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)			1.85	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.88	mg/Kg	1	2.00	94	70 - 130

Sample: 329755 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101718	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1480**	mg/Kg	10	4.00

Sample: 329755 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101673	Date Analyzed:	2013-05-23	Analyzed By:	CW
Prep Batch:	86150	Sample Preparation:	2011-05-21	Prepared By:	CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			132	mg/Kg	1	100	132	55.1 - 135.7

Sample: 329755 - AH-4 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101739	Date Analyzed:	2013-05-26	Analyzed By:	AH
Prep Batch:	86200	Sample Preparation:	2013-05-23	Prepared By:	AH

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	B,Qs	1	**5.35**	mg/Kg	1	4.00

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)			1.87	mg/Kg	1	2.00	94	70 - 130

Sample: 329756 - AH-4 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101718	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**104**	mg/Kg	5	4.00

Sample: 329757 - AH-5 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	101749	Date Analyzed:	2013-05-28	Analyzed By:	AH
Prep Batch:	86209	Sample Preparation:	2013-05-27	Prepared By:	AH

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene [3]	U	1	<0.100	mg/Kg	5	0.0200
Toluene		1	**0.516**	mg/Kg	5	0.0200
Ethylbenzene		1	**1.66**	mg/Kg	5	0.0200
Xylene		1	**5.26**	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			8.35	mg/Kg	5	10.0	84	70 - 130
4-Bromofluorobenzene (4-BFB)			11.2	mg/Kg	5	10.0	112	70 - 130

Sample: 329757 - AH-5 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101718	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1080**	mg/Kg	10	4.00

Sample: 329757 - AH-5 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101673	Date Analyzed:	2013-05-23	Analyzed By:	CW
Prep Batch:	86150	Sample Preparation:	2011-05-21	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**537**	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		170	mg/Kg	1	100	170	55.1 - 135.7

Sample: 329757 - AH-5 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101739	Date Analyzed:	2013-05-26	Analyzed By:	AH
Prep Batch:	86200	Sample Preparation:	2013-05-23	Prepared By:	AH

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B,Qs	1	**96.0**	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			9.43	mg/Kg	5	10.0	94	70 - 130
4-Bromofluorobenzene (4-BFB)			11.2	mg/Kg	5	10.0	112	70 - 130

Sample: 329758 - AH-5 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101718	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**601**	mg/Kg	5	4.00

Sample: 329759 - AH-6 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	101749	Date Analyzed:	2013-05-28	Analyzed By:	AH
Prep Batch:	86209	Sample Preparation:	2013-05-27	Prepared By:	AH

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene [4]	U	1	<0.400	mg/Kg	20	0.0200
Toluene		1	**13.5**	mg/Kg	20	0.0200
Ethylbenzene		1	**37.6**	mg/Kg	20	0.0200
Xylene		1	**65.2**	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			35.7	mg/Kg	20	40.0	89	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	52.7	mg/Kg	20	40.0	132	70 - 130

Sample: 329759 - AH-6 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101718	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**5990**	mg/Kg	10	4.00

Sample: 329759 - AH-6 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101673	Date Analyzed:	2013-05-23	Analyzed By:	CW
Prep Batch:	86150	Sample Preparation:	2011-05-21	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**3280**	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		241	mg/Kg	1	100	241	55.1 - 135.7

Sample: 329759 - AH-6 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101739	Date Analyzed:	2013-05-26	Analyzed By:	AH
Prep Batch:	86200	Sample Preparation:	2013-05-23	Prepared By:	AH

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	**1090**	mg/Kg	20	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			36.9	mg/Kg	20	40.0	92	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	62.2	mg/Kg	20	40.0	156	70 - 130

Sample: 329760 - AH-6 1-1.5'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	101738	Date Analyzed:	2013-05-26	Analyzed By:	AH
Prep Batch:	86199	Sample Preparation:	2013-05-25	Prepared By:	AH

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		1	**0.263**	mg/Kg	1	0.0200
Xylene		1	**0.363**	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.66	mg/Kg	1	2.00	83	70 - 130
4-Bromofluorobenzene (4-BFB)			1.86	mg/Kg	1	2.00	93	70 - 130

Sample: 329760 - AH-6 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101718	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

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

Sample: 329761 - AH-7 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	101749	Date Analyzed:	2013-05-28	Analyzed By:	AH
Prep Batch:	86209	Sample Preparation:	2013-05-27	Prepared By:	AH

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene [5]	U	1	<1.00	mg/Kg	50	0.0200
Toluene		1	**22.4**	mg/Kg	50	0.0200
Ethylbenzene		1	**53.0**	mg/Kg	50	0.0200
Xylene		1	**102**	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			88.6	mg/Kg	50	100	89	70 - 130
4-Bromofluorobenzene (4-BFB)			116	mg/Kg	50	100	116	70 - 130

Sample: 329761 - AH-7 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101718	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**5750**	mg/Kg	10	4.00

Sample: 329761 - AH-7 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101673	Date Analyzed:	2013-05-23	Analyzed By:	CW
Prep Batch:	86150	Sample Preparation:	2011-05-21	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**8690**	mg/Kg	5	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		544	mg/Kg	5	100	544	55.1 - 135.7

Sample: 329761 - AH-7 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101739	Date Analyzed:	2013-05-26	Analyzed By:	AH
Prep Batch:	86200	Sample Preparation:	2013-05-23	Prepared By:	AH

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B,Qs	1	**2000**	mg/Kg	100	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			187	mg/Kg	100	200	94	70 - 130
4-Bromofluorobenzene (4-BFB)			212	mg/Kg	100	200	106	70 - 130

Sample: 329762 - AH-7 1-1.5'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	101738	Date Analyzed:	2013-05-26	Analyzed By:	AH
Prep Batch:	86199	Sample Preparation:	2013-05-25	Prepared By:	AH

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene [6]	U	1	<0.200	mg/Kg	10	0.0200
Toluene		1	**0.961**	mg/Kg	10	0.0200
Ethylbenzene		1	**11.2**	mg/Kg	10	0.0200
Xylene		1	**24.6**	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			18.4	mg/Kg	10	20.0	92	70 - 130
4-Bromofluorobenzene (4-BFB)			25.2	mg/Kg	10	20.0	126	70 - 130

Sample: 329762 - AH-7 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	101718	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	Sample Preparation:	2013-05-22	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**865**	mg/Kg	5	4.00

Sample: 329762 - AH-7 1-1.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101713	Date Analyzed:	2013-05-24	Analyzed By:	CW
Prep Batch:	86185	Sample Preparation:	2013-05-23	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	**774**	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		171	mg/Kg	1	100	171	55.1 - 135.7

Sample: 329762 - AH-7 1-1.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101742	Date Analyzed:	2013-05-27	Analyzed By:	AH
Prep Batch:	86203	Sample Preparation:	2013-05-25	Prepared By:	AH

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
GRO	Qs	1	**350**		mg/Kg	10	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			18.3	mg/Kg	10	20.0	92	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	32.9	mg/Kg	10	20.0	164	70 - 130

Method Blanks

Method Blank (1) QC Batch: 101673

QC Batch:	101673	Date Analyzed:	2013-05-23	Analyzed By:	CW
Prep Batch:	86150	QC Preparation:	2013-05-21	Prepared By:	CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	13.3	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	QSr	QSr	138	mg/Kg	1	100	138	55.1 - 135.7

Method Blank (1) QC Batch: 101713

QC Batch:	101713	Date Analyzed:	2013-05-24	Analyzed By:	CW
Prep Batch:	86185	QC Preparation:	2013-05-23	Prepared By:	CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	12.0	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			126	mg/Kg	1	100	126	55.1 - 135.7

Method Blank (1) QC Batch: 101717

QC Batch:	101717	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	QC Preparation:	2013-05-22	Prepared By:	AR

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

Method Blank (1) QC Batch: 101718

QC Batch:	101718	Date Analyzed:	2013-05-24	Analyzed By:	AR
Prep Batch:	86124	QC Preparation:	2013-05-22	Prepared By:	AR

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

Method Blank (1) QC Batch: 101738

QC Batch:	101738	Date Analyzed:	2013-05-26	Analyzed By:	AH
Prep Batch:	86199	QC Preparation:	2013-05-25	Prepared By:	AH

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)			1.80	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.77	mg/Kg	1	2.00	88	70 - 130

Method Blank (1) QC Batch: 101739

QC Batch:	101739	Date Analyzed:	2013-05-26	Analyzed By:	AH
Prep Batch:	86200	QC Preparation:	2013-05-23	Prepared By:	AH

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	4.42	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.78	mg/Kg	1	2.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)			1.62	mg/Kg	1	2.00	81	70 - 130

Method Blank (1) QC Batch: 101742

QC Batch: 101742 | Date Analyzed: 2013-05-27 | Analyzed By: AH
Prep Batch: 86203 | QC Preparation: 2013-05-25 | Prepared By: AH

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.78	mg/Kg	1	2.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

Method Blank (1) QC Batch: 101749

QC Batch: 101749 | Date Analyzed: 2013-05-28 | Analyzed By: AH
Prep Batch: 86209 | QC Preparation: 2013-05-27 | Prepared By: AH

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.85	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.79	mg/Kg	1	2.00	90	70 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 101673 | Date Analyzed: 2013-05-23 | Analyzed By: CW
Prep Batch: 86150 | QC Preparation: 2013-05-21 | Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	260	mg/Kg	1	250	13.3	99	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	282	mg/Kg	1	250	13.3	107	66.9 - 119.9	8	20

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

Surrogate			LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	Qsr	Qsr	155	166	mg/Kg	1	100	155	166	76.8 - 140.2

Laboratory Control Spike (LCS-1)

QC Batch: 101713 | Date Analyzed: 2013-05-24 | Analyzed By: CW
Prep Batch: 86185 | QC Preparation: 2013-05-23 | Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	242	mg/Kg	1	250	12	92	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	217	mg/Kg	1	250	12	82	66.9 - 119.9	11	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	138	125	mg/Kg	1	100	138	125	76.8 - 140.2

Laboratory Control Spike (LCS-1)

QC Batch: 101717 | Date Analyzed: 2013-05-24 | Analyzed By: AR
Prep Batch: 86124 | QC Preparation: 2013-05-22 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2770	mg/Kg	1	2500	<3.85	111	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			2830	mg/Kg	1	2500	<3.85	113	85 - 115	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 101718 | Date Analyzed: 2013-05-24 | Analyzed By: AR
Prep Batch: 86124 | QC Preparation: 2013-05-22 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2680	mg/Kg	1	2500	<3.85	107	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	7	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: 101738 | Date Analyzed: 2013-05-26 | Analyzed By: AH
Prep Batch: 86199 | QC Preparation: 2013-05-25 | Prepared By: AH

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.77	mg/Kg	1	2.00	<0.00810	88	70 - 130
Toluene		1	1.83	mg/Kg	1	2.00	<0.00750	92	70 - 130
Ethylbenzene		1	1.82	mg/Kg	1	2.00	<0.00730	91	70 - 130

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control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Xylene		1	5.31	mg/Kg	1	6.00	<0.00700	88	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	1.83	mg/Kg	1	2.00	<0.00810	92	70 - 130	3	20
Toluene		1	1.91	mg/Kg	1	2.00	<0.00750	96	70 - 130	4	20
Ethylbenzene		1	1.89	mg/Kg	1	2.00	<0.00730	94	70 - 130	4	20
Xylene		1	5.53	mg/Kg	1	6.00	<0.00700	92	70 - 130	4	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.81	1.80	mg/Kg	1	2.00	90	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.84	1.86	mg/Kg	1	2.00	92	93	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 101739 | Date Analyzed: 2013-05-26 | Analyzed By: AH
Prep Batch: 86200 | QC Preparation: 2013-05-23 | Prepared By: AH

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	23.4	mg/Kg	1	20.0	4.42	117	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	24.8	mg/Kg	1	20.0	4.42	124	70 - 130	6	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.86	1.88	mg/Kg	1	2.00	93	94	70 - 130
4-Bromofluorobenzene (4-BFB)	1.74	1.76	mg/Kg	1	2.00	87	88	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 101742 | Date Analyzed: 2013-05-27 | Analyzed By: AH
Prep Batch: 86203 | QC Preparation: 2013-05-25 | Prepared By: AH

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.6	mg/Kg	1	20.0	<2.32	93	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	18.5	mg/Kg	1	20.0	<2.32	92	70 - 130	0	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)	1.88	1.86	mg/Kg	1	2.00	94	93	70 - 130
4-Bromofluorobenzene (4-BFB)	1.88	1.86	mg/Kg	1	2.00	94	93	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 101749 | Date Analyzed: 2013-05-28 | Analyzed By: AH
Prep Batch: 86209 | QC Preparation: 2013-05-27 | Prepared By: AH

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.87	mg/Kg	1	2.00	<0.00810	94	70 - 130
Toluene		1	1.92	mg/Kg	1	2.00	<0.00750	96	70 - 130
Ethylbenzene		1	1.89	mg/Kg	1	2.00	<0.00730	94	70 - 130
Xylene		1	5.51	mg/Kg	1	6.00	<0.00700	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
Benzene		1	1.99	mg/Kg	1	2.00	<0.00810	100	70 - 130	6	20
Toluene		1	2.04	mg/Kg	1	2.00	<0.00750	102	70 - 130	6	20
Ethylbenzene		1	2.01	mg/Kg	1	2.00	<0.00730	100	70 - 130	6	20
Xylene		1	5.87	mg/Kg	1	6.00	<0.00700	98	70 - 130	6	20

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

continued ...

control spikes continued ...

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.76	1.82	mg/Kg	1	2.00	88	91	70 - 130
4-Bromofluorobenzene (4-BFB)	1.79	1.86	mg/Kg	1	2.00	90	93	70 - 130

Matrix Spike (MS-1) Spiked Sample: 329652

QC Batch: 101673 | Date Analyzed: 2013-05-23 | Analyzed By: CW
Prep Batch: 86150 | QC Preparation: 2013-05-21 | Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	319	mg/Kg	1	250	13.3	122	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	285	mg/Kg	1	250	13.3	109	36.1 - 147.2	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
n-Tricosane	106	97.9	mg/Kg	1	100	106	98	78.3 - 131.6

Matrix Spike (MS-1) Spiked Sample: 329762

QC Batch: 101713 | Date Analyzed: 2013-05-24 | Analyzed By: CW
Prep Batch: 86185 | QC Preparation: 2013-05-23 | Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Qs	Qs 1	1160	mg/Kg	1	250	774	154	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	1140	mg/Kg	1	250	774	146	36.1 - 147.2	2	20

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

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	Qsr	Qsr	153	150	mg/Kg	1	100	153	150	78.3 - 131.6

Matrix Spike (MS-1) Spiked Sample: 329753

QC Batch: 101717 | Date Analyzed: 2013-05-24 | Analyzed By: AR
Prep Batch: 86124 | QC Preparation: 2013-05-22 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			6640	mg/Kg	10	2500	4250	96	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			7090	mg/Kg	10	2500	4250	114	78.9 - 121	7	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: 329762

QC Batch: 101718 | Date Analyzed: 2013-05-24 | Analyzed By: AR
Prep Batch: 86124 | QC Preparation: 2013-05-22 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3500	mg/Kg	5	2500	865	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			3380	mg/Kg	5	2500	865	101	78.9 - 121	4	20

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

Matrix Spike (xMS-1) Spiked Sample: 329751

QC Batch: 101738 | Date Analyzed: 2013-05-26 | Analyzed By: AH
Prep Batch: 86199 | QC Preparation: 2013-05-25 | Prepared By: AH

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.60	mg/Kg	1	2.00	<0.00810	80	70 - 130
Toluene		1	1.70	mg/Kg	1	2.00	<0.00750	85	70 - 130
Ethylbenzene		1	1.75	mg/Kg	1	2.00	<0.00730	88	70 - 130
Xylene		1	5.13	mg/Kg	1	6.00	<0.00700	86	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.69	mg/Kg	1	2.00	<0.00810	84	70 - 130	6	20
Toluene		1	1.80	mg/Kg	1	2.00	<0.00750	90	70 - 130	6	20
Ethylbenzene		1	1.86	mg/Kg	1	2.00	<0.00730	93	70 - 130	6	20
Xylene		1	5.44	mg/Kg	1	6.00	<0.00700	91	70 - 130	6	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	1.85	mg/Kg	1	2	89	92	70 - 130
4-Bromofluorobenzene (4-BFB)	1.85	1.86	mg/Kg	1	2	92	93	70 - 130

Matrix Spike (MS-1) Spiked Sample: 329652

QC Batch: 101739 | Date Analyzed: 2013-05-26 | Analyzed By: AH
Prep Batch: 86200 | QC Preparation: 2013-05-23 | Prepared By: AH

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	16.0	mg/Kg	1	20.0	4.47	58	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	Qs	Qs	16.2	mg/Kg	1	20.0	4.47	59	70 - 130	1	20

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

continued ...

matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.70	1.74	mg/Kg	1	2	85	87	70 - 130
4-Bromofluorobenzene (4-BFB)	1.72	1.77	mg/Kg	1	2	86	88	70 - 130

Matrix Spike (xMS-1) Spiked Sample: 329751

QC Batch: 101742 | Date Analyzed: 2013-05-27 | Analyzed By: AH
Prep Batch: 86203 | QC Preparation: 2013-05-25 | Prepared By: AH

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs Qs	1	11.6	mg/Kg	1	20.0	3.02	43	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	Qs Qs	1	13.1	mg/Kg	1	20.0	3.02	50	70 - 130	12	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.68	1.78	mg/Kg	1	2	84	89	70 - 130
4-Bromofluorobenzene (4-BFB)	1.81	1.91	mg/Kg	1	2	90	96	70 - 130

Matrix Spike (MS-1) Spiked Sample: 329652

QC Batch: 101749 | Date Analyzed: 2013-05-28 | Analyzed By: AH
Prep Batch: 86209 | QC Preparation: 2013-05-27 | Prepared By: AH

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.65	mg/Kg	1	2.00	<0.00810	82	70 - 130
Toluene		1	1.79	mg/Kg	1	2.00	<0.00750	90	70 - 130
Ethylbenzene		1	1.86	mg/Kg	1	2.00	<0.00730	93	70 - 130
Xylene		1	5.46	mg/Kg	1	6.00	<0.00700	91	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene			1.65	mg/Kg	1	2.00	<0.00810	82	70 - 130	0	20
Toluene			1.79	mg/Kg	1	2.00	<0.00750	90	70 - 130	0	20
Ethylbenzene			1.87	mg/Kg	1	2.00	<0.00730	94	70 - 130	0	20
Xylene			5.47	mg/Kg	1	6.00	<0.00700	91	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)	1.81	1.73	mg/Kg	1	2	90	86	70 - 130
4-Bromofluorobenzene (4-BFB)	1.91	1.80	mg/Kg	1	2	96	90	70 - 130

Calibration Standards

Standard (CCV-1)

QC Batch: 101673 Date Analyzed: 2013-05-23 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	2013-05-23

Standard (CCV-2)

QC Batch: 101673 Date Analyzed: 2013-05-23 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	208	83	80 - 120	2013-05-23

Standard (CCV-3)

QC Batch: 101673 Date Analyzed: 2013-05-23 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	282	113	80 - 120	2013-05-23

Standard (CCV-4)

QC Batch: 101673 Date Analyzed: 2013-05-23 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	270	108	80 - 120	2013-05-23

Standard (CCV-1)

QC Batch: 101713 Date Analyzed: 2013-05-24 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	212	85	80 - 120	2013-05-24

Standard (CCV-2)

QC Batch: 101713 Date Analyzed: 2013-05-24 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	205	82	80 - 120	2013-05-24

Standard (CCV-1)

QC Batch: 101717 Date Analyzed: 2013-05-24 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	2013-05-24

Standard (CCV-2)

QC Batch: 101717 Date Analyzed: 2013-05-24 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	2013-05-24

Standard (CCV-1)

QC Batch: 101718 Date Analyzed: 2013-05-24 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	2013-05-24

Standard (CCV-2)

QC Batch: 101718 Date Analyzed: 2013-05-24 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	2013-05-24

Standard (CCV-1)

QC Batch: 101738 Date Analyzed: 2013-05-26 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0926	93	80 - 120	2013-05-26
Toluene		1	mg/kg	0.100	0.0954	95	80 - 120	2013-05-26
Ethylbenzene		1	mg/kg	0.100	0.0950	95	80 - 120	2013-05-26
Xylene		1	mg/kg	0.300	0.277	92	80 - 120	2013-05-26

Standard (CCV-2)

QC Batch: 101738 Date Analyzed: 2013-05-26 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0929	93	80 - 120	2013-05-26
Toluene		1	mg/kg	0.100	0.0968	97	80 - 120	2013-05-26
Ethylbenzene		1	mg/kg	0.100	0.0951	95	80 - 120	2013-05-26
Xylene		1	mg/kg	0.300	0.277	92	80 - 120	2013-05-26

Standard (CCV-3)

QC Batch: 101738 Date Analyzed: 2013-05-26 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0866	87	80 - 120	2013-05-26
Toluene		1	mg/kg	0.100	0.0896	90	80 - 120	2013-05-26
Ethylbenzene		1	mg/kg	0.100	0.0881	88	80 - 120	2013-05-26
Xylene		1	mg/kg	0.300	0.257	86	80 - 120	2013-05-26

Standard (CCV-1)

QC Batch: 101739 Date Analyzed: 2013-05-26 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.20	120	80 - 120	2013-05-26

Standard (CCV-2)

QC Batch: 101739 Date Analyzed: 2013-05-26 Analyzed By: AH

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	2013-05-26

Standard (CCV-3)

QC Batch: 101739 Date Analyzed: 2013-05-26 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.03	103	80 - 120	2013-05-26

Standard (CCV-1)

QC Batch: 101742 Date Analyzed: 2013-05-27 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.853	85	80 - 120	2013-05-27

Standard (CCV-2)

QC Batch: 101742 Date Analyzed: 2013-05-27 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.876	88	80 - 120	2013-05-27

Standard (CCV-1)

QC Batch: 101749 Date Analyzed: 2013-05-28 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0909	91	80 - 120	2013-05-28
Toluene		1	mg/kg	0.100	0.0936	94	80 - 120	2013-05-28
Ethylbenzene		1	mg/kg	0.100	0.0918	92	80 - 120	2013-05-28
Xylene		1	mg/kg	0.300	0.268	89	80 - 120	2013-05-28

Standard (CCV-2)

QC Batch: 101749 Date Analyzed: 2013-05-28 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0894	89	80 - 120	2013-05-28
Toluene		1	mg/kg	0.100	0.0917	92	80 - 120	2013-05-28
Ethylbenzene		1	mg/kg	0.100	0.0903	90	80 - 120	2013-05-28
Xylene		1	mg/kg	0.300	0.263	88	80 - 120	2013-05-28

Standard (CCV-3)

QC Batch: 101749 Date Analyzed: 2013-05-28 Analyzed By: AH

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0903	90	80 - 120	2013-05-28
Toluene		1	mg/kg	0.100	0.0922	92	80 - 120	2013-05-28
Ethylbenzene		1	mg/kg	0.100	0.0898	90	80 - 120	2013-05-28
Xylene		1	mg/kg	0.300	0.262	87	80 - 120	2013-05-28

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

Result Comments

1 Dilution due to hydrocarbons.
2 Dilution due to hydrocarbons.
3 Dilution due to hydrocarbons.
4 Dilution due to hydrocarbons.
5 Dilution due to hydrocarbons.
6 Dilution due to hydrocarbons.

Attachments

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

13052005

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: COG
SITE MANAGER: Ike Tavarez
PROJECT NO.: 112MCOS
PROJECT NAME: COG - Empire SDY #3 Eddy Co, NM

LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	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	Rest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
329747	5/14		S		X	AH 1 (0-1')	1				X		X	X											X			
748			S		X	(1-1.5')	1				X														X			
749			S		X	AH 2 (0-1')	1				X		X	X											X			
750			S		X	(1-1.5')	1				X														X			
751			S		X	(2-2.5')	1				X														X			
752			S		X	AH 3 (0-1')	1				X		X	X											X			
753			S		X	(1-1.5')	1				X														X			
754			S		X	(2-2.5')	1				X														X			
755			S		X	AH 4 (0-1')	1				X		X	X											X			
756			S		X	(1-1.5')	1				X														X			

RELINQUISHED BY: (Signature)	Date: 5/17/13 Time: 1535	RECEIVED BY: (Signature)	Date: 5-17-13 Time: 15:30
SAMPLED BY: (Print & Initial) AG/BR	Date: 5/17/13 Time: 1535		
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS	AIRBILL #: OTHER:		
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
TETRA TECH CONTACT PERSON: Ike	Results by: RUSH Charges Authorized: Yes No		
RECEIVING LABORATORY: Trale ADDRESS: CITY: Midland STATE: ZIP: CONTACT: PHONE:	RECEIVED BY: (Signature) DATE: TIME:		

SAMPLE CONDITION WHEN RECEIVED: 3.8

REMARKS: Run deeper sample if TPH exceed 5,000 mg/kg. - Run deeper depths of benzene exceed 10 mg/kg or 50 mg/kg. TCLP BTEX Midland - all

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

13052005

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: 2 OF: 2

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112MC05

PROJECT NAME: COG - Empire SD4 # 3 Eddy Co, NM

LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	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	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
757	5/14		S		X	AH 5 (0-1')	1				X		X	X											X			
758	↓		S		X	(1-1.5')	1				X														X			
759	5/15		S		X	AH 6 (0-1')	1				X		X	X											X			
760	↓		S		X	(1-1.5')	1				X														X			
761	↓		S		X	AH 7 (0-1')	1				X		X	X											X			
762	↓		S		X	(1-1.5')	1				X														X			

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date: 5/17/13 Time: 1530	RECEIVED BY: (Signature) A. Hernandez	Date: 5.17.13 Time: 15:30	SAMPLED BY: (Print & Initial) AG / RR	Date: 5/17/13 Time: 1535
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:	SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS	AIRBILL #: OTHER:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:	TETRA TECH CONTACT PERSON: Ike	Results by:
RECEIVING LABORATORY: Trace ADDRESS: CITY: Midland STATE: ZIP: CONTACT: PHONE:		RECEIVED BY: (Signature) DATE: TIME:			RUSH Charges Authorized: Yes No
SAMPLE CONDITION WHEN RECEIVED: 3.8		REMARKS:			

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

Summary Report

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

Report Date: November 14, 2013

Work Order: 13110126

Project Location: Eddy Co, NM
Project Name: COG/Electra Fed #5 Water Line
Project Number: 112MC05971

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
345632	BG 0'	soil	2013-09-16	00:00	2013-11-01
345633	BG 2'	soil	2013-09-16	00:00	2013-11-01
345634	BG 4'	soil	2013-09-16	00:00	2013-11-01
345635	BG 6'	soil	2013-09-16	00:00	2013-11-01
345636	BG 8'	soil	2013-09-16	00:00	2013-11-01
345637	BG 10'	soil	2013-09-16	00:00	2013-11-01
345638	T2 (AH 2)1.5' EB 3'	soil	2013-09-16	00:00	2013-11-01
345639	T2 (AH 2)1.5' EB 2'	soil	2013-09-16	00:00	2013-11-01
345640	T2 (AH 2)1.5' EB 0'	soil	2013-09-16	00:00	2013-11-01
345641	T1 (AH 3)3.5' EB 3.5'	soil	2013-09-16	00:00	2013-11-01
345642	T1 (AH 3)3.5' EB 1.5'	soil	2013-09-16	00:00	2013-11-01
345643	T1 (AH 3)3.5' EB 0'	soil	2013-09-16	00:00	2013-11-01

Sample: 345632 - BG 0'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 345633 - BG 2'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 345634 - BG 4'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 345635 - BG 6'

Param	Flag	Result	Units	RL
Chloride		**98.1**	mg/Kg	4

Sample: 345636 - BG 8'

Param	Flag	Result	Units	RL
Chloride		**284**	mg/Kg	4

Sample: 345637 - BG 10'

Param	Flag	Result	Units	RL
Chloride		**294**	mg/Kg	4

Sample: 345638 - T2 (AH 2)1.5' EB 3'

Param	Flag	Result	Units	RL
Chloride		**1030**	mg/Kg	4

Sample: 345639 - T2 (AH 2)1.5' EB 2'

Param	Flag	Result	Units	RL
Chloride		**2210**	mg/Kg	4

Sample: 345640 - T2 (AH 2)1.5' EB 0'

Param	Flag	Result	Units	RL
Chloride		**687**	mg/Kg	4

Sample: 345641 - T1 (AH 3)3.5' EB 3.5'

Param	Flag	Result	Units	RL
Chloride		**1230**	mg/Kg	4

Sample: 345642 - T1 (AH 3)3.5' EB 1.5'

Param	Flag	Result	Units	RL
Chloride		**856**	mg/Kg	4

Sample: 345643 - T1 (AH 3)3.5' EB 0'

Param	Flag	Result	Units	RL
Chloride		**4090**	mg/Kg	4

Summary Report

(Corrected Report)

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

Report Date: November 20, 2013

Work Order: 13110126

Project Location: Eddy Co., NM
Project Name: COG/Empire SDU #3
Project Number: 112MC05409

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
345632	BG 0'	soil	2013-09-16	00:00	2013-11-01
345633	BG 2'	soil	2013-09-16	00:00	2013-11-01
345634	BG 4'	soil	2013-09-16	00:00	2013-11-01
345635	BG 6'	soil	2013-09-16	00:00	2013-11-01
345636	BG 8'	soil	2013-09-16	00:00	2013-11-01
345637	BG 10'	soil	2013-09-16	00:00	2013-11-01
345638	T2 (AH 2)1.5' EB 3'	soil	2013-09-16	00:00	2013-11-01
345639	T2 (AH 2)1.5' EB 2'	soil	2013-09-16	00:00	2013-11-01
345640	T2 (AH 2)1.5' EB 0'	soil	2013-09-16	00:00	2013-11-01
345641	T1 (AH 3)3.5' EB 3.5'	soil	2013-09-16	00:00	2013-11-01
345642	T1 (AH 3)3.5' EB 1.5'	soil	2013-09-16	00:00	2013-11-01
345643	T1 (AH 3)3.5' EB 0'	soil	2013-09-16	00:00	2013-11-01

Sample: 345632 - BG 0'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 345633 - BG 2'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 345634 - BG 4'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 345635 - BG 6'

Param	Flag	Result	Units	RL
Chloride		**98.1**	mg/Kg	4

Sample: 345636 - BG 8'

Param	Flag	Result	Units	RL
Chloride		**284**	mg/Kg	4

Sample: 345637 - BG 10'

Param	Flag	Result	Units	RL
Chloride		**294**	mg/Kg	4

Sample: 345638 - T2 (AH 2)1.5' EB 3'

Param	Flag	Result	Units	RL
Chloride		**1030**	mg/Kg	4

Sample: 345639 - T2 (AH 2)1.5' EB 2'

Param	Flag	Result	Units	RL
Chloride		**2210**	mg/Kg	4

Sample: 345640 - T2 (AH 2)1.5' EB 0'

Param	Flag	Result	Units	RL
Chloride		**687**	mg/Kg	4

Sample: 345641 - T1 (AH 3)3.5' EB 3.5'

Param	Flag	Result	Units	RL
Chloride		**1230**	mg/Kg	4

Sample: 345642 - T1 (AH 3)3.5' EB 1.5'

Param	Flag	Result	Units	RL
Chloride		**856**	mg/Kg	4

Sample: 345643 - T1 (AH 3)3.5' EB 0'

Param	Flag	Result	Units	RL
Chloride		**4090**	mg/Kg	4

TRACEANALYSIS, INC.

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

Certifications

WBENC: 237019 **HUB:** 1752439743100-86536 **DBE:** VN 20657
NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317 **El Paso:** T104704221-08-TX LELAP-02002 **Midland:** T104704392-08-TX

Analytical and Quality Control Report

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

Report Date: November 20, 2013

Work Order: 13110126

Project Location: Eddy Co., NM
Project Name: COG/Empire SDU #3
Project Number: 112MC05409

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
345632	BG 0'	soil	2013-09-16	00:00	2013-11-01
345633	BG 2'	soil	2013-09-16	00:00	2013-11-01
345634	BG 4'	soil	2013-09-16	00:00	2013-11-01
345635	BG 6'	soil	2013-09-16	00:00	2013-11-01
345636	BG 8'	soil	2013-09-16	00:00	2013-11-01
345637	BG 10'	soil	2013-09-16	00:00	2013-11-01
345638	T2 (AH 2)1.5' EB 3'	soil	2013-09-16	00:00	2013-11-01
345639	T2 (AH 2)1.5' EB 2'	soil	2013-09-16	00:00	2013-11-01
345640	T2 (AH 2)1.5' EB 0'	soil	2013-09-16	00:00	2013-11-01
345641	T1 (AH 3)3.5' EB 3.5'	soil	2013-09-16	00:00	2013-11-01
345642	T1 (AH 3)3.5' EB 1.5'	soil	2013-09-16	00:00	2013-11-01

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
345643	T1 (AH 3)3.5' EB 0'	soil	2013-09-16	00:00	2013-11-01

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

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

Standard Flags

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

Case Narrative

Samples for project COG/Empire SDU #3 were received by TraceAnalysis, Inc. on 2013-11-01 and assigned to work order 13110126. Samples for work order 13110126 were received intact at a temperature of 22.6 C. Samples not on ice. Out of hold time... run as is.

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	90323	2013-11-08 at 10:48	106744	2013-11-13 at 13:49
Chloride (Titration)	SM 4500-Cl B	90323	2013-11-08 at 10:48	106747	2013-11-13 at 14:31

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 13110126 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 345632 - BG 0'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

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

Sample: 345633 - BG 2'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

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

Sample: 345634 - BG 4'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

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

Sample: 345635 - BG 6'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

continued ...

sample 345635 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**98.1**	mg/Kg	5	4.00

Sample: 345636 - BG 8'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**284**	mg/Kg	5	4.00

Sample: 345637 - BG 10'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**294**	mg/Kg	5	4.00

Sample: 345638 - T2 (AH 2)1.5' EB 3'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**1030**	mg/Kg	5	4.00

Sample: 345639 - T2 (AH 2)1.5' EB 2'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**2210**		mg/Kg	10	4.00

Sample: 345640 - T2 (AH 2)1.5' EB 0'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**687**		mg/Kg	5	4.00

Sample: 345641 - T1 (AH 3)3.5' EB 3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**1230**		mg/Kg	10	4.00

Sample: 345642 - T1 (AH 3)3.5' EB 1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106747	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**856**		mg/Kg	5	4.00

Sample: 345643 - T1 (AH 3)3.5' EB 0'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	106747	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	Sample Preparation:	2013-11-08	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**4090**	mg/Kg	10	4.00

Method Blank (1) QC Batch: 106744

QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	QC Preparation:	2013-11-08	Prepared By:	AR

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

Method Blank (1) QC Batch: 106747

QC Batch:	106747	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	QC Preparation:	2013-11-08	Prepared By:	AR

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

Laboratory Control Spike (LCS-1)

QC Batch:	106744	Date Analyzed:	2013-11-13	Analyzed By:	AR
Prep Batch:	90323	QC Preparation:	2013-11-08	Prepared By:	AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	2300	mg/Kg	1	2500	<3.85	92	89.7 - 115.9

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

continued ...

control spikes continued ...

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	2410	mg/Kg	1	2500	<3.85	96	89.7 - 115.9	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: 106747 | Date Analyzed: 2013-11-13 | Analyzed By: AR
Prep Batch: 90323 | QC Preparation: 2013-11-08 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	2550	mg/Kg	1	2500	<3.85	102	89.7 - 115.9

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	2400	mg/Kg	1	2500	<3.85	96	89.7 - 115.9	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: 345641

QC Batch: 106744 | Date Analyzed: 2013-11-13 | Analyzed By: AR
Prep Batch: 90323 | QC Preparation: 2013-11-08 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	3930	mg/Kg	10	2500	1230	108	78.9 - 121

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	3670	mg/Kg	10	2500	1230	98	78.9 - 121	7	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: 345651

QC Batch: 106747 | Date Analyzed: 2013-11-13 | Analyzed By: AR
Prep Batch: 90323 | QC Preparation: 2013-11-08 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	7090	mg/Kg	10	2500	4880	88	78.9 - 121

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	7460	mg/Kg	10	2500	4880	103	78.9 - 121	5	20

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

Standard (CCV-1)

QC Batch: 106744 Date Analyzed: 2013-11-13 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.5	100	85 - 115	2013-11-13

Standard (CCV-2)

QC Batch: 106744 Date Analyzed: 2013-11-13 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2013-11-13

Standard (CCV-1)

QC Batch: 106747 Date Analyzed: 2013-11-13 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.0	99	85 - 115	2013-11-13

Standard (CCV-2)

QC Batch: 106747 Date Analyzed: 2013-11-13 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2013-11-13

1/11/26

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 2

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: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112MC05971

PROJECT NAME: COG / Empire SDU #3

LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	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	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
34532	4/14/13		S		X	BG 0'	1																	X				
633			S		X	2'	1																	X				
634			S		X	4'	1																	X				
635			S		X	6'	1																	X				
636			S		X	8'	1																	X				
637			S		X	10'	1																	X				
638			S		X	T2 (AH2) 1.5' EB 3'	1																	X				
639			S		X	T2 (AH2) 1.5' EB 2'	1																	X				
640			S		X	T2 (AH2) 1.5' EB 0'	1																	X				
641			S		X	T1 (AH3) 3.5' EB 3.5'	1																	X				

RELINQUISHED BY: (Signature) Date: 4/14/13 Time: 14:30

RECEIVED BY: (Signature) Date: 4/14/13 Time: 14:32

SAMPLED BY: (Print & Initial) RL HP Date: 4/14/13 Time: 14:30

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS

AIRBILL #:

OTHER:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RECEIVING LABORATORY: Trace

ADDRESS:

CITY: Midland STATE: ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: TIME:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 22.6°

REMARKS: Out of hold - run as is

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

131101216

Analysis Request of Chain of Custody Record

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: COG | SITE MANAGER: Ike Tavarez

PROJECT NO.: 112mc05971 | PROJECT NAME: COG Empire SD Lift #3 Eddy Co, NM

LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	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	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
642	9/16/13		S		X	T1 (AH3) 3.5' EB 1.5'	1																	X				
643	↓		S		X	T1 (AH3) 3.5' EB 0'	1																	X				

RELINQUISHED BY: (Signature)	Date: 11/11/13 Time: 1430	RECEIVED BY: (Signature)	Date: 11/13 Time: 1430
SAMPLED BY: (Print & Initial) AC HP	Date: 11/13 Time: 1430		
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS	AIRBILL #: OTHER:		
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
TETRA TECH CONTACT PERSON: Ike Tavarez	Results by:		
RECEIVING LABORATORY: Trace ADDRESS: CITY: Midland STATE: ZIP: CONTACT: PHONE:	RECEIVED BY: (Signature) DATE: TIME:		RUSH Charges Authorized: Yes No
SAMPLE CONDITION WHEN RECEIVED: 22.6°	REMARKS:		

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