SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	**Moncrief State #001**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit L**	**Sec 23**	**T17S**	**R28E**		
Lease Number:	**API-30-015-25017**					
County:	**Eddy County**					
GPS:	**32.81742° N**			**104.15406° W**		
Surface Owner:	**State**					
Mineral Owner:						
Directions:	From Artesia travel east for approx. 13.5 miles on hwy. 82. Turn north on Red Lake Rd. and travel approx. 1.5 miles turning east on the lease road traveling 1.0 miles east to the location.					

Release Data:	
Date Released:	6/1/2013
Type Release:	Produced Water
Source of Contamination:	Murphy swithc on a water tank.
Fluid Released:	10 bbls
Fluids Recovered:	7 bbls

Official Communication:			
Name:	Robert McNeill		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring St.
	600 W. Illinois Ave.		
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	**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:	**10**	

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

TETRA TECH

January 15, 2014

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, Moncrief State #001 Tank Battery, Unit L, Section 23, Township 17 South, Range 28 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Moncrief State #001 Tank Battery located in Unit L, Section 23, Township 17 South, Range 28 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81742°, W 104.15406°. 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 June 1, 2013, which released approximately ten (10) barrels of produced water from a murphy switch failure. To alleviate the problem, COG personnel repaired the murphy switch. Seven (7) barrels of produced water were recovered. The spill was contained within the berms of the tank battery affecting an area approximately 20' X 35'. The initial C-141 form is enclosed in Appendix A.

Groundwater

There were no wells listed in Section 23, however to the NMOCD groundwater map the depth to groundwater is between 50' and 100' below surface. The groundwater data is shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as

Tetra Tech
4000 North Big Spring, Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 1,000 mg/kg.

Soil Assessment and Analytical Results

On July 12, 2013, Tetra Tech personnel inspected and sampled the spill area. Two (2) auger holes (AH-1 and AH-2) were installed using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, a shallow hydrocarbon impact was detected in the subsurface soils. TPH and total BTEX concentrations were detected above the RRAL in the area of AH-2 of 1,254 mg/kg and 67.4 mg/kg at 0-1.0' below surface. Auger hole (AH-2) was undefined for both BTEX and TPH.

Auger holes (AH-1 and AH-2) showed chloride concentrations at 0-1' of 1,420 mg/kg and 19,100 mg/kg, respectively. Deeper samples could not be collected due to the dense formation at the location. The areas of AH-1 and AH-2 were not vertically defined for chlorides.

Remedial Activities

On December 11, 2013, Tetra Tech personnel supervised the excavation of impacted material as highlighted (green) in Table 1 and shown on Figure 4. Prior to excavating, the areas of AH-1 and AH-2 were trenched with a mini-excavator to define extents for chlorides. In addition, the area of AH-2 was evaluated for TPH and total BTEX.

Auger holes (AH-1 and AH-2) were trenched to a depth of 3.0' and deeper excavation could not be performed due to a dense underlying formation. Referring to Table 1, the area of AH-1 (T-1) showed chloride concentrations of 2,100 mg/kg at 2.0' and 949 mg/kg at 3.0' below surface. Based on the results, the area was excavated to approximately 3.0' below surface.

In the area of AH-2 (T-2) showed elevated chloride concentrations of 26,400 mg/kg at 1.0' and declined to 12,600 mg/kg at 3.0' below surface. This area was not vertically defined. In addition, the TPH and total BTEX concentrations declined below the RRAL at 1.0' below surface. Due to the proximity of equipment, lines, and tanks in the area of AH-2, the area was excavated to a depth of 1.0' below surface. Based on the data and limited impacted area, the remaining impacted soil will be deferred until the abandonment of the facility. In addition, a clay cap was installed in both areas to prevent vertical migration of the remaining impact in the

soils. Approximately 18 yards of impacted soil were transported to proper disposal and the excavation was backfilled with clean soil to grade.

Conclusion

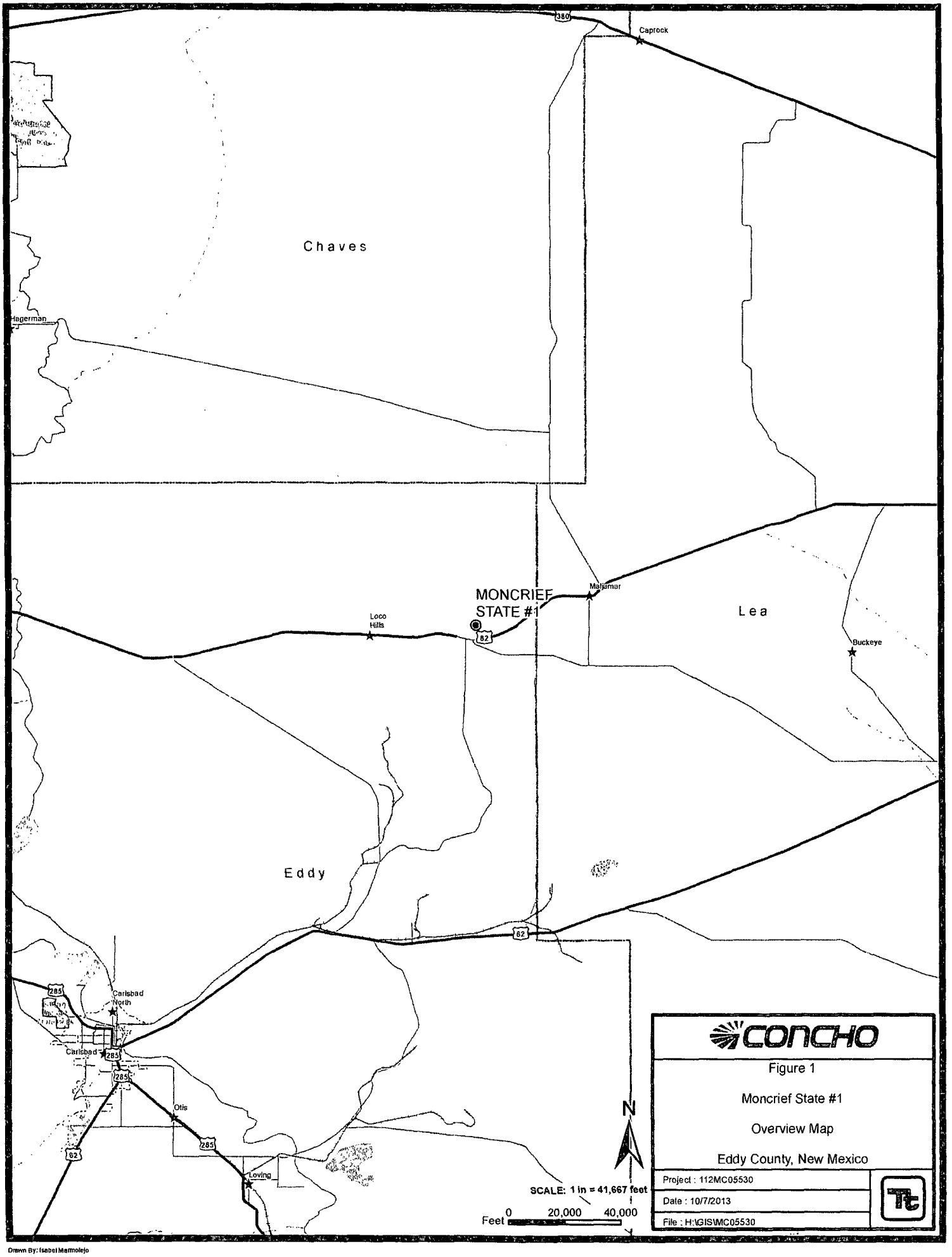
COG requests closure of this site based on the remedial actions taken. A Final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remedial activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

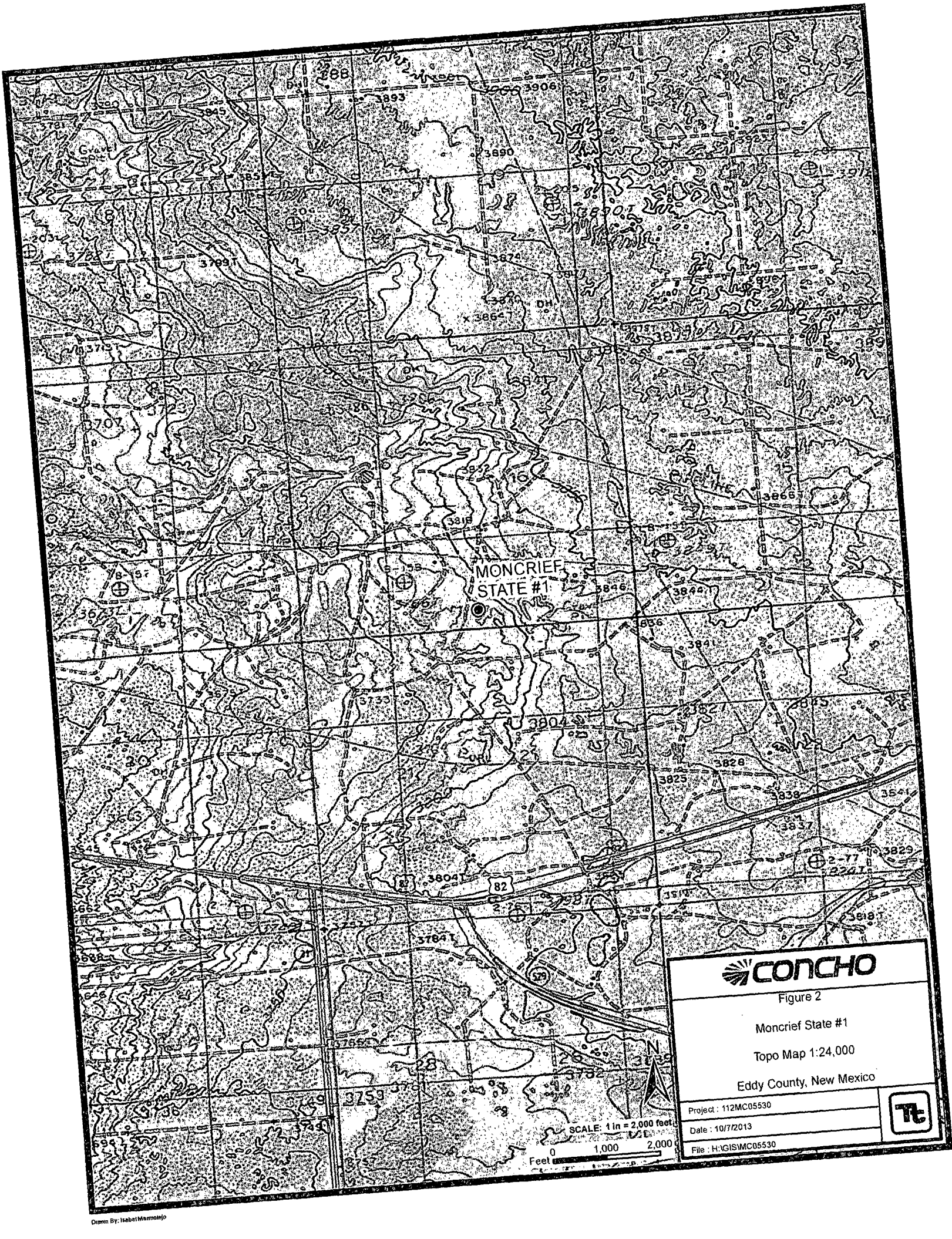
Marcus Kujawski
Technician IV

cc: Robert McNeill – COG

Figures



Drawn By: Isabel Marmolejo



CONCHO

Figure 2

Moncrief State #1

Topo Map 1:24,000

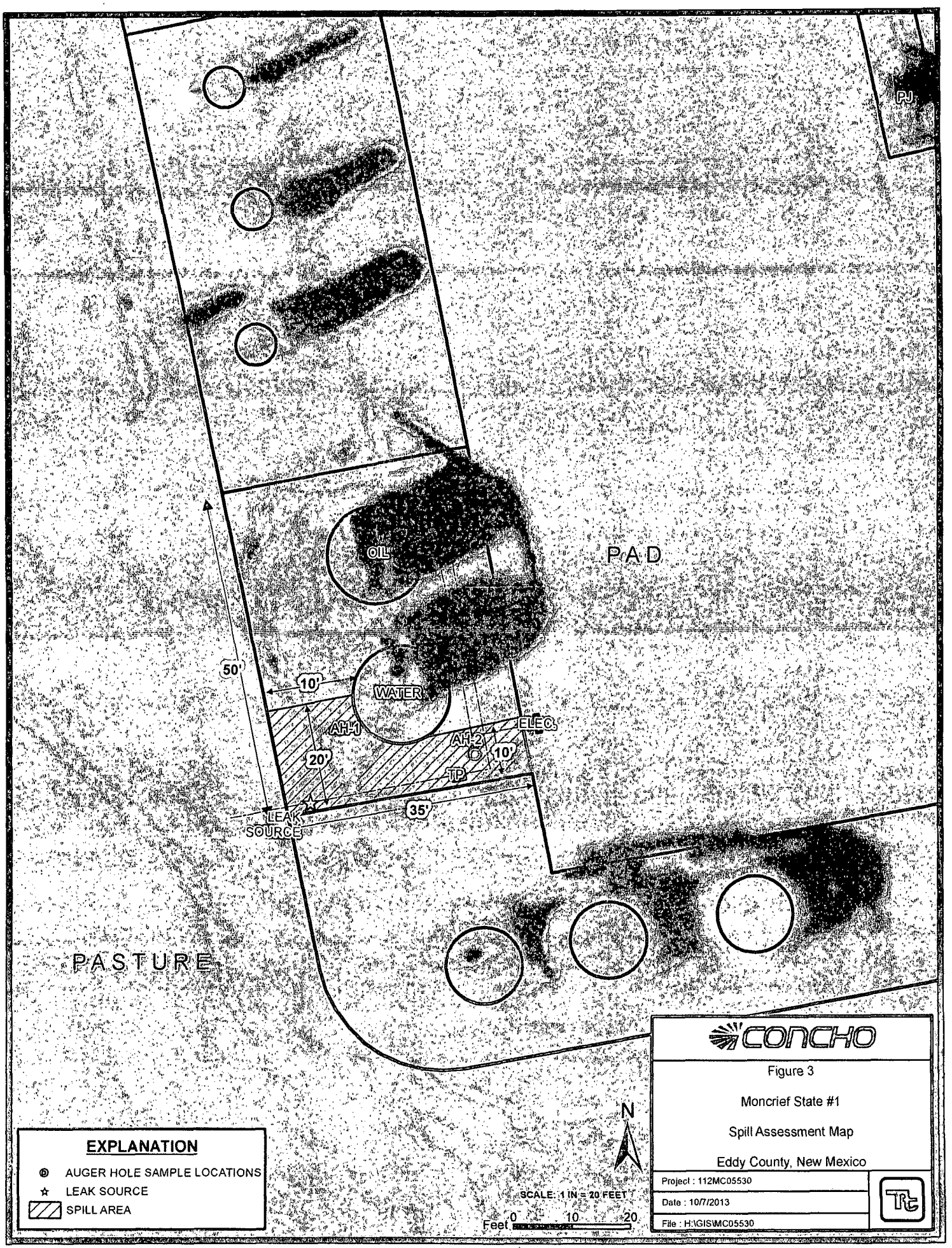
Eddy County, New Mexico

Project : 112MC05530

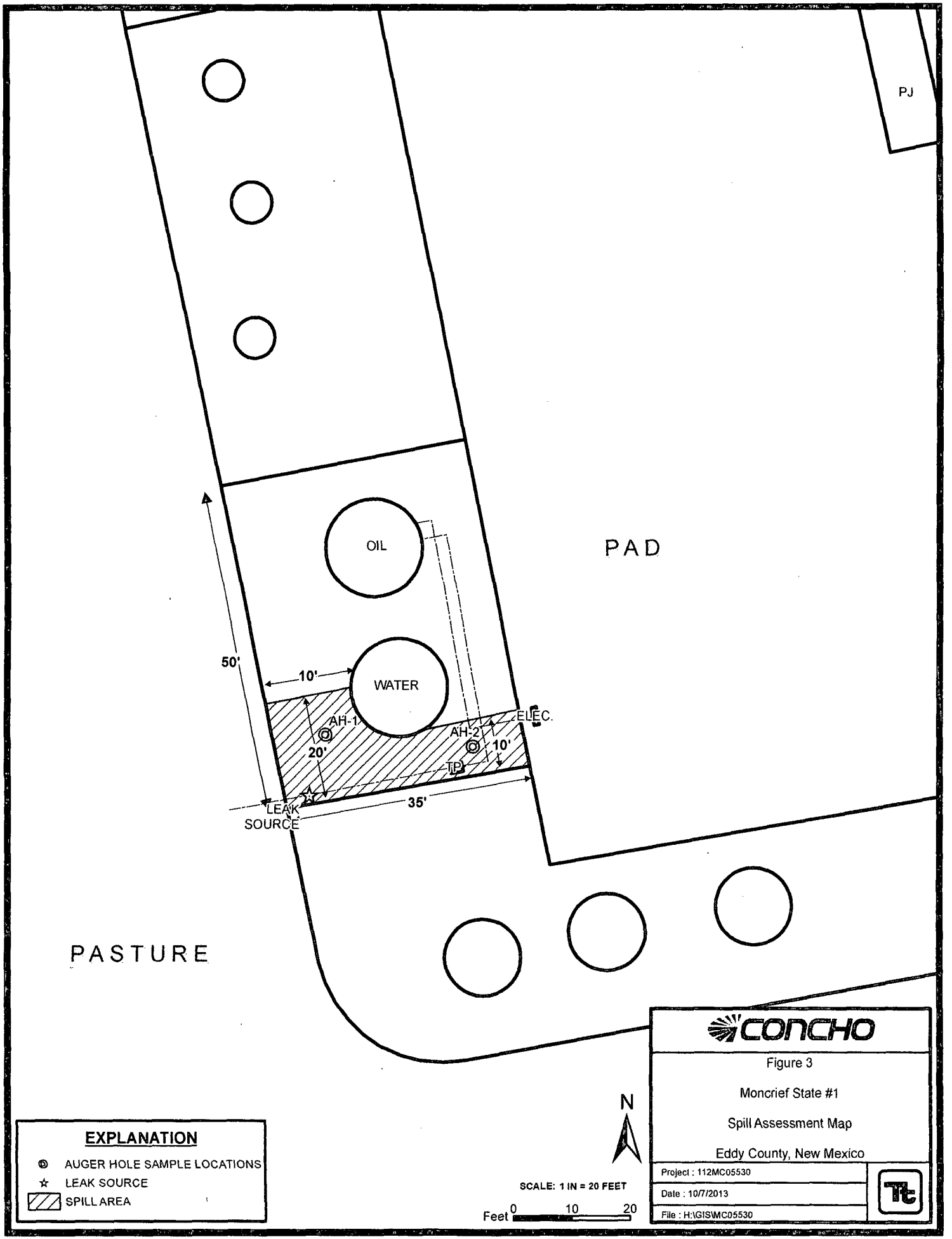
Date : 10/7/2013

File : H:\GIS\MC05530

Drawn By: Isabel Marmolejo



Drawn By: Isabel Mamolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- LEAK SOURCE
- SPILL AREA

CONCHO

Figure 3

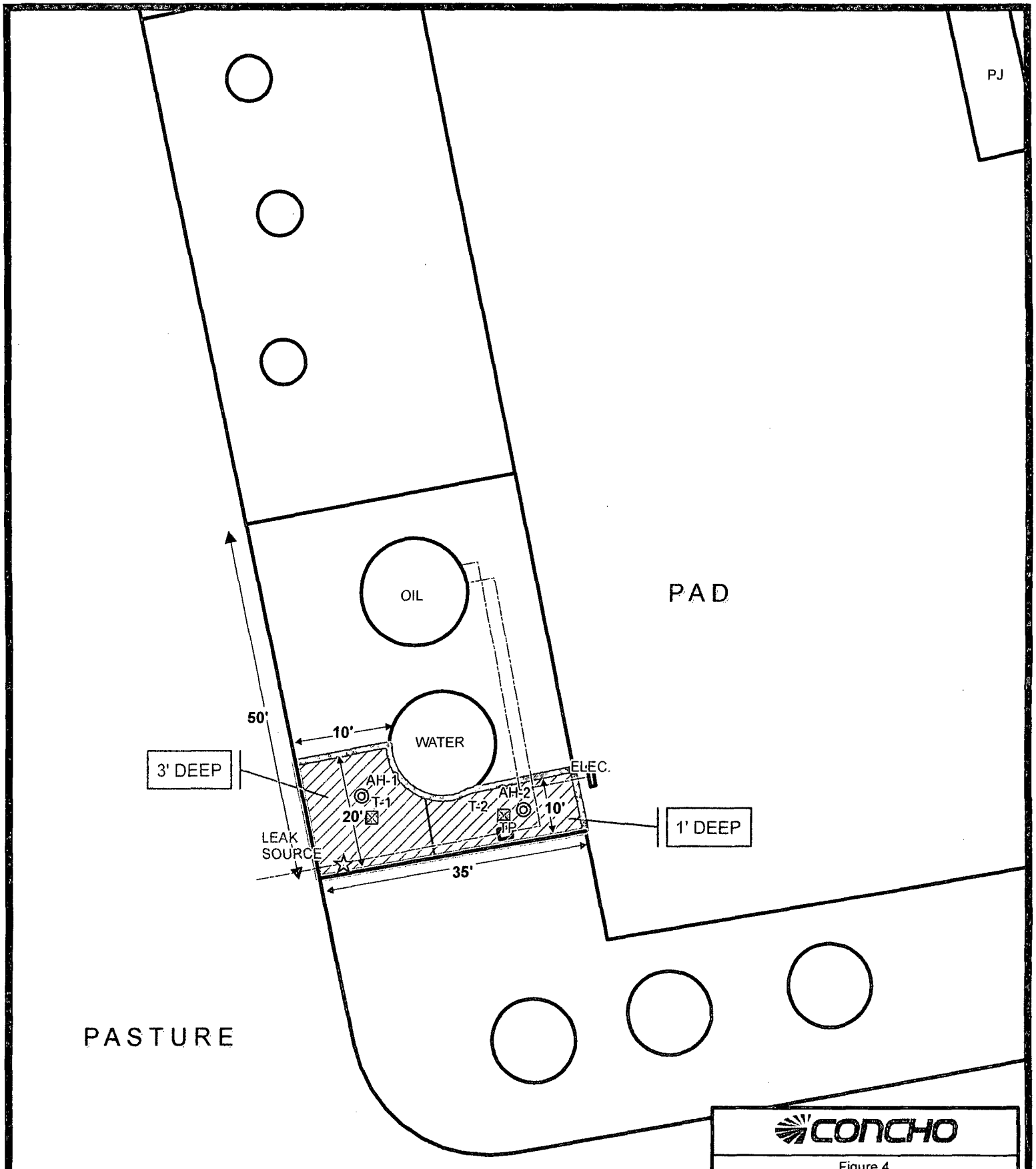
Moncrief State #1

Spill Assessment Map

Eddy County, New Mexico

Project : 112MC05530	
Date : 10/7/2013	
File : H:\GIS\MC05530	

Drwn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- LEAK SOURCE
- TRENCH LOCATIONS
- CLAY LINER INSTALLED
- EXCAVATION AREAS & DEPTHS

N

SCALE: 1 IN = 20 FEET

Feet 0 10 20

CONCHO

Figure 4

Moncrief State #1

Excavation Areas & Depths Map

Eddy County, New Mexico

Project : 112MC05530	
Date : 10/23/2013	
File : H:\GIS\MC05530	

Drawn By: Isabel Marmolejo

Tables

Table 1
COG Operating, LLC
Moncrief
Eddy County, New Mexico

Sample ID	Sample Date	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	7/24/2013	0-1	0		X	39.5	477	517	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,420
T-1	12/12/2013	0	-		X	-	-	-	-	-	-	-	-	846
	"	2	-		X	-	-	-	-	-	-	-	-	2,100
	"	3	3		X	-	-	-	-	-	-	-	-	949
AH-2	7/24/2013	0-1	0		X	577	677	1,254	<0.100	3.7	22.9	40.8	67.4	19,100
T-2	12/12/2013	1	1		X	<10.0	158	158	<0.050	<0.050	<0.050	<0.150	<0.300	26,400
	"	2	-	X		<50.0	824	824	<0.050	<0.050	<0.050	<0.150	<0.300	15,400
	"	3	-	X		<10.0	42.6	42.6	<0.050	<0.050	<0.050	<0.150	<0.300	12,600

Excavated Depths

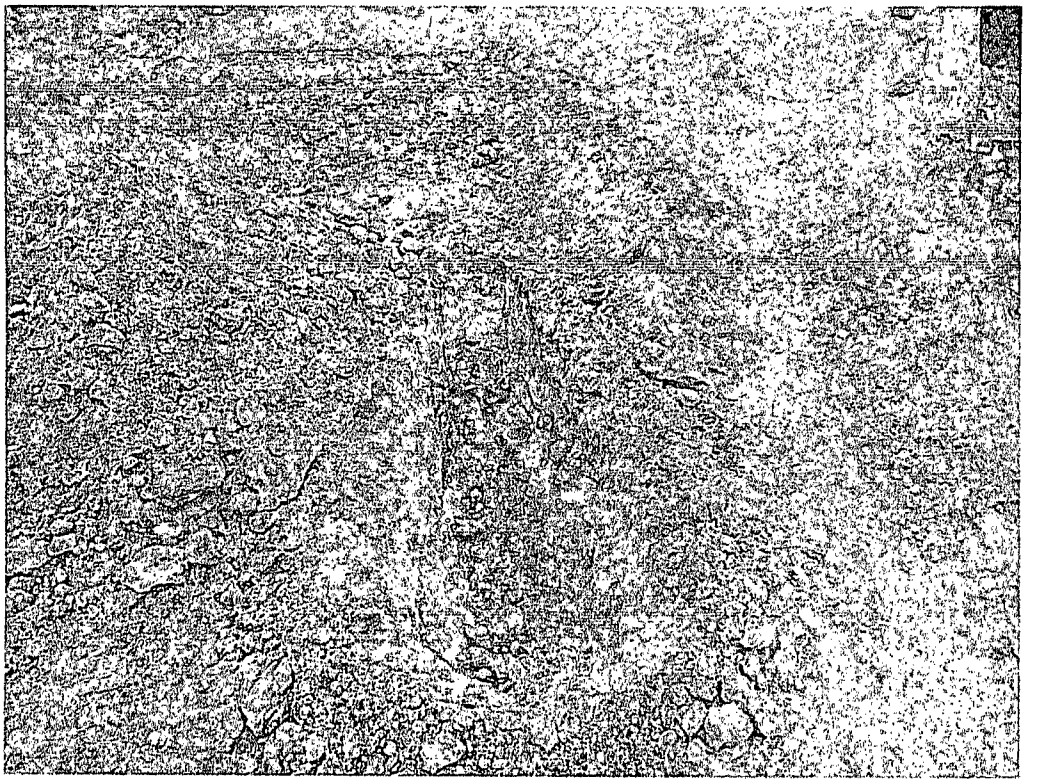
(-) Not Analyzed

Clay Liner Installed

T-2 BTEX and TPH analyzed by Cardinal Lab

COG Operating LLC
Moncrief St. #1 Tank
Battery
Eddy County, New Mexico

TETRA TECH

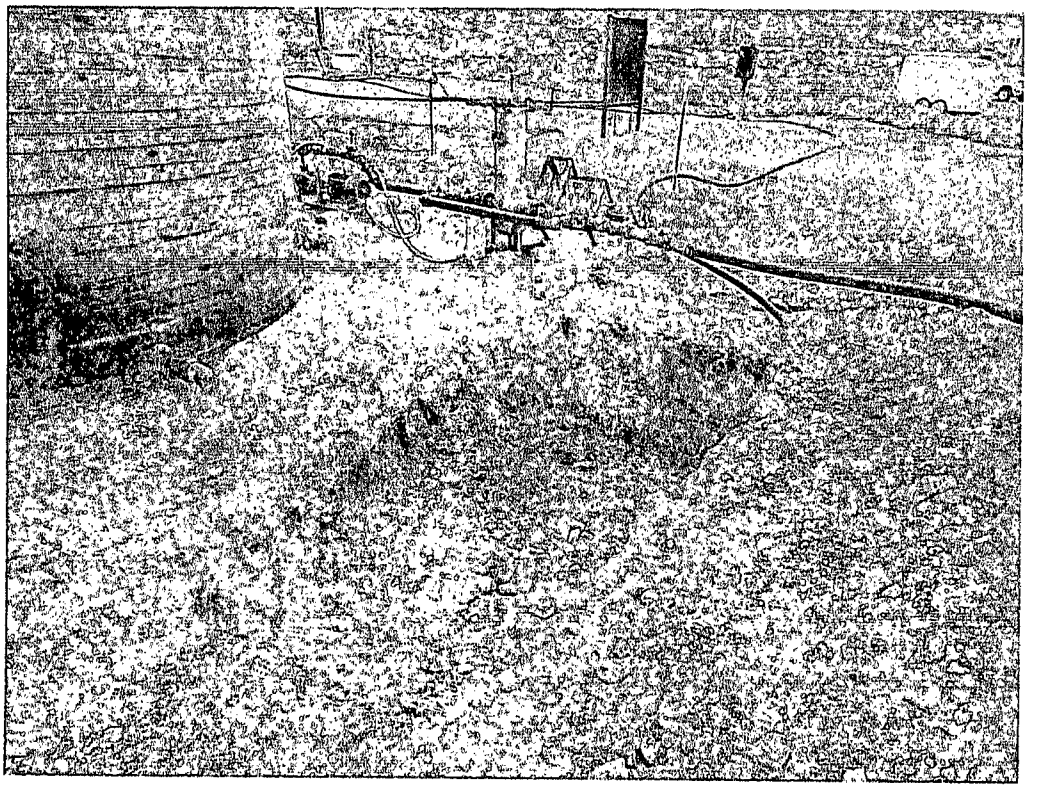


View North – T-1 in area of AH-1 at 3.0'

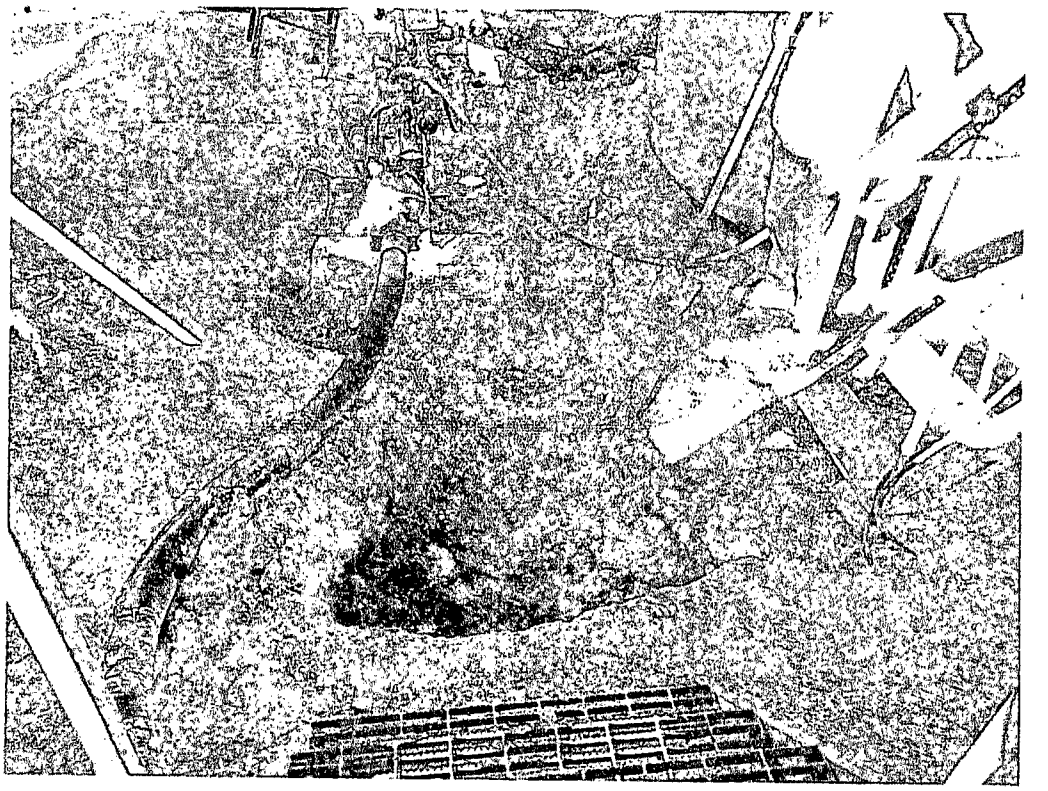
View North – T-2 in area of AH-2 at 3.0'

COG Operating LLC
Moncrief St. #1 Tank
Battery
Eddy County, New Mexico

TETRA TECH



View South – AH-1 area at 3.0'



View West – AH-2 area at 1.0'

COG Operating LLC
Moncrief St. #1 Tank
Battery
Eddy County, New Mexico

TETRA TECH

View South – AH-1 area backfilled

View East – AH-2 area backfilled

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Pat Ellis
Address	600 West Illinois Avenue, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	MONCRIEF STATE #001	Facility Type	TANK BATTERY

Surface Owner STATE	Mineral Owner	Lease No. (API#) 30-015-25017

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	23	17S	28E					EDDY

Latitude 32.81742 **Longitude** 104.15406

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 10bbls	Volume Recovered 7bbls
Source of Release Murphy switch on water tank	Date and Hour of Occurrence 06-01-2013	Date and Hour of Discovery 06-01-2013 9:00am
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The murphy switch malfunctioned and did not turn on the transfer pump. We have replaced the murphy switch to prevent reoccurrence.

Describe Area Affected and Cleanup Action Taken.*

Initially 10bbls of produced water were released due to a murphy switch failure on the water tank. We were able to recover 7bbls of produced water with a vacuum truck. The spill was completely contained inside the facility walls. 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: 06-05-2013 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
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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 Moncrief St. #1	Facility Type **Tank Battery**

Surface Owner: State	Mineral Owner	Lease No. (API#)30-015-25017

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	23	17S	28E					

Latitude 32.81742° N **Longitude** 104.15406° W

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 10 bbls	Volume Recovered 7 bbls
Source of Release: Murphy Switch on Water Tank	Date and Hour of Occurrence 06/01/2013	Date and Hour of Discovery 06/01/2013 9:00 am
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

RECEIVED
MAR 05 2014
NMOCD ARTESIA

Describe Cause of Problem and Remedial Action Taken.*

The murphy witch malfunctioned and did on turn on the transfer pump. The murphy switch was replaced to prevent reoccurrence.

Describe Area Affected and Cleanup Action Taken.*

Initially 10bbls of produced water were released due to a murphy switch failure on the water tank. 7bbls of produced water were recovered with a vacuum truck. The spill was completely contained inside the facility walls. Tetra Tech inspected the 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: 01/15/2014 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Moncried State #001
Eddy County, New Mexico

16 South 27 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 **70**	26	25
31	32	33	34	35	36

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

17 South 27 East

6	5 **30**	4	3	2	1
7 **14**	8	9	10	11 **64** **50**	12
18 **111**	17 **90**	16 **175**	15	14	13
19	20	21	22	23 **40**	24
30	29	28	27	26	25
31	32 **140**	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 **46** **79**	23 SITE	24
30	29	28	27	26	25
31	32 SITE	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	32	33	34	35 153	36

18 South 27 East

6	5	4	3	2	1
7	8	9	10 **50**	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28 **100**	27	26	25
31 **66**	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 **66**	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

- 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: July 24, 2013

Work Order: 13071701

Project Location: Eddy Co., NM
Project Name: COG/Moncrief
Project Number: 112MC05530

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
335252	AH-1 0-1'	soil	2013-07-12	00:00	2013-07-16
335253	AH-2 0-1'	soil	2013-07-12	00:00	2013-07-16

	BTEX				TPH DRO - NEW	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
335252 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	**477** Qs	**39.5**
335253 - AH-2 0-1'	<0.100 [1]	**3.71**	**22.9**	**40.8**	**677** Qs	**557**

Sample: 335252 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**1420**	mg/Kg	4

Sample: 335253 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**19100**	mg/Kg	4

[1]Dilution due to hydrocarbons.

TRACEANALYSIS, INC.

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: July 24, 2013

Work Order: 13071701

Project Location: Eddy Co., NM
Project Name: COG/Moncrief
Project Number: 112MC05530

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
335252	AH-1 0-1'	soil	2013-07-12	00:00	2013-07-16
335253	AH-2 0-1'	soil	2013-07-12	00:00	2013-07-16

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

Report Contents

Case Narrative

Samples for project COG/Moncrief were received by TraceAnalysis, Inc. on 2013-07-16 and assigned to work order 13071701. Samples for work order 13071701 were received intact at a temperature of 5.4 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	87449	2013-07-18 at 15:00	103208	2013-07-19 at 15:16
BTEX	S 8021B	87548	2013-07-23 at 09:00	103326	2013-07-23 at 11:45
Chloride (Titration)	SM 4500-Cl B	87396	2013-07-17 at 10:16	103151	2013-07-18 at 11:19
TPH DRO - NEW	S 8015 D	87433	2013-07-18 at 14:00	103193	2013-07-19 at 10:43
TPH GRO	S 8015 D	87486	2013-07-19 at 15:00	103250	2013-07-21 at 12:00

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 13071701 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: 335252 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	103326	Date Analyzed:	2013-07-23	Analyzed By:	KC
Prep Batch:	87548	Sample Preparation:	2013-07-23	Prepared By:	KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.85	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			2.32	mg/Kg	1	2.00	116	70 - 130

Sample: 335252 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	103151	Date Analyzed:	2013-07-18	Analyzed By:	AR
Prep Batch:	87396	Sample Preparation:	2013-07-17	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**1420**	mg/Kg	10	4.00

Sample: 335252 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	103193	Date Analyzed:	2013-07-19	Analyzed By:	CW
Prep Batch:	87433	Sample Preparation:	2013-07-18	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	**477**	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		164	mg/Kg	1	100	164	55.1 - 135.7

Sample: 335252 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	103250	Date Analyzed:	2013-07-21	Analyzed By:	KC
Prep Batch:	87486	Sample Preparation:	2013-07-19	Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	**39.5**	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.60	mg/Kg	2	4.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			4.68	mg/Kg	2	4.00	117	70 - 130

Sample: 335253 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	103208	Date Analyzed:	2013-07-19	Analyzed By:	KC
Prep Batch:	87449	Sample Preparation:	2013-07-18	Prepared By:	KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.100	mg/Kg	5	0.0200
Toluene		1	**3.71**	mg/Kg	5	0.0200
Ethylbenzene		1	**22.9**	mg/Kg	5	0.0200
Xylene		1	**40.8**	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			8.45	mg/Kg	5	10.0	84	70 - 130
4-Bromofluorobenzene (4-BFB)			11.4	mg/Kg	5	10.0	114	70 - 130

Sample: 335253 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	103151	Date Analyzed:	2013-07-18	Analyzed By:	AR
Prep Batch:	87396	Sample Preparation:	2013-07-17	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**19100**	mg/Kg	10	4.00

Sample: 335253 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	103193	Date Analyzed:	2013-07-19	Analyzed By:	CW
Prep Batch:	87433	Sample Preparation:	2013-07-18	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	**677**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane Qsr	Qsr		181	mg/Kg	1	100	181	55.1 - 135.7

Sample: 335253 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	103250	Date Analyzed:	2013-07-21	Analyzed By:	KC
Prep Batch:	87486	Sample Preparation:	2013-07-19	Prepared By:	KC

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO		1	**557**	mg/Kg	20	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			38.1	mg/Kg	20	40.0	95	70 - 130
4-Bromofluorobenzene (4-BFB)			47.5	mg/Kg	20	40.0	119	70 - 130

Method Blanks

Method Blank (1) QC Batch: 103151

QC Batch: 103151 | Date Analyzed: 2013-07-18 | Analyzed By: AR
Prep Batch: 87396 | QC Preparation: 2013-07-17 | Prepared By: AR

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

Method Blank (1) QC Batch: 103193

QC Batch: 103193 | Date Analyzed: 2013-07-19 | Analyzed By: CW
Prep Batch: 87433 | QC Preparation: 2013-07-18 | Prepared By: CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	15.8	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			115	mg/Kg	1	100	115	55.1 - 135.7

Method Blank (1) QC Batch: 103208

QC Batch: 103208 | Date Analyzed: 2013-07-19 | Analyzed By: KC
Prep Batch: 87449 | QC Preparation: 2013-07-18 | Prepared By: KC

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

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

continued ...

method blank continued ...

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

Method Blank (1) QC Batch: 103250

QC Batch: 103250 Date Analyzed: 2013-07-21 Analyzed By: KC
Prep Batch: 87486 QC Preparation: 2013-07-19 Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	3.80	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)			2.00	mg/Kg	1	2.00	100	70 - 130

Method Blank (1) QC Batch: 103326

QC Batch: 103326 Date Analyzed: 2013-07-23 Analyzed By: KC
Prep Batch: 87548 QC Preparation: 2013-07-23 Prepared By: KC

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.84	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.96	mg/Kg	1	2.00	98	70 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 103151 | Date Analyzed: 2013-07-18 | Analyzed By: AR
Prep Batch: 87396 | QC Preparation: 2013-07-17 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2390	mg/Kg	1	2500	<3.85	96	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			2510	mg/Kg	1	2500	<3.85	100	85 - 115	5	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 103193 | Date Analyzed: 2013-07-19 | Analyzed By: CW
Prep Batch: 87433 | QC Preparation: 2013-07-18 | Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	260	mg/Kg	1	250	15.8	98	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	267	mg/Kg	1	250	15.8	100	66.9 - 119.9	3	20

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

Surrogate			LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	Qsr	Qsr	150	154	mg/Kg	1	100	150	154	76.8 - 140.2

Laboratory Control Spike (LCS-1)

QC Batch: 103208 | Date Analyzed: 2013-07-19 | Analyzed By: KC
Prep Batch: 87449 | QC Preparation: 2013-07-18 | Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.81	mg/Kg	1	2.00	<0.00810	90	70 - 130
Toluene		1	1.84	mg/Kg	1	2.00	<0.00750	92	70 - 130
Ethylbenzene		1	1.89	mg/Kg	1	2.00	<0.00730	94	70 - 130
Xylene		1	5.83	mg/Kg	1	6.00	<0.00700	97	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	1.79	mg/Kg	1	2.00	<0.00810	90	70 - 130	1	20
Toluene		1	1.85	mg/Kg	1	2.00	<0.00750	92	70 - 130	0	20
Ethylbenzene		1	1.90	mg/Kg	1	2.00	<0.00730	95	70 - 130	0	20
Xylene		1	5.86	mg/Kg	1	6.00	<0.00700	98	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	1.85	mg/Kg	1	2.00	94	92	70 - 130
4-Bromofluorobenzene (4-BFB)	2.05	1.92	mg/Kg	1	2.00	102	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 103250 | Date Analyzed: 2013-07-21 | Analyzed By: KC
Prep Batch: 87486 | QC Preparation: 2013-07-19 | Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.8	mg/Kg	1	20.0	<2.32	89	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	17.9	mg/Kg	1	20.0	<2.32	90	70 - 130	0	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
Trifluorotoluene (TFT)	1.72	1.71	mg/Kg	1	2.00	86	86	70 - 130
4-Bromofluorobenzene (4-BFB)	2.00	2.02	mg/Kg	1	2.00	100	101	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 103326 | Date Analyzed: 2013-07-23 | Analyzed By: KC
Prep Batch: 87548 | QC Preparation: 2013-07-23 | Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.73	mg/Kg	1	2.00	<0.00810	86	70 - 130
Toluene		1	1.80	mg/Kg	1	2.00	<0.00750	90	70 - 130
Ethylbenzene		1	1.87	mg/Kg	1	2.00	<0.00730	94	70 - 130
Xylene		1	5.72	mg/Kg	1	6.00	<0.00700	95	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.75	mg/Kg	1	2.00	<0.00810	88	70 - 130	1	20
Toluene		1	1.78	mg/Kg	1	2.00	<0.00750	89	70 - 130	1	20
Ethylbenzene		1	1.86	mg/Kg	1	2.00	<0.00730	93	70 - 130	0	20
Xylene		1	5.64	mg/Kg	1	6.00	<0.00700	94	70 - 130	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.78	1.78	mg/Kg	1	2.00	89	89	70 - 130
4-Bromofluorobenzene (4-BFB)	1.93	1.87	mg/Kg	1	2.00	96	94	70 - 130

Matrix Spike (MS-1) Spiked Sample: 335253

QC Batch: 103151 | Date Analyzed: 2013-07-18 | Analyzed By: AR
Prep Batch: 87396 | QC Preparation: 2013-07-17 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			21900	mg/Kg	10	2500	19100	112	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			21700	mg/Kg	10	2500	19100	104	78.9 - 121	1	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: 335252

QC Batch: 103193 | Date Analyzed: 2013-07-19 | Analyzed By: CW
Prep Batch: 87433 | QC Preparation: 2013-07-18 | Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	844	mg/Kg	1	250	477	147	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	Qs	Qs 1	850	mg/Kg	1	250	477	149	36.1 - 147.2	1	20

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

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	Qsr	Qsr	184	182	mg/Kg	1	100	184	182	78.3 - 131.6

Matrix Spike (MS-1) Spiked Sample: 335034

QC Batch: 103208 | Date Analyzed: 2013-07-19 | Analyzed By: KC
Prep Batch: 87449 | QC Preparation: 2013-07-18 | Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.85	mg/Kg	1	2.00	<0.00810	92	70 - 130
Toluene		1	1.85	mg/Kg	1	2.00	<0.00750	92	70 - 130
Ethylbenzene		1	1.92	mg/Kg	1	2.00	<0.00730	96	70 - 130
Xylene		1	5.81	mg/Kg	1	6.00	<0.00700	97	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	1.75	mg/Kg	1	2.00	<0.00810	88	70 - 130	6	20
Toluene		1	1.80	mg/Kg	1	2.00	<0.00750	90	70 - 130	3	20
Ethylbenzene		1	1.85	mg/Kg	1	2.00	<0.00730	92	70 - 130	4	20
Xylene		1	5.63	mg/Kg	1	6.00	<0.00700	94	70 - 130	3	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.83	1.75	mg/Kg	1	2	92	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.96	1.87	mg/Kg	1	2	98	94	70 - 130

Matrix Spike (MS-1) Spiked Sample: 334574

QC Batch: 103250 | Date Analyzed: 2013-07-21 | Analyzed By: KC
Prep Batch: 87486 | QC Preparation: 2013-07-19 | Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.7	mg/Kg	1	20.0	<2.32	88	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	17.7	mg/Kg	1	20.0	<2.32	88	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)	1.73	1.61	mg/Kg	1	2	86	80	70 - 130
4-Bromofluorobenzene (4-BFB)	2.22	1.86	mg/Kg	1	2	111	93	70 - 130

Matrix Spike (MS-1) Spiked Sample: 335928

QC Batch: 103326 | Date Analyzed: 2013-07-23 | Analyzed By: KC
Prep Batch: 87548 | QC Preparation: 2013-07-23 | Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.66	mg/Kg	1	2.00	<0.00810	83	70 - 130

continued ...

matrix spikes continued ...

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Toluene		1	1.70	mg/Kg	1	2.00	<0.00750	85	70 - 130
Ethylbenzene		1	1.76	mg/Kg	1	2.00	<0.00730	88	70 - 130
Xylene		1	5.30	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	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.70	mg/Kg	1	2.00	<0.00810	85	70 - 130	2	20
Toluene		1	1.73	mg/Kg	1	2.00	<0.00750	86	70 - 130	2	20
Ethylbenzene		1	1.80	mg/Kg	1	2.00	<0.00730	90	70 - 130	2	20
Xylene		1	5.50	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	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.67	1.83	mg/Kg	1	2	84	92	70 - 130
4-Bromofluorobenzene (4-BFB)	1.77	1.92	mg/Kg	1	2	88	96	70 - 130

Calibration Standards

Standard (CCV-1)

QC Batch: 103151 | Date Analyzed: 2013-07-18 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-07-18

Standard (CCV-2)

QC Batch: 103151 | Date Analyzed: 2013-07-18 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.7	100	85 - 115	2013-07-18

Standard (CCV-1)

QC Batch: 103193 | Date Analyzed: 2013-07-19 | 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	253	101	80 - 120	2013-07-19

Standard (CCV-2)

QC Batch: 103193 | Date Analyzed: 2013-07-19 | 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	244	98	80 - 120	2013-07-19

Standard (CCV-3)

QC Batch: 103193 Date Analyzed: 2013-07-19 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	260	104	80 - 120	2013-07-19

Standard (CCV-4)

QC Batch: 103193 Date Analyzed: 2013-07-19 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	256	102	80 - 120	2013-07-19

Standard (CCV-1)

QC Batch: 103208 Date Analyzed: 2013-07-19 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0926	93	80 - 120	2013-07-19
Toluene		1	mg/kg	0.100	0.0924	92	80 - 120	2013-07-19
Ethylbenzene		1	mg/kg	0.100	0.0911	91	80 - 120	2013-07-19
Xylene		1	mg/kg	0.300	0.277	92	80 - 120	2013-07-19

Standard (CCV-2)

QC Batch: 103208 Date Analyzed: 2013-07-19 Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0940	94	80 - 120	2013-07-19
Toluene		1	mg/kg	0.100	0.0917	92	80 - 120	2013-07-19
Ethylbenzene		1	mg/kg	0.100	0.0887	89	80 - 120	2013-07-19
Xylene		1	mg/kg	0.300	0.268	89	80 - 120	2013-07-19

Standard (CCV-3)

QC Batch: 103208 | Date Analyzed: 2013-07-19 | Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0933	93	80 - 120	2013-07-19
Toluene		1	mg/kg	0.100	0.0913	91	80 - 120	2013-07-19
Ethylbenzene		1	mg/kg	0.100	0.0899	90	80 - 120	2013-07-19
Xylene		1	mg/kg	0.300	0.272	91	80 - 120	2013-07-19

Standard (CCV-1)

QC Batch: 103250 | Date Analyzed: 2013-07-21 | Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.999	100	80 - 120	2013-07-21

Standard (CCV-2)

QC Batch: 103250 | Date Analyzed: 2013-07-21 | Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.963	96	80 - 120	2013-07-21

Standard (CCV-3)

QC Batch: 103250 | Date Analyzed: 2013-07-21 | Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.972	97	80 - 120	2013-07-21

Standard (CCV-1)

QC Batch: 103326 | Date Analyzed: 2013-07-23 | Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0925	92	80 - 120	2013-07-23
Toluene		1	mg/kg	0.100	0.0928	93	80 - 120	2013-07-23
Ethylbenzene		1	mg/kg	0.100	0.0911	91	80 - 120	2013-07-23
Xylene		1	mg/kg	0.300	0.277	92	80 - 120	2013-07-23

Standard (CCV-2)

QC Batch: 103326 | Date Analyzed: 2013-07-23 | Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0912	91	80 - 120	2013-07-23
Toluene		1	mg/kg	0.100	0.0909	91	80 - 120	2013-07-23
Ethylbenzene		1	mg/kg	0.100	0.0890	89	80 - 120	2013-07-23
Xylene		1	mg/kg	0.300	0.269	90	80 - 120	2013-07-23

Standard (CCV-3)

QC Batch: 103326 | Date Analyzed: 2013-07-23 | Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0901	90	80 - 120	2013-07-23
Toluene		1	mg/kg	0.100	0.0902	90	80 - 120	2013-07-23
Ethylbenzene		1	mg/kg	0.100	0.0888	89	80 - 120	2013-07-23
Xylene		1	mg/kg	0.300	0.269	90	80 - 120	2013-07-23

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.

Attachments

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

1307 1701

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

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

CLIENT NAME: COG

SITE MANAGER: IKE TAVAREZ

PROJECT NO.: 112MC055530

PROJECT NAME: COG - MAVERICK EDDY CO, NM

LAB I.D. NUMBER	DATE	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. 8080/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
335252	7/12		S		X	AH-1 (0-1)	1				X		X	X											X				
253						AH-2 (0-1)	1				X		X	X											X				

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:
Mar Zhuant	7/15/13	1645		7/16/13	16'45
RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:
RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:

SAMPLED BY: (Print & Initial) MARCUS KNIGHTS / RYAN REECH Date: 7-16-13 Time: 1645

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

TETRA TECH CONTACT PERSON: IKE TAVAREZ

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: TRACE
ADDRESS:
CITY: MIDLAND STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED: 5°

REMARKS: Max depth - Samples if TPH exceeds 1,000 mg/kg; or if benzene exceeds 10 mg/kg or if Total BTEX exceeds 50 mg/kg 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.

Summary Report

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

Report Date: January 15, 2014

Work Order: 13123126

Project Location: Eddy Co., NM
Project Name: COG/Moncrief
Project Number: 112MC05530

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
350421	T-1 (0')	soil	2013-12-12	00:00	2013-12-30
350422	T-1 (2')	soil	2013-12-12	00:00	2013-12-30
350423	T-1 (3')	soil	2013-12-12	00:00	2013-12-30
350424	T-2 (0')	soil	2013-12-12	00:00	2013-12-30
350425	T-2 (2')	soil	2013-12-12	00:00	2013-12-30
350426	T-2 (3')	soil	2013-12-12	00:00	2013-12-30

Sample: 350421 - T-1 (0')

Param	Flag	Result	Units	RL
Chloride	Qs	**846**	mg/Kg	5

Sample: 350422 - T-1 (2')

Param	Flag	Result	Units	RL
Chloride	Qs	**2100**	mg/Kg	5

Sample: 350423 - T-1 (3')

Param	Flag	Result	Units	RL
Chloride	Qs	**949**	mg/Kg	5

Sample: 350424 - T-2 (0')

Param	Flag	Result	Units	RL
Chloride	Qs	**26400**	mg/Kg	5

Sample: 350425 - T-2 (2')

Param	Flag	Result	Units	RL
Chloride	Qs	**15400**	mg/Kg	5

Sample: 350426 - T-2 (3')

Param	Flag	Result	Units	RL
Chloride	Qs	**12600**	mg/Kg	5

TRACEANALYSIS, INC.

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: January 15, 2014

Work Order: 13123126

Project Location: Eddy Co., NM
Project Name: COG/Moncrief
Project Number: 112MC05530

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
350421	T-1 (0')	soil	2013-12-12	00:00	2013-12-30
350422	T-1 (2')	soil	2013-12-12	00:00	2013-12-30
350423	T-1 (3')	soil	2013-12-12	00:00	2013-12-30
350424	T-2 (0')	soil	2013-12-12	00:00	2013-12-30
350425	T-2 (2')	soil	2013-12-12	00:00	2013-12-30
350426	T-2 (3')	soil	2013-12-12	00:00	2013-12-30

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

Report Contents

Case Narrative

Samples for project COG/Moncrief were received by TraceAnalysis, Inc. on 2013-12-30 and assigned to work order 13123126. Samples for work order 13123126 were received intact at a temperature of 5.7 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	91293	2013-12-30 at 10:00	108328	2014-01-15 at 12:30

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 13123126 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: 350421 - T-1 (0')

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108328	Date Analyzed:	2014-01-15	Analyzed By:	GS
Prep Batch:	91293	Sample Preparation:	2013-12-30	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	Qs		**846**	mg/Kg	5	5.00

Sample: 350422 - T-1 (2')

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108328	Date Analyzed:	2014-01-15	Analyzed By:	GS
Prep Batch:	91293	Sample Preparation:	2013-12-30	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	Qs		**2100**	mg/Kg	5	5.00

Sample: 350423 - T-1 (3')

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108328	Date Analyzed:	2014-01-15	Analyzed By:	GS
Prep Batch:	91293	Sample Preparation:	2013-12-30	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	Qs		**949**	mg/Kg	5	5.00

Sample: 350424 - T-2 (0')

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108328	Date Analyzed:	2014-01-15	Analyzed By:	GS
Prep Batch:	91293	Sample Preparation:	2013-12-30	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	Qs		**26400**	mg/Kg	50	5.00

Sample: 350425 - T-2 (2')

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108328	Date Analyzed:	2014-01-15	Analyzed By:	GS
Prep Batch:	91293	Sample Preparation:	2013-12-30	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	Qs		**15400**	mg/Kg	50	5.00

Sample: 350426 - T-2 (3')

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	108328	Date Analyzed:	2014-01-15	Analyzed By:	GS
Prep Batch:	91293	Sample Preparation:	2013-12-30	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	Qs		**12600**	mg/Kg	50	5.00

Method Blanks

Method Blank (1) QC Batch: 108328

QC Batch:	108328	Date Analyzed:	2014-01-15	Analyzed By:	GS
Prep Batch:	91293	QC Preparation:	2013-12-30	Prepared By:	GS

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.05	mg/Kg	5

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 108328 | Date Analyzed: 2014-01-15 | Analyzed By: GS
Prep Batch: 91293 | QC Preparation: 2013-12-30 | Prepared By: GS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			99.0	mg/Kg	1	100	<3.05	99	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			100	mg/Kg	1	100	<3.05	100	85 - 115	1	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: 350426

QC Batch: 108328 | Date Analyzed: 2014-01-15 | Analyzed By: GS
Prep Batch: 91293 | QC Preparation: 2013-12-30 | Prepared By: GS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			13100	mg/Kg	50	500	12600	100	80 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	Q_n	Q_s	12800	mg/Kg	50	500	12600	40	80 - 120	2	20

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

Calibration Standards

Standard (ICV-1)

QC Batch: 108328 | Date Analyzed: 2014-01-15 | Analyzed By: GS

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.0	99	85 - 115	2014-01-15

Standard (CCV-1)

QC Batch: 108328 | Date Analyzed: 2014-01-15 | Analyzed By: GS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2014-01-15

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-13-9	Lubbock

Standard Flags

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

Attachments

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

12/30/20

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

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

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112MC03530

PROJECT NAME: (COG) Moncrief State #1 Eddy Co NM

ANALYSIS REQUEST (Circle or Specify Method No.): Chloride

LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	Chloride
350421	12/12		S		X	T-1 (0')	1	X
422			S		X	(2')	1	X
423			S		X	(3')	1	X
424			S		X	T-2 (0')	1	X
425			S		X	(2')	1	X
426			S		X	(3')	1	X
	12/11		S		X	~~AH 7 (North Side Wall)~~	1	X
			S		X	~~AH 3 (South Side Wall)~~	1	X
			S		X	~~AH 4 (Bottom Hole 5')~~	1	X
			S		X	~~T-1 (AH-3 Surface)~~	1	X

Other analysis columns (not marked): 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; Gamma Spec.; Alpha Beta (Air); PLM (Asbestos); Major Anions/Cations, pH, TDS. Preservative method columns: FILTERED (Y/N), HCL, HNO3, ICE, NONE.

RELINQUISHED BY: (Signature) [signature] Date: 12-30-13 Time: 1600 — RECEIVED BY: (Signature) [signature] Date: 12-30-13 Time: 0800

RELINQUISHED BY: (Signature) [signature] Date: 12-30-13 Time: 11:10 — RECEIVED BY: (Signature) [signature] Date: 12/30/13 Time: 11:10

RELINQUISHED BY: (Signature) [signature] Date: 12/30/13 Time: 15:30 — RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Initial) HP RR Date: Time: 12-30-13

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

TETRA TECH CONTACT PERSON: Ike Tavarez — Results by: — RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature) Brenda Ward DATE: 12/31/13 TIME: 9:00

SAMPLE CONDITION WHEN RECEIVED: 5.7°

REMARKS: 2.6/2.5° LS ZQ 722-4145W 411

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