SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	Brigham H South Tank Battery					
Company:	COG Operating LLC					
Section, Township and Range	Unit C	Sec. 28	T-17-S	R-30-E		
Lease Number:	API-30-015-50473					
County:	Eddy County					
GPS:	32.81208° N			103.97825° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	In Loco Hills at intersection of Hagerman Cutoff and Hwy 82, travel south on Hagerman Cutoff 0.3 miles, turn left east 0.5 miles to location on left.					

Release Data:	
Date Released:	5/16/2012
Type Release:	Oil
Source of Contamination:	Circulating pump seal failure
Fluid Released:	13 bbls
Fluids Recovered:	10 bbls

RECEIVED
NOV 01 2012
NMOCD ARTESIA

Official Communication:			
Name:	Pat Ellis		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	550 W. Texas Ave. Ste. 1300		1910 N. Big Spring
P.O. Box			
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 682-4559
Fax:	(432) 684-7137		
Email:	pellis@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

October 10, 2012

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

Re: Closure Report for the COG Operating LLC., Brigham H South Tank Battery Located in Unit C, Section 28, Township 17 South, Range 30 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 Brigham H South Tank Battery Located in Unit C, Section 28, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81208°, W 103.97825°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico Oil Conservation Division (NMOCD) Form C-141 Initial Report, the leak was discovered on May 16, 2012, and released approximately thirteen (13) barrels (bbls) of oil due to a seal failure on a circulating pump. COG personnel replaced the defective seal. Approximately ten (10) bbls of free fluids were recovered from the spill area.

The spill initiated from the circulating pump on the west side of the tank battery. The spill migrated along the berm edges both on the north and south berm edge. The spill measures approximately 95'x4' (south edge), 55'x3' (north edge), and source area 25'x15'. The footprint of the spill is shown on Figure 3. The initial Form C-141 is enclosed in Appendix A.

Tetra Tech
1910 North Big Spring, Midland,TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

Groundwater

No wells were located in Section 28. According to the NMOCD groundwater map, depth to groundwater in this area is approximately 275' below surface. The groundwater data is shown in Appendix B.

Regulatory

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

Soil Assessment

Prior to sampling, COG removed approximately 3"-6" from the spill area. On July 3, 2012, Tetra Tech personnel inspected and sampled the spill area. A total of six (6) auger holes (AH-1 through AH-6) were installed using a stainless steel hand auger to assess the impacted soils to a maximum depth of 2.0' below surface. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C.

Referring to Table 1, auger holes (AH-1, AH-3, and AH-4) were below the RRAL for TPH and BTEX. Auger holes (AH-2, AH-5, and AH-6) exceeded the RRAL for TPH with concentrations ranging from 5,620 mg/kg to 11,120 mg/kg at 0-1' below surface. In additional, auger holes (AH-2, AH-3, and AH-6) exceeded the RRAL for total BTEX with concentrations ranging from 58.4 mg/kg to 131 mg/kg at 0-1' bgs. Due to a dense shallow caliche layer, deeper samples could not be collected with a hand auger.

TETRA TECH

Remediation and Closure Request

From August 27, 2012 through August 30, 2012, Tetra Tech personnel supervised the excavation of the spill area. The spill footprint and final excavation depths of the soil remediation were met as stated in the approved work plan. The impacted areas were excavated to a depth of AH-2 (2.0'), AH-4 (3.0'), AH-5 (1.0') and AH-6 (2.0'). Based on the field data, deeper excavation was not performed in the area of AH-4 due to safety concerns. During inspection, the field chloride data was reviewed with the BLM and only requested confirmation samples from the excavation bottoms and approved the backfilling of the site. Approximately 30 cubic yards were removed and disposed of at R360 facility.

On August 29, 2012, Tetra Tech personnel collected confirmation samples (CS-1, CS-2 and CS-3) to evaluate the excavation bottoms. Referring to Table 1, all confirmation samples were below the RRAL for TPH or BTEX and the chloride concentrations in the area of AH-4 declined with depth.

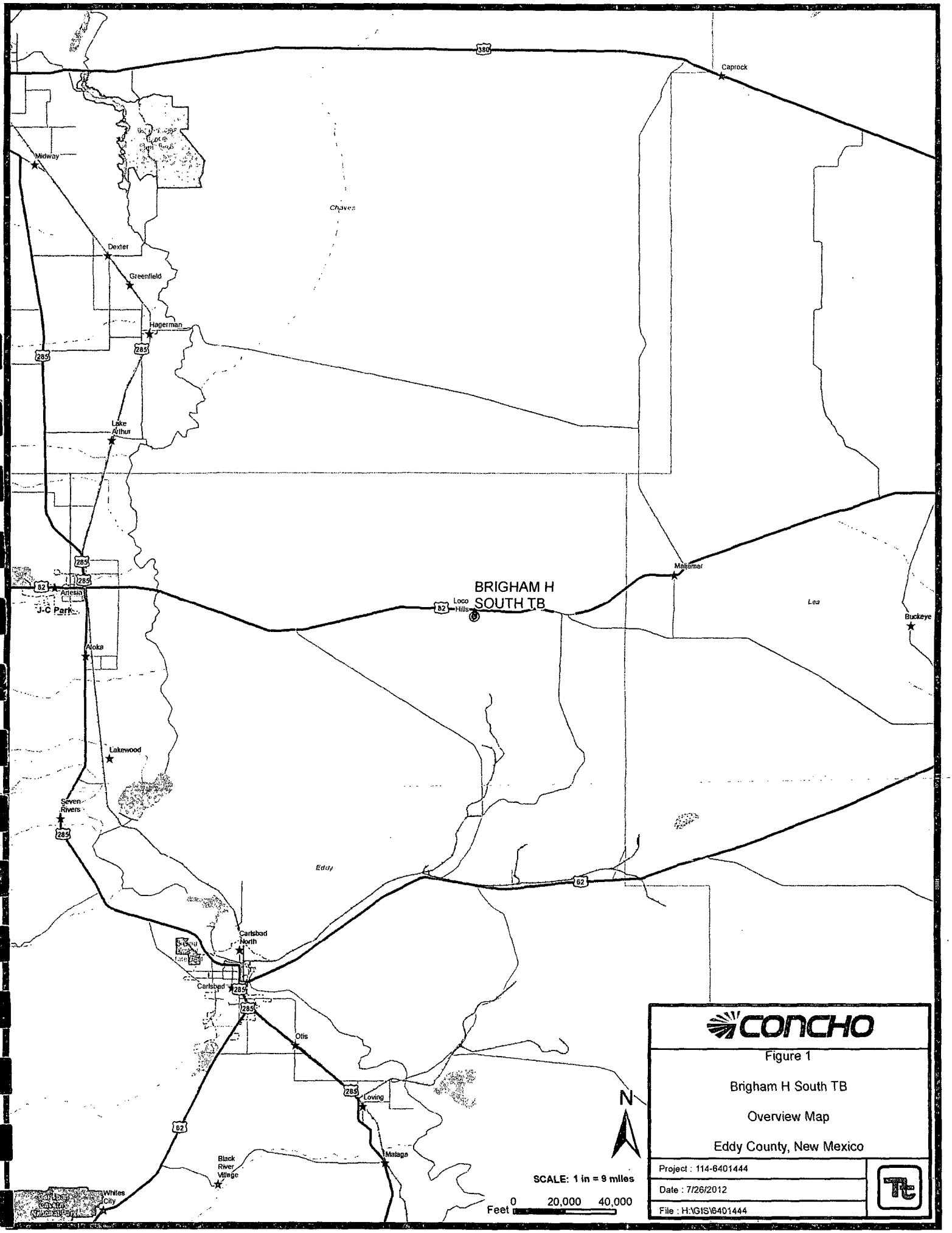
Based on the remediation activities performed at this location, COG requests closure for this site. The C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities performed at the site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

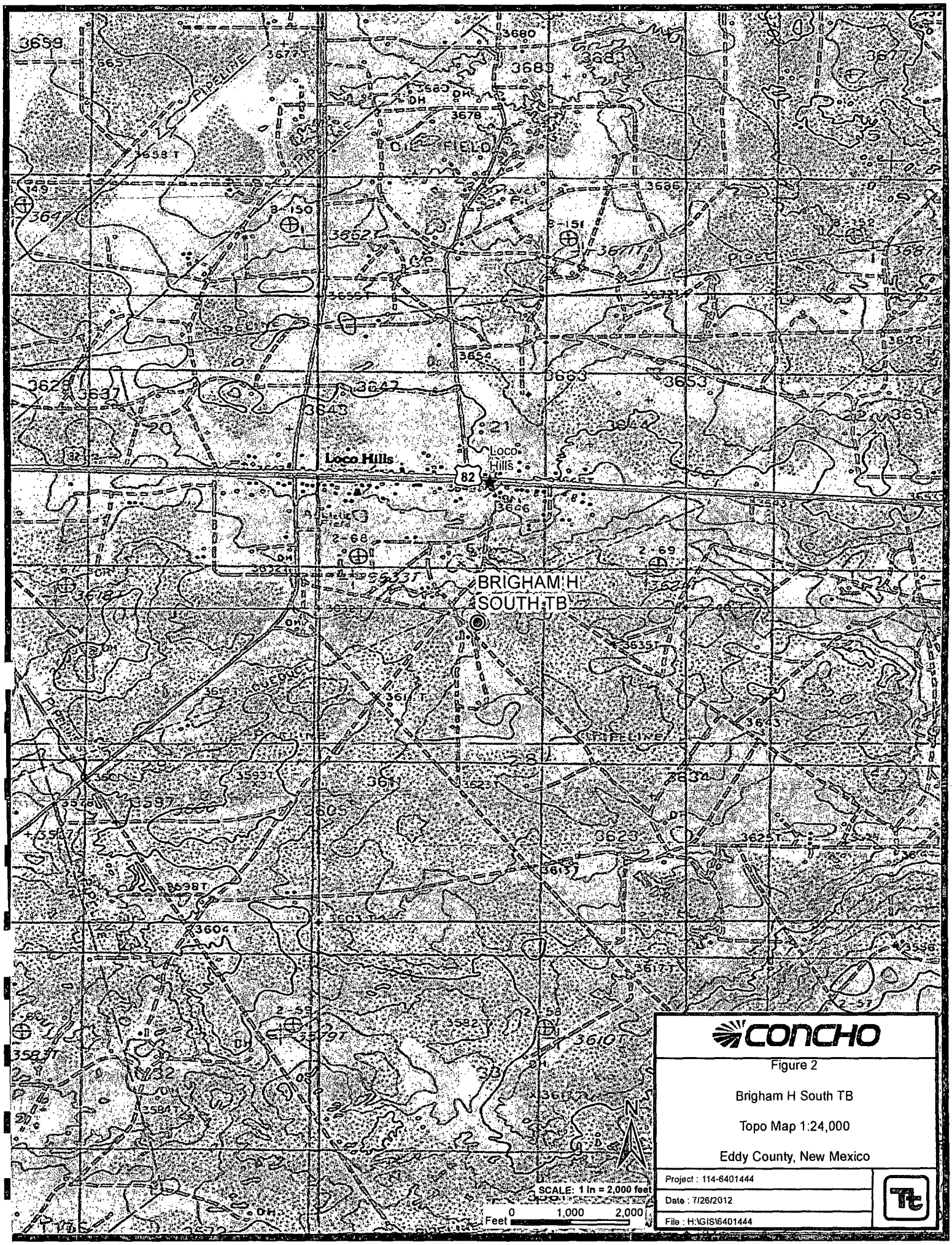
Ike Tavarez
Senior Project Manager

cc: Pat Ellis – COG
Terry Gregston - BLM

FIGURES



Drawn By: Isabel Marmolejo



CONCHO

Figure 2

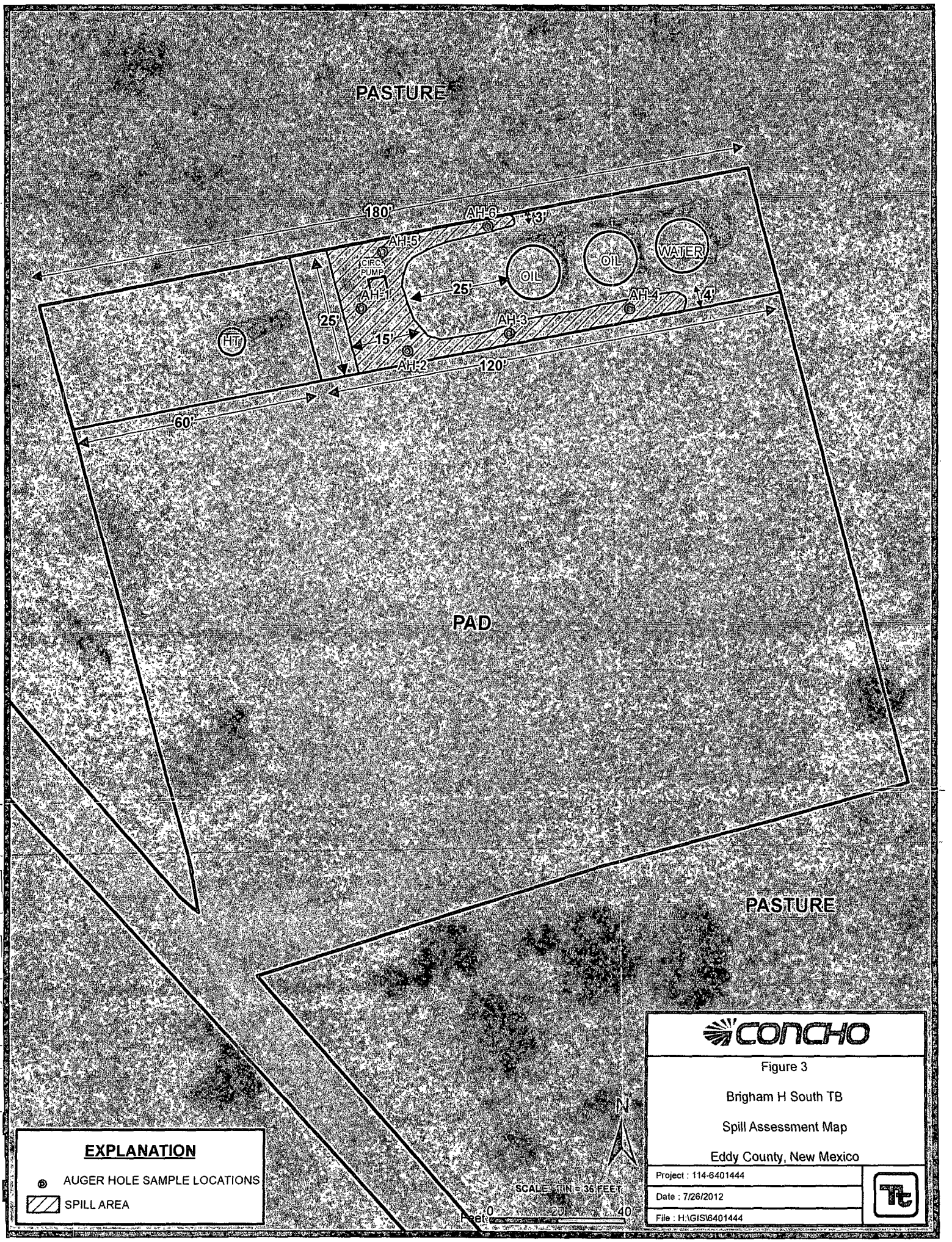
Brigham H South TB

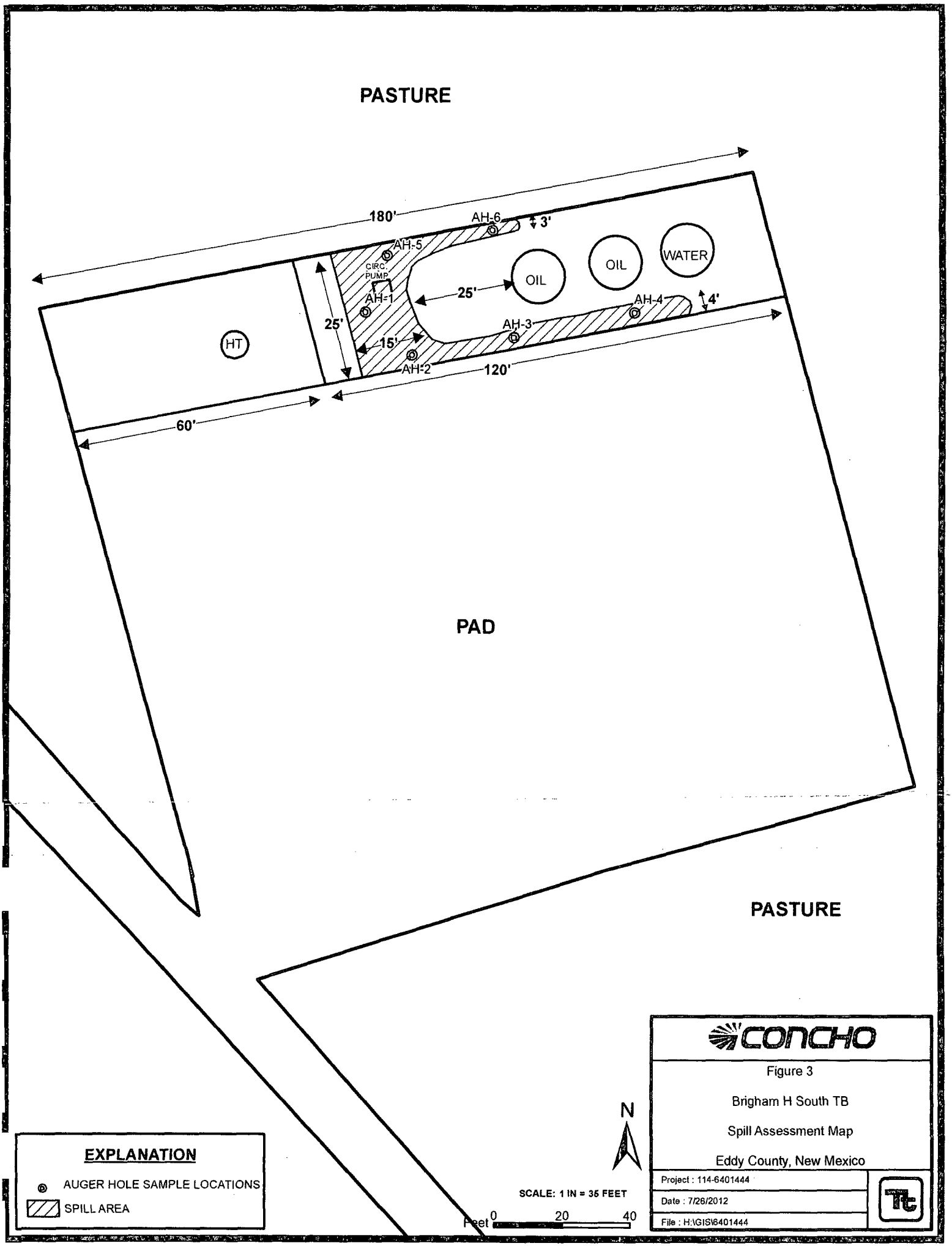
Topo Map 1:24,000

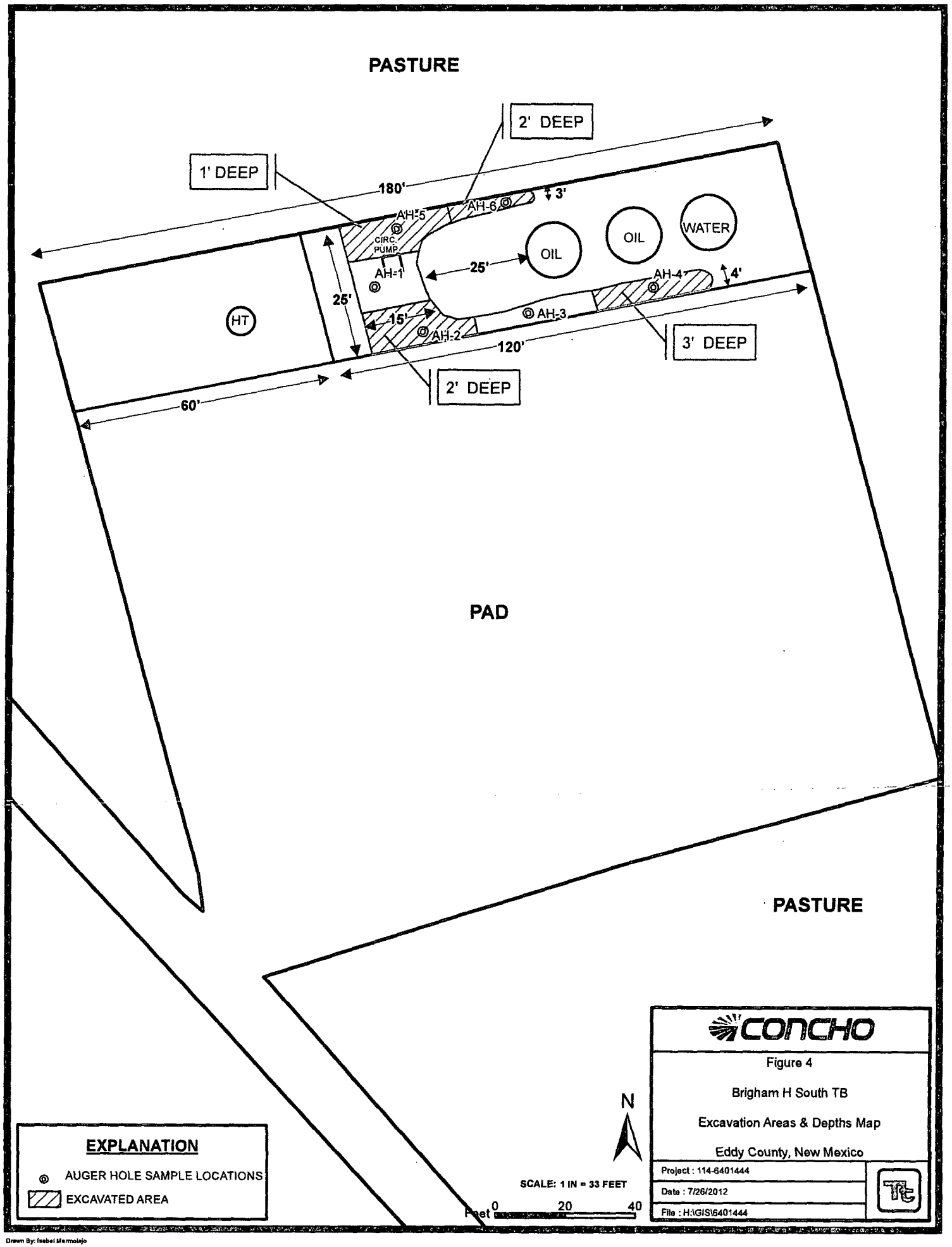
Eddy County, New Mexico

Project : 114-6401444	
Date : 7/26/2012	
File : H:\GIS\6401444	

Drawn By: Isabel Marmolejo


PASTURE
180'
AH-6
3'
AH-5
CIRC. PUMP
OIL
OIL
WATER
AH-1
25'
AH-4
4'
25'
AH-3
15'
AH-2
120'
60'
HTr
PAD
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
SPILL AREA
N
SCALE: 1" = 36 FEET
Feet 0 20 40
CONCHO
Figure 3
Brigham H South TB
Spill Assessment Map
Eddy County, New Mexico
Project : 114-6401444
Date : 7/26/2012
File : H:\GIS\6401444
Drawn By: Isabel Mamolejo


PASTURE
180'
AH-6
3'
AH-5
CIRC. PUMP
AH-1
25'
OIL
OIL
WATER
25'
AH-4
4'
HT
AH-3
15'
AH-2
120'
60'
PAD
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
SPILL AREA
N
SCALE: 1 IN = 35 FEET
Feet 0 20 40
CONCHO
Figure 3
Brigham H South TB
Spill Assessment Map
Eddy County, New Mexico
Project : 114-6401444
Date : 7/26/2012
File : H:\GIS\6401444
Drawn By: Isabel Marmolejo


PASTURE
2' DEEP
1' DEEP
180'
3'
AH-5
AH-6
CIRC PUMP
AH-1
OIL
OIL
WATER
25'
AH-4
4'
25'
HT
15'
AH-2
AH-3
120'
3' DEEP
2' DEEP
60'
PAD
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
EXCAVATED AREA
N
SCALE: 1 IN = 33 FEET
Feet 0 20 40
CONCHO
Figure 4
Brigham H South TB
Excavation Areas & Depths Map
Eddy County, New Mexico
Project : 114-6401444
Date : 7/26/2012
File : H:\GIS\6401444
Drawn By: Isabel Mermolejo

TABLES

Table 1
COG Operating LLC.
Brigham H South Tank Battery
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	BEB 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	7/3/2012	0-1	0.5	X		21.9	1,590	1,612	0.0231	0.645	0.335	0.507	1.51	99.6
	"	1-1.5	0.5	X		-	-	-	-	-	-	-	-	<20.0
	"	1.5-2	0.5	X		-	-	-	-	-	-	-	-	<20.0
AH-2	7/3/2012	0-1	0.5		X	1,620	4,000	5,620	0.264	22.4	38.1	69.8	131	<20.0
	"	1-1.5	0.5		X	-	-	-	-	-	-	-	-	94.6
CS-1	8/29/2012	2' Bottom	-	X		9.32	99.1	108	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	-
AH-3	7/3/2012	0-1	0.5	X		46.6	711	758	0.0609	0.245	0.411	0.713	1.43	632
AH-4	7/3/2012	0-0.5	0.5		X	6.65	72.9	79.6	<0.0200	0.0504	0.0227	0.0236	0.097	4,320
CS-3	8/29/2012	3' Bottom	-	X		-	-	-	-	-	-	-	-	1,250
AH-5	7/3/2012	0-1	0.5		X	1,120	10,000	11,120	<0.200	7.82	18.3	32.3	58.4	<20.0
	"	1-1.5	0.5	X		763	4,060	4,823	<0.400	4.10	8.63	16.4	29.1	<20.0
AH-6	7/3/2012	0-1	0.5		X	2,750	4,200	6,950	2.05	8.85	22.9	24.9	58.7	76.0
CS-2	8/29/2012	2' Bottom	-	X		106	86.7	193	<0.0200	<0.0200	0.0983	0.439	0.537	-

(-) Not Analyzed

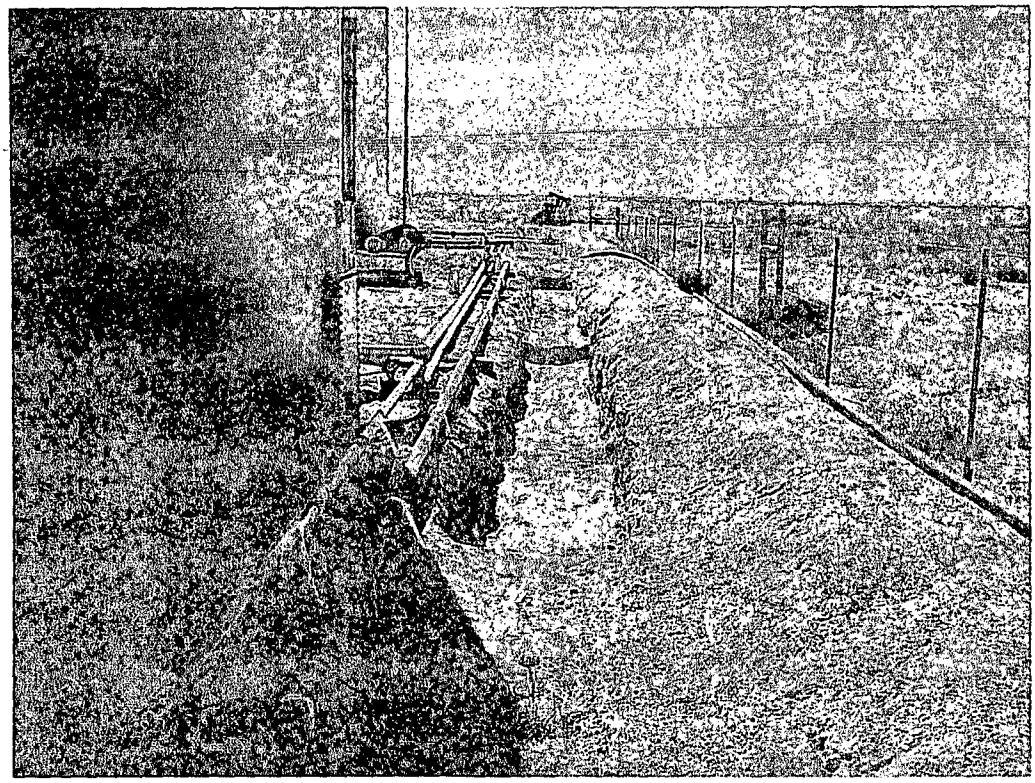
(BEB) Below Excavation Bottom

Excavation Depths

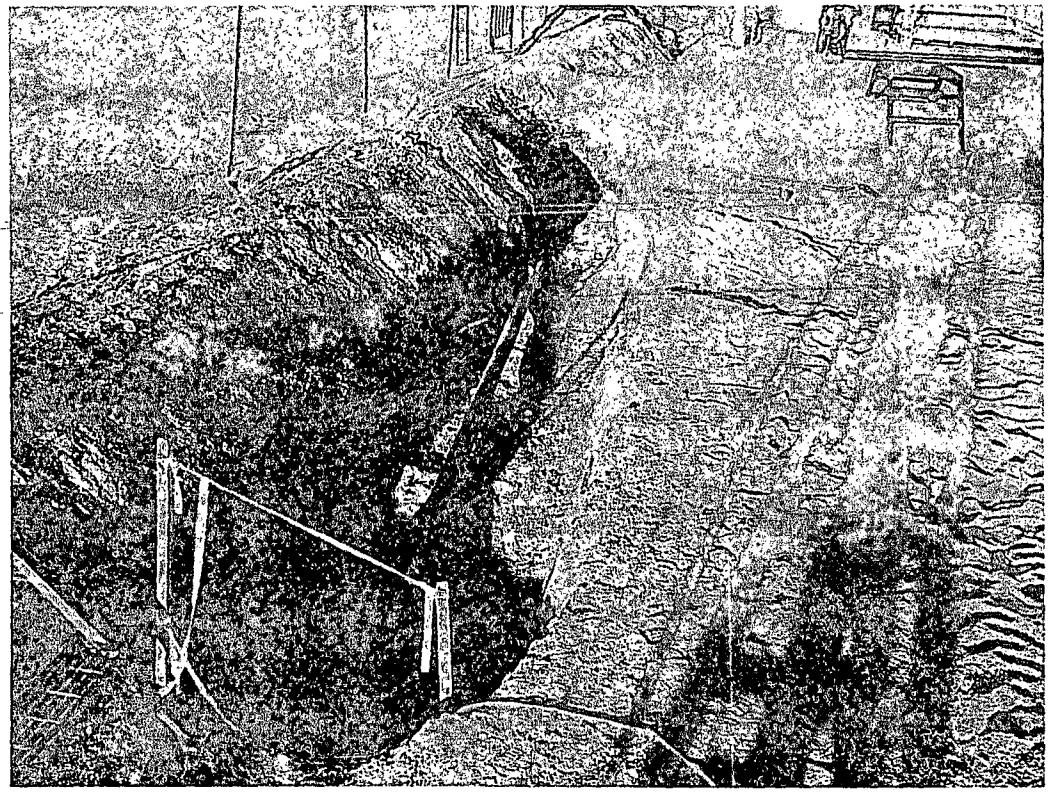
PHOTOGRAPHS

COG Operating LLC
Brigham H South Tank Battery
Eddy County, New Mexico

TETRA TECH



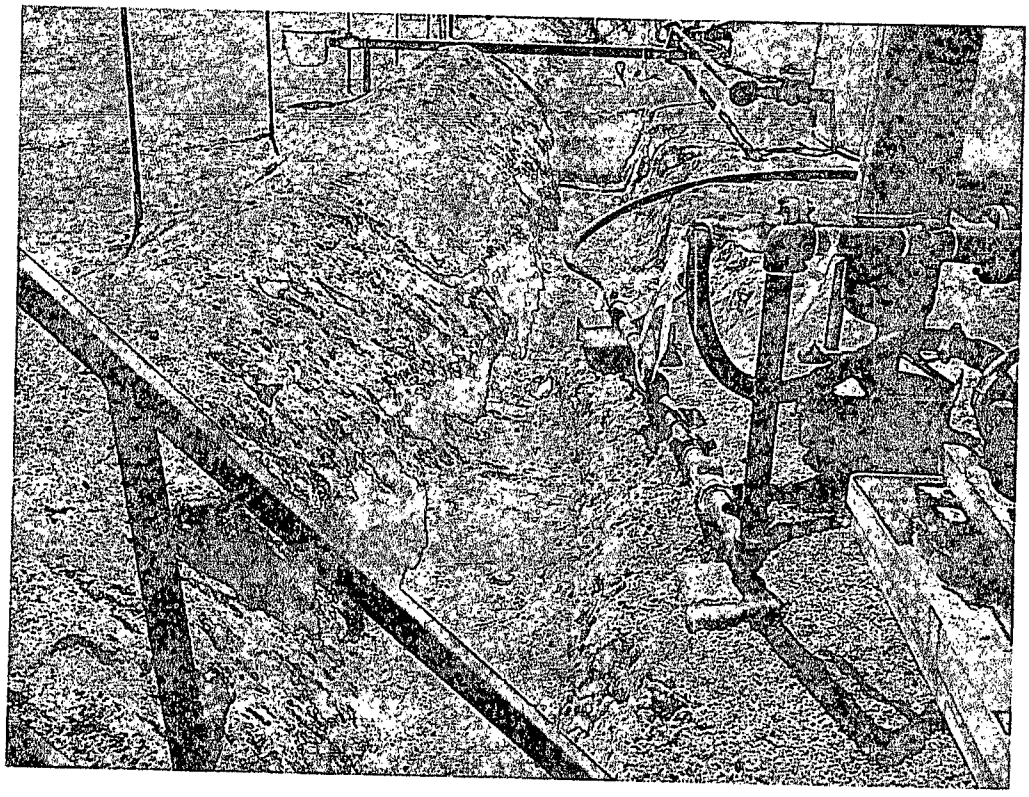
View West – Excavation of AH-6 and AH-5



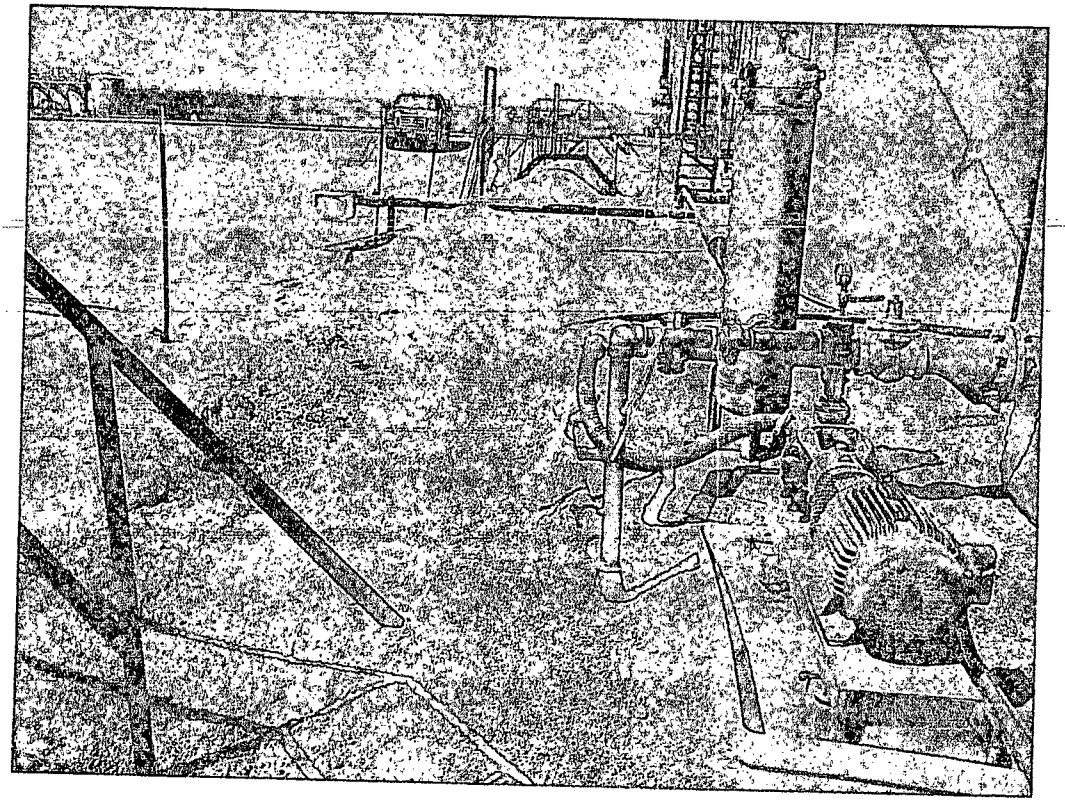
View West – Excavation of AH-2

COG Operating LLC
Brigham H South Tank Battery
Eddy County, New Mexico

TETRA TECH



View West – Excavation of AH-4



View west – Backfill

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

RECEIVED
NOV 01 2012
NMOCD ARTESIA

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	**550 W. Texas, Suite 1300 Midland, Texas 79701**	Telephone No.	**(432) 230-0077**
Facility Name	**Brigham H South Tank Battery**	Facility Type	**Tank Battery**

Surface Owner: State	Mineral Owner	Lease No. (API#) 30-015-31366

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	28	17	30E					Eddy

Latitude 32 48.720 **Longitude** 103 58.685

NATURE OF RELEASE

Type of Release: Oil	Volume of Release 13 bbls oil	Volume Recovered 10 bbls oil
Source of Release: Circulating Pump	Date and Hour of Occurrence 05/16/2012	Date and Hour of Discovery 05/16/2012 1:03 p.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom? Josh Russo	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The seal on the circulating pump was not working correctly and subsequently caused a release of oil into the facility. The seal inside the pump has been replaced.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech personnel inspected the site and collected samples to define the spills extent. Soil that exceeded RRAL was removed and hauled to proper disposal. The site was then brought up to surface grade with clean backfill material. Tetra Tech prepared a closure report and submitted it 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:

Printed Name: Ike Tavarez (agent fort COG)

Title: Project Manager

E-mail Address: Ike.Tavarez@TetraTech.com

Date: 10-10-12 Phone: (432) 682-4559

OIL CONSERVATION DIVISION

Approved by District Supervisor:

Approval Date: Expiration Date:

Conditions of Approval: Attached ☐

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	Pat Ellis
Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Brigham H South Tank Battery	Facility Type	Tank Battery

Surface Owner Federal	Mineral Owner	Lease No. (API#) 30-015-50473 Closest well location

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	28	17	30E					Eddy

Latitude 32 48.720 **Longitude** 103 58.685

NATURE OF RELEASE

Type of Release Oil	Volume of Release 13bbls	Volume Recovered 10bbls
Source of Release Circulating pump	Date and Hour of Occurrence 05/16/2012	Date and Hour of Discovery 05/16/2012 1:03 p.m.
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 seal on the circulating pump was not working correctly and subsequently caused a release of oil into the facility. The seal inside the pump has been replaced.

Describe Area Affected and Cleanup Action Taken.*

Initially 13bbls of oil was released from the circulating pump and we were able to recover 10bbls with a vacuum truck. All free fluid has been recovered and several inches of the contaminated soil has been removed from the facility and hauled to disposal. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD/BLM 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: Josh Russo	Approved by District Supervisor:	
Title: HSE Coordinator	Approval Date:	Expiration Date:
E-mail Address: jrusso@conchoresources.com	Conditions of Approval:	Attached ☐
Date: 06/04/2012 Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

APPENDIX B

Water Well Data
Average Depth to Groundwater (ft)
COG - Brigham H South Tank Battery
Eddy County, New Mexico

16 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	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

16 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 **288**
18	17	16	15	14	13 **113**
19	20	21	22	23	24
30	29	28	27	26	25
31 **290**	32	33	34	35	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 **80**	23	24
30	29 **210** **208'**	28	27	26	25
31	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	21	22	23	24
30	29	28 **SITE**	27	26	25
31	32	33	34	35	36

17 South 31 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 **271**	35	36

18 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	23	24
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

18 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 **400**
18	17	16	15	14 **317**	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 **261**	36

- New Mexico State Engineers Well Reports
- USGS Well Reports
- Geology and Groundwater Conditions in Southern Eddy, County, NM
- NMOCD - Groundwater Data
- Site Location -Brigham H South Tank Battery

APPENDIX C

Summary Report

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

Report Date: July 20, 2012

Work Order: 12070519

Project Location: Eddy Co., NM
Project Name: COG/Brigham H South Tank Battery
Project Number: 114-6401444

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
302766	AH-1 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302767	AH-1 1-1.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302768	AH-1 1.5-2' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302769	AH-2 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302770	AH-2 1-1.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302771	AH-3 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302772	AH-4 0-.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302773	AH-5 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302774	AH-5 1-1.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302775	AH-6 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05

Sample - Field Code	BTEX Benzene (mg/Kg)	BTEX Toluene (mg/Kg)	BTEX Ethylbenzene (mg/Kg)	BTEX Xylene (mg/Kg)	MTBE MTBE (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
302766 - AH-1 0-1' (6 in. BEB)	**0.0231**	**0.645**	**0.335**	**0.507**		**1590** Qs	**21.9** Qs
302769 - AH-2 0-1' (6 in. BEB)	**0.264**	**22.4**	**38.1**	**69.8**		**4000** Qs	**1620** Je,Qs
302771 - AH-3 0-1' (6 in. BEB)	**0.0609**	**0.245**	**0.411**	**0.713**		**711** Qs	**46.6** Qs
302772 - AH-4 0-.5' (6 in. BEB)	<0.0200	**0.0504**	**0.0227**	**0.0236**		**72.9** Qs	**6.65** Qs
302773 - AH-5 0-1' (6 in. BEB)	<0.200 [1]	**7.82**	**18.3**	**32.3**		**10000** Qs	**1120** Je,Qs
302774 - AH-5 1-1.5' (6 in. BEB)	<0.400 [2]	**4.10**	**8.63**	**16.4**	<0.400	**4060** Qs	**763**
302775 - AH-6 0-1' (6 in. BEB)	**2.05**	**8.85**	**22.9**	**24.9**		**4200** Qs	**2750** [3] Qs

Sample: 302766 - AH-1 0-1' (6 in. BEB)

continued ...

[1] Dilution due to excessive hydrocarbons.
[2] Dilution due to excessive hydrocarbons.
[3] Sample weighed out of 48-hr preservation time.

sample 302766 continued ...

Param	Flag	Result	Units	RL

Param	Flag	Result	Units	RL
Chloride		**99.6**	mg/Kg	4

Sample: 302767 - AH-1 1-1.5' (6 in. BEB)

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

Sample: 302768 - AH-1 1.5-2' (6 in. BEB)

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

Sample: 302769 - AH-2 0-1' (6 in. BEB)

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

Sample: 302770 - AH-2 1-1.5' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**94.6**	mg/Kg	4

Sample: 302771 - AH-3 0-1' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**632**	mg/Kg	4

Sample: 302772 - AH-4 0-.5' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**4320**	mg/Kg	4

Sample: 302773 - AH-5 0-1' (6 in. BEB)

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

Sample: 302774 - AH-5 1-1.5' (6 in. BEB)

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

Sample: 302775 - AH-6 0-1' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**76.0**	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

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report
(Corrected Report)

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

Report Date: July 20, 2012

Work Order: 12070519

Project Location: Eddy Co., NM
Project Name: COG/Brigham H South Tank Battery
Project Number: 114-6401444

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
302766	AH-1 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302767	AH-1 1-1.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302768	AH-1 1.5-2' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302769	AH-2 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302770	AH-2 1-1.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302771	AH-3 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302772	AH-4 0-.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302773	AH-5 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302774	AH-5 1-1.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302775	AH-6 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05

Report Corrections (Work Order 12070519)

- 7/10/12: Added BTEX to sample 302774.
- 7/18/12: Removed 48-hour flag from BTEX.

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/Brigham H South Tank Battery were received by TraceAnalysis, Inc. on 2012-07-05 and assigned to work order 12070519. Samples for work order 12070519 were received intact at a temperature of 4.0 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	78768	2012-07-10 at 14:25	92885	2012-07-10 at 14:25
BTEX	S 8021B	78843	2012-07-11 at 15:36	92978	2012-07-11 at 15:36
Chloride (Titration)	SM 4500-Cl B	78690	2012-07-06 at 08:44	92803	2012-07-06 at 14:55
Chloride (Titration)	SM 4500-Cl B	78690	2012-07-06 at 08:44	92804	2012-07-06 at 14:56
MTBE	S 8021B	78768	2012-07-10 at 14:25	92885	2012-07-10 at 14:25
TPH DRO - NEW	S 8015 D	78748	2012-07-09 at 09:00	92862	2012-07-09 at 11:00
TPH DRO - NEW	S 8015 D	78943	2012-07-16 at 15:00	93102	2012-07-16 at 15:22
TPH GRO	S 8015 D	78768	2012-07-10 at 14:25	92886	2012-07-10 at 14:25
TPH GRO	S 8015 D	78843	2012-07-11 at 15:36	92979	2012-07-11 at 15:36
TPH GRO	S 8015 D	78890	2012-07-13 at 16:19	93030	2012-07-13 at 16:19

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 12070519 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: 302766 - AH-1 0-1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	92978	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Sample Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene		1	**0.0231**	mg/Kg	1	0.0200
Toluene		1	**0.645**	mg/Kg	1	0.0200
Ethylbenzene		1	**0.335**	mg/Kg	1	0.0200
Xylene		1	**0.507**	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.06	mg/Kg	1	2.00	103	70 - 130
4-Bromofluorobenzene (4-BFB)			2.21	mg/Kg	1	2.00	110	70 - 130

Sample: 302766 - AH-1 0-1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	92803	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	Sample Preparation:	2012-07-06	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**99.6**	mg/Kg	5	4.00

Sample: 302766 - AH-1 0-1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	92862	Date Analyzed:	2012-07-09	Analyzed By:	CW
Prep Batch:	78748	Sample Preparation:	2012-07-09	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	2	**1590**	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		230	mg/Kg	1	100	230	49.3 - 157.5

Sample: 302766 - AH-1 0-1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	92979	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Sample Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	**21.9**	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.48	mg/Kg	1	2.00	74	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	2.81	mg/Kg	1	2.00	140	70 - 130

Sample: 302767 - AH-1 1-1.5' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	92803	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	Sample Preparation:	2012-07-06	Prepared By:	AR

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

Sample: 302768 - AH-1 1.5-2' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	92803	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	Sample Preparation:	2012-07-06	Prepared By:	AR

continued ...

sample 302768 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

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

Sample: 302769 - AH-2 0-1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	92978	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Sample Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	**0.264**	mg/Kg	10	0.0200
Toluene		1	**22.4**	mg/Kg	10	0.0200
Ethylbenzene		1	**38.1**	mg/Kg	10	0.0200
Xylene		1	**69.8**	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.15	mg/Kg	10	2.00	108	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	7.07	mg/Kg	10	2.00	354	70 - 130

Sample: 302769 - AH-2 0-1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	92803	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	Sample Preparation:	2012-07-06	Prepared By:	AR

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

Sample: 302769 - AH-2 0-1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	92862	Date Analyzed:	2012-07-09	Analyzed By:	CW
Prep Batch:	78748	Sample Preparation:	2012-07-09	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	2	**4000**	mg/Kg	5	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		353	mg/Kg	5	100	353	49.3 - 157.5

Sample: 302769 - AH-2 0-1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	92979	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Sample Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Je,Qs	1	**1620**	mg/Kg	10	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.41	mg/Kg	10	2.00	70	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	65.8	mg/Kg	10	2.00	3290	70 - 130

Sample: 302770 - AH-2 1-1.5' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	92803	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	Sample Preparation:	2012-07-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**94.6**	mg/Kg	5	4.00

Sample: 302771 - AH-3 0-1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	92978	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Sample Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene		1	**0.0609**	mg/Kg	2	0.0200
Toluene		1	**0.245**	mg/Kg	2	0.0200
Ethylbenzene		1	**0.411**	mg/Kg	2	0.0200
Xylene		1	**0.713**	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	2	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			2.36	mg/Kg	2	2.00	118	70 - 130

Sample: 302771 - AH-3 0-1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	92803	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	Sample Preparation:	2012-07-06	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**632**	mg/Kg	5	4.00

Sample: 302771 - AH-3 0-1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	92862	Date Analyzed:	2012-07-09	Analyzed By:	CW
Prep Batch:	78748	Sample Preparation:	2012-07-09	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	2	**711**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane Qsr	Qsr		180	mg/Kg	1	100	180	49.3 - 157.5

Sample: 302771 - AH-3 0-1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	92979	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Sample Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qs	1	**46.6**	mg/Kg	2	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.47	mg/Kg	2	2.00	74	70 - 130
4-Bromofluorobenzene (4-BFB)			2.60	mg/Kg	2	2.00	130	70 - 130

Sample: 302772 - AH-4 0-.5' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	92978	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Sample Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene		1	**0.0504**	mg/Kg	1	0.0200
Ethylbenzene		1	**0.0227**	mg/Kg	1	0.0200
Xylene	B	1	**0.0236**	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.22	mg/Kg	1	2.00	111	70 - 130
4-Bromofluorobenzene (4-BFB)			2.28	mg/Kg	1	2.00	114	70 - 130

Sample: 302772 - AH-4 0-.5' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	92803	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	Sample Preparation:	2012-07-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**4320**	mg/Kg	10	4.00

Sample: 302772 - AH-4 0-.5' (6 in. BEB)

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	92862	Date Analyzed:	2012-07-09	Analyzed By:	CW
Prep Batch:	78748	Sample Preparation:	2012-07-09	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	2	**72.9**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			146	mg/Kg	1	100	146	49.3 - 157.5

Sample: 302772 - AH-4 0-.5' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	92979	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Sample Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	**6.65**	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.87	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			2.17	mg/Kg	1	2.00	108	70 - 130

Sample: 302773 - AH-5 0-1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	92978	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Sample Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	<0.200	mg/Kg	10	0.0200
Toluene		1	**7.82**	mg/Kg	10	0.0200
Ethylbenzene		1	**18.3**	mg/Kg	10	0.0200
Xylene		1	**32.3**	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	10	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	3.91	mg/Kg	10	2.00	196	70 - 130

Sample: 302773 - AH-5 0-1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	92803	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	Sample Preparation:	2012-07-06	Prepared By:	AR

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

Sample: 302773 - AH-5 0-1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	92862	Date Analyzed:	2012-07-09	Analyzed By:	CW
Prep Batch:	78748	Sample Preparation:	2012-07-09	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	2	**10000**	mg/Kg	20	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	855	mg/Kg	20	100	855	49.3 - 157.5

Sample: 302773 - AH-5 0-1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	92979	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Sample Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Jc,Qs	1	**1120**	mg/Kg	10	2.00

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr		1.14	mg/Kg	10	2.00	57	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		76.0	mg/Kg	10	2.00	3800	70 - 130

Sample: 302774 - AH-5 1-1.5' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	92885	Date Analyzed:	2012-07-10	Analyzed By:	ZLM
Prep Batch:	78768	Sample Preparation:	2012-07-10	Prepared By:	ZLM

Parameter		Flag	Cert	RL Result	Units	Dilution	RL
MTBE		U	1	<0.400	mg/Kg	20	0.0200
Benzene	2	U	1	<0.400	mg/Kg	20	0.0200
Toluene			1	**4.10**	mg/Kg	20	0.0200
Ethylbenzene			1	**8.63**	mg/Kg	20	0.0200
Xylene			1	**16.4**	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.70	mg/Kg	20	2.00	85	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	2.93	mg/Kg	20	2.00	146	70 - 130

Sample: 302774 - AH-5 1-1.5' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	92804	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	Sample Preparation:	2012-07-06	Prepared By:	AR

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

Sample: 302774 - AH-5 1-1.5' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	93102	Date Analyzed:	2012-07-16	Analyzed By:	DS
Prep Batch:	78943	Sample Preparation:	2012-07-16	Prepared By:	DS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	1	**4060**	mg/Kg	10	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		350	mg/Kg	10	100	350	75.4 - 130

Sample: 302774 - AH-5 1-1.5' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	92886	Date Analyzed:	2012-07-10	Analyzed By:	ZLM
Prep Batch:	78768	Sample Preparation:	2012-07-10	Prepared By:	ZLM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO		1	**763**	mg/Kg	20	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	20	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	20.4	mg/Kg	20	2.00	1020	70 - 130

Sample: 302775 - AH-6 0-1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	92978	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Sample Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene		1	**2.05**	mg/Kg	5	0.0200
Toluene		1	**8.85**	mg/Kg	5	0.0200
Ethylbenzene		1	**22.9**	mg/Kg	5	0.0200

continued ...

sample 302775 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Xylene		1	**24.9**	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.71	mg/Kg	5	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	3.62	mg/Kg	5	2.00	181	70 - 130

Sample: 302775 - AH-6 0-1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	92804	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	Sample Preparation:	2012-07-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**76.0**	mg/Kg	5	4.00

Sample: 302775 - AH-6 0-1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	92862	Date Analyzed:	2012-07-09	Analyzed By:	CW
Prep Batch:	78748	Sample Preparation:	2012-07-09	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	2	**4200**	mg/Kg	10	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	350	mg/Kg	10	100	350	49.3 - 157.5

Sample: 302775 - AH-6 0-1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	93030	Date Analyzed:	2012-07-13	Analyzed By:	ZLM
Prep Batch:	78890	Sample Preparation:	2012-07-13	Prepared By:	ZLM

Parameter		Flag	Cert	RL Result	Units	Dilution	RL
GRO	3	Qs	1	**2750**	mg/Kg	50	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.45	mg/Kg	50	2.00	72	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	60.6	mg/Kg	50	2.00	3030	70 - 130

Method Blanks

Method Blank (1) QC Batch: 92803

QC Batch:	92803	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	QC Preparation:	2012-07-06	Prepared By:	AR

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

Method Blank (1) QC Batch: 92804

QC Batch:	92804	Date Analyzed:	2012-07-06	Analyzed By:	AR
Prep Batch:	78690	QC Preparation:	2012-07-06	Prepared By:	AR

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

Method Blank (1) QC Batch: 92862

QC Batch:	92862	Date Analyzed:	2012-07-09	Analyzed By:	CW
Prep Batch:	78748	QC Preparation:	2012-07-09	Prepared By:	CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			130	mg/Kg	1	100	130	52 - 160.8

Method Blank (1) QC Batch: 92885

QC Batch:	92885	Date Analyzed:	2012-07-10	Analyzed By:	ZLM
Prep Batch:	78768	QC Preparation:	2012-07-10	Prepared By:	ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
MTBE		1	<0.00502	mg/Kg	0.02
Benzene		1	<0.00365	mg/Kg	0.02
Toluene		1	<0.00816	mg/Kg	0.02
Ethylbenzene		1	<0.00560	mg/Kg	0.02
Xylene		1	0.0133	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.88	mg/Kg	1	2.00	94	70 - 130

Method Blank (1) QC Batch: 92886

QC Batch:	92886	Date Analyzed:	2012-07-10	Analyzed By:	ZLM
Prep Batch:	78768	QC Preparation:	2012-07-10	Prepared By:	ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	0.650	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.67	mg/Kg	1	2.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	70 - 130

Method Blank (1) QC Batch: 92978

QC Batch:	92978	Date Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	QC Preparation:	2012-07-11	Prepared By:	ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00365	mg/Kg	0.02
Toluene		1	<0.00816	mg/Kg	0.02

continued ...

method blank continued ...

Parameter	Flag	Cert	MDL Result	Units	RL
Ethylbenzene		1	<0.00560	mg/Kg	0.02
Xylene		1	0.0126	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.98	mg/Kg	1	2.00	99	70 - 130

Method Blank (1) QC Batch: 92979

QC Batch: 92979 | Date Analyzed: 2012-07-11 | Analyzed By: ZLM
Prep Batch: 78843 | QC Preparation: 2012-07-11 | Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	0.540	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.65	mg/Kg	1	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)			1.94	mg/Kg	1	2.00	97	70 - 130

Method Blank (1) QC Batch: 93030

QC Batch: 93030 | Date Analyzed: 2012-07-13 | Analyzed By: ZLM
Prep Batch: 78890 | QC Preparation: 2012-07-13 | Prepared By: ZLM

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	2.32	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.76	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			2.06	mg/Kg	1	2.00	103	70 - 130

Method Blank (1) QC Batch: 93102

QC Batch:	93102	Date Analyzed:	2012-07-16	Analyzed By:	DS
Prep Batch:	78943	QC Preparation:	2012-07-16	Prepared By:	DS

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<6.50	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			128	mg/Kg	1	100	128	75.4 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 92803 | Date Analyzed: 2012-07-06 | Analyzed By: AR
Prep Batch: 78690 | QC Preparation: 2012-07-06 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2580	mg/Kg	1	2500	<3.85	103	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			2690	mg/Kg	1	2500	<3.85	108	85 - 115	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 92804 | Date Analyzed: 2012-07-06 | Analyzed By: AR
Prep Batch: 78690 | QC Preparation: 2012-07-06 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2620	mg/Kg	1	2500	<3.85	105	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2750	mg/Kg	1	2500	<3.85	110	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: 92862 | Date Analyzed: 2012-07-09 | Analyzed By: CW
Prep Batch: 78748 | QC Preparation: 2012-07-09 | Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	263	mg/Kg	1	250	<14.5	105	62 - 128.3

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		2	263	mg/Kg	1	250	<14.5	105	62 - 128.3	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
n-Tricosane	129	129	mg/Kg	1	100	129	129	58.6 - 149.6

Laboratory Control Spike (LCS-1)

QC Batch: 92885 | Date Analyzed: 2012-07-10 | Analyzed By: ZLM
Prep Batch: 78768 | QC Preparation: 2012-07-10 | Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
MTBE		1	1.93	mg/Kg	1	2.00	<0.00502	96	71.4 - 120
Benzene		1	1.94	mg/Kg	1	2.00	<0.00365	97	75.4 - 120
Toluene		1	1.88	mg/Kg	1	2.00	<0.00816	94	74.9 - 120
Ethylbenzene		1	1.91	mg/Kg	1	2.00	<0.00560	96	78.1 - 120
Xylene		1	5.73	mg/Kg	1	6.00	0.0133	96	77.3 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
MTBE		1	1.98	mg/Kg	1	2.00	<0.00502	99	71.4 - 120	3	20
Benzene		1	1.96	mg/Kg	1	2.00	<0.00365	98	75.4 - 120	1	20
Toluene		1	1.96	mg/Kg	1	2.00	<0.00816	98	74.9 - 120	4	20
Ethylbenzene		1	2.00	mg/Kg	1	2.00	<0.00560	100	78.1 - 120	5	20
Xylene		1	5.98	mg/Kg	1	6.00	0.0133	100	77.3 - 120	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)	1.84	1.98	mg/Kg	1	2.00	92	99	70 - 130
4-Bromofluorobenzene (4-BFB)	1.87	1.98	mg/Kg	1	2.00	94	99	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 92886 | Date Analyzed: 2012-07-10 | Analyzed By: ZLM
Prep Batch: 78768 | QC Preparation: 2012-07-10 | Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.8	mg/Kg	1	20.0	0.65	89	68.9 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	17.9	mg/Kg	1	20.0	0.65	90	68.9 - 120	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.84	1.81	mg/Kg	1	2.00	92	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.98	1.92	mg/Kg	1	2.00	99	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 92978 | Date Analyzed: 2012-07-11 | Analyzed By: ZLM
Prep Batch: 78843 | QC Preparation: 2012-07-11 | Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.06	mg/Kg	1	2.00	<0.00365	103	75.4 - 120
Toluene		1	2.04	mg/Kg	1	2.00	<0.00816	102	74.9 - 120
Ethylbenzene		1	2.06	mg/Kg	1	2.00	<0.00560	103	78.1 - 120
Xylene		1	6.19	mg/Kg	1	6.00	0.0126	103	77.3 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.07	mg/Kg	1	2.00	<0.00365	104	75.4 - 120	0	20
Toluene		1	2.07	mg/Kg	1	2.00	<0.00816	104	74.9 - 120	1	20
Ethylbenzene		1	2.09	mg/Kg	1	2.00	<0.00560	104	78.1 - 120	1	20
Xylene		1	6.27	mg/Kg	1	6.00	0.0126	104	77.3 - 120	1	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)	2.01	2.04	mg/Kg	1	2.00	100	102	70 - 130
4-Bromofluorobenzene (4-BFB)	2.06	2.09	mg/Kg	1	2.00	103	104	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 92979 | Date Analyzed: 2012-07-11 | Analyzed By: ZLM
Prep Batch: 78843 | QC Preparation: 2012-07-11 | Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	16.7	mg/Kg	1	20.0	0.54	84	68.9 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	17.9	mg/Kg	1	20.0	0.54	90	68.9 - 120	7	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.68	1.80	mg/Kg	1	2.00	84	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.95	2.02	mg/Kg	1	2.00	98	101	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 93030 | Date Analyzed: 2012-07-13 | Analyzed By: ZLM
Prep Batch: 78890 | QC Preparation: 2012-07-13 | Prepared By: ZLM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	20.9	mg/Kg	1	20.0	2.32	104	68.9 - 120

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

continued ...

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	21.1	mg/Kg	1	20.0	2.32	106	68.9 - 120	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)	1.90	1.75	mg/Kg	1	2.00	95	88	70 - 130
4-Bromofluorobenzene (4-BFB)	2.15	2.18	mg/Kg	1	2.00	108	109	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 93102 | Date Analyzed: 2012-07-16 | Analyzed By: DS
Prep Batch: 78943 | QC Preparation: 2012-07-16 | Prepared By: DS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	245	mg/Kg	1	250	7.49	95	73.2 - 118

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	246	mg/Kg	1	250	7.49	95	73.2 - 118	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
n-Tricosane	125	124	mg/Kg	1	100	125	124	75.4 - 130

Matrix Spike (MS-1) Spiked Sample: 302773

QC Batch: 92803 | Date Analyzed: 2012-07-06 | Analyzed By: AR
Prep Batch: 78690 | QC Preparation: 2012-07-06 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2770	mg/Kg	5	2500	<19.2	111	79.4 - 120.6

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			2860	mg/Kg	5	2500	<19.2	114	79.4 - 120.6	3	20

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

Matrix Spike (MS-1) Spiked Sample: 302775

QC Batch: 92804 | Date Analyzed: 2012-07-06 | Analyzed By: AR
Prep Batch: 78690 | QC Preparation: 2012-07-06 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2510	mg/Kg	5	2500	76	97	79.4 - 120.6

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			2630	mg/Kg	5	2500	76	102	79.4 - 120.6	5	20

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

Matrix Spike (MS-1) Spiked Sample: 302733

QC Batch: 92862 | Date Analyzed: 2012-07-09 | Analyzed By: CW
Prep Batch: 78748 | QC Preparation: 2012-07-09 | Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO Qs Qs	Qs	Qs	2	372	mg/Kg	1	250	221	60	45.5 - 127

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	Qs	Qs	2	375	mg/Kg	1	250	221	62	45.5 - 127	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	137	135	mg/Kg	1	100	137	135	45.4 - 145.8

Matrix Spike (MS-1) Spiked Sample: 303095

QC Batch: 92885 | Date Analyzed: 2012-07-10 | Analyzed By: ZLM
Prep Batch: 78768 | QC Preparation: 2012-07-10 | Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
MTBE		1	2.21	mg/Kg	1	2.00	<0.00502	110	48.4 - 137
Benzene		1	1.89	mg/Kg	1	2.00	<0.00365	94	37.6 - 142
Toluene		1	1.97	mg/Kg	1	2.00	<0.00816	98	38.6 - 153
Ethylbenzene		1	2.10	mg/Kg	1	2.00	<0.00560	105	36.7 - 172
Xylene		1	6.33	mg/Kg	1	6.00	0.0106	105	36.7 - 173

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
MTBE		1	2.10	mg/Kg	1	2.00	<0.00502	105	48.4 - 137	5	20
Benzene		1	1.86	mg/Kg	1	2.00	<0.00365	93	37.6 - 142	2	20
Toluene		1	1.93	mg/Kg	1	2.00	<0.00816	96	38.6 - 153	2	20
Ethylbenzene		1	2.06	mg/Kg	1	2.00	<0.00560	103	36.7 - 172	2	20
Xylene		1	6.18	mg/Kg	1	6.00	0.0106	103	36.7 - 173	2	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.18	2.08	mg/Kg	1	2	109	104	70 - 130
4-Bromofluorobenzene (4-BFB)	2.03	1.96	mg/Kg	1	2	102	98	70 - 130

Matrix Spike (MS-1) Spiked Sample: 303095

QC Batch: 92886 | Date Analyzed: 2012-07-10 | Analyzed By: ZLM
Prep Batch: 78768 | QC Preparation: 2012-07-10 | Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	12.6	mg/Kg	1	20.0	<0.359	63	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.1	mg/Kg	1	20.0	<0.359	76	70 - 130	18	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.35	1.61	mg/Kg	1	2	68	80	70 - 130
4-Bromofluorobenzene (4-BFB)	1.73	2.05	mg/Kg	1	2	86	102	70 - 130

Matrix Spike (MS-1) Spiked Sample: 302733

QC Batch: 92978 | Date Analyzed: 2012-07-11 | Analyzed By: ZLM
Prep Batch: 78843 | QC Preparation: 2012-07-11 | Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.96	mg/Kg	1	2.00	0.223	87	37.6 - 142
Toluene		1	2.11	mg/Kg	1	2.00	0.259	92	38.6 - 153
Ethylbenzene		1	2.64	mg/Kg	1	2.00	0.41	112	36.7 - 172
Xylene		1	7.81	mg/Kg	1	6.00	0.944	114	36.7 - 173

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.04	mg/Kg	1	2.00	0.223	91	37.6 - 142	4	20
Toluene		1	2.18	mg/Kg	1	2.00	0.259	96	38.6 - 153	3	20
Ethylbenzene		1	2.42	mg/Kg	1	2.00	0.41	100	36.7 - 172	9	20
Xylene		1	7.26	mg/Kg	1	6.00	0.944	105	36.7 - 173	7	20

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

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)			2.15	2.29	mg/Kg	1	2	108	114	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	3.14	2.52	mg/Kg	1	2	157	126	70 - 130

Matrix Spike (MS-1) Spiked Sample: 302733

QC Batch: 92979 | Date Analyzed: 2012-07-11 | Analyzed By: ZLM
Prep Batch: 78843 | QC Preparation: 2012-07-11 | Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	117	mg/Kg	1	20.0	66.2	254	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	107	mg/Kg	1	20.0	66.2	204	70 - 130	9	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)			1.61	1.23	mg/Kg	1	2	80	62	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	3.35	2.06	mg/Kg	1	2	168	103	70 - 130

Matrix Spike (MS-1) Spiked Sample: 302775

QC Batch: 93030 | Date Analyzed: 2012-07-13 | Analyzed By: ZLM
Prep Batch: 78890 | QC Preparation: 2012-07-13 | Prepared By: ZLM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	2700	mg/Kg	50	20.0	2750	-250	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	2890	mg/Kg	50	20.0	2750	700	70 - 130	7	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)	Qsr	Qsr	1.26	1.35	mg/Kg	50	2	63	68	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	56.4	61.5	mg/Kg	50	2	2820	3075	70 - 130

Matrix Spike (MS-1) Spiked Sample: 302802

QC Batch: 93102 | Date Analyzed: 2012-07-16 | Analyzed By: DS
Prep Batch: 78943 | QC Preparation: 2012-07-16 | Prepared By: DS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Qs	Qs	5690	mg/Kg	10	250	5020	268	75.4 - 130

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

Param		F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Qs	Qs	1	5490	mg/Kg	10	250	5020	188	75.4 - 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
n-Tricosane	Qsr	Qsr	446	398	mg/Kg	10	100	446	398	38.4 - 143

Calibration Standards

Standard (CCV-1)

QC Batch: 92803 | Date Analyzed: 2012-07-06 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-07-06

Standard (CCV-2)

QC Batch: 92803 | Date Analyzed: 2012-07-06 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.4	99	85 - 115	2012-07-06

Standard (CCV-1)

QC Batch: 92804 | Date Analyzed: 2012-07-06 | 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	2012-07-06

Standard (CCV-2)

QC Batch: 92804 | Date Analyzed: 2012-07-06 | 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	2012-07-06

Standard (CCV-1)

QC Batch: 92862 | Date Analyzed: 2012-07-09 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	251	100	80 - 120	2012-07-09

Standard (CCV-2)

QC Batch: 92862 | Date Analyzed: 2012-07-09 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	257	103	80 - 120	2012-07-09

Standard (CCV-3)

QC Batch: 92862 | Date Analyzed: 2012-07-09 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	243	97	80 - 120	2012-07-09

Standard (CCV-4)

QC Batch: 92862 | Date Analyzed: 2012-07-09 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	248	99	80 - 120	2012-07-09

Standard (CCV-1)

QC Batch: 92885 | Date Analyzed: 2012-07-10 | Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		1	mg/Kg	0.100	0.0988	99	80 - 120	2012-07-10
Benzene		1	mg/kg	0.100	0.0984	98	80 - 120	2012-07-10
Toluene		1	mg/kg	0.100	0.0967	97	80 - 120	2012-07-10
Ethylbenzene		1	mg/kg	0.100	0.0969	97	80 - 120	2012-07-10
Xylene		1	mg/kg	0.300	0.292	97	80 - 120	2012-07-10

Standard (CCV-2)

QC Batch: 92885 Date Analyzed: 2012-07-10 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		1	mg/Kg	0.100	0.0952	95	80 - 120	2012-07-10
Benzene		1	mg/kg	0.100	0.0945	94	80 - 120	2012-07-10
Toluene		1	mg/kg	0.100	0.0945	94	80 - 120	2012-07-10
Ethylbenzene		1	mg/kg	0.100	0.0951	95	80 - 120	2012-07-10
Xylene		1	mg/kg	0.300	0.284	95	80 - 120	2012-07-10

Standard (CCV-3)

QC Batch: 92885 Date Analyzed: 2012-07-10 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		1	mg/Kg	0.100	0.103	103	80 - 120	2012-07-10
Benzene		1	mg/kg	0.100	0.103	103	80 - 120	2012-07-10
Toluene		1	mg/kg	0.100	0.101	101	80 - 120	2012-07-10
Ethylbenzene		1	mg/kg	0.100	0.103	103	80 - 120	2012-07-10
Xylene		1	mg/kg	0.300	0.310	103	80 - 120	2012-07-10

Standard (CCV-1)

QC Batch: 92886 Date Analyzed: 2012-07-10 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.888	89	80 - 120	2012-07-10

Standard (CCV-2)

QC Batch: 92886 Date Analyzed: 2012-07-10 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.824	82	80 - 120	2012-07-10

Standard (CCV-3)

QC Batch: 92886 Date Analyzed: 2012-07-10 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.02	102	80 - 120	2012-07-10

Standard (CCV-1)

QC Batch: 92978 Date Analyzed: 2012-07-11 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.106	106	80 - 120	2012-07-11
Toluene		1	mg/kg	0.100	0.104	104	80 - 120	2012-07-11
Ethylbenzene		1	mg/kg	0.100	0.106	106	80 - 120	2012-07-11
Xylene		1	mg/kg	0.300	0.316	105	80 - 120	2012-07-11

Standard (CCV-2)

QC Batch: 92978 Date Analyzed: 2012-07-11 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0979	98	80 - 120	2012-07-11
Toluene		1	mg/kg	0.100	0.0957	96	80 - 120	2012-07-11
Ethylbenzene		1	mg/kg	0.100	0.0965	96	80 - 120	2012-07-11
Xylene		1	mg/kg	0.300	0.292	97	80 - 120	2012-07-11

Standard (CCV-3)

QC Batch: 92978 Date Analyzed: 2012-07-11 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0963	96	80 - 120	2012-07-11
Toluene		1	mg/kg	0.100	0.0974	97	80 - 120	2012-07-11
Ethylbenzene		1	mg/kg	0.100	0.0968	97	80 - 120	2012-07-11
Xylene		1	mg/kg	0.300	0.287	96	80 - 120	2012-07-11

Standard (CCV-1)

QC Batch: 92979 Date Analyzed: 2012-07-11 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.889	89	80 - 120	2012-07-11

Standard (CCV-2)

QC Batch: 92979 Date Analyzed: 2012-07-11 Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.09	109	80 - 120	2012-07-11

Standard (CCV-3)

QC Batch: 92979 | Date Analyzed: 2012-07-11 | Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO	4	1	mg/Kg	2.00	1.61	80	80 - 120	2012-07-11

Standard (CCV-1)

QC Batch: 93030 | Date Analyzed: 2012-07-13 | Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.01	101	80 - 120	2012-07-13

Standard (CCV-2)

QC Batch: 93030 | Date Analyzed: 2012-07-13 | Analyzed By: ZLM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.12	112	80 - 120	2012-07-13

Standard (CCV-1)

QC Batch: 93102 | Date Analyzed: 2012-07-16 | Analyzed By: DS

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	2012-07-16

Standard (CCV-2)

QC Batch: 93102 | Date Analyzed: 2012-07-16 | Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	246	98	80 - 120	2012-07-16

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	T104704219-12-8	Lubbock
2	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.
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 excessive hydrocarbons.
2 Dilution due to excessive hydrocarbons.
3 Sample weighed out of 48-hr preservation time.

4 CCV was double-spiked.

Attachments

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

120702-12

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

ANALYSIS REQUEST (Circle or Specify Method No.)

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-6401444

PROJECT NAME: Brigham H South Tank Battery 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. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
302766	6/3/12				1	AH-1 '0-1' (6" BEB)	1				1		X	X											X				
767						AH-1 '1-1.5' (6" BEB)																								
768						AH-1 '1.5-2' (6" BEB)																								
769						AH-2 '0-1' (6" BEB)								X	X															
770						AH-2 '1-1.5' (6" BEB)																								
771						AH-3 '0-1' (6" BEB)								X	X															
772						AH-4 '0-.5' (6" BEB)								X	X															
773						AH-5 '0-1' (6" BEB)								X	X															
774						AH-5 '1-1.5' (6" BEB)								X	X															
775						AH-6 '0-1' (6" BEB)								X	X															

RELINQUISHED BY: (Signature) — Date: — Time:
RECEIVED BY: (Signature) Jeanne Fitch — Date: 7-5-12 — Time: 1115
SAMPLED BY: (Print & Initial) — Date: — Time:

RELINQUISHED BY: (Signature) Jeanne Fitch — Date: 7-5-12 — Time: 1310
RECEIVED BY: (Signature) — Date: 7-5-12 — Time: 1310
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: — OTHER:

RELINQUISHED BY: (Signature) ARON — Date: 7-5-12 — Time: 1310
RECEIVED BY: (Signature) — Date: — Time:
TETRA TECH CONTACT PERSON: Ike Tavarez — Results by:

RECEIVING LABORATORY: Trace Analysis
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) — DATE: 07/09/12 — TIME: 0800
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 4°C

REMARKS: If TPH > 5,000 mg/kg run deeper sample
If total BTEX > 50 mg/kg Run deeper sample
Add BTEX/TPH 302774 BW 7/10/12 Midland - DRO/GRO
Add BTEX

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: September 6, 2012

Work Order: 12083126

Project Location: Eddy Co., NM
Project Name: COG/Brigham H South Tank Battery
Project Number: 114-6401444

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
308288	CS-1 2' Bottom AH-2	soil	2012-08-29	00:00	2012-08-31
308289	CS-2 2' Bottom AH-6	soil	2012-08-29	00:00	2012-08-31
308290	CS-3 3' Bottom AH-4	soil	2012-08-29	00:00	2012-08-31

	BTEX				TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
308288 - CS-1 2' Bottom AH-2	<0.0200	<0.0200	<0.0200	<0.0200	**99.1** Qs	**9.32**
308289 - CS-2 2' Bottom AH-6	<0.0200	<0.0200	**0.0983**	**0.439**	**86.7** Qs	**106**

Sample: 308290 - CS-3 3' Bottom AH-4

Param	Flag	Result	Units	RL
Chloride		**1250**	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

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: September 6, 2012

Work Order: 12083126

Project Location: Eddy Co., NM
Project Name: COG/Brigham H South Tank Battery
Project Number: 114-6401444

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
308288	CS-1 2' Bottom AH-2	soil	2012-08-29	00:00	2012-08-31
308289	CS-2 2' Bottom AH-6	soil	2012-08-29	00:00	2012-08-31
308290	CS-3 3' Bottom AH-4	soil	2012-08-29	00:00	2012-08-31

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

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

Report Contents

Case Narrative

Samples for project COG/Brigham H South Tank Battery were received by TraceAnalysis, Inc. on 2012-08-31 and assigned to work order 12083126. Samples for work order 12083126 were received intact at a temperature of 3.7 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	80083	2012-09-05 at 09:24	94514	2012-09-05 at 09:24
Chloride (Titration)	SM 4500-Cl B	80093	2012-09-04 at 09:31	94521	2012-09-04 at 15:32
TPH DRO - NEW	S 8015 D	80058	2012-09-04 at 15:00	94474	2012-09-05 at 08:29
TPH GRO	S 8015 D	80083	2012-09-05 at 09:24	94515	2012-09-05 at 09:24

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 12083126 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: 308288 - CS-1 2' Bottom AH-2

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	94514	Date Analyzed:	2012-09-05	Analyzed By:	MT
Prep Batch:	80083	Sample Preparation:	2012-09-05	Prepared By:	MT

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)			1.86	mg/Kg	1	2.00	93	70 - 130
4-Bromofluorobenzene (4-BFB)			2.32	mg/Kg	1	2.00	116	70 - 130

Sample: 308288 - CS-1 2' Bottom AH-2

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	94474	Date Analyzed:	2012-09-05	Analyzed By:	CW
Prep Batch:	80058	Sample Preparation:	2012-09-04	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs	2	**99.1**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			107	mg/Kg	1	100	107	70 - 130

Sample: 308288 - CS-1 2' Bottom AH-2

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	94515	Date Analyzed:	2012-09-05	Analyzed By:	MT
Prep Batch:	80083	Sample Preparation:	2012-09-05	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO		1	**9.32**	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.71	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			2.28	mg/Kg	1	2.00	114	70 - 130

Sample: 308289 - CS-2 2' Bottom AH-6

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	94514	Date Analyzed:	2012-09-05	Analyzed By:	MT
Prep Batch:	80083	Sample Preparation:	2012-09-05	Prepared By:	MT

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		1	**0.0983**	mg/Kg	1	0.0200
Xylene		1	**0.439**	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.03	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	3.52	mg/Kg	1	2.00	176	70 - 130

Sample: 308289 - CS-2 2' Bottom AH-6

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	94474	Date Analyzed:	2012-09-05	Analyzed By:	CW
Prep Batch:	80058	Sample Preparation:	2012-09-04	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	Qs	2	**86.7**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			103	mg/Kg	1	100	103	70 - 130

Sample: 308289 - CS-2 2' Bottom AH-6

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	94515	Date Analyzed:	2012-09-05	Analyzed By:	MT
Prep Batch:	80083	Sample Preparation:	2012-09-05	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO		1	**106**	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.78	mg/Kg	1	2.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	5.10	mg/Kg	1	2.00	255	70 - 130

Sample: 308290 - CS-3 3' Bottom AH-4

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	94521	Date Analyzed:	2012-09-04	Analyzed By:	AR
Prep Batch:	80093	Sample Preparation:	2012-09-04	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**1250**	mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 94474

QC Batch:	94474	Date Analyzed:	2012-09-05	Analyzed By:	CW
Prep Batch:	80058	QC Preparation:	2012-09-04	Prepared By:	CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			109	mg/Kg	1	100	109	70 - 130

Method Blank (1) QC Batch: 94514

QC Batch:	94514	Date Analyzed:	2012-09-05	Analyzed By:	MT
Prep Batch:	80083	QC Preparation:	2012-09-05	Prepared By:	MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00365	mg/Kg	0.02
Toluene		1	<0.00816	mg/Kg	0.02
Ethylbenzene		1	<0.00560	mg/Kg	0.02
Xylene		1	<0.00460	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.08	mg/Kg	1	2.00	104	70 - 130

Method Blank (1) QC Batch: 94515

QC Batch:	94515	Date Analyzed:	2012-09-05	Analyzed By:	MT
Prep Batch:	80083	QC Preparation:	2012-09-05	Prepared By:	MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.359	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			2.09	mg/Kg	1	2.00	104	70 - 130

Method Blank (1) QC Batch: 94521

QC Batch:	94521	Date Analyzed:	2012-09-04	Analyzed By:	AR
Prep Batch:	80093	QC Preparation:	2012-09-04	Prepared By:	AR

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 94474 Date Analyzed: 2012-09-05 Analyzed By: CW
Prep Batch: 80058 QC Preparation: 2012-09-04 Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	262	mg/Kg	1	250	<14.5	105	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	275	mg/Kg	1	250	<14.5	110	70 - 130	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	113	113	mg/Kg	1	100	113	113	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 94514 Date Analyzed: 2012-09-05 Analyzed By: MT
Prep Batch: 80083 QC Preparation: 2012-09-05 Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.96	mg/Kg	1	2.00	<0.00365	98	75.4 - 120
Toluene		1	1.93	mg/Kg	1	2.00	<0.00816	96	74.9 - 120
Ethylbenzene		1	2.01	mg/Kg	1	2.00	<0.00560	100	78.1 - 120
Xylene		1	6.00	mg/Kg	1	6.00	<0.00460	100	77.3 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.93	mg/Kg	1	2.00	<0.00365	96	75.4 - 120	2	20
Toluene		1	1.92	mg/Kg	1	2.00	<0.00816	96	74.9 - 120	0	20
Ethylbenzene		1	2.02	mg/Kg	1	2.00	<0.00560	101	78.1 - 120	0	20
Xylene		1	6.02	mg/Kg	1	6.00	<0.00460	100	77.3 - 120	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)	1.77	1.76	mg/Kg	1	2.00	88	88	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: 94515 | Date Analyzed: 2012-09-05 | Analyzed By: MT
Prep Batch: 80083 | QC Preparation: 2012-09-05 | Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.5	mg/Kg	1	20.0	<0.359	78	68.9 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	17.8	mg/Kg	1	20.0	<0.359	89	68.9 - 120	14	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)	1.44	1.67	mg/Kg	1	2.00	72	84	70 - 130
4-Bromofluorobenzene (4-BFB)	1.78	1.96	mg/Kg	1	2.00	89	98	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 94521 | Date Analyzed: 2012-09-04 | Analyzed By: AR
Prep Batch: 80093 | QC Preparation: 2012-09-04 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2590	mg/Kg	1	2500	<3.85	104	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2680	mg/Kg	1	2500	<3.85	107	85 - 115	3	20

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

Matrix Spike (MS-1) Spiked Sample: 308288

QC Batch: 94474 | Date Analyzed: 2012-09-05 | Analyzed By: CW
Prep Batch: 80058 | QC Preparation: 2012-09-04 | Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	406	mg/Kg	1	250	99.1	123	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Qs	Qs 2	434	mg/Kg	1	250	99.1	134	70 - 130	7	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	110	111	mg/Kg	1	100	110	111	70 - 130

Matrix Spike (xMS-1) Spiked Sample:

QC Batch: 94514 | Date Analyzed: 2012-09-05 | Analyzed By: MT
Prep Batch: 80083 | QC Preparation: 2012-09-05 | Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.12	mg/Kg	1	2.00	<0.00365	106	37.6 - 142
Toluene		1	2.28	mg/Kg	1	2.00	<0.00816	114	38.6 - 153
Ethylbenzene		1	2.52	mg/Kg	1	2.00	<0.00560	126	36.7 - 172
Xylene		1	7.52	mg/Kg	1	6.00	<0.00460	125	36.7 - 173

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.11	mg/Kg	1	2.00	<0.00365	106	37.6 - 142	0	20
Toluene		1	2.28	mg/Kg	1	2.00	<0.00816	114	38.6 - 153	0	20
Ethylbenzene		1	2.51	mg/Kg	1	2.00	<0.00560	126	36.7 - 172	0	20
Xylene		1	7.49	mg/Kg	1	6.00	<0.00460	125	36.7 - 173	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)	2.19	2.15	mg/Kg	1	2	110	108	70 - 130

continued ...

matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	2.26	2.24	mg/Kg	1	2	113	112	70 - 130

Matrix Spike (MS-1) Spiked Sample: 308336

QC Batch: 94515 | Date Analyzed: 2012-09-05 | Analyzed By: MT
Prep Batch: 80083 | QC Preparation: 2012-09-05 | Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.7	mg/Kg	1	20.0	1.03	88	68.9 - 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
GRO		1	18.9	mg/Kg	1	20.0	1.03	90	68.9 - 120	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.84	1.88	mg/Kg	1	2	92	94	70 - 130
4-Bromofluorobenzene (4-BFB)	2.37	2.50	mg/Kg	1	2	118	125	70 - 130

Matrix Spike (MS-1) Spiked Sample: 308290

QC Batch: 94521 | Date Analyzed: 2012-09-04 | Analyzed By: AR
Prep Batch: 80093 | QC Preparation: 2012-09-04 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3850	mg/Kg	5	2500	1250	104	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			3680	mg/Kg	5	2500	1250	97	78.9 - 121	4	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 94474 | Date Analyzed: 2012-09-05 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	257	103	80 - 120	2012-09-05

Standard (CCV-2)

QC Batch: 94474 | Date Analyzed: 2012-09-05 | Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	260	104	80 - 120	2012-09-05

Standard (CCV-1)

QC Batch: 94514 | Date Analyzed: 2012-09-05 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0971	97	80 - 120	2012-09-05
Toluene		1	mg/kg	0.100	0.0962	96	80 - 120	2012-09-05
Ethylbenzene		1	mg/kg	0.100	0.0988	99	80 - 120	2012-09-05
Xylene		1	mg/kg	0.300	0.295	98	80 - 120	2012-09-05

Standard (CCV-2)

QC Batch: 94514 | Date Analyzed: 2012-09-05 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0963	96	80 - 120	2012-09-05
Toluene		1	mg/kg	0.100	0.0946	95	80 - 120	2012-09-05
Ethylbenzene		1	mg/kg	0.100	0.0974	97	80 - 120	2012-09-05
Xylene		1	mg/kg	0.300	0.291	97	80 - 120	2012-09-05

Standard (CCV-3)

QC Batch: 94514 Date Analyzed: 2012-09-05 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0936	94	80 - 120	2012-09-05
Toluene		1	mg/kg	0.100	0.0935	94	80 - 120	2012-09-05
Ethylbenzene		1	mg/kg	0.100	0.0970	97	80 - 120	2012-09-05
Xylene		1	mg/kg	0.300	0.291	97	80 - 120	2012-09-05

Standard (CCV-1)

QC Batch: 94515 Date Analyzed: 2012-09-05 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.849	85	80 - 120	2012-09-05

Standard (CCV-2)

QC Batch: 94515 Date Analyzed: 2012-09-05 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.815	82	80 - 120	2012-09-05

Standard (CCV-3)

QC Batch: 94515 | Date Analyzed: 2012-09-05 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.894	89	80 - 120	2012-09-05

Standard (CCV-1)

QC Batch: 94521 | Date Analyzed: 2012-09-04 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-09-04

Standard (CCV-2)

QC Batch: 94521 | Date Analyzed: 2012-09-04 | 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	98.9	99	85 - 115	2012-09-04

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	T104704219-12-8	Lubbock
2	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.
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.

12083126

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

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-COG1444

PROJECT NAME: COG / Brigham H South TB
Eddy Co. NM

LAB I.D. NUMBER	DATE 2012	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
288	8/29		S		X	CS-1 2' Bottom AH-2	1				X		X	X											X				
289	8/29		S		X	CS-2 2' Bottom AH-6	1				X		X	X															
290	8/29		S		X	CS-3 3' Bottom AH-4	1				X														X				

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: 08-31-12 Time: 1300
SAMPLED BY: (Print & Initial) Johnny Tarin Smith Date: 8/29/12 Time:

RELINQUISHED BY: (Signature) Jeanne Fitch Date: 08-31-12 Time: 1400
RECEIVED BY: (Signature) J Hernandez Date: 8/31/12 Time: 14:00
SAMPLE SHIPPED BY: (Circle) FEDEX HAND DELIVERED BUS UPS AIRBILL #: OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
TETRA TECH CONTACT PERSON: Ike Tavarez
Results by: Wed if possible
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: 2.7 intact
REMARKS: Rush Midland ALS

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