

SITE INFORMATION

Report Type: Work Plan

General Site Information:

Site:	Harper State Tank Battery					
Company:	COG Operating LLC					
Section, Township and Range	Unit P	Sec. 16	T-17-S	R-30-E		
Lease Number:	API-30-015-30831					
County:	Eddy County					
GPS:	32.82866° N			103.96902° W		
Surface Owner:	State					
Mineral Owner:						
Directions:	Hwy 82 and Goat Roper Road (Loco Hills), North on Goat Roper 0.7 miles, turn right 0.4 miles, turn right 0.2 miles					

Release Data:

Date Released:	11/21/2011
Type Release:	Produced Water
Source of Contamination:	Water transfer line
Fluid Released:	2 bbls oil 8 bbls produced water
Fluids Recovered:	1 bbls oil 6 bbls produced water

Official Communication:

Name:	Pat Ellis	Ike Tavaréz
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@tetrattech.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

January 18, 2012

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

Re: Assessment and Work Plan for the COG Operating LLC., Harper State Tank Battery, Section 16, 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 at the Harper State Tank Battery located in Section 16, Township 17 South, Range 30 East, Eddy County, New Mexico. The spill site coordinates are N 32.82866°, W 103.96902°. 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 November 21, 2011, and released approximately 2 barrels of oil and 8 barrels of produced water due to a transfer water line leak. Approximately 1 barrel of oil and 6 barrels of produced water were recovered from the spill area. The spill initiated at the transfer line and impacted an area approximately 3' x 70' along the front side of the tank battery. The spill migrated to the backside of the tank battery impacting an area approximately 5' x 100'. The spill is shown on Figures 3. The initial Form C-141 is enclosed in Appendix A.

Groundwater

No water wells were reported in Section 16. According to the NMOCD groundwater map, the average depth to groundwater is approximately 300' below surface. The groundwater data is shown in Appendix A.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.662.4559 Fax 432.662.3946 www.tetratech.com

**Regulatory**

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

Soil Assessment

Tetra Tech personnel inspected and sampled the spill area on December 20, 2011. A total of four (4) auger holes (AH-1 through AH-4) were installed using a stainless steel hand auger to assess the impacted area. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The auger hole locations are shown on Figure 3.

Analytical Results

Referring to Table 1, Auger holes (AH-3 and AH-4) were below the RRAL for TPH and BTEX. AH-1 exceeded the RRAL for TPH and BTEX at 0-1' and 1-1.5', which declined below the RRAL at 2-2.5' below surface. In addition, total BTEX exceeded the RRAL at AH-1 and AH-2 and declined below the RRAL at 3.0' and 1.0', respectively.

A shallow chloride impact was detected at the site. Chloride concentrations were detected at all four of the auger holes locations and vertically defined. Auger holes (AH-2, AH-3 and AH-4) showed chloride impact from surface to 1.5' below surface. A deeper impact was detected in the area of AH-1 to 3.0' below surface, which declined to 1,020 mg/kg at 4-4.5' and 452 mg/kg at 5-5.5' below surface.



Work Plan

COG proposes to removal of impacted material as highlighted (green) in Table 1 and shown in Figure 4. The area of AH-1 will be excavated to a depth of approximately 3.0' to 4.0' below surface. The areas of AH-2 and AH-3 will be excavated to a depth of 1.0' below surface and 1.5' in the area of AH-4. All of the excavated soil will be transported to proper disposal. Once the final depths are achieved, the excavations will be backfilled with clean soil.

Based on location of the spill area, excavation of the spill may not be achieve due to proximity of oil and gas equipment, structures or lines, which may cause cave ins and safety concerns for onsite equipment and personnel. As such, Tetra Tech will excavate the soils to the maximum extent practicable.

If you have any questions or comments concerning the assessment or the proposed work plan, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavaréz, PG
Senior Project Manager

cc: Pat Ellis – COG

Figures

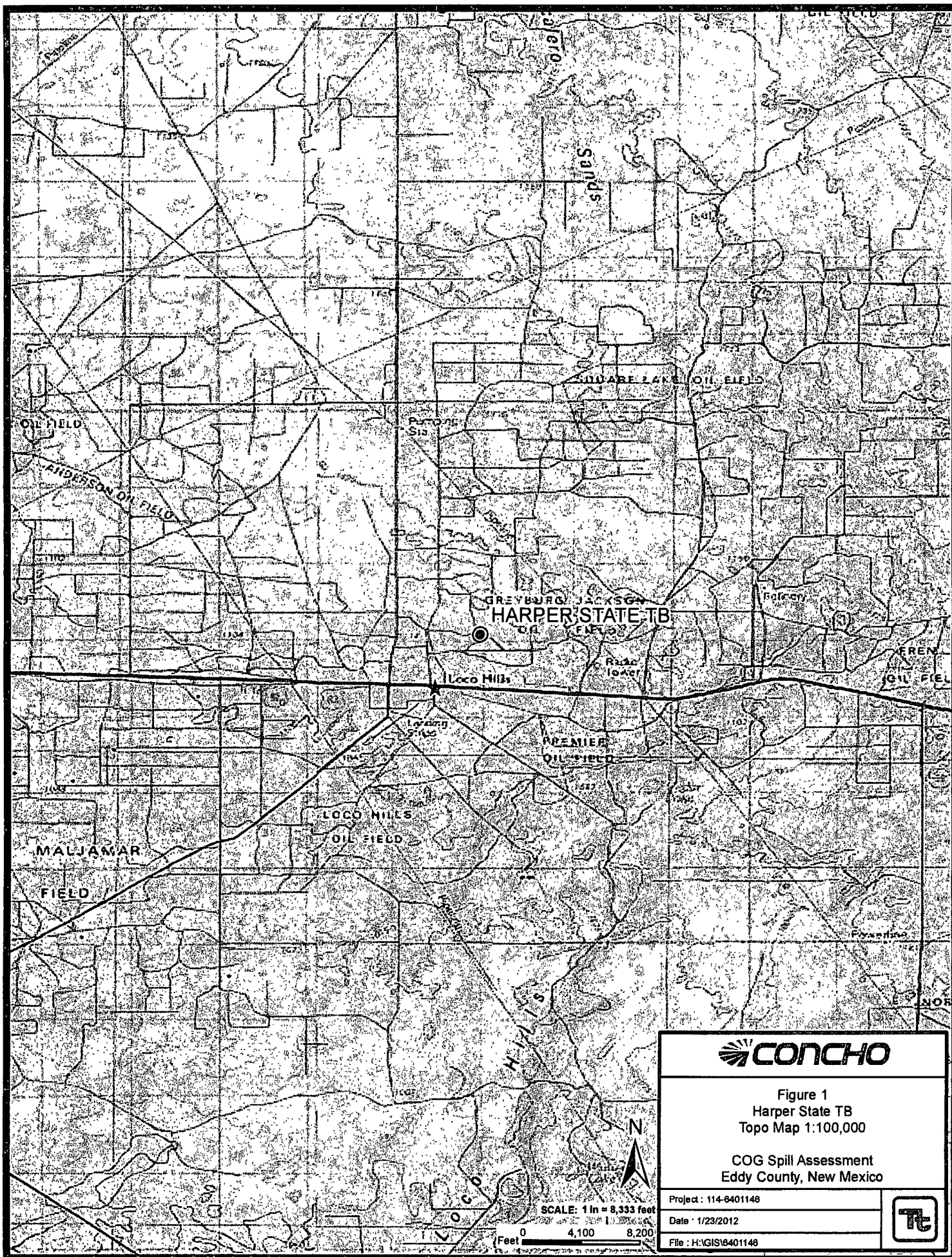


Figure 1
Harper State TB
Topo Map 1:100,000

COG Spill Assessment
Eddy County, New Mexico

Project : 114-6401148

Date : 1/23/2012

File : H:\GIS\6401148



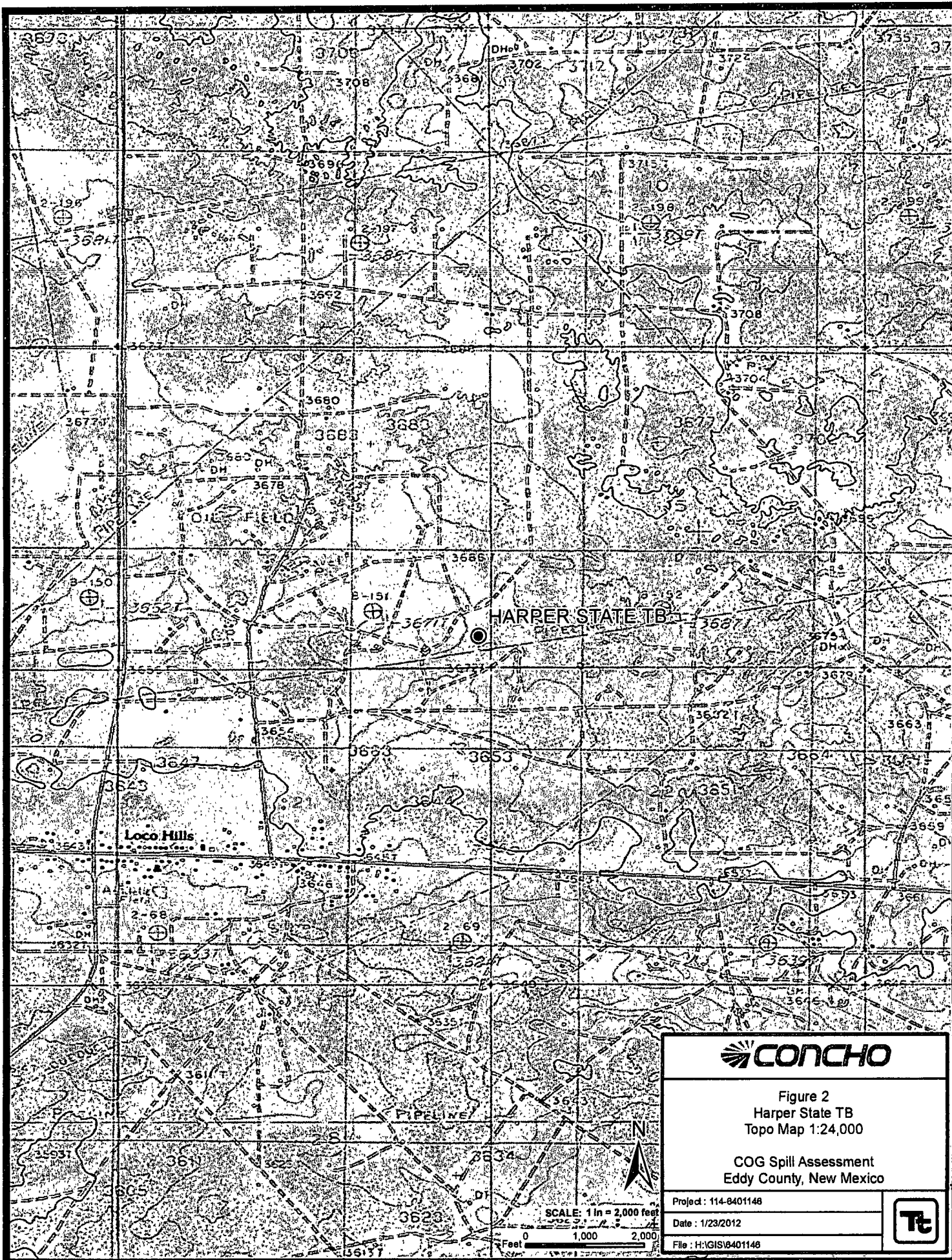


Figure 2
Harper State TB
Topo Map 1:24,000

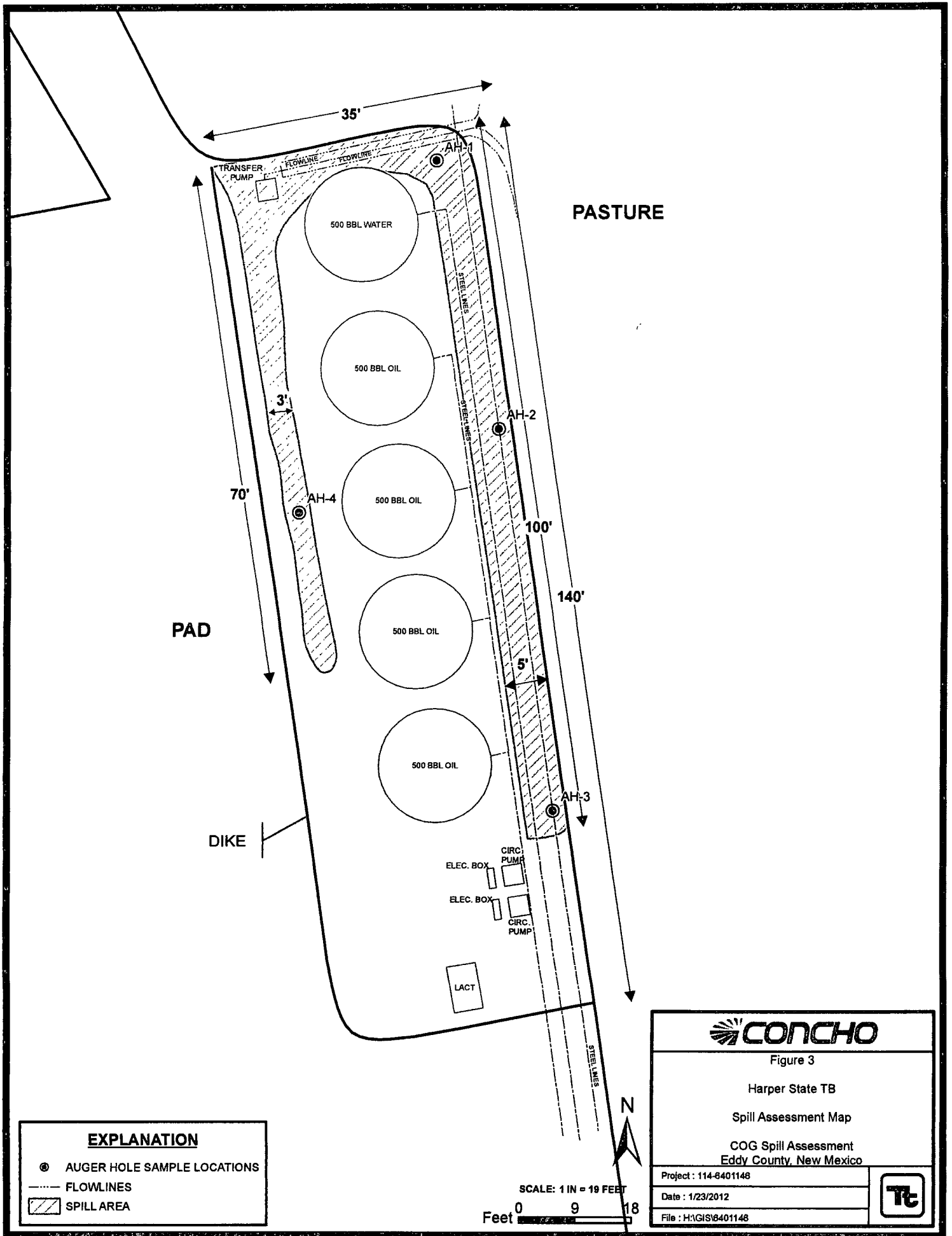
COG Spill Assessment
Eddy County, New Mexico

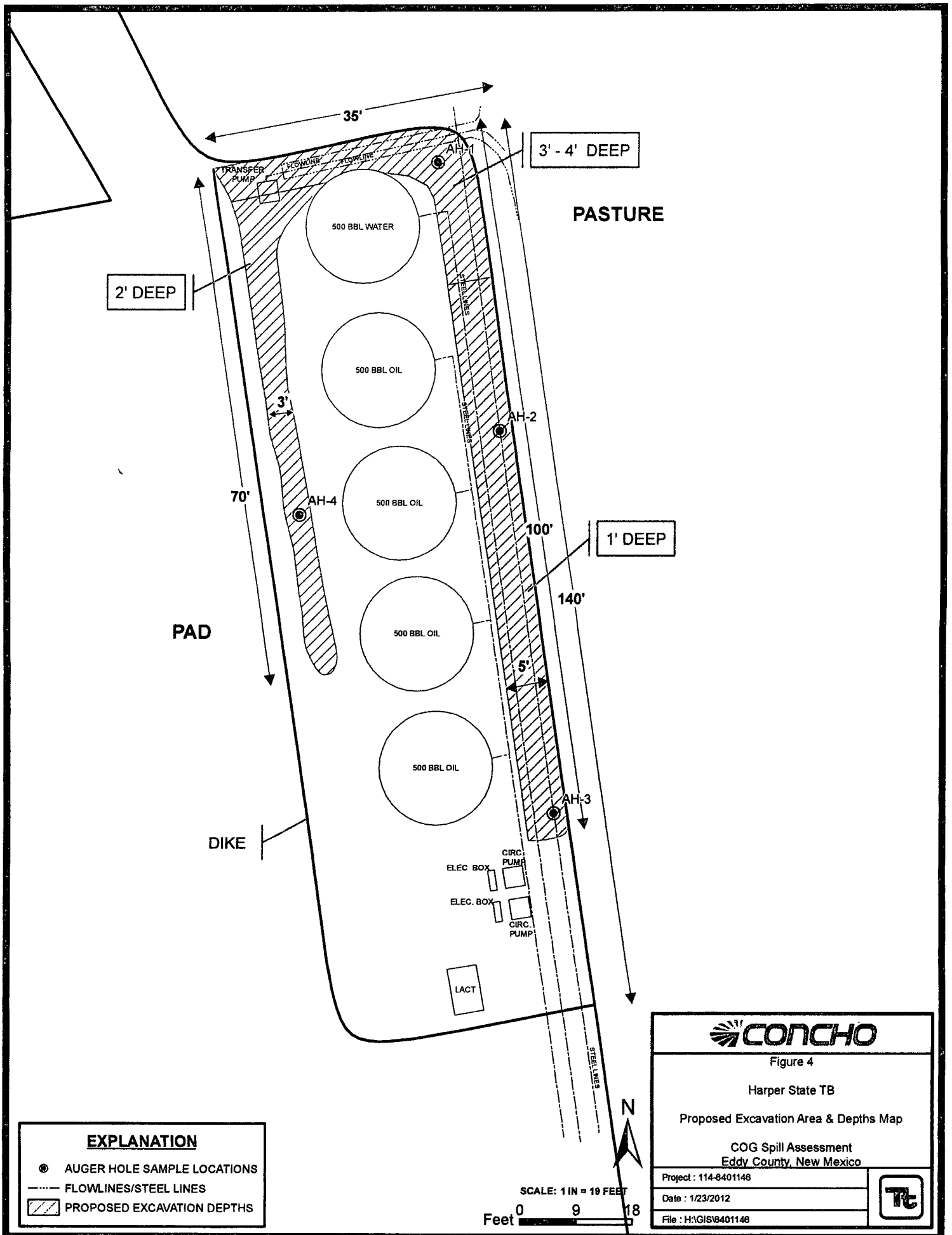
Project: 114-8401148

Date: 1/23/2012

File: H:\GIS\8401148







Tables

Table 1
COG Operating LLC
Harper State Tank Battery
Eddy County, New Mexico

[illegible]

Table 1
COG Operating LLC
Harper State Tank Battery
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	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-3	12/20/2011	0-1	-	X		283	<50.0	283	0.0607	1.22	3.04	4.54	8.86	2,600
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	<200
	"	2-2.5	-	X		-	-	-	-	-	-	-	-	<200
	"	3-3.5		X		-	-	-	-	-	-	-	-	<200
	"	4-4.5		X		-	-	-	-	-	-	-	-	<200
	"	5-5.5	-	X		-	-	-	-	-	-	-	-	<200
	"	6-6.5	-	X		-	-	-	-	-	-	-	-	<200
	"	7-7.5	-	X		-	-	-	-	-	-	-	-	<200
	"	8-8.5	-	X		-	-	-	-	-	-	-	-	227
	"	9-9.5	-	X		-	-	-	-	-	-	-	-	<200
AH-4	12/20/2011	0-1	-	X		<2.00	<50.0	<50.0	0.0303	0.102	<0.0200	<0.0200	0.132	7,160
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	2,290
	"	2-2.5		X		-	-	-	-	-	-	-	-	289
	"	3-3.5		X		-	-	-	-	-	-	-	-	<200
	"	4-4.5	-	X		-	-	-	-	-	-	-	-	<200
		5-5.5	-	X		-	-	-	-	-	-	-	-	<200
	"	6-6.5	-	X		-	-	-	-	-	-	-	-	<200
	"	7-7.5	-	X		-	-	-	-	-	-	-	-	<200
	"	8-8.5		X		-	-	-	-	-	-	-	-	<200
	"	9-9.5	-	X		-	-	-	-	-	-	-	-	<200

(--) Not Analyzed

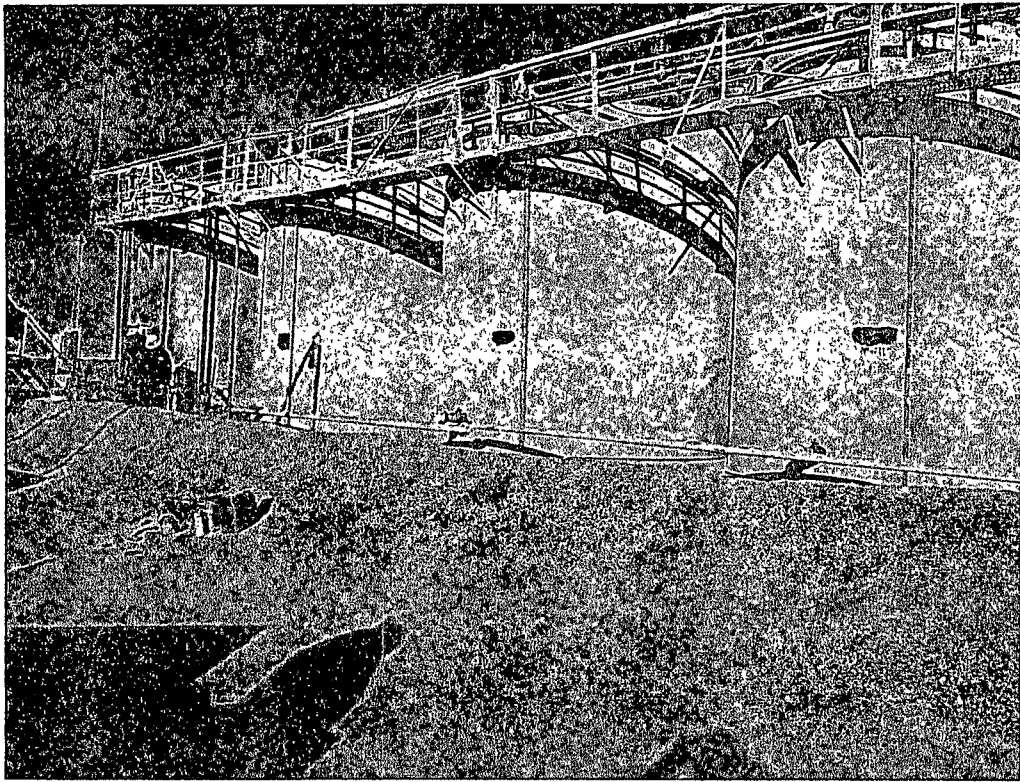
 Proposed Excavation Depths

(BEB) Below Excavation Bottom

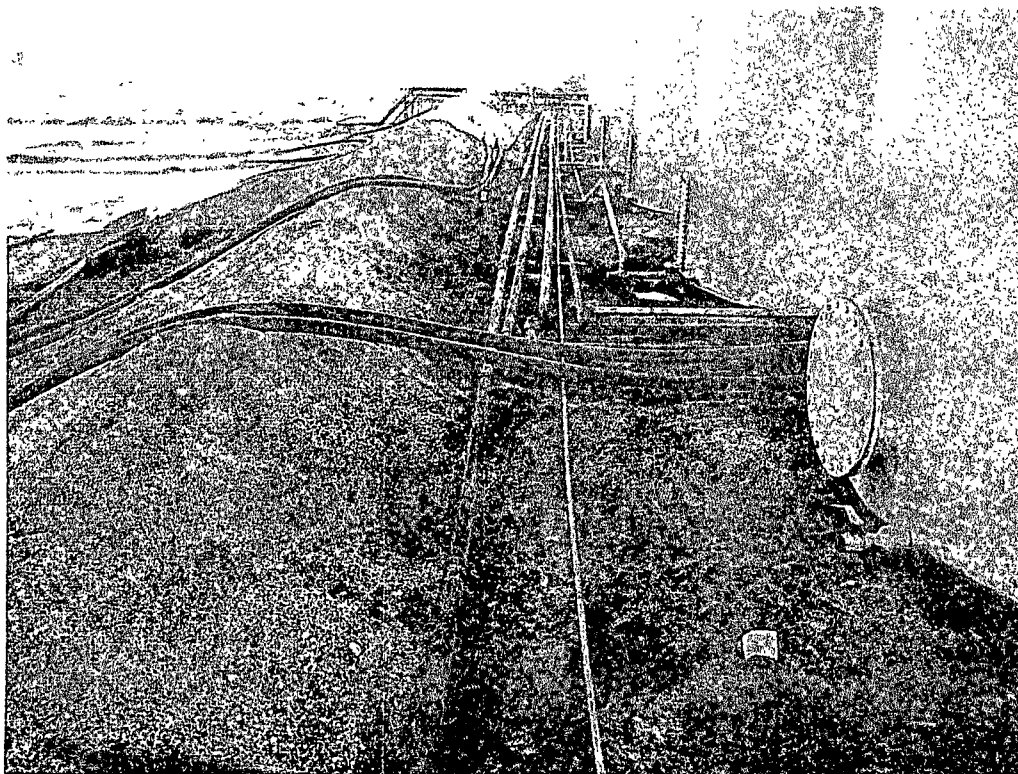
Photos



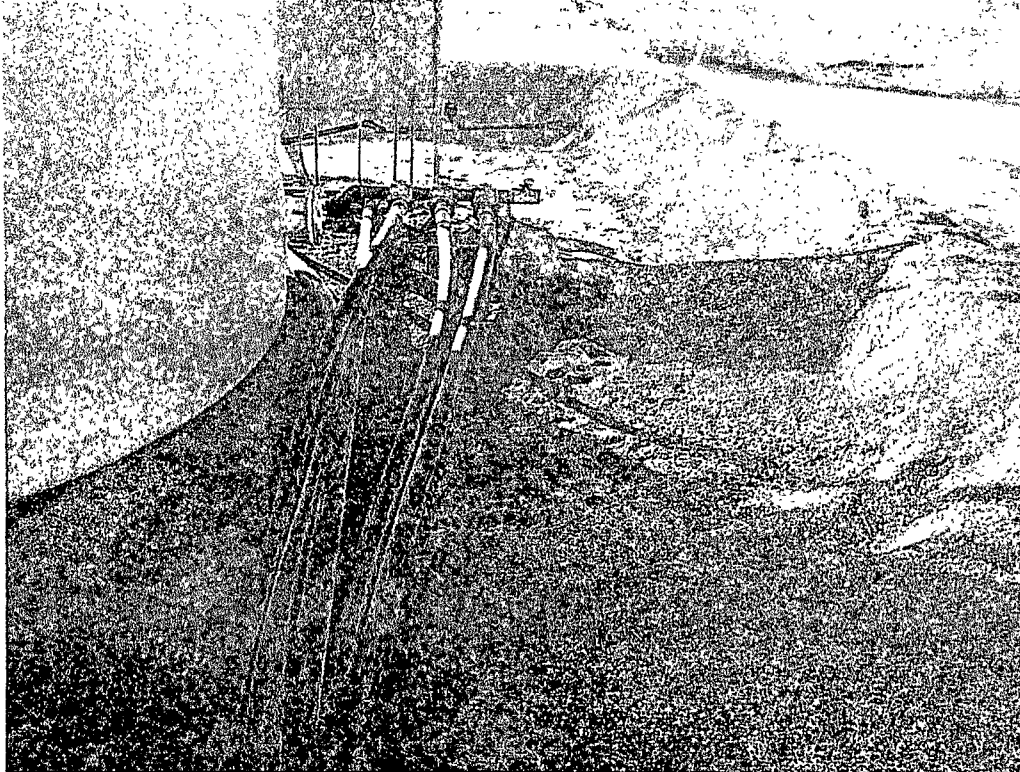
TETRA TECH



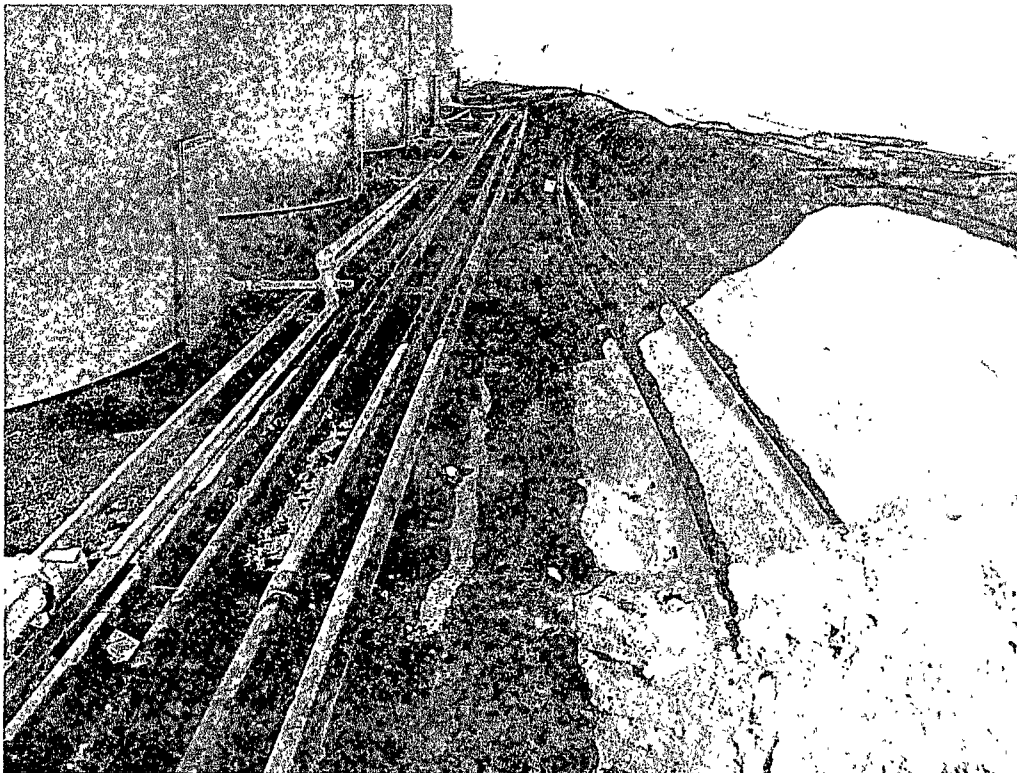
View north east – Harper State Tank Battery



View south – Backside of tank battery near AH-1



View north – Harper State Tank Battery



View north – Backside of tank battery

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-14
Revised October 10, 200
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	Harper State Tank Battery	Facility Type	Tank Battery

Surface Owner	State	Mineral Owner	Lease No. (API#) 30-015-30831
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	16	17S	30E					Eddy

Latitude 32 49.728 Longitude 103 58.150

NATURE OF RELEASE

Type of Release	Produced fluids	Volume of Release	2bbls oil 8bbls produced water	Volume Recovered	1bbls oil 6bbls produced water
Source of Release	Water transfer line	Date and Hour of Occurrence	11/21/2011	Date and Hour of Discovery	11/21/2011 4:30 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.*

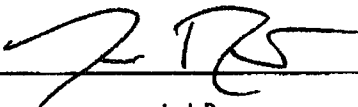
Describe Cause of Problem and Remedial Action Taken.*

The water transfer line leaked inside the facility. The line has been repaired and returned to service.

Describe Area Affected and Cleanup Action Taken.*

Initially 10bbls of produced fluid were released from the water transfer line and we were able to recover 7bbls with a vacuum truck. The entire release was contained inside the facility walls. The spill dimensions measured 3' x 70'. The spill area has been excavated and the contaminated soil has been 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 OCD 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:	
Date: 11/29/2011 Phone: 432-212-2399		Attached ☐	

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Harper State 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	20	21	22	23	24
110	29	28	27	26	25
30	32	33	34	35	36
31					

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
18	17	16	15	14	288
19	20	21	22	23	113
30	29	28	27	26	25
31	32	33	34	35	36
290					

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	23	24
30	29	210	28	27	26
31	208'	33	34	35	36
				153	

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	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	35	36
				271	

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
18	17	16	15	14	400
19	20	21	22	23	317
30	29	28	27	26	25
31	32	33	34	35	36
				261	

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

Appendix C

Summary Report

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

Report Date: January 5, 2012

Work Order: 11122310



Project Location: Eddy Co., NM
Project Name: COG/Harper State TB
Project Number: 114-6401146

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
285279	AH-1 0-1'	soil	2011-12-20	00:00	2011-12-22
285280	AH-1 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285281	AH-1 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285282	AH-1 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285283	AH-1 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285284	AH-1 5-5.5'	soil	2011-12-20	00:00	2011-12-22
285285	AH-1 6-6.5'	soil	2011-12-20	00:00	2011-12-22
285286	AH-1 7-7.5'	soil	2011-12-20	00:00	2011-12-22
285287	AH-1 8-8.5'	soil	2011-12-20	00:00	2011-12-22
285288	AH-1 9-9.5'	soil	2011-12-20	00:00	2011-12-22
285289	AH-2 0-1'	soil	2011-12-20	00:00	2011-12-22
285290	AH-2 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285291	AH-2 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285292	AH-2 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285293	AH-2 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285294	AH-2 5-5.5'	soil	2011-12-20	00:00	2011-12-22
285295	AH-2 6-6.5'	soil	2011-12-20	00:00	2011-12-22
285296	AH-2 7-7.5'	soil	2011-12-20	00:00	2011-12-22
285297	AH-2 8-8.5'	soil	2011-12-20	00:00	2011-12-22
285298	AH-2 9-9.5'	soil	2011-12-20	00:00	2011-12-22
285299	AH-3 0-1'	soil	2011-12-20	00:00	2011-12-22
285300	AH-3 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285301	AH-3 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285302	AH-3 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285303	AH-3 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285304	AH-3 5-5.5'	soil	2011-12-20	00:00	2011-12-22
285305	AH-3 6-6.5'	soil	2011-12-20	00:00	2011-12-22
285306	AH-3 7-7.5'	soil	2011-12-20	00:00	2011-12-22
285307	AH-3 8-8.5'	soil	2011-12-20	00:00	2011-12-22
285308	AH-3 9-9.5'	soil	2011-12-20	00:00	2011-12-22

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
285309	AH-4 0-1'	soil	2011-12-20	00:00	2011-12-22
285310	AH-4 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285311	AH-4 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285312	AH-4 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285313	AH-4 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285314	AH-4 5-5.5'	soil	2011-12-20	00:00	2011-12-22
285315	AH-4 6-6.5'	soil	2011-12-20	00:00	2011-12-22
285316	AH-4 7-7.5'	soil	2011-12-20	00:00	2011-12-22
285317	AH-4 8-8.5'	soil	2011-12-20	00:00	2011-12-22
285318	AH-4 9-9.5'	soil	2011-12-20	00:00	2011-12-22

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
285279 - AH-1 0-1'	37.9	265 J _e	153	185 J _e	2190	6480 Q _s
285280 - AH-1 1-1.5'	107 J _e	361 J _e	200 J _e	248 J _e	8450	10300
285281 - AH-1 2-2.5'	0.917	23.4	26.3	35.0	534	1380 Q _r , Q _s
285282 - AH-1 3-3.5'	<0.0200 Q _r	<0.0200 Q _r	0.0247	0.0701		
285289 - AH-2 0-1'	<1.00 Q _r	38.8 Q _r , Q _s	41.4 Q _r , Q _s	52.3 Q _r , Q _s	527	1920 Q _s
285290 - AH-2 1-1.5'	<0.0200	<0.0200	<0.0200	<0.0200		
285299 - AH-3 0-1'	0.0607	1.22	3.04	4.54	<50.0	283 Q _s
285309 - AH-4 0-1'	0.0303	0.102	<0.0200	<0.0200	<50.0	<2.00 Q _r , Q _s

Sample: 285279 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		10200	mg/Kg	4

Sample: 285280 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		2360	mg/Kg	4

Sample: 285281 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		2710	mg/Kg	4

Sample: 285282 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		2200	mg/Kg	4

Sample: 285283 - AH-1 4-4.5'

Param	Flag	Result	Units	RL
Chloride		1020	mg/Kg	4

Sample: 285284 - AH-1 5-5.5'

Param	Flag	Result	Units	RL
Chloride		452	mg/Kg	4

Sample: 285285 - AH-1 6-6.5'

Param	Flag	Result	Units	RL
Chloride		244	mg/Kg	4

Sample: 285286 - AH-1 7-7.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285287 - AH-1 8-8.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285288 - AH-1 9-9.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285289 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		6880	mg/Kg	4

Sample: 285290 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		234	mg/Kg	4

Sample: 285291 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285292 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285293 - AH-2 4-4.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285294 - AH-2 5-5.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285295 - AH-2 6-6.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285296 - AH-2 7-7.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285297 - AH-2 8-8.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285298 - AH-2 9-9.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285299 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		2600	mg/Kg	4

Sample: 285300 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285301 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285302 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285303 - AH-3 4-4.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285304 - AH-3 5-5.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285305 - AH-3 6-6.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285306 - AH-3 7-7.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285307 - AH-3 8-8.5'

Param	Flag	Result	Units	RL
Chloride		227	mg/Kg	4

Sample: 285308 - AH-3 9-9.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285309 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		7160	mg/Kg	4

Sample: 285310 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		2290	mg/Kg	4

Sample: 285311 - AH-4 2-2.5'

Param	Flag	Result	Units	RL
Chloride		289	mg/Kg	4

Sample: 285312 - AH-4 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285313 - AH-4 4-4.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285314 - AH-4 5-5.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285315 - AH-4 6-6.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285316 - AH-4 7-7.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285317 - AH-4 8-8.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 285318 - AH-4 9-9.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4



6701 Araddeen Avenue, Suite G Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1798
200 East Sunset Road, Suite F El Paso, Texas 79927 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A-1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: January 5, 2012

Work Order: 11122310



Project Location: Eddy Co., NM
Project Name: COG/Harper State TB
Project Number: 114-6401146

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
285279	AH-1 0-1'	soil	2011-12-20	00:00	2011-12-22
285280	AH-1 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285281	AH-1 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285282	AH-1 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285283	AH-1 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285284	AH-1 5-5.5'	soil	2011-12-20	00:00	2011-12-22
285285	AH-1 6-6.5'	soil	2011-12-20	00:00	2011-12-22
285286	AH-1 7-7.5'	soil	2011-12-20	00:00	2011-12-22
285287	AH-1 8-8.5'	soil	2011-12-20	00:00	2011-12-22
285288	AH-1 9-9.5'	soil	2011-12-20	00:00	2011-12-22
285289	AH-2 0-1'	soil	2011-12-20	00:00	2011-12-22
285290	AH-2 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285291	AH-2 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285292	AH-2 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285293	AH-2 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285294	AH-2 5-5.5'	soil	2011-12-20	00:00	2011-12-22
285295	AH-2 6-6.5'	soil	2011-12-20	00:00	2011-12-22
285296	AH-2 7-7.5'	soil	2011-12-20	00:00	2011-12-22

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
285297	AH-2 8-8.5'	soil	2011-12-20	00:00	2011-12-22
285298	AH-2 9-9.5'	soil	2011-12-20	00:00	2011-12-22
285299	AH-3 0-1'	soil	2011-12-20	00:00	2011-12-22
285300	AH-3 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285301	AH-3 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285302	AH-3 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285303	AH-3 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285304	AH-3 5-5.5'	soil	2011-12-20	00:00	2011-12-22
285305	AH-3 6-6.5'	soil	2011-12-20	00:00	2011-12-22
285306	AH-3 7-7.5'	soil	2011-12-20	00:00	2011-12-22
285307	AH-3 8-8.5'	soil	2011-12-20	00:00	2011-12-22
285308	AH-3 9-9.5'	soil	2011-12-20	00:00	2011-12-22
285309	AH-4 0-1'	soil	2011-12-20	00:00	2011-12-22
285310	AH-4 1-1.5'	soil	2011-12-20	00:00	2011-12-22
285311	AH-4 2-2.5'	soil	2011-12-20	00:00	2011-12-22
285312	AH-4 3-3.5'	soil	2011-12-20	00:00	2011-12-22
285313	AH-4 4-4.5'	soil	2011-12-20	00:00	2011-12-22
285314	AH-4 5-5.5'	soil	2011-12-20	00:00	2011-12-22
285315	AH-4 6-6.5'	soil	2011-12-20	00:00	2011-12-22
285316	AH-4 7-7.5'	soil	2011-12-20	00:00	2011-12-22
285317	AH-4 8-8.5'	soil	2011-12-20	00:00	2011-12-22
285318	AH-4 9-9.5'	soil	2011-12-20	00:00	2011-12-22

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



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

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Case Narrative

Samples for project COG/Harper State TB were received by TraceAnalysis, Inc. on 2011-12-22 and assigned to work order 11122310. Samples for work order 11122310 were received intact at a temperature of 7.7 C. Samples were received on ice.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	74262	2011-12-28 at 07:25	87453	2011-12-28 at 07:25
BTEX	S 8021B	74291	2011-12-29 at 13:50	87485	2011-12-29 at 13:50
BTEX	S 8021B	74348	2012-01-02 at 14:50	87557	2012-01-02 at 18:27
BTEX	S 8021B	74348	2012-01-02 at 14:50	87572	2012-01-03 at 11:44
Chloride (Titration)	SM 4500-Cl B	74333	2011-12-30 at 11:20	87545	2012-01-02 at 14:22
Chloride (Titration)	SM 4500-Cl B	74333	2011-12-30 at 11:20	87594	2012-01-04 at 13:54
Chloride (Titration)	SM 4500-Cl B	74350	2012-01-03 at 09:57	87595	2012-01-04 at 13:56
Chloride (Titration)	SM 4500-Cl B	74350	2012-01-03 at 09:57	87596	2012-01-04 at 13:57
Chloride (Titration)	SM 4500-Cl B	74350	2012-01-03 at 09:57	87597	2012-01-04 at 13:58
TPH DRO - NEW	S 8015 D	74279	2011-12-28 at 14:36	87474	2011-12-28 at 14:36
TPH DRO - NEW	S 8015 D	74345	2012-01-02 at 10:00	87554	2012-01-02 at 12:00
TPH GRO	S 8015 D	74262	2011-12-28 at 07:25	87454	2011-12-28 at 07:25
TPH GRO	S 8015 D	74291	2011-12-29 at 13:50	87486	2011-12-29 at 13:50
TPH GRO	S 8015 D	74348	2012-01-02 at 14:50	87558	2012-01-02 at 17:09
TPH GRO	S 8015 D	74348	2012-01-02 at 14:50	87573	2012-01-03 at 12:10

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 11122310 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: January 5, 2012
114-6401146

Work Order: 11122310
COG/Harper State TB

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Eddy Co., NM

Analytical Report

Sample: 285279 - AH-1 0-1'

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 87453

Prep Batch: 74262

Analytical Method: S 8021B

Date Analyzed: 2011-12-28

Sample Preparation: 2011-12-28

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	37.9	mg/Kg	20	0.0200
Toluene	Ja	1	265	mg/Kg	20	0.0200
Ethylbenzene		1	153	mg/Kg	20	0.0200
Xylene	Ja	1	185	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.48	mg/Kg	20	2.00	74	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	47.3	mg/Kg	20	2.00	2365	70 - 130

Sample: 285279 - AH-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 87545

Prep Batch: 74333

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-01-02

Sample Preparation: 2011-12-30

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			10200	mg/Kg	100	4.00

Sample: 285279 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 87474

Prep Batch: 74279

Analytical Method: S 8015 D

Date Analyzed: 2011-12-28

Sample Preparation: 2011-12-28

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	2190	mg/Kg	1	50.0

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COG/Harper State TB

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Eddy Co., NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	169	mg/Kg	1	100	169	53.5 - 147.1

Sample: 285279 - AH-1 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 87486
Prep Batch: 74291

Analytical Method: S 8015 D
Date Analyzed: 2011-12-29
Sample Preparation: 2011-12-29

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Q _s	1	6480	mg/Kg	200	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	85.1	mg/Kg	200	2.00	4255	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	238	mg/Kg	200	2.00	11900	70 - 130

Sample: 285280 - AH-1 1-1.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 87557
Prep Batch: 74348

Analytical Method: S 8021B
Date Analyzed: 2012-01-02
Sample Preparation: 2012-01-02

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Je	2	107	mg/Kg	20	0.0200
Toluene	Je	2	361	mg/Kg	20	0.0200
Ethylbenzene	Je	2	200	mg/Kg	20	0.0200
Xylene	Je	2	248	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			19.8	mg/Kg	20	20.0	99	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			44.0	mg/Kg	20	20.0	220	70.6 - 179

Report Date: January 5, 2012
114-6401146

Work Order: 11122310
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Eddy Co., NM

Sample: 285280 - AH-1 1-1.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-01-02	Analyzed By:	AR
QC Batch:	87545	Sample Preparation:	2011-12-30	Prepared By:	AR
Prep Batch:	74333				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2360	mg/Kg	100	4.00

Sample: 285280 - AH-1 1-1.5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2012-01-02	Analyzed By:	kg
QC Batch:	87554	Sample Preparation:	2012-01-02	Prepared By:	kg
Prep Batch:	74345				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	8450	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qcr	Qcr	400	mg/Kg	5	100	400	53.5 - 147.1

Sample: 285280 - AH-1 1-1.5'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2012-01-03	Analyzed By:	AG
QC Batch:	87573	Sample Preparation:	2012-01-02	Prepared By:	AG
Prep Batch:	74348				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		2	10300	mg/Kg	200	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			209	mg/Kg	200	200	104	30 - 134.6
4-Bromofluorobenzene (4-BFB)			243	mg/Kg	200	200	122	22.4 - 149

Report Date: January 5, 2012
114-6401146

Work Order: 11122310
COG/Harper State TB

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Eddy Co., NM

Sample: 285281 - AH-1 2-2.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 87557
Prep Batch: 74348

Analytical Method: S 8021B
Date Analyzed: 2012-01-02
Sample Preparation: 2012-01-02

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		2	0.917	mg/Kg	10	0.0200
Toluene		2	23.4	mg/Kg	10	0.0200
Ethylbenzene		2	26.3	mg/Kg	10	0.0200
Xylene		2	35.0	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			10.5	mg/Kg	10	10.0	105	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			14.9	mg/Kg	10	10.0	149	70.6 - 179

Sample: 285281 - AH-1 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87545
Prep Batch: 74333

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-01-02
Sample Preparation: 2011-12-30

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2710	mg/Kg	100	4.00

Sample: 285281 - AH-1 2-2.5'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 87554
Prep Batch: 74345

Analytical Method: S 8015 D
Date Analyzed: 2012-01-02
Sample Preparation: 2012-01-02

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	534	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			118	mg/Kg	1	100	118	53.5 - 147.1

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Sample: 285281 - AH-1 2-2.5'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 87558
Prep Batch: 74348

Analytical Method: S 8015 D
Date Analyzed: 2012-01-02
Sample Preparation: 2012-01-02

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr, Qs	2	1380	mg/Kg	10	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			10.6	mg/Kg	10	10.0	106	30 - 134.6
4-Bromofluorobenzene (4-BFB)			11.6	mg/Kg	10	10.0	116	22.4 - 149

Sample: 285282 - AH-1 3-3.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 87572
Prep Batch: 74348

Analytical Method: S 8021B
Date Analyzed: 2012-01-03
Sample Preparation: 2012-01-02

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qr, U	2	<0.0200	mg/Kg	1	0.0200
Toluene	Qr, U	2	<0.0200	mg/Kg	1	0.0200
Ethylbenzene		2	0.0247	mg/Kg	1	0.0200
Xylene		2	0.0701	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.13	mg/Kg	1	2.00	106	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.02	mg/Kg	1	2.00	101	70.6 - 179

Sample: 285282 - AH-1 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87545
Prep Batch: 74333

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-01-02
Sample Preparation: 2011-12-30

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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2200	mg/Kg	100	4.00

Sample: 285283 - AH-1 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	87545	Date Analyzed:	2012-01-02	Analyzed By:	AR
Prep Batch:	74333	Sample Preparation:	2011-12-30	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1020	mg/Kg	50	4.00

Sample: 285284 - AH-1 5-5.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	87545	Date Analyzed:	2012-01-02	Analyzed By:	AR
Prep Batch:	74333	Sample Preparation:	2011-12-30	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			452	mg/Kg	50	4.00

Sample: 285285 - AH-1 6-6.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	87594	Date Analyzed:	2012-01-04	Analyzed By:	AR
Prep Batch:	74333	Sample Preparation:	2011-12-30	Prepared By:	AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			244	mg/Kg	50	4.00

Sample: 285286 - AH-1 7-7.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87594 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74333 Sample Preparation: 2011-12-30 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285287 - AH-1 8-8.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87594 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74333 Sample Preparation: 2011-12-30 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285288 - AH-1 9-9.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87594 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74333 Sample Preparation: 2011-12-30 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

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Sample: 285289 - AH-2 0-1'

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 87485
Prep Batch: 74291

Analytical Method: S 8021B
Date Analyzed: 2011-12-29
Sample Preparation: 2011-12-29

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qr	1	<1.00	mg/Kg	50	0.0200
Toluene	Qr, Qs	1	38.8	mg/Kg	50	0.0200
Ethylbenzene	Qr, Qs	1	41.4	mg/Kg	50	0.0200
Xylene	Qr, Qs	1	52.3	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.64	mg/Kg	50	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	15.9	mg/Kg	50	2.00	795	70 - 130

Sample: 285289 - AH-2 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87594
Prep Batch: 74333

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-01-04
Sample Preparation: 2011-12-30

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6880	mg/Kg	100	4.00

Sample: 285289 - AH-2 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 87474
Prep Batch: 74279

Analytical Method: S 8015 D
Date Analyzed: 2011-12-28
Sample Preparation: 2011-12-28

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	527	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			106	mg/Kg	1	100	106	53.5 - 147.1

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Sample: 285289 - AH-2 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 87486
Prep Batch: 74291

Analytical Method: S 8015 D
Date Analyzed: 2011-12-29
Sample Preparation: 2011-12-29

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	1920	mg/Kg	50	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	11.8	mg/Kg	50	2.00	590	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	38.0	mg/Kg	50	2.00	1900	70 - 130

Sample: 285290 - AH-2 1-1.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 87557
Prep Batch: 74348

Analytical Method: S 8021B
Date Analyzed: 2012-01-02
Sample Preparation: 2012-01-02

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	2	<0.0200	mg/Kg	1	0.0200
Toluene	u	2	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	u	2	<0.0200	mg/Kg	1	0.0200
Xylene	u	2	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.98	mg/Kg	1	2.00	99	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.76	mg/Kg	1	2.00	88	70.6 - 179

Sample: 285290 - AH-2 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 87594
Prep Batch: 74333

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-01-04
Sample Preparation: 2011-12-30

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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			234	mg/Kg	50	4.00

Sample: 285291 - AH-2 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87594 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74333 Sample Preparation: 2011-12-30 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285292 - AH-2 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87594 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74333 Sample Preparation: 2011-12-30 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285293 - AH-2 4-4.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87594 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74333 Sample Preparation: 2011-12-30 Prepared By: AR

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285294 - AH-2 5-5.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87594 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74333 Sample Preparation: 2011-12-30 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285295 - AH-2 6-6.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87595 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285296 - AH-2 7-7.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87595 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

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Sample: 285297 - AH-2 8-8.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87595 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285298 - AH-2 9-9.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87595 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285299 - AH-3 0-1'

Laboratory: Lubbock
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 87453 Date Analyzed: 2011-12-28 Analyzed By: MT
Prep Batch: 74262 Sample Preparation: 2011-12-28 Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	0.0607	mg/Kg	1	0.0200
Toluene		1	1.22	mg/Kg	1	0.0200
Ethylbenzene		1	3.04	mg/Kg	1	0.0200
Xylene		1	4.54	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.55	mg/Kg	1	2.00	78	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{or}	Q _{or}	3.37	mg/Kg	1	2.00	168	70 - 130

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Sample: 285299 - AH-3 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87595 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2600	mg/Kg	100	4.00

Sample: 285299 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 87474 Date Analyzed: 2011-12-28 Analyzed By: kg
Prep Batch: 74279 Sample Preparation: 2011-12-28 Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			92.6	mg/Kg	1	100	93	53.5 - 147.1

Sample: 285299 - AH-3 0-1'

Laboratory: Lubbock
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 87486 Date Analyzed: 2011-12-29 Analyzed By: MT
Prep Batch: 74291 Sample Preparation: 2011-12-29 Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qs	1	283	mg/Kg	2	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.66	mg/Kg	2	2.00	83	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	14.0	mg/Kg	2	2.00	700	70 - 130

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Sample: 285300 - AH-3 1-1.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-01-04	Analyzed By:	AR
QC Batch:	87595	Sample Preparation:	2012-01-03	Prepared By:	AR
Prep Batch:	74350				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285301 - AH-3 2-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-01-04	Analyzed By:	AR
QC Batch:	87595	Sample Preparation:	2012-01-03	Prepared By:	AR
Prep Batch:	74350				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285302 - AH-3 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-01-04	Analyzed By:	AR
QC Batch:	87595	Sample Preparation:	2012-01-03	Prepared By:	AR
Prep Batch:	74350				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285303 - AH-3 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-01-04	Analyzed By:	AR
QC Batch:	87595	Sample Preparation:	2012-01-03	Prepared By:	AR
Prep Batch:	74350				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285304 - AH-3 5-5.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87595 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285305 - AH-3 6-6.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87596 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285306 - AH-3 7-7.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87596 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

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Sample: 285307 - AH-3 8-8.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87596 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			227	mg/Kg	50	4.00

Sample: 285308 - AH-3 9-9.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87596 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285309 - AH-4 0-1'

Laboratory: Lubbock
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 87453 Date Analyzed: 2011-12-28 Analyzed By: MT
Prep Batch: 74262 Sample Preparation: 2011-12-28 Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	0.0303	mg/Kg	1	0.0200
Toluene		1	0.102	mg/Kg	1	0.0200
Ethylbenzene		1	<0.0200	mg/Kg	1	0.0200
Xylene		1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.78	mg/Kg	1	2.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)			1.68	mg/Kg	1	2.00	84	70 - 130

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Sample: 285309 - AH-4 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87596 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			7160	mg/Kg	100	4.00

Sample: 285309 - AH-4 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 87474 Date Analyzed: 2011-12-28 Analyzed By: kg
Prep Batch: 74279 Sample Preparation: 2011-12-28 Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			88.5	mg/Kg	1	100	88	53.5 - 147.1

Sample: 285309 - AH-4 0-1'

Laboratory: Lubbock
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 87454 Date Analyzed: 2011-12-28 Analyzed By: MT
Prep Batch: 74262 Sample Preparation: 2011-12-28 Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr, Qs	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.10	mg/Kg	1	2.00	105	70 - 130
4-Bromofluorobenzene (4-BFB)			2.08	mg/Kg	1	2.00	104	70 - 130

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Sample: 285310 - AH-4 1-1.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-01-04	Analyzed By:	AR
QC Batch:	87596	Sample Preparation:	2012-01-03	Prepared By:	AR
Prep Batch:	74350				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2290	mg/Kg	100	4.00

Sample: 285311 - AH-4 2-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-01-04	Analyzed By:	AR
QC Batch:	87596	Sample Preparation:	2012-01-03	Prepared By:	AR
Prep Batch:	74350				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			289	mg/Kg	50	4.00

Sample: 285312 - AH-4 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-01-04	Analyzed By:	AR
QC Batch:	87596	Sample Preparation:	2012-01-03	Prepared By:	AR
Prep Batch:	74350				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285313 - AH-4 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-01-04	Analyzed By:	AR
QC Batch:	87596	Sample Preparation:	2012-01-03	Prepared By:	AR
Prep Batch:	74350				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285314 - AH-4 5-5.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87596 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285315 - AH-4 6-6.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87597 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285316 - AH-4 7-7.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87597 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

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Sample: 285317 - AH-4 8-8.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-01-04	Analyzed By:	AR
QC Batch:	87597	Sample Preparation:	2012-01-03	Prepared By:	AR
Prep Batch:	74350				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

Sample: 285318 - AH-4 9-9.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-01-04	Analyzed By:	AR
QC Batch:	87597	Sample Preparation:	2012-01-03	Prepared By:	AR
Prep Batch:	74350				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<200	mg/Kg	50	4.00

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Method Blanks

Method Blank (1) QC Batch: 87453

QC Batch: 87453
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00335	mg/Kg	0.02
Toluene		1	<0.00471	mg/Kg	0.02
Ethylbenzene		1	<0.00440	mg/Kg	0.02
Xylene		1	<0.00557	mg/Kg	0.02

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

Method Blank (1) QC Batch: 87454

QC Batch: 87454
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.446	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.20	mg/Kg	1	2.00	110	70 - 130
4-Bromofluorobenzene (4-BFB)			2.08	mg/Kg	1	2.00	104	70 - 130

Method Blank (1) QC Batch: 87474

QC Batch: 87474
Prep Batch: 74279

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: kg
Prepared By: kg

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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			97.4	mg/Kg	1	100	97	52.7 - 133.8

Method Blank (1) QC Batch: 87485

QC Batch: 87485
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00335	mg/Kg	0.02
Toluene		1	<0.00471	mg/Kg	0.02
Ethylbenzene		1	<0.00440	mg/Kg	0.02
Xylene		1	<0.00557	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.58	mg/Kg	1	2.00	79	70 - 130
4-Bromofluorobenzene (4-BFB)			1.64	mg/Kg	1	2.00	82	70 - 130

Method Blank (1) QC Batch: 87486

QC Batch: 87486
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.446	mg/Kg	2

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

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Method Blank (1) QC Batch: 87545

QC Batch: 87545
Prep Batch: 74333

Date Analyzed: 2012-01-02
QC Preparation: 2011-12-30

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 87554

QC Batch: 87554
Prep Batch: 74345

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: kg
Prepared By: kg

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			83.5	mg/Kg	1	100	84	52.7 - 133.8

Method Blank (1) QC Batch: 87557

QC Batch: 87557
Prep Batch: 74348

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		2	<0.0118	mg/Kg	0.02
Toluene		2	<0.00600	mg/Kg	0.02
Ethylbenzene		2	<0.00850	mg/Kg	0.02
Xylene		2	<0.00613	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.03	mg/Kg	1	2.00	102	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)			1.66	mg/Kg	1	2.00	83	48.4 - 123.1

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Method Blank (1) QC Batch: 87558

QC Batch: 87558
Prep Batch: 74348

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		2	1.04	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.05	mg/Kg	1	2.00	102	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.59	mg/Kg	1	2.00	80	52.4 - 130

Method Blank (1) QC Batch: 87572

QC Batch: 87572
Prep Batch: 74348

Date Analyzed: 2012-01-03
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		2	<0.0118	mg/Kg	0.02
Toluene		2	<0.00600	mg/Kg	0.02
Ethylbenzene		2	<0.00850	mg/Kg	0.02
Xylene		2	<0.00613	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	1	2.00	96	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)			1.66	mg/Kg	1	2.00	83	48.4 - 123.1

Method Blank (1) QC Batch: 87573

QC Batch: 87573
Prep Batch: 74348

Date Analyzed: 2012-01-03
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		2	1.38	mg/Kg	2

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.62	mg/Kg	1	2.00	81	52.4 - 130

Method Blank (1) QC Batch: 87594

QC Batch: 87594 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74333 QC Preparation: 2011-12-30 Prepared By: AR

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

Method Blank (1) QC Batch: 87595

QC Batch: 87595 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 QC Preparation: 2012-01-03 Prepared By: AR

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

Method Blank (1) QC Batch: 87596

QC Batch: 87596 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 QC Preparation: 2012-01-03 Prepared By: AR

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

Method Blank (1) QC Batch: 87597

QC Batch: 87597 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 QC Preparation: 2012-01-03 Prepared By: AR

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

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 87453
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.79	mg/Kg	1	2.00	<0.00335	89	70 - 130
Toluene		1	1.80	mg/Kg	1	2.00	<0.00471	90	70 - 130
Ethylbenzene		1	1.84	mg/Kg	1	2.00	<0.00440	92	70 - 130
Xylene		1	5.48	mg/Kg	1	6.00	<0.00557	91	70 - 130

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.79	mg/Kg	1	2.00	<0.00335	90	70 - 130	0	20
Toluene		1	1.80	mg/Kg	1	2.00	<0.00471	90	70 - 130	0	20
Ethylbenzene		1	1.86	mg/Kg	1	2.00	<0.00440	93	70 - 130	1	20
Xylene		1	5.55	mg/Kg	1	6.00	<0.00557	92	70 - 130	1	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.80	1.81	mg/Kg	1	2.00	90	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.77	1.80	mg/Kg	1	2.00	89	90	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 87454
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.8	mg/Kg	1	20.0	<0.446	94	70 - 130

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

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	19.8	mg/Kg	1	20.0	<0.446	99	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	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.00	2.05	mg/Kg	1	2.00	100	103	70 - 130
4-Bromofluorobenzene (4-BFB)	2.13	2.16	mg/Kg	1	2.00	106	108	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 87474
Prep Batch: 74279

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	205	mg/Kg	1	250	<14.5	82	64.5 - 146.9

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	210	mg/Kg	1	250	<14.5	84	64.5 - 146.9	2	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
n-Tricosane	104	105	mg/Kg	1	100	104	105	65.3 - 135.8

Laboratory Control Spike (LCS-1)

QC Batch: 87485
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.79	mg/Kg	1	2.00	<0.00335	90	70 - 130

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Toluene		1	1.74	mg/Kg	1	2.00	<0.00471	87	70 - 130
Ethylbenzene		1	1.77	mg/Kg	1	2.00	<0.00440	88	70 - 130
Xylene		1	5.26	mg/Kg	1	6.00	<0.00557	88	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.68	mg/Kg	1	2.00	<0.00335	84	70 - 130	6	20
Toluene		1	1.62	mg/Kg	1	2.00	<0.00471	81	70 - 130	7	20
Ethylbenzene		1	1.65	mg/Kg	1	2.00	<0.00440	82	70 - 130	7	20
Xylene		1	4.90	mg/Kg	1	6.00	<0.00557	82	70 - 130	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)	1.69	1.66	mg/Kg	1	2.00	84	83	70 - 130
4-Bromofluorobenzene (4-BFB)	1.69	1.56	mg/Kg	1	2.00	84	78	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 87486
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.0	mg/Kg	1	20.0	<0.446	90	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	18.2	mg/Kg	1	20.0	<0.446	91	70 - 130	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	1.87	mg/Kg	1	2.00	97	94	70 - 130
4-Bromofluorobenzene (4-BFB)	2.14	2.17	mg/Kg	1	2.00	107	108	70 - 130

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Laboratory Control Spike (LCS-1)

QC Batch: 87545
Prep Batch: 74333

Date Analyzed: 2012-01-02
QC Preparation: 2011-12-30

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			95.8	mg/Kg	1	100	<3.85	96	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			106	mg/Kg	1	100	<3.85	106	85 - 115	10	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: 87554
Prep Batch: 74345

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	201	mg/Kg	1	250	<14.5	80	64.5 - 146.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	219	mg/Kg	1	250	<14.5	88	64.5 - 146.9	9	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	99.5	107	mg/Kg	1	100	100	107	65.3 - 135.8

Laboratory Control Spike (LCS-1)

QC Batch: 87557
Prep Batch: 74348

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

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Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	2.08	mg/Kg	1	2.00	<0.0118	104	77.4 - 121.7
Toluene		2	2.02	mg/Kg	1	2.00	<0.00600	101	88.6 - 121.6
Ethylbenzene		2	1.92	mg/Kg	1	2.00	<0.00850	96	74.3 - 117.9
Xylene		2	5.75	mg/Kg	1	6.00	<0.00613	96	73.4 - 118.8

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		2	2.20	mg/Kg	1	2.00	<0.0118	110	77.4 - 121.7	6	20
Toluene		2	2.12	mg/Kg	1	2.00	<0.00600	106	88.6 - 121.6	5	20
Ethylbenzene		2	2.03	mg/Kg	1	2.00	<0.00850	102	74.3 - 117.9	6	20
Xylene		2	6.08	mg/Kg	1	6.00	<0.00613	101	73.4 - 118.8	6	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.02	2.06	mg/Kg	1	2.00	101	103	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.93	2.02	mg/Kg	1	2.00	96	101	56.2 - 132.1

Laboratory Control Spike (LCS-1)

QC Batch: 87558
Prep Batch: 74348

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	17.5	mg/Kg	1	20.0	<0.753	88	60.9 - 105.4

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		2	18.0	mg/Kg	1	20.0	<0.753	90	60.9 - 105.4	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.06	2.14	mg/Kg	1	2.00	103	107	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.75	1.84	mg/Kg	1	2.00	88	92	56.2 - 132

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Laboratory Control Spike (LCS-1)

QC Batch: 87572
Prep Batch: 74348

Date Analyzed: 2012-01-03
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	2.22	mg/Kg	1	2.00	<0.0118	111	77.4 - 121.7
Toluene		2	2.11	mg/Kg	1	2.00	<0.00600	106	88.6 - 121.6
Ethylbenzene		2	1.96	mg/Kg	1	2.00	<0.00850	98	74.3 - 117.9
Xylene		2	5.87	mg/Kg	1	6.00	<0.00613	98	73.4 - 118.8

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		2	2.18	mg/Kg	1	2.00	<0.0118	109	77.4 - 121.7	2	20
Toluene		2	2.07	mg/Kg	1	2.00	<0.00600	104	88.6 - 121.6	2	20
Ethylbenzene		2	1.95	mg/Kg	1	2.00	<0.00850	98	74.3 - 117.9	0	20
Xylene		2	5.80	mg/Kg	1	6.00	<0.00613	97	73.4 - 118.8	1	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.95	1.96	mg/Kg	1	2.00	98	98	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.94	1.91	mg/Kg	1	2.00	97	96	56.2 - 132.1

Laboratory Control Spike (LCS-1)

QC Batch: 87573
Prep Batch: 74348

Date Analyzed: 2012-01-03
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	17.2	mg/Kg	1	20.0	<0.753	86	60.9 - 105.4

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		2	16.8	mg/Kg	1	20.0	<0.753	84	60.9 - 105.4	2	20

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

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Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.04	1.99	mg/Kg	1	2.00	102	100	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.76	1.78	mg/Kg	1	2.00	88	89	56.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 87594
Prep Batch: 74333

Date Analyzed: 2012-01-04
QC Preparation: 2011-12-30

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			97.6	mg/Kg	1	100	<3.85	98	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			104	mg/Kg	1	100	<3.85	104	85 - 115	6	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: 87595
Prep Batch: 74350

Date Analyzed: 2012-01-04
QC Preparation: 2012-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			96.7	mg/Kg	1	100	<3.85	97	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			102	mg/Kg	1	100	<3.85	102	85 - 115	5	20

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

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Laboratory Control Spike (LCS-1)

QC Batch: 87596
Prep Batch: 74350

Date Analyzed: 2012-01-04
QC Preparation: 2012-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			97.7	mg/Kg	1	100	<3.85	98	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			103	mg/Kg	1	100	<3.85	103	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: 87597
Prep Batch: 74350

Date Analyzed: 2012-01-04
QC Preparation: 2012-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			97.0	mg/Kg	1	100	<3.85	97	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			104	mg/Kg	1	100	<3.85	104	85 - 115	7	20

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

Matrix Spike (MS-1) Spiked Sample: 285158

QC Batch: 87453
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.58	mg/Kg	1	2.00	<0.00335	79	70 - 130
Toluene		1	1.70	mg/Kg	1	2.00	<0.00471	85	70 - 130
Ethylbenzene		1	1.85	mg/Kg	1	2.00	<0.00440	92	70 - 130

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Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Xylene		1	5.49	mg/Kg	1	6.00	<0.00557	92	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.61	mg/Kg	1	2.00	<0.00335	80	70 - 130	2	20
Toluene		1	1.73	mg/Kg	1	2.00	<0.00471	86	70 - 130	2	20
Ethylbenzene		1	1.90	mg/Kg	1	2.00	<0.00440	95	70 - 130	3	20
Xylene		1	5.63	mg/Kg	1	6.00	<0.00557	94	70 - 130	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)	1.78	1.82	mg/Kg	1	2	89	91	70 - 130
4-Bromofluorobenzene (4-BFB)	1.69	1.77	mg/Kg	1	2	84	88	70 - 130

Matrix Spike (MS-1) Spiked Sample: 285158

QC Batch: 87454
Prep Batch: 74262

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Q _{sr}	Q _{sr}	11.2	mg/Kg	1	20.0	<0.446	56	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	Q _{sr}	Q _{sr}	17.1	mg/Kg	1	20.0	<0.446	86	70 - 130	42	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)	1.28	2.00	mg/Kg	1	2	64	100	70 - 130
4-Bromofluorobenzene (4-BFB)	1.50	2.12	mg/Kg	1	2	75	106	70 - 130

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Matrix Spike (MS-1) Spiked Sample: 285309

QC Batch: 87474
Prep Batch: 74279

Date Analyzed: 2011-12-28
QC Preparation: 2011-12-28

Analyzed By: kg
Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	186	mg/Kg	1	250	<14.5	74	38.8 - 153.3

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		2	195	mg/Kg	1	250	<14.5	78	38.8 - 153.3	5	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	85.3	93.5	mg/Kg	1	100	85	94	54.6 - 149.8

Matrix Spike (MS-1) Spiked Sample: 285289

QC Batch: 87485
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.68	mg/Kg	50	2.00	0.684	100	70 - 130
Toluene	Q _s	Q _s	51.9	mg/Kg	50	2.00	38.8	655	70 - 130
Ethylbenzene	Q _s	Q _s	54.5	mg/Kg	50	2.00	41.4	655	70 - 130
Xylene	Q _s	Q _s	71.5	mg/Kg	50	6.00	52.3	320	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	Q _r	Q _r	2.19	mg/Kg	50	2.00	0.684	75	70 - 130	20	20
Toluene	Q _r , Q _s	Q _r , Q _s	31.8	mg/Kg	50	2.00	38.8	-350	70 - 130	48	20
Ethylbenzene	Q _r , Q _s	Q _r , Q _s	35.2	mg/Kg	50	2.00	41.4	-310	70 - 130	43	20
Xylene	Q _r , Q _s	Q _r , Q _s	48.8	mg/Kg	50	6.00	52.3	-58	70 - 130	38	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.92	1.91	mg/Kg	50	2	96	96	70 - 130

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Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	22.1	15.0	mg/Kg	50	2	1105	750	70 - 130

Matrix Spike (MS-1) Spiked Sample: 285289

QC Batch: 87486
Prep Batch: 74291

Date Analyzed: 2011-12-29
QC Preparation: 2011-12-29

Analyzed By: MT
Prepared By: MT

Param			F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Q _{sr}	Q _{sr}		1	2020	mg/Kg	50	20.0	1920	500	70 - 130

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

Param				MSD		Dil.	Spike	Matrix	Rec.		RPD	
	F	C		Result	Units		Amount	Result	Rec.	Limit	RPD	Limit
GRO	Q _s	Q _s	1	2420	mg/Kg	50	20.0	1920	2500	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)	Q _{sr}	Q _{sr}	11.0	19.8	mg/Kg	50	2	550	990	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	29.0	42.6	mg/Kg	50	2	1450	2130	70 - 130

Matrix Spike (MS-1) Spiked Sample: 285284

QC Batch: 87545
Prep Batch: 74333

Date Analyzed: 2012-01-02
QC Preparation: 2011-12-30

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10600	mg/Kg	100	10000	452	101	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			11100	mg/Kg	100	10000	452	106	79.4 - 120.6	5	20

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

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Matrix Spike (MS-1) Spiked Sample: 285234

QC Batch: 87554
Prep Batch: 74345

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: kg
Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	205	mg/Kg	1	250	<14.5	82	38.8 - 153.3

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		2	214	mg/Kg	1	250	<14.5	86	38.8 - 153.3	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	97.0	94.5	mg/Kg	1	100	97	94	54.6 - 149.8

Matrix Spike (MS-1) Spiked Sample: 285290

QC Batch: 87557
Prep Batch: 74348

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	2.24	mg/Kg	1	2.00	<0.0118	112	69.4 - 123.6
Toluene		2	2.21	mg/Kg	1	2.00	<0.00600	110	75.4 - 134.3
Ethylbenzene		2	2.16	mg/Kg	1	2.00	<0.00850	108	58.8 - 133.7
Xylene		2	6.50	mg/Kg	1	6.00	<0.00613	108	57 - 134.2

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		2	1.99	mg/Kg	1	2.00	<0.0118	100	69.4 - 123.6	12	20
Toluene		2	1.96	mg/Kg	1	2.00	<0.00600	98	75.4 - 134.3	12	20
Ethylbenzene		2	1.96	mg/Kg	1	2.00	<0.00850	98	58.8 - 133.7	10	20
Xylene		2	5.87	mg/Kg	1	6.00	<0.00613	98	57 - 134.2	10	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)	2.12	2.49	mg/Kg	1	2	106	124	79.4 - 141.1

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Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	2.07	2.47	mg/Kg	1	2	104	124	71 - 167

Matrix Spike (MS-1) Spiked Sample: 285125

QC Batch: 87558
Prep Batch: 74348

Date Analyzed: 2012-01-02
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	20.7	mg/Kg	1	20.0	3.7	85	61.8 - 114

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

Param	MSD				Spike	Matrix	Rec.		RPD				
	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit		
GRO	1	Qr, Qs	Qr, Qs	2	3.47	mg/Kg	1	20.0	3.7	0	61.8 - 114	143	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)	2.70	1.72	mg/Kg	1	2	135	86	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	2.64	1.54	mg/Kg	1	2	132	77	37.3 - 162

Matrix Spike (MS-1) Spiked Sample: 285291

QC Batch: 87572
Prep Batch: 74348

Date Analyzed: 2012-01-03
QC Preparation: 2012-01-02

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2	2.36	mg/Kg	1	2.00	<0.0118	118	69.4 - 123.6
Toluene		2	2.32	mg/Kg	1	2.00	<0.00600	116	75.4 - 134.3
Ethylbenzene		2	2.31	mg/Kg	1	2.00	<0.00850	116	58.8 - 133.7
Xylene		2	6.93	mg/Kg	1	6.00	<0.00613	116	57 - 134.2

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

Param	MSD			Units	Dil.	Spike	Matrix	Rec.	Rec. Limit	RPD	RPD Limit	
	F	C	Result			Amount	Result					
Benzene	Qr	Qr	2	1.91	mg/Kg	1	2.00	<0.0118	96	69.4 - 123.6	21	20

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Param			MSD		Dil.	Spike Amount	Matrix Result	Rec.	Rec.		RPD	RPD Limit
	F	C	Result	Units					Limit			
Toluene	Q _r	Q _r	2	1.87	mg/Kg	1	2.00	<0.00600	94	75.4 - 134.3	22	20
Ethylbenzene			2	1.92	mg/Kg	1	2.00	<0.00850	96	58.8 - 133.7	18	20
Xylene			2	5.71	mg/Kg	1	6.00	<0.00613	95	57 - 134.2	19	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	2.07	mg/Kg	1	2	110	104	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.21	2.06	mg/Kg	1	2	110	103	71 - 167

Matrix Spike (MS-1) Spiked Sample: 285294

QC Batch: 87594
Prep Batch: 74333

Date Analyzed: 2012-01-04
QC Preparation: 2011-12-30

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10000	mg/Kg	100	10000	<385	100	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			10400	mg/Kg	100	10000	<385	104	79.4 - 120.6	4	20

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

Matrix Spike (MS-1) Spiked Sample: 285304

QC Batch: 87595
Prep Batch: 74350

Date Analyzed: 2012-01-04
QC Preparation: 2012-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10000	mg/Kg	100	10000	<385	100	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			10500	mg/Kg	100	10000	<385	105	79.4 - 120.6	5	20

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

Matrix Spike (MS-1) Spiked Sample: 285314

QC Batch: 87596
Prep Batch: 74350

Date Analyzed: 2012-01-04
QC Preparation: 2012-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10200	mg/Kg	100	10000	<385	102	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			10500	mg/Kg	100	10000	<385	105	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: 285493

QC Batch: 87597
Prep Batch: 74350

Date Analyzed: 2012-01-04
QC Preparation: 2012-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10300	mg/Kg	100	10000	463	98	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			10600	mg/Kg	100	10000	463	101	79.4 - 120.6	3	20

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

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114-6401146

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COG/Harper State TB

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Eddy Co., NM

Calibration Standards

Standard (CCV-1)

QC Batch: 87453

Date Analyzed: 2011-12-28

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	0.0913	91	80 - 120	2011-12-28
Toluene		1	mg/Kg	0.100	0.0920	92	80 - 120	2011-12-28
Ethylbenzene		1	mg/Kg	0.100	0.0950	95	80 - 120	2011-12-28
Xylene		1	mg/Kg	0.300	0.283	94	80 - 120	2011-12-28

Standard (CCV-2)

QC Batch: 87453

Date Analyzed: 2011-12-28

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	0.0876	88	80 - 120	2011-12-28
Toluene		1	mg/Kg	0.100	0.0901	90	80 - 120	2011-12-28
Ethylbenzene		1	mg/Kg	0.100	0.0919	92	80 - 120	2011-12-28
Xylene		1	mg/Kg	0.300	0.278	92	80 - 120	2011-12-28

Standard (CCV-3)

QC Batch: 87453

Date Analyzed: 2011-12-28

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	0.0889	89	80 - 120	2011-12-28
Toluene		1	mg/Kg	0.100	0.0873	87	80 - 120	2011-12-28
Ethylbenzene		1	mg/Kg	0.100	0.0892	89	80 - 120	2011-12-28
Xylene		1	mg/Kg	0.300	0.268	89	80 - 120	2011-12-28

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Eddy Co., NM

Standard (CCV-1)

QC Batch: 87454

Date Analyzed: 2011-12-28

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	0.948	95	80 - 120	2011-12-28

Standard (CCV-2)

QC Batch: 87454

Date Analyzed: 2011-12-28

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	1.10	110	80 - 120	2011-12-28

Standard (CCV-2)

QC Batch: 87474

Date Analyzed: 2011-12-28

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	223	89	80 - 120	2011-12-28

Standard (CCV-3)

QC Batch: 87474

Date Analyzed: 2011-12-28

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	208	83	80 - 120	2011-12-28

Standard (CCV-1)

QC Batch: 87485

Date Analyzed: 2011-12-29

Analyzed By: MT

Report Date: January 5, 2012
114-6401146

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COG/Harper State TB

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Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0874	87	80 - 120	2011-12-29
Toluene		1	mg/Kg	0.100	0.0858	86	80 - 120	2011-12-29
Ethylbenzene		1	mg/Kg	0.100	0.0875	88	80 - 120	2011-12-29
Xylene		1	mg/Kg	0.300	0.260	87	80 - 120	2011-12-29

Standard (CCV-2)

QC Batch: 87485

Date Analyzed: 2011-12-29

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	0.0882	88	80 - 120	2011-12-29
Toluene		1	mg/Kg	0.100	0.0868	87	80 - 120	2011-12-29
Ethylbenzene		1	mg/Kg	0.100	0.0869	87	80 - 120	2011-12-29
Xylene		1	mg/Kg	0.300	0.260	87	80 - 120	2011-12-29

Standard (CCV-1)

QC Batch: 87486

Date Analyzed: 2011-12-29

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	0.927	93	80 - 120	2011-12-29

Standard (CCV-2)

QC Batch: 87486

Date Analyzed: 2011-12-29

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	0.979	98	80 - 120	2011-12-29

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114-6401146

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Eddy Co., NM

Standard (CCV-3)

QC Batch: 87486

Date Analyzed: 2011-12-29

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	0.911	91	80 - 120	2011-12-29

Standard (ICV-1)

QC Batch: 87545

Date Analyzed: 2012-01-02

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.6	100	85 - 115	2012-01-02

Standard (CCV-1)

QC Batch: 87545

Date Analyzed: 2012-01-02

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	2012-01-02

Standard (CCV-2)

QC Batch: 87554

Date Analyzed: 2012-01-02

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	205	82	80 - 120	2012-01-02

Standard (CCV-3)

QC Batch: 87554

Date Analyzed: 2012-01-02

Analyzed By: kg

Report Date: January 5, 2012
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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	202	81	80 - 120	2012-01-02

Standard (CCV-2)

QC Batch: 87557

Date Analyzed: 2012-01-02

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/Kg	0.100	0.111	111	80 - 120	2012-01-02
Toluene		2	mg/Kg	0.100	0.106	106	80 - 120	2012-01-02
Ethylbenzene		2	mg/Kg	0.100	0.102	102	80 - 120	2012-01-02
Xylene		2	mg/Kg	0.300	0.303	101	80 - 120	2012-01-02

Standard (CCV-3)

QC Batch: 87557

Date Analyzed: 2012-01-02

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/Kg	0.100	0.108	108	80 - 120	2012-01-02
Toluene		2	mg/Kg	0.100	0.102	102	80 - 120	2012-01-02
Ethylbenzene		2	mg/Kg	0.100	0.0975	98	80 - 120	2012-01-02
Xylene		2	mg/Kg	0.300	0.292	97	80 - 120	2012-01-02

Standard (CCV-2)

QC Batch: 87558

Date Analyzed: 2012-01-02

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	1.11	111	80 - 120	2012-01-02

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Eddy Co., NM

Standard (CCV-3)

QC Batch: 87558

Date Analyzed: 2012-01-02

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	1.17	117	80 - 120	2012-01-02

Standard (CCV-1)

QC Batch: 87572

Date Analyzed: 2012-01-03

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/Kg	0.100	0.105	105	80 - 120	2012-01-03
Toluene		2	mg/Kg	0.100	0.102	102	80 - 120	2012-01-03
Ethylbenzene		2	mg/Kg	0.100	0.0966	97	80 - 120	2012-01-03
Xylene		2	mg/Kg	0.300	0.288	96	80 - 120	2012-01-03

Standard (CCV-2)

QC Batch: 87572

Date Analyzed: 2012-01-03

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/Kg	0.100	0.115	115	80 - 120	2012-01-03
Toluene		2	mg/Kg	0.100	0.110	110	80 - 120	2012-01-03
Ethylbenzene		2	mg/Kg	0.100	0.104	104	80 - 120	2012-01-03
Xylene		2	mg/Kg	0.300	0.309	103	80 - 120	2012-01-03

Standard (CCV-1)

QC Batch: 87573

Date Analyzed: 2012-01-03

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	1.10	110	80 - 120	2012-01-03

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Standard (CCV-2)

QC Batch: 87573

Date Analyzed: 2012-01-03

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	1.09	109	80 - 120	2012-01-03

Standard (ICV-1)

QC Batch: 87594

Date Analyzed: 2012-01-04

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.6	100	85 - 115	2012-01-04

Standard (CCV-1)

QC Batch: 87594

Date Analyzed: 2012-01-04

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	100	100	85 - 115	2012-01-04

Standard (ICV-1)

QC Batch: 87595

Date Analyzed: 2012-01-04

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.8	100	85 - 115	2012-01-04

Standard (CCV-1)

QC Batch: 87595

Date Analyzed: 2012-01-04

Analyzed By: AR

Report Date: January 5, 2012
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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-01-04

Standard (ICV-1)

QC Batch: 87596

Date Analyzed: 2012-01-04

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.6	100	85 - 115	2012-01-04

Standard (CCV-1)

QC Batch: 87596

Date Analyzed: 2012-01-04

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	100	100	85 - 115	2012-01-04

Standard (ICV-1)

QC Batch: 87597

Date Analyzed: 2012-01-04

Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-01-04

Standard (CCV-1)

QC Batch: 87597

Date Analyzed: 2012-01-04

Analyzed By: AR

Report Date: January 5, 2012
114-6401146

Work Order: 11122310
COG/Harper State TB

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Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.6	100	85 - 115	2012-01-04

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	T104704219-11-5	Lubbock
2	NELAP	T104704392-11-3	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
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 special comment - Prep error. Sample was not spiked.

Attachments

Report Date: January 5, 2012
114-6401146

Work Order: 11122310
COG/Harper State TB

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Eddy Co., NM

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

111223,0

Analysis Request of Chain of Custody Record

PAGE: 1

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

 ANALYSIS REQUEST
 (Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tawarez

PROJECT NO.:

114-6401146

PROJECT NAME:

Harper State TB

LAB I.D.
NUMBER

DATE

TIME

MATRIX
COMP.
GRAB
 Eddy Co NM
 SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

 BTEX 8021B
 TPH 8015 MOD.
 PAH 8270

RCHA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/624

GC/MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

285279

12/20

S

X

AA-1

0-1'

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X

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#11128310

Analysis Request of Chain of Custody Record

PAGE: 2

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

 ANALYSIS REQUEST
 (Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavaraz

PROJECT NO.:

114-6401146

PROJECT NAME:

Harper State TB

LAB I.D.
NUMBERDATE
2011

TIME

MATRIX
COMP
GRAB
 Eddy Co NM
 SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

BTX 808B	TX1005 (Ext. to C35)	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	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorine	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
PAH 8270	TX1005 (Ext. to C35)	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	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorine	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
PAH 8270	TX1005 (Ext. to C35)	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	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorine	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
PAH 8270	TX1005 (Ext. to C35)	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	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorine	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
PAH 8270	TX1005 (Ext. to C35)	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	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorine	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
PAH 8270	TX1005 (Ext. to C35)	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	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorine	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
PAH 8270	TX1005 (Ext. to C35)	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	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorine	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
PAH 8270	TX1005 (Ext. to C35)	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	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorine	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
PAH 8270	TX1005 (Ext. to C35)	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	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorine	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
PAH 8270	TX1005 (Ext. to C35)	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	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorine	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date: 12-22-11

RECEIVED BY: (Signature)

Date: 12-22-11

SAMPLED BY: (Print & Initial)

Date: 12-20-11

RELINQUISHED BY: (Signature)

Date: 12-22-11

RECEIVED BY: (Signature)

Date: 12-22-11

SAMPLE SHIPPED BY: (Circle)

AIRBILL #:

RELINQUISHED BY: (Signature)

Date: 12-22-11

RECEIVED BY: (Signature)

Date: 12-22-11

FEDEX

BUS

OTHER:

TETRA TECH CONTACT PERSON:

Results by:

RECEIVING LABORATORY:

RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE: DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

Intact 7.7°

Ike Tavaraz

RUSH Charges
Authorized:

Yes No

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

11122210

Analysis Request of Chain of Custody Record

PAGE: 3

4

**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 Tavaraz

PROJECT NO.:

114-6401146

PROJECT NAME:

Harper State TB

LAB I.D.
NUMBERDATE
2011

TIME

MATRIX

COMP

GRAB

Eddy Co NM
SAMPLE IDENTIFICATIONNUMBER OF CONTAINERS
FILTERED (Y/N)PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

BTX 8024B
PH 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 8060/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date: 12-22-11

Time: 1:44

RECEIVED BY: (Signature)

Date: 12/22/11

Time: 1:44

SAMPLED BY: (Print & Initial)

TF 121

Date: 12-20-11

Time:

RELINQUISHED BY: (Signature)

Date: 12/21/11

Time: 10:10

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

UPS

AIRBILL #:

OTHER:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Ike Tavaraz

Results by:

RUSH Charges

Authorized:

Yes

No

RECEIVING LABORATORY:

ADDRESS:

CITY: Midland

STATE: TX

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

77° intact

REMARKS:

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

#11122310

Analysis Request of Chain of Custody Record

PAGE: 4

**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 Tavaraz

PROJECT NO.:

114-6401146

PROJECT NAME:

Harper State TB

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

Eddy Co NM

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

BTEX 8021B

PAH 8270

ROA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/624

GC/MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 808/608

Chlorides

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

309

2011

12/20

S

X

AH-4

0-1'

1

X

X

X

X

310

1-1.5'

X

311

2-2.5'

X

312

3-3.5'

X

313

4-4.5'

X

314

5-5.5'

X

315

6-6.5'

X

316

7-7.5'

X

317

8-8.5'

X

318

9-9.5'

X

RELINQUISHED BY: (Signature)

Date: 12-22-11

Time: 11:45

RECEIVED BY: (Signature)

Date: 12/22/11

Time: 10:41

SAMPLED BY: (Print & Initial)

TF/ST

Date: 12-20-11

Time:

RELINQUISHED BY: (Signature)

Date: 12/23/11

Time: 10:10

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

AIRBILL #:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

HAND DELIVERED

OTHER:

RECEIVING LABORATORY:

Trace

RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland

STATE: TX

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

TETRA TECH CONTACT PERSON:

Ike Tavaraz

Results by:

RUSH Charges

Authorized:

Yes

No

SAMPLE CONDITION WHEN RECEIVED:

1.70 intact

REMARKS:

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