

SITE INFORMATION

2RP-818

Report Type: Closure Report

General Site Information:

Site:	Sagebrush Federal Tank Battery		
Company:	COG Operating LLC		
Section, Township and Range	Unit J - Sec 34 - T-18S - R-27E		
Lease Number:	30-015-33910		
County:	Eddy County		
GPS:	32.70130° N	104.26465° W	
Surface Owner:	Federal		
Mineral Owner:			
Directions:	From the intersection of Hwy 82 and Illinois Camp Road, travel south on Illinois Camp Road 4.4 mi, right 0.6 mi, right 2.1 mi, left 1.6 mi, right 0.4 mi to location.		

Release Data:

Date Released:	7/11/2011
Type Release:	Condensate
Source of Contamination:	Hole in tank bottom
Fluid Released:	217 bbls
Fluids Recovered:	0 bbls

Official Communication:

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

Ranking Criteria

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

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



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FEB 28 2012

NMOCD ARTESIA

February 14, 2012

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

Re: Closure Report for the COG Operating LLC., Sagebrush Federal Tank Battery, Unit J, Section 34, Township 18 South, Range 27 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Sagebrush Federal Tank Battery, Unit J, Section 34, Township 18 South, Range 27 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.70130°, W 104.26465°. 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 July 11, 2011, and released approximately 217 barrels of condensate due to a hole in the bottom of the tank. Zero (0) barrels were recovered from the spill area. The spill was contained inside the facility berm impacting an area under the tank measuring approximately 15' x 15'. The initial Form C-141 is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 34. According to the NMOCD groundwater map, one well is located in Section 28, with a reported depth to water of 92' below surface. Based on these findings, groundwater in this area is less than 100' below surface. The groundwater data is shown in Appendix B.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetrattech.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, ethyl benzene 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, ethyl benzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 1,000 mg/kg.

Soil Assessment and Analytical Results

Prior to sampling, COG had the leaking tank removed from the facility. On July 14, 2011, Tetra Tech personnel inspected and sampled the spill area. One (1) auger hole (AH-1) was installed at the former tank location using a stainless steel hand auger to assess the impacted soils. The auger hole was advanced to a depth of 9.0' below surface. 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 sampling results are summarized in Table 1. The auger hole location is shown on Figure 3.

Referring to Table 1, all of the submitted samples were above the RRAL for TPH and BTEX. Elevated chloride concentrations were detected at the surface and declined with depth to 216 mg/kg at 6-6.5' below surface.

On July 27-28, 2011, Tetra Tech supervised the installation of three (3) boreholes (BH-1, BH-2, and BH-3) utilizing an air rotary drilling rig. Borehole (BH-1) was installed in the center for the former tank location and the remaining boreholes (BH-2 and BH-3) were installed to define horizontal extents. Samples were collected and field screened with an organic vapor meter (OVM) to total depths of 30' to 55' below surface. Samples were placed in laboratory provided containers and submitted for laboratory analysis. Copies of the laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The borehole locations are shown on Figure 4.

Referring to Table 1, the impacted soil in the area of BH-1 declined below TPH and BTEX RRAL at 20.0' and 25.0', respectively. The remaining



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auger holes (AH-2 and AH-3) did not show any concentrations above the RRAL, which indicates the soil impact is confined to the vicinity of BH-1.

Closure Activities

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. Prior to excavation area, COG removed the tank to access the impacted soil. The final excavation depths of the soil remediation were met as stated in the approved work plan. The spill area measuring approximately 25' x 25' was excavated to a depth of approximately 20.0' below surface. A total of 1,480 cubic yards of soil were excavated and hauled to proper disposal. The excavated area and depths are highlighted in Table 1 and shown on Figure 4.

Once excavated to the appropriate depths, confirmation samples were collected from the excavation bottom hole and sidewalls. The confirmation samples results are shown in Table 2.

Referring to Table 2, all of the samples were below the RRAL for TPH and BTEX. The chloride concentrations were not an environmental concern. Once approved by BLM, the excavation was backfilled with clean soil to grade.

Based on the remedial activities performed, COG request closure of the site. A copy of the C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the remedial activities, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH



Ike Tavaraz
Project Management

cc: Pat Ellis – COG
cc: Terry Gregston – BLM

FIGURES

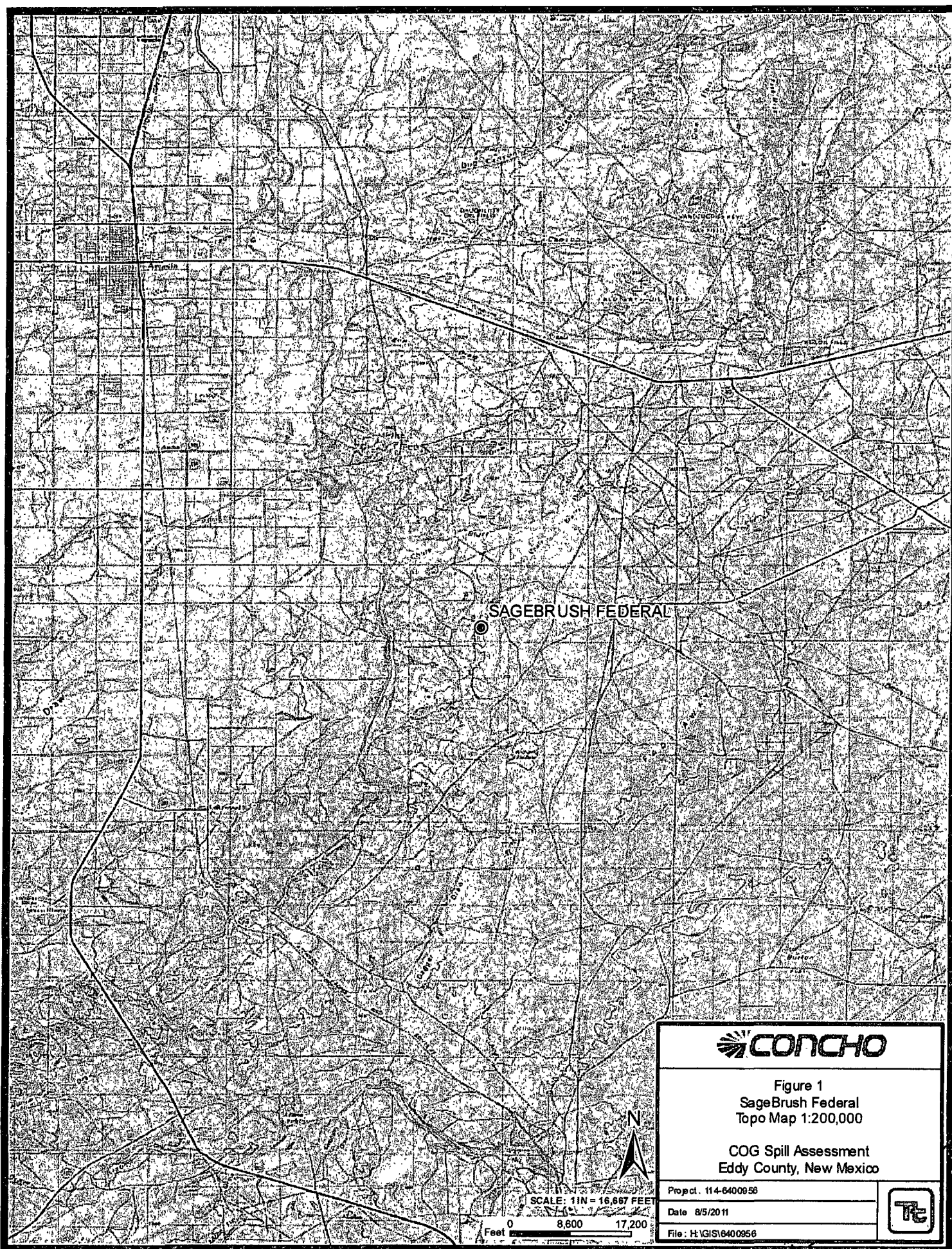


Figure 1
SageBrush Federal
Topo Map 1:200,000

COG Spill Assessment
Eddy County, New Mexico

Project: 114-6400956

Date: 8/5/2011

File: H:\GIS\16400956



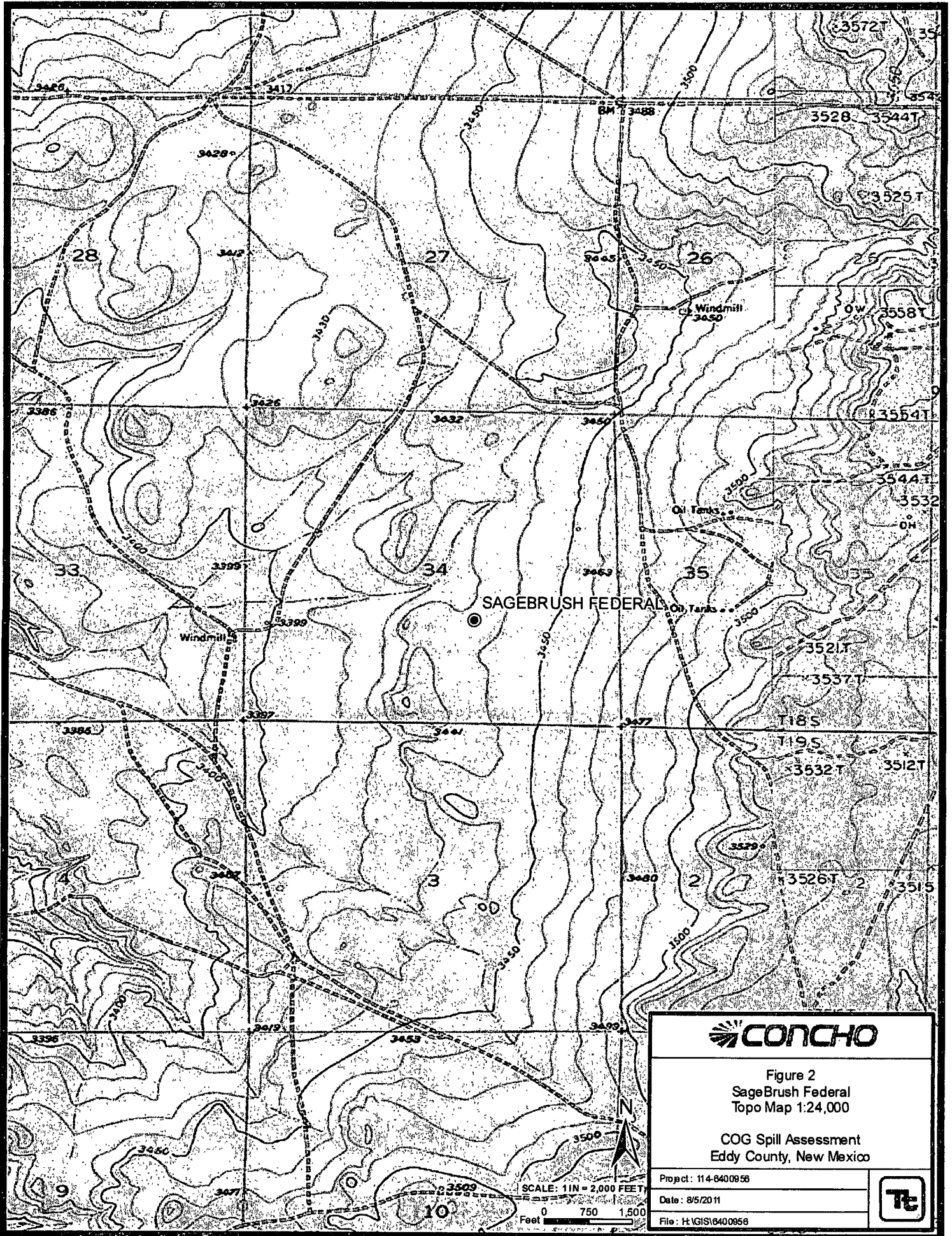


Figure 2
SageBrush Federal
Topo Map 1:24,000

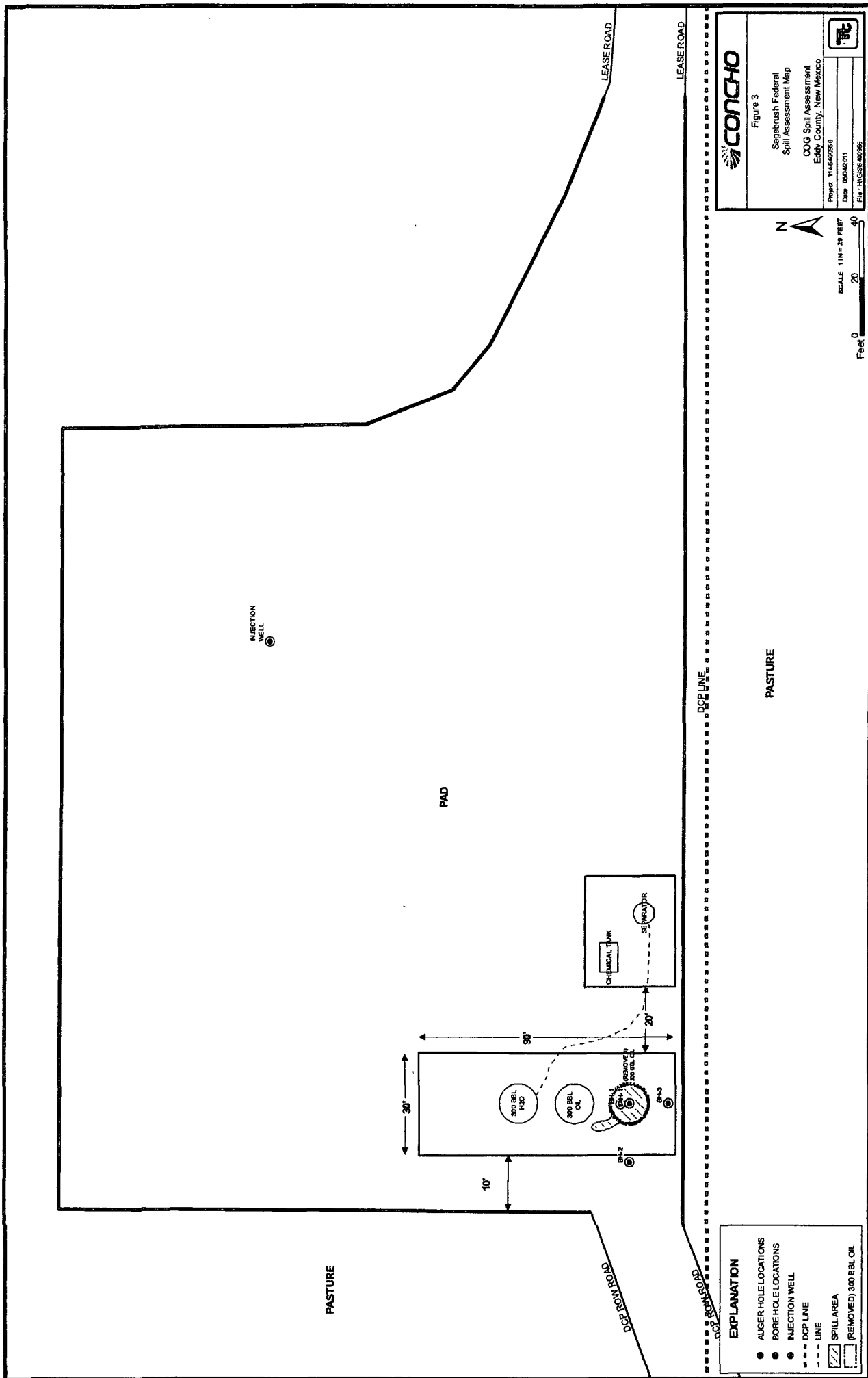
COG Spill Assessment
Eddy County, New Mexico

Project: 114-6400958

Date: 8/5/2011

File: H:\GIS\6400958





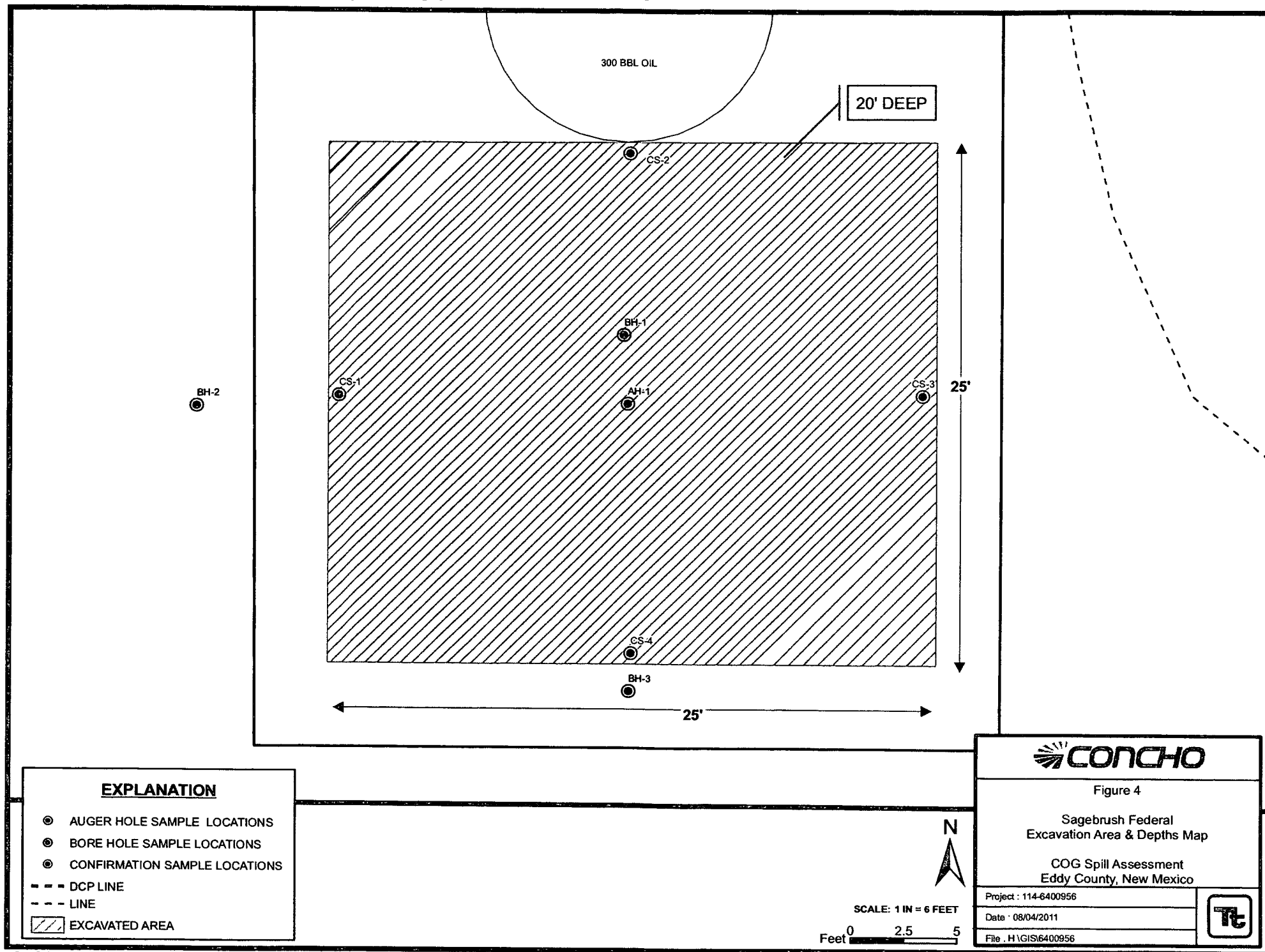


Table 1
COG Operating LLC.
Sagebrush Federal Tank Battery
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	OVM (ppm)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX	Chloride (mg/kg)
				In-Situ	Removed	DRO	GRO	Total						
AH-1	7/14/2011	0-1'			X	346	2,060	2,406	7.68	2.48	4.49	70.6	85	9,750
	"	4-4.5			X	497	1,470	1,967	6.97	2.18	3.15	52.7	65	2,500
	"	6-6.5			X	439	2,150	2,589	8.15	0.72	6.08	80.0	95	216
	"	9-9.5			X	1,980	5,630	7,610	34.5	1.97	12.90	239	288	<200
BH-1	7/27/2011	0-1'	273		X									
	"	3'	481		X									
	"	5'	603		X	446	2,260	2,706	28.2	101	13.8	117	260	
	"	7'	363		X									
	"	10'	463		X									
	"	15'	746		X	1,690	4,760	6,450	33.0	133	26.9	179	372	
	"	20'	601		X	86.8	844	931	4.49	19.6	5.06	34.4	64	
	"	25'	480	X		64.4	9.16	74	<0.020	0.170	0.135	0.481	0.79	-
	"	30'	197	X		-	-	-	-	-	-	-	-	-
	"	40'	301	X		<50.0	<2.00	<50.00	<0.020	<0.020	<0.020	<0.020	<0.020	-
	"	50'	7	X		<50.0	<2.00	<50.00	<0.020	<0.020	<0.020	<0.020	<0.020	-
	"	55'	36	X		<50.0	<2.00	<50.00	<0.020	<0.020	<0.020	<0.020	<0.020	

Table 1
COG Operating LLC.
Sagebrush Federal Tank Battery
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	OVM (ppm)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX	Chloride (mg/kg)
				In-Situ	Removed	DRO	GRO	Total						
BH-2	7/28/2011	0-1'	47	X		<50.0	<2.00	<50.0	<0.020	<0.020	<0.020	<0.020	<0.020	-
	"	3'	24	X		-	-	-	-	-	-	-	-	-
	"	5'	18	X		-	-	-	-	-	-	-	-	-
	"	7'	26	X		<50.0	<2.00	<50.0	<0.020	<0.020	<0.020	<0.020	<0.020	-
	"	10'	14	X		-	-	-	-	-	-	-	-	-
	"	15'	9	X		-	-	-	-	-	-	-	-	-
	"	20'	18	X		-	-	-	-	-	-	-	-	-
	"	25'	23	X		-	-	-	-	-	-	-	-	-
	"	30'	6	X		<50.0	<2.00	<50.0	<0.020	<0.020	<0.020	<0.020	<0.020	-
BH-3	7/28/2011	0-1'	86	X		<50.0	<2.00	<50.0	0.276	0.480	<0.0200	0.633	1.39	-
	"	3'	434	X		-	-	-	-	-	-	-	-	-
	"	5'	140	X		-	-	-	-	-	-	-	-	-
	"	7'	156	X		<50.0	<2.00	<50.0	<0.020	0.150	<0.020	<0.020	0.150	-
	"	10'	170	X		-	-	-	-	-	-	-	-	-
	"	15'	296	X		-	-	-	-	-	-	-	-	-
	"	20'	664	X		129	146	275	1.65	4.04	0.738	5.36	11.79	-
	"	25'	-	X		-	-	-	-	-	-	-	-	-
	"	30'	38	X		<50.0	2.12	<50.0	<0.020	<0.020	<0.020	0.377	0.377	-
	"	40'	26	X		-	-	-	-	-	-	-	-	-
	"	45'	15	X		<50.0	<2.00	<50.0	<0.020	<0.020	<0.020	<0.020	<0.020	-

OVM Organic Vapor Meter

(--) Not Analyzed

 Excavated Depths

Table 2
COG Operating LLC.
Sagebrush Federal Tank Battery
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	OVM (ppm)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX	Chloride (mg/kg)
				In-Situ	Removed	DRO	GRO	Total						
CS-1	9/13/2011	North Sidewall	252	X		<50.0	<2.00	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<200
CS-2	9/13/2011	East Sidewall	143	X		<50.0	<2.00	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<200
CS-3	9/13/2011	South Sidewall	349	X		133	130	263	<0.0200	0.272	0.634	6.7	7.61	<200
CS-4	9/13/2011	West Sidewall	157	X		281	125	406	0.0569	1.78	1.26	16.7	19.8	<200
CS-5	9/13/2011	Bottom 20'	340	X		<50.0	144	144	0.0616	0.315	0.379	0.843	1.5986	277

OVM Organic Vapor Meter

(--) Not Analyzed

☐ Excavated Depths

PHOTOGRAPHS



Excavation



Excavation

APPENDIX A

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

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

RECEIVED

FEB 28 2012

NMOCD ARTESIA

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company	COG Operating LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 1300 Midland, Texas 79701	Telephone No.	(432) 685-4332
Facility Name	Sagebrush Federal	Facility Type	Tank Battery
Surface Owner:	Federal	Mineral Owner	
		Lease No. (API#)	30-015-33910

LOCATION OF RELEASE

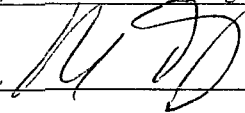
Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	34	18S	27E					Eddy

Latitude 33 42.105 Longitude 104 15.876

NATURE OF RELEASE

Type of Release:	Condensate	Volume of Release	217 bbls	Volume Recovered	0 bbls
Source of Release:	Hole in bottom of tank	Date and Hour of Occurrence	07/11/2011	Date and Hour of Discovery	07/11/2011 6:00 p.m.
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Mike Bratcher--OCD		
By Whom?	Josh Russo	Date and Hour	07/11/2011 1:18 a.m.		
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	N/A		
If a Watercourse was Impacted, Describe Fully.* N/A					
Describe Cause of Problem and Remedial Action Taken.* A hole developed in the bottom of the oil tank causing the release of condensate. The tank has been taken out of service and will be switched with a new tank.					
Describe Area Affected and Cleanup Action Taken.* Tetra Tech inspected and assessed the spill area to define the extents. The impacted soils exceeding the RRAL were removed and hauled to proper disposal. Based on the confirmation sample results, the excavation was backfilled to grade with clean backfill material. Tetra Tech prepared a closure report to submit to the NMOCD for review.					

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 	OIL CONSERVATION DIVISION		
Printed Name: Ike Tavarez (agent for COG)	Approved by District Supervisor:		
Title: Project Manager	Approval Date:	Expiration Date:	
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached ☐	
Date: 2-14-12 Phone: (432) 682-4559			

* Attach Additional Sheets If Necessary

rec'd 2/28/12

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Sagebrush Federal	Facility Type	Tank Battery

Surface Owner	Federal	Mineral Owner		Lease No. (API#)	30-015-33910
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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
J	34	18S	27E					Eddy

Latitude 32 42.105 Longitude 104 15.876

NATURE OF RELEASE

Type of Release	Condensate	Volume of Release	217bbls	Volume Recovered	0bbls
Source of Release	Hole in bottom of tank	Date and Hour of Occurrence	07/11/2011	Date and Hour of Discovery	07/11/2011 6:00 p.m.
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Mike Bratcher-OCD		
By Whom?	Josh Russo	Date and Hour	07/13/2011 1:18 a.m.		
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.*

A hole developed in the bottom of the oil tank causing the release of condensate. The tank has been taken out of service and will be switched with a new tank.

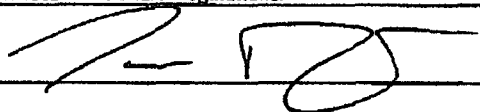
Describe Area Affected and Cleanup Action Taken.*

Initially 217bbls of condensate were released from the oil tank and we were unable to recover any fluid with a vacuum truck. The release area is located directly where the tank was sitting inside the tank battery. 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 BLM/NMOCD for approval prior to any significant remediation work.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

OIL CONSERVATION DIVISION

Signature:



Printed Name:

Josh Russo

Approved by District Supervisor:

Title:

HSE Coordinator

Approval Date:

Expiration Date:

E-mail Address:

jrusso@conchoresources.com

Conditions of Approval:

Attached ☐

Date: 07/25/2011

Phone: 432-212-2399

* Attach Additional Sheets If Necessary

APPENDIX B

Water Well Data
Average Depth to Groundwater (ft)
COG - Sagebrush Federal
Eddy County, New Mexico

17 South 26 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 27 East					
6	5	4	3	2	1
7	8	9	10	11	12
14				54	
18	17	16	15	14	13
86	283	194			
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
	120				

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

18 South 28 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

19 South 26 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

19 South 27 East					
6	5	20	4	3	2
7	8	50	9	10	11
18	17	16	15	14	82
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

19 South 28 East					
6	5	4	3	2	1
7	8	9	248	10	11
18	17	16	285	15	14
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

-  New Mexico State Engineers Well Reports
-  USGS Well Reports
-  Geology and Groundwater Conditions in Southern Eddy, County, NM
-  SITE - Sagebrush Federal

Borehole Log

Boring/ Well Name BH-1
GPS 32.70162° 104.26466°
Project Number 114-6400956
Client COG
Site Name Sagebrush Federal Tank Battery
Site Location Eddy CO., NM
Total Depth (ft) 55
Date Installed July 27, 2011

Depth (Ft)	OVM	Sample Description
0-1'	273	Brown soft silty clay - damp
3'	481	Brown soft silty clay - damp
5'	603	Brown soft sandy clay - less moisture
7'	363	Brown soft sandy clay - less moisture
10'	463	Brown medium silty clay - dry
15'	746	Red Brown soft sandy clay
20'	601	Red Brown stiff silty clay
25'	480	Gypsum Boundry @ 23' - Red Brown sandy clay
30'	197	Solid rock dolomite
40'	301	Solid rock dolomite
50'	7	Solid rock gypsum dolomite
55'	36	Solid rock gypsum dolomite

Total Depth: 55'

APPENDIX C

Summary Report

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

Report Date: September 30, 2011

Work Order: 11092213



Project Location: Eddy Co., NM
Project Name: COG/Sagebrush Federal TB
Project Number: 114-6400956

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
278034	CS-5 Bottom Hole 20'	soil	2011-09-19	08:30	2011-09-22

Sample - Field Code	BTEX				TPH DRO - NEW DRO	TPH GRO GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	(mg/Kg)	(mg/Kg)
278034 - CS-5 Bottom Hole 20'	0.0616	0.315	0.379 Qs	0.843 Qs	<50.0 Qr,Qs	144

Sample: 278034 - CS-5 Bottom Hole 20'

Param	Flag	Result	Units	RL
Chloride		277	mg/Kg	4



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lap@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: September 30, 2011

Work Order: 11092213



Project Location: Eddy Co., NM
Project Name: COG/Sagebrush Federal TB
Project Number: 114-6400956

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
278034	CS-5 Bottom Hole 20'	soil	2011-09-19	08:30	2011-09-22

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 16 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/Sagebrush Federal TB were received by TraceAnalysis, Inc. on 2011-09-22 and assigned to work order 11092213. Samples for work order 11092213 were received intact at a temperature of 1.0 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	72241	2011-09-27 at 12:00	85074	2011-09-27 at 17:50
Chloride (Titration)	SM 4500-Cl B	72245	2011-09-27 at 10:20	85101	2011-09-28 at 15:34
TPH DRO - NEW	S 8015 D	72249	2011-09-27 at 15:37	85087	2011-09-27 at 15:37
TPH GRO	S 8015 D	72241	2011-09-27 at 12:00	85075	2011-09-29 at 18:18

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 11092213 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

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Analytical Report

Sample: 278034 - CS-5 Bottom Hole 20'

Laboratory: Midland

Analysis: BTEX

QC Batch: 85074

Prep Batch: 72241

Analytical Method: S 8021B

Date Analyzed: 2011-09-27

Sample Preparation: 2011-09-27

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	0.0616	mg/Kg	1	0.0200
Toluene		1	0.315	mg/Kg	1	0.0200
Ethylbenzene	Q*	1	0.379	mg/Kg	1	0.0200
Xylene	Q*	1	0.843	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)			2.19	mg/Kg	1	2.00	110	70.6 - 179

Sample: 278034 - CS-5 Bottom Hole 20'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 85101

Prep Batch: 72245

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-09-28

Sample Preparation: 2011-09-28

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			277	mg/Kg	50	4.00

Sample: 278034 - CS-5 Bottom Hole 20'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 85087

Prep Batch: 72249

Analytical Method: S 8015 D

Date Analyzed: 2011-09-27

Sample Preparation: 2011-09-27

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			76.5	mg/Kg	1	100	76	67.5 - 147.1

Sample: 278034 - CS-5 Bottom Hole 20'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 85075
Prep Batch: 72241

Analytical Method: S 8015 D
Date Analyzed: 2011-09-29
Sample Preparation: 2011-09-27

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	144	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		1.90	mg/Kg	1	2.00	95	30 - 134.6
4-Bromofluorobenzene (4-BFB)			2.47	mg/Kg	1	2.00	124	22.4 - 149

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Method Blanks

Method Blank (1) QC Batch: 85074

QC Batch: 85074
Prep Batch: 72241

Date Analyzed: 2011-09-27
QC Preparation: 2011-09-27

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.0118	mg/Kg	0.02
Toluene		1	<0.00600	mg/Kg	0.02
Ethylbenzene		1	<0.00850	mg/Kg	0.02
Xylene		1	<0.00613	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.02	mg/Kg	1	2.00	101	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)			1.83	mg/Kg	1	2.00	92	48.4 - 123.1

Method Blank (1) QC Batch: 85075

QC Batch: 85075
Prep Batch: 72241

Date Analyzed: 2011-09-29
QC Preparation: 2011-09-27

Analyzed By: AG
Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	0.949	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.73	mg/Kg	1	2.00	86	52.4 - 130

Method Blank (1) QC Batch: 85087

QC Batch: 85087
Prep Batch: 72249

Date Analyzed: 2011-09-27
QC Preparation: 2011-09-27

Analyzed By: kg
Prepared By: kg

Report Date: September 30, 2011
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Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			85.3	mg/Kg	1	100	85	52.7 - 133.8

Method Blank (1) QC Batch: 85101

QC Batch: 85101
Prep Batch: 72245

Date Analyzed: 2011-09-28
QC Preparation: 2011-09-27

Analyzed By: AR
Prepared By: AR

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

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 85074
Prep Batch: 72241

Date Analyzed: 2011-09-27
QC Preparation: 2011-09-27

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.01	mg/Kg	1	2.00	<0.0118	100	77.4 - 121.7
Toluene		1	2.04	mg/Kg	1	2.00	<0.00600	102	88.6 - 121.6
Ethylbenzene		1	2.05	mg/Kg	1	2.00	<0.00850	102	74.3 - 117.9
Xylene		1	6.14	mg/Kg	1	6.00	<0.00613	102	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		1	1.99	mg/Kg	1	2.00	<0.0118	100	77.4 - 121.7	1	20
Toluene		1	1.99	mg/Kg	1	2.00	<0.00600	100	88.6 - 121.6	2	20
Ethylbenzene		1	1.99	mg/Kg	1	2.00	<0.00850	100	74.3 - 117.9	3	20
Xylene		1	5.97	mg/Kg	1	6.00	<0.00613	100	73.4 - 118.8	3	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)	2.01	2.00	mg/Kg	1	2.00	100	100	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.98	1.98	mg/Kg	1	2.00	99	99	56.2 - 132.1

Laboratory Control Spike (LCS-1)

QC Batch: 85075
Prep Batch: 72241

Date Analyzed: 2011-09-29
QC Preparation: 2011-09-27

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.4	mg/Kg	1	20.0	<0.753	87	60.9 - 95.4

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

continued ...

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control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	17.9	mg/Kg	1	20.0	<0.753	90	60.9 - 95.4	3	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)	1.88	1.90	mg/Kg	1	2.00	94	95	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.84	1.86	mg/Kg	1	2.00	92	93	56.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 85087
Prep Batch: 72249

Date Analyzed: 2011-09-27
QC Preparation: 2011-09-27

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	203	mg/Kg	1	250	<14.5	81	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		1	207	mg/Kg	1	250	<14.5	83	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	83.8	83.7	mg/Kg	1	100	84	84	65.3 - 135.8

Laboratory Control Spike (LCS-1)

QC Batch: 85101
Prep Batch: 72245

Date Analyzed: 2011-09-28
QC Preparation: 2011-09-27

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			95.4	mg/Kg	1	100	<3.85	95	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. 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.

Matrix Spike (MS-1) Spiked Sample: 278071

QC Batch: 85074
Prep Batch: 72241

Date Analyzed: 2011-09-27
QC Preparation: 2011-09-27

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.45	mg/Kg	1	2.00	<0.0118	122	69.4 - 123.6
Toluene		1	2.57	mg/Kg	1	2.00	<0.00600	128	75.4 - 134.3
Ethylbenzene	Qs	1	2.69	mg/Kg	1	2.00	<0.00850	134	58.8 - 133.7
Xylene	Qs	1	8.08	mg/Kg	1	6.00	<0.00613	135	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		1	2.20	mg/Kg	1	2.00	<0.0118	110	69.4 - 123.6	11	20
Toluene		1	2.33	mg/Kg	1	2.00	<0.00600	116	75.4 - 134.3	10	20
Ethylbenzene		1	2.45	mg/Kg	1	2.00	<0.00850	122	58.8 - 133.7	9	20
Xylene		1	7.35	mg/Kg	1	6.00	<0.00613	122	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)	2.08	2.07	mg/Kg	1	2	104	104	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.06	2.09	mg/Kg	1	2	103	104	71 - 167

Matrix Spike (MS-1) Spiked Sample: 278077

QC Batch: 85075
Prep Batch: 72241

Date Analyzed: 2011-09-29
QC Preparation: 2011-09-27

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.0	mg/Kg	1	20.0	0.9676	85	61.8 - 114

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

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Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	18.4	mg/Kg	1	20.0	0.9676	92	61.8 - 114	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)	1.87	1.86	mg/Kg	1	2	94	93	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	1.98	1.99	mg/Kg	1	2	99	100	37.3 - 162

Matrix Spike (MS-1) Spiked Sample: 278103

QC Batch: 85087
Prep Batch: 72249

Date Analyzed: 2011-09-27
QC Preparation: 2011-09-27

Analyzed By: kg
Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	464	mg/Kg	1	250	280	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	Qr, Qs	1	835	mg/Kg	1	250	280	222	38.8 - 153.3	57	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	112	mg/Kg	1	100	97	112	54.6 - 149.8

Matrix Spike (MS-1) Spiked Sample: 278038

QC Batch: 85101
Prep Batch: 72245

Date Analyzed: 2011-09-28
QC Preparation: 2011-09-27

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10100	mg/Kg	100	10000	<385	101	79.4 - 120.6

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

continued ...

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matrix spikes continued . . .

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			10800	mg/Kg	100	10000	<385	108	79.4 - 120.6	7	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 85074

Date Analyzed: 2011-09-27

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0983	98	80 - 120	2011-09-27
Toluene		1	mg/Kg	0.100	0.0998	100	80 - 120	2011-09-27
Ethylbenzene		1	mg/Kg	0.100	0.101	101	80 - 120	2011-09-27
Xylene		1	mg/Kg	0.300	0.304	101	80 - 120	2011-09-27

Standard (CCV-2)

QC Batch: 85074

Date Analyzed: 2011-09-27

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.103	103	80 - 120	2011-09-27
Toluene		1	mg/Kg	0.100	0.107	107	80 - 120	2011-09-27
Ethylbenzene		1	mg/Kg	0.100	0.106	106	80 - 120	2011-09-27
Xylene		1	mg/Kg	0.300	0.319	106	80 - 120	2011-09-27

Standard (CCV-1)

QC Batch: 85075

Date Analyzed: 2011-09-29

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.09	109	80 - 120	2011-09-29

Standard (CCV-2)

QC Batch: 85075

Date Analyzed: 2011-09-29

Analyzed By: AG

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.04	104	80 - 120	2011-09-29

Standard (CCV-1)

QC Batch: 85087

Date Analyzed: 2011-09-27

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	202	81	80 - 120	2011-09-27

Standard (CCV-2)

QC Batch: 85087

Date Analyzed: 2011-09-27

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	208	83	80 - 120	2011-09-27

Standard (ICV-1)

QC Batch: 85101

Date Analyzed: 2011-09-28

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	101	101	85 - 115	2011-09-28

Standard (CCV-1)

QC Batch: 85101

Date Analyzed: 2011-09-28

Analyzed By: AR

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.3	99	85 - 115	2011-09-28

Appendix

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-10-TX	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 MPL. 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

Attachments

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

W0# 11092213

Analysis Request of Chain of Custody Record



TETRA TECH

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

PAGE: 1 OF: 1

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: **COG**

SITE MANAGER: **Ike Tavoroz**

PROJECT NO.: **114-6400956**

PROJECT NAME: **Sagebrush Federal**
Eddy County

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP.

GRAB

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHOD

BTEX 80215
TPH 8015 MOD TX1005 (Ext. to C35)
PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd 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

28034 9/19/11 8:30 S X CS-5 Bottom Hole 20'

RELINQUISHED BY: (Signature) *[Signature]*

Date: 9/21/11
Time: 9:53 AM

RECEIVED BY: (Signature) *[Signature]*

Date: 9/22/11
Time: 9:54 AM

SAMPLED BY: (Print & Initial) **Brian Schaefer BPS**

Date: 9/19/11
Time: 8:30

RELINQUISHED BY: (Signature) *[Signature]*

Date: 9/21/11
Time: 1420

RECEIVED BY: (Signature) *[Signature]*

Date: 9/22/11
Time: 1400

SAMPLE SHIPPED BY: (Circle)

AIRBILL #: _____

RELINQUISHED BY: (Signature) *[Signature]*

Date: 9/22/11
Time: 1505

RECEIVED BY: (Signature) *[Signature]*

Date: _____
Time: _____

FEDEX BUS
HAND DELIVERED UPS

OTHER: _____

RECEIVING LABORATORY:

ADDRESS:

CITY: **Midland**

STATE: **TX**

ZIP: _____

CONTACT:

PHONE: _____

RECEIVED BY: (Signature) *[Signature]*

DATE: 9/22/11

TIME: 3:10 PM

TETRA TECH CONTACT PERSON:
Ike Tavoroz

Results by:

RUSH Charges

Authorized:

Yes

No

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

Summary Report

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

Report Date: September 19, 2011

Work Order: 11091539



Project Location: Eddy Co., NM
Project Name: COG/Sagebrush Federal TB
Project Number: 114-6400956

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
277359	CS-1 North Side Wwall	soil	2011-09-13	00:00	2011-09-15
277360	CS-2 East Side Wall	soil	2011-09-13	00:00	2011-09-15
277361	CS-3 South Side Wall	soil	2011-09-13	00:00	2011-09-15
277362	CS-4 West Side Wall	soil	2011-09-13	00:00	2011-09-15

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)
277359 - CS-1 North Side Wwall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
277360 - CS-2 East Side Wall	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
277361 - CS-3 South Side Wall	<0.0200	0.272	0.634	6.70	133	130
277362 - CS-4 West Side Wall	0.0569	1.78	1.26	16.7	281	125

Sample: 277359 - CS-1 North Side Wwall

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

Sample: 277360 - CS-2 East Side Wall

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

Sample: 277361 - CS-3 South Side Wall

Report Date: September 19, 2011

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

Sample: 277362 - CS-4 West Side Wall

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



5701 Aberdeen Avenue, Suite B Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1296
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 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 Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX, 79705

Report Date: September 19, 2011

Work Order: 11091539



Project Location: Eddy Co., NM
Project Name: COG/Sagebrush Federal TB
Project Number: 114-6400956

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
277359	CS-1 North Side Wwall	soil	2011-09-13	00:00	2011-09-15
277360	CS-2 East Side Wall	soil	2011-09-13	00:00	2011-09-15
277361	CS-3 South Side Wall	soil	2011-09-13	00:00	2011-09-15
277362	CS-4 West Side Wall	soil	2011-09-13	00:00	2011-09-15

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 20 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/Sagebrush Federal TB were received by TraceAnalysis, Inc. on 2011-09-15 and assigned to work order 11091539. Samples for work order 11091539 were received intact at a temperature of 0.9 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	72007	2011-09-16 at 11:00	84782	2011-09-17 at 16:01
Chloride (Titration)	SM 4500-Cl B	71964	2011-09-15 at 15:53	84761	2011-09-16 at 11:08
TPH DRO - NEW	S 8015 D	72014	2011-09-16 at 14:31	84797	2011-09-16 at 14:31
TPH GRO	S 8015 D	72007	2011-09-16 at 11:00	84783	2011-09-17 at 16:27

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 11091539 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: September 19, 2011
114-6400956

Work Order: 11091539
COG/Sagebrush Federal TB

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Eddy Co., NM

Analytical Report

Sample: 277359 - CS-1 North Side Wwall

Laboratory: Midland

Analysis: BTEX

QC Batch: 84782

Prep Batch: 72007

Analytical Method: S 8021B

Date Analyzed: 2011-09-17

Sample Preparation: 2011-09-16

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.36	mg/Kg	1	2.00	118	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.14	mg/Kg	1	2.00	107	70.6 - 179

Sample: 277359 - CS-1 North Side Wwall

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 84761

Prep Batch: 71964

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-09-16

Sample Preparation: 2011-09-15

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

Sample: 277359 - CS-1 North Side Wwall

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 84797

Prep Batch: 72014

Analytical Method: S 8015 D

Date Analyzed: 2011-09-16

Sample Preparation: 2011-09-16

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			118	mg/Kg	1	100	118	67.5 - 147.1

Sample: 277359 - CS-1 North Side Wwall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 84783
Prep Batch: 72007

Analytical Method: S 8015 D
Date Analyzed: 2011-09-17
Sample Preparation: 2011-09-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	u	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.18	mg/Kg	1	2.00	109	30 - 134.6
4-Bromofluorobenzene (4-BFB)	j		1.67	mg/Kg	1	2.00	84	22.4 - 149

Sample: 277360 - CS-2 East Side Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 84782
Prep Batch: 72007

Analytical Method: S 8021B
Date Analyzed: 2011-09-17
Sample Preparation: 2011-09-16

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.45	mg/Kg	1	2.00	122	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.25	mg/Kg	1	2.00	112	70.6 - 179

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Sample: 277360 - CS-2 East Side Wall

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 84761 Date Analyzed: 2011-09-16 Analyzed By: AR
Prep Batch: 71964 Sample Preparation: 2011-09-15 Prepared By: AR

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

Sample: 277360 - CS-2 East Side Wall

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 84797 Date Analyzed: 2011-09-16 Analyzed By: kg
Prep Batch: 72014 Sample Preparation: 2011-09-16 Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			115	mg/Kg	1	100	115	67.5 - 147.1

Sample: 277360 - CS-2 East Side Wall

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 84783 Date Analyzed: 2011-09-17 Analyzed By: AG
Prep Batch: 72007 Sample Preparation: 2011-09-16 Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	u	i	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.25	mg/Kg	1	2.00	112	30 - 134.6
4-Bromofluorobenzene (4-BFB)	j		1.72	mg/Kg	1	2.00	86	22.4 - 149

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Sample: 277361 - CS-3 South Side Wall

Laboratory: Midland

Analysis: BTEX

QC Batch: 84782

Prep Batch: 72007

Analytical Method: S 8021B

Date Analyzed: 2011-09-17

Sample Preparation: 2011-09-16

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.0200	mg/Kg	1	0.0200
Toluene		1	0.272	mg/Kg	1	0.0200
Ethylbenzene		1	0.634	mg/Kg	1	0.0200
Xylene		1	6.70	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.51	mg/Kg	1	2.00	126	70.6 - 179

Sample: 277361 - CS-3 South Side Wall

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 84761

Prep Batch: 71964

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-09-16

Sample Preparation: 2011-09-15

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

Sample: 277361 - CS-3 South Side Wall

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 84797

Prep Batch: 72014

Analytical Method: S 8015 D

Date Analyzed: 2011-09-16

Sample Preparation: 2011-09-16

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	133	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			115	mg/Kg	1	100	115	67.5 - 147.1

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Sample: 277361 - CS-3 South Side Wall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 84783
Prep Batch: 72007

Analytical Method: S 8015 D
Date Analyzed: 2011-09-17
Sample Preparation: 2011-09-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	130	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		1.75	mg/Kg	1	2.00	88	30 - 134.6
4-Bromofluorobenzene (4-BFB)			2.09	mg/Kg	1	2.00	104	22.4 - 149

Sample: 277362 - CS-4 West Side Wall

Laboratory: Midland
Analysis: BTEX
QC Batch: 84782
Prep Batch: 72007

Analytical Method: S 8021B
Date Analyzed: 2011-09-17
Sample Preparation: 2011-09-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	0.0569	mg/Kg	1	0.0200
Toluene		1	1.78	mg/Kg	1	0.0200
Ethylbenzene		1	1.26	mg/Kg	1	0.0200
Xylene		1	16.7	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.39	mg/Kg	1	2.00	120	70.6 - 179

Sample: 277362 - CS-4 West Side Wall

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 84761
Prep Batch: 71964

Analytical Method: SM 4500-Cl B
Date Analyzed: 2011-09-16
Sample Preparation: 2011-09-15

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

continued ...

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COG/Sagebrush Federal TB

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sample 277362 continued ...

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

Sample: 277362 - CS-4 West Side Wall

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 84797
Prep Batch: 72014

Analytical Method: S 8015 D
Date Analyzed: 2011-09-16
Sample Preparation: 2011-09-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	281	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			122	mg/Kg	1	100	122	67.5 - 147.1

Sample: 277362 - CS-4 West Side Wall

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 84783
Prep Batch: 72007

Analytical Method: S 8015 D
Date Analyzed: 2011-09-17
Sample Preparation: 2011-09-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	125	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		1.76	mg/Kg	1	2.00	88	30 - 134.6
4-Bromofluorobenzene (4-BFB)			2.35	mg/Kg	1	2.00	118	22.4 - 149

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Method Blanks

Method Blank (1) QC Batch: 84761

QC Batch: 84761 Date Analyzed: 2011-09-16 Analyzed By: AR
Prep Batch: 71964 QC Preparation: 2011-09-15 Prepared By: AR

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

Method Blank (1) QC Batch: 84782

QC Batch: 84782 Date Analyzed: 2011-09-17 Analyzed By: AG
Prep Batch: 72007 QC Preparation: 2011-09-16 Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.0118	mg/Kg	0.02
Toluene		1	<0.00600	mg/Kg	0.02
Ethylbenzene		1	<0.00850	mg/Kg	0.02
Xylene		1	<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)			1.65	mg/Kg	1	2.00	82	48.4 - 123.1

Method Blank (1) QC Batch: 84783

QC Batch: 84783 Date Analyzed: 2011-09-17 Analyzed By: AG
Prep Batch: 72007 QC Preparation: 2011-09-16 Prepared By: AG

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.753	mg/Kg	2

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.88	mg/Kg	1	2.00	94	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.30	mg/Kg	1	2.00	65	52.4 - 130

Method Blank (1) QC Batch: 84797

QC Batch: 84797
Prep Batch: 72014

Date Analyzed: 2011-09-16
QC Preparation: 2011-09-16

Analyzed By: kg
Prepared By: kg

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			117	mg/Kg	1	100	117	52.7 - 133.8

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 84761
Prep Batch: 71964

Date Analyzed: 2011-09-16
QC Preparation: 2011-09-15

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			96.6	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	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			105	mg/Kg	1	100	<3.85	105	85 - 115	8	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: 84782
Prep Batch: 72007

Date Analyzed: 2011-09-17
QC Preparation: 2011-09-16

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.19	mg/Kg	1	2.00	<0.0118	110	77.4 - 121.7
Toluene		1	2.04	mg/Kg	1	2.00	<0.00600	102	88.6 - 121.6
Ethylbenzene		1	1.96	mg/Kg	1	2.00	<0.00850	98	74.3 - 117.9
Xylene		1	5.79	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	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.27	mg/Kg	1	2.00	<0.0118	114	77.4 - 121.7	4	20
Toluene		1	2.12	mg/Kg	1	2.00	<0.00600	106	88.6 - 121.6	4	20
Ethylbenzene		1	2.02	mg/Kg	1	2.00	<0.00850	101	74.3 - 117.9	3	20
Xylene		1	6.02	mg/Kg	1	6.00	<0.00613	100	73.4 - 118.8	4	20

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

continued ...

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114-6400956

Work Order: 11091539
COG/Sagebrush Federal TB

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Eddy Co., NM

control spikes continued ...

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.00	2.02	mg/Kg	1	2.00	100	101	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.87	1.88	mg/Kg	1	2.00	94	94	56.2 - 132.1

Laboratory Control Spike (LCS-1)

QC Batch: 84783
Prep Batch: 72007

Date Analyzed: 2011-09-17
QC Preparation: 2011-09-16

Analyzed By: AG
Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	13.1	mg/Kg	1	20.0	<0.753	66	60.9 - 95.4

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		1	12.9	mg/Kg	1	20.0	<0.753	64	60.9 - 95.4	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.87	1.88	mg/Kg	1	2.00	94	94	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.45	1.43	mg/Kg	1	2.00	72	72	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 84797
Prep Batch: 72014

Date Analyzed: 2011-09-16
QC Preparation: 2011-09-16

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	260	mg/Kg	1	250	<14.5	104	64.5 - 146.9

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

continued ...

Report Date: September 19, 2011
114-6400956

Work Order: 11091539
COG/Sagebrush Federal TB

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Eddy Co., NM

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	272	mg/Kg	1	250	<14.5	109	64.5 - 146.9	4	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	127	129	mg/Kg	1	100	127	129	65.3 - 135.8

Matrix Spike (MS-1) Spiked Sample: 277362

QC Batch: 84761
Prep Batch: 71964

Date Analyzed: 2011-09-16
QC Preparation: 2011-09-15

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10400	mg/Kg	100	10000	<385	104	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			10800	mg/Kg	100	10000	<385	108	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: 277377

QC Batch: 84782
Prep Batch: 72007

Date Analyzed: 2011-09-17
QC Preparation: 2011-09-16

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.96	mg/Kg	1	2.00	<0.0118	98	69.4 - 123.6
Toluene		1	1.91	mg/Kg	1	2.00	<0.00600	96	75.4 - 134.3
Ethylbenzene		1	1.95	mg/Kg	1	2.00	<0.00850	98	58.8 - 133.7
Xylene		1	5.76	mg/Kg	1	6.00	<0.00613	96	57 - 134.2

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

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114-6400956

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Eddy Co., NM

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.18	mg/Kg	1	2.00	<0.0118	109	69.4 - 123.6	11	20
Toluene		1	2.12	mg/Kg	1	2.00	<0.00600	106	75.4 - 134.3	10	20
Ethylbenzene		1	2.18	mg/Kg	1	2.00	<0.00850	109	58.8 - 133.7	11	20
Xylene		1	6.42	mg/Kg	1	6.00	<0.00613	107	57 - 134.2	11	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.05	2.25	mg/Kg	1	2	102	112	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.03	2.16	mg/Kg	1	2	102	108	71 - 167

Matrix Spike (MS-1) Spiked Sample: 277380

QC Batch: 84783
Prep Batch: 72007

Date Analyzed: 2011-09-17
QC Preparation: 2011-09-16

Analyzed By: AG
Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.5	mg/Kg	1	20.0	<0.753	78	61.8 - 114

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.4	mg/Kg	1	20.0	<0.753	77	61.8 - 114	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.18	2.08	mg/Kg	1	2	109	104	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	1.91	1.78	mg/Kg	1	2	96	89	37.3 - 162

Matrix Spike (MS-1) Spiked Sample: 277385

QC Batch: 84797
Prep Batch: 72014

Date Analyzed: 2011-09-16
QC Preparation: 2011-09-16

Analyzed By: kg
Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	263	mg/Kg	1	250	<14.5	105	38.8 - 153.3

Report Date: September 19, 2011
114-6400956

Work Order: 11091539
COG/Sagebrush Federal TB

Page Number: 16 of 20
Eddy Co., NM

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	258	mg/Kg	1	250	<14.5	103	38.8 - 153.3	2	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	116	116	mg/Kg	1	100	116	116	54.6 - 149.8

Calibration Standards

Standard (ICV-1)

QC Batch: 84761

Date Analyzed: 2011-09-16

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	93.9	94	85 - 115	2011-09-16

Standard (CCV-1)

QC Batch: 84761

Date Analyzed: 2011-09-16

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	106	106	85 - 115	2011-09-16

Standard (CCV-1)

QC Batch: 84782

Date Analyzed: 2011-09-17

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.112	112	80 - 120	2011-09-17
Toluene		1	mg/Kg	0.100	0.104	104	80 - 120	2011-09-17
Ethylbenzene		1	mg/Kg	0.100	0.100	100	80 - 120	2011-09-17
Xylene		1	mg/Kg	0.300	0.298	99	80 - 120	2011-09-17

Standard (CCV-2)

QC Batch: 84782

Date Analyzed: 2011-09-17

Analyzed By: AG

Report Date: September 19, 2011
114-6400956

Work Order: 11091539
COG/Sagebrush Federal TB

Page Number: 18 of 20
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	0.112	112	80 - 120	2011-09-17
Toluene		1	mg/Kg	0.100	0.103	103	80 - 120	2011-09-17
Ethylbenzene		1	mg/Kg	0.100	0.0993	99	80 - 120	2011-09-17
Xylene		1	mg/Kg	0.300	0.292	97	80 - 120	2011-09-17

Standard (CCV-1)

QC Batch: 84783

Date Analyzed: 2011-09-17

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.812	81	80 - 120	2011-09-17

Standard (CCV-2)

QC Batch: 84783

Date Analyzed: 2011-09-17

Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.843	84	80 - 120	2011-09-17

Standard (CCV-1)

QC Batch: 84797

Date Analyzed: 2011-09-16

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	266	106	80 - 120	2011-09-16

Standard (CCV-2)

QC Batch: 84797

Date Analyzed: 2011-09-16

Analyzed By: kg

Report Date: September 19, 2011
114-6400956

Work Order: 11091539
COG/Sagebrush Federal 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
DRO		1	mg/Kg	250	266	106	80 - 120	2011-09-16

Appendix

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-10-TX	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

Attachments

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

XWO #: 11491539

Analysis Request of Chain of Custody Record



TETRA TECH

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

PAGE: 1

OF: 1

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavoroz

PROJECT NO.:

114-6400956

PROJECT NAME:

Sagebrush Federal
Eddy County

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

BTEX 8021B
TPH 8015 MOD. TX1005 (Ext. to C95)
PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

ROI

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

RELINQUISHED BY: (Signature)

Date:

9/15/11

Time:

6:50

RECEIVED BY: (Signature)

Date:

9/15/11

Time:

0800

SAMPLED BY: (Print & Initial)

Date:

9/15/11

Time:

1200

RELINQUISHED BY: (Signature)

Date:

9/15/11

Time:

1510

RECEIVED BY: (Signature)

Date:

9/15/11

Time:

1610

SAMPLE SHIPPED BY: (Circle)

AIRBILL #:

FEDEX

BUS

HAND DELIVERED

UPS

OTHER:

RECEIVING LABORATORY:

RECEIVED BY: (Signature)

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

0.9°C intact

Right-hand result by Mandy M...
All tests Midland

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

Summary Report

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

Report Date: August 4, 2011

Work Order: 11072934



Project Location: Eddy Co., NM
Project Name: COG/Sagebrush Federal TB
Project Number: 114-6400956

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
273122	BH-1 5'	soil	2011-07-27	00:00	2011-07-29
273125	BH-1 15'	soil	2011-07-27	00:00	2011-07-29
273126	BH-1 20'	soil	2011-07-27	00:00	2011-07-29
273127	BH-1 25'	soil	2011-07-27	00:00	2011-07-29
273129	BH-1 40'	soil	2011-07-27	00:00	2011-07-29
273130	BH-1 50'	soil	2011-07-27	00:00	2011-07-29
273131	BH-1 55'	soil	2011-07-27	00:00	2011-07-29
273132	BH-2 0-1'	soil	2011-07-28	00:00	2011-07-29
273135	BH-2 7'	soil	2011-07-28	00:00	2011-07-29
273140	BH-2 30'	soil	2011-07-28	00:00	2011-07-29
273142	BH-3 3'	soil	2011-07-28	00:00	2011-07-29
273144	BH-3 7'	soil	2011-07-28	00:00	2011-07-29
273147	BH-3 20'	soil	2011-07-28	00:00	2011-07-29
273149	BH-3 30'	soil	2011-07-28	00:00	2011-07-29
273151	BH-3 45'	soil	2011-07-28	00:00	2011-07-29

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)
273122 - BH-1 5'	28.2	101	13.8	117	446	2260
273125 - BH-1 15'	33.0	133	26.9	179	1690	4760
273126 - BH-1 20'	4.49	19.6	5.06	34.4	86.8	844
273127 - BH-1 25'	<0.0200	0.170	0.135	0.481	64.4	9.16
273129 - BH-1 40'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
273130 - BH-1 50'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
273131 - BH-1 55'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
273132 - BH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
273135 - BH-2 7'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
273140 - BH-2 30'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

continued ...

... continued

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
273142 - BH-3 3'	0.276	0.480	<0.0200	0.633	<50.0	<2.00
273144 - BH-3 7'	<0.0200	0.150	<0.0200	<0.0200	<50.0	<2.00
273147 - BH-3 20'	1.65	4.04	0.738	5.36	129	146
273149 - BH-3 30'	<0.0200	<0.0200	<0.0200	0.377	<50.0	2.12
273151 - BH-3 45'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1296
209 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 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 Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX, 79705

Report Date: August 4, 2011

Work Order: 11072934



Project Location: Eddy Co., NM
Project Name: COG/Sagebrush Federal TB
Project Number: 114-6400956

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
273122	BH-1 5'	soil	2011-07-27	00:00	2011-07-29
273125	BH-1 15'	soil	2011-07-27	00:00	2011-07-29
273126	BH-1 20'	soil	2011-07-27	00:00	2011-07-29
273127	BH-1 25'	soil	2011-07-27	00:00	2011-07-29
273129	BH-1 40'	soil	2011-07-27	00:00	2011-07-29
273130	BH-1 50'	soil	2011-07-27	00:00	2011-07-29
273131	BH-1 55'	soil	2011-07-27	00:00	2011-07-29
273132	BH-2 0-1'	soil	2011-07-28	00:00	2011-07-29
273135	BH-2 7'	soil	2011-07-28	00:00	2011-07-29
273140	BH-2 30'	soil	2011-07-28	00:00	2011-07-29
273142	BH-3 3'	soil	2011-07-28	00:00	2011-07-29
273144	BH-3 7'	soil	2011-07-28	00:00	2011-07-29
273147	BH-3 20'	soil	2011-07-28	00:00	2011-07-29
273149	BH-3 30'	soil	2011-07-28	00:00	2011-07-29
273151	BH-3 45'	soil	2011-07-28	00:00	2011-07-29

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

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

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

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QC Batch 83493 - CCV (1)	40
QC Batch 83493 - CCV (2)	40
QC Batch 83494 - CCV (1)	40
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Case Narrative

Samples for project COG/Sagebrush Federal TB were received by TraceAnalysis, Inc. on 2011-07-29 and assigned to work order 11072934. Samples for work order 11072934 were received intact at a temperature of 4.0 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	70886	2011-08-01 at 09:48	83457	2011-08-01 at 09:48
BTEX	S 8021B	70922	2011-08-02 at 14:52	83492	2011-08-03 at 00:32
BTEX	S 8021B	70959	2011-08-03 at 13:48	83539	2011-08-04 at 00:39
TPH DRO - NEW	S 8015 D	70923	2011-08-02 at 09:05	83494	2011-08-02 at 09:05
TPH DRO - NEW	S 8015 D	70960	2011-08-03 at 13:34	83544	2011-08-03 at 13:34
TPH GRO	S 8015 D	70886	2011-08-01 at 09:48	83458	2011-08-01 at 09:48
TPH GRO	S 8015 D	70922	2011-08-02 at 14:52	83493	2011-08-03 at 00:32
TPH GRO	S 8015 D	70959	2011-08-03 at 13:48	83540	2011-08-04 at 00:39

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 11072934 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

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Analytical Report

Sample: 273122 - BH-1 5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 83457
Prep Batch: 70886

Analytical Method: S 8021B
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	28.2	mg/Kg	10	0.0200
Toluene		1	101	mg/Kg	10	0.0200
Ethylbenzene		1	13.8	mg/Kg	10	0.0200
Xylene		1	117	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			10.2	mg/Kg	10	10.0	102	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			12.8	mg/Kg	10	10.0	128	70.6 - 179

Sample: 273122 - BH-1 5'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 83494
Prep Batch: 70923

Analytical Method: S 8015 D
Date Analyzed: 2011-08-02
Sample Preparation: 2011-08-02

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	446	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			137	mg/Kg	1	100	137	67.5 - 147.1

Sample: 273122 - BH-1 5'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 83458
Prep Batch: 70886

Analytical Method: S 8015 D
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	2260	mg/Kg	10	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		9.68	mg/Kg	10	10.0	97	30 - 134.6
4-Bromofluorobenzene (4-BFB)	J		14.7	mg/Kg	10	10.0	147	22.4 - 149

Sample: 273125 - BH-1 15'

Laboratory: Midland

Analysis: BTEX

QC Batch: 83492

Prep Batch: 70922

Analytical Method: S 8021B

Date Analyzed: 2011-08-03

Sample Preparation: 2011-08-02

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	33.0	mg/Kg	100	0.0200
Toluene		1	133	mg/Kg	100	0.0200
Ethylbenzene		1	26.9	mg/Kg	100	0.0200
Xylene		1	179	mg/Kg	100	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			106	mg/Kg	100	100	106	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			104	mg/Kg	100	100	104	70.6 - 179

Sample: 273125 - BH-1 15'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 83494

Prep Batch: 70923

Analytical Method: S 8015 D

Date Analyzed: 2011-08-02

Sample Preparation: 2011-08-02

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	1690	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			184	mg/Kg	1	100	184	67.5 - 147.1

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Sample: 273125 - BH-1 15'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 83493
Prep Batch: 70922

Analytical Method: S 8015 D
Date Analyzed: 2011-08-03
Sample Preparation: 2011-08-02

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	4760	mg/Kg	100	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		107	mg/Kg	100	100	107	30 - 134.6
4-Bromofluorobenzene (4-BFB)	J		111	mg/Kg	100	100	111	22.4 - 149

Sample: 273126 - BH-1 20'

Laboratory: Midland
Analysis: BTEX
QC Batch: 83539
Prep Batch: 70959

Analytical Method: S 8021B
Date Analyzed: 2011-08-04
Sample Preparation: 2011-08-03

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	4.49	mg/Kg	20	0.0200
Toluene		1	19.6	mg/Kg	20	0.0200
Ethylbenzene		1	5.06	mg/Kg	20	0.0200
Xylene		1	34.4	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			23.1	mg/Kg	20	20.0	116	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			23.3	mg/Kg	20	20.0	116	70.6 - 179

Sample: 273126 - BH-1 20'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 83544
Prep Batch: 70960

Analytical Method: S 8015 D
Date Analyzed: 2011-08-03
Sample Preparation: 2011-08-03

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

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sample 273126 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	86.8	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	67.5 - 147.1

Sample: 273126 - BH-1 20'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 83540
Prep Batch: 70959

Analytical Method: S 8015 D
Date Analyzed: 2011-08-04
Sample Preparation: 2011-08-03

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	844	mg/Kg	20	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		23.4	mg/Kg	20	20.0	117	30 - 134.6
4-Bromofluorobenzene (4-BFB)	J		23.7	mg/Kg	20	20.0	118	22.4 - 149

Sample: 273127 - BH-1 25'

Laboratory: Midland
Analysis: BTEX
QC Batch: 83457
Prep Batch: 70886

Analytical Method: S 8021B
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.0200	mg/Kg	1	0.0200
Toluene		1	0.170	mg/Kg	1	0.0200
Ethylbenzene		1	0.135	mg/Kg	1	0.0200
Xylene		1	0.481	mg/Kg	1	0.0200

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.32	mg/Kg	1	2.00	116	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.41	mg/Kg	1	2.00	120	70.6 - 179

Sample: 273127 - BH-1 25'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 83494

Prep Batch: 70923

Analytical Method: S 8015 D

Date Analyzed: 2011-08-02

Sample Preparation: 2011-08-02

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	64.4	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	67.5 - 147.1

Sample: 273127 - BH-1 25'

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 83458

Prep Batch: 70886

Analytical Method: S 8015 D

Date Analyzed: 2011-08-01

Sample Preparation: 2011-08-01

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	9.16	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.22	mg/Kg	1	2.00	111	30 - 134.6
4-Bromofluorobenzene (4-BFB)			2.13	mg/Kg	1	2.00	106	22.4 - 149

Sample: 273129 - BH-1 40'

Laboratory: Midland

Analysis: BTEX

QC Batch: 83457

Prep Batch: 70886

Analytical Method: S 8021B

Date Analyzed: 2011-08-01

Sample Preparation: 2011-08-01

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.14	mg/Kg	1	2.00	107	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.16	mg/Kg	1	2.00	108	70.6 - 179

Sample: 273129 - BH-1 40'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 83494 Date Analyzed: 2011-08-02 Analyzed By: kg
Prep Batch: 70923 Sample Preparation: 2011-08-02 Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	67.5 - 147.1

Sample: 273129 - BH-1 40'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 83458 Date Analyzed: 2011-08-01 Analyzed By: ME
Prep Batch: 70886 Sample Preparation: 2011-08-01 Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	u	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.06	mg/Kg	1	2.00	103	30 - 134.6
4-Bromofluorobenzene (4-BFB)	j		1.96	mg/Kg	1	2.00	98	22.4 - 149

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Sample: 273130 - BH-1 50'

Laboratory: Midland

Analysis: BTEX

QC Batch: 83457

Prep Batch: 70886

Analytical Method: S 8021B

Date Analyzed: 2011-08-01

Sample Preparation: 2011-08-01

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.03	mg/Kg	1	2.00	102	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.03	mg/Kg	1	2.00	102	70.6 - 179

Sample: 273130 - BH-1 50'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 83494

Prep Batch: 70923

Analytical Method: S 8015 D

Date Analyzed: 2011-08-02

Sample Preparation: 2011-08-02

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			120	mg/Kg	1	100	120	67.5 - 147.1

Sample: 273130 - BH-1 50'

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 83458

Prep Batch: 70886

Analytical Method: S 8015 D

Date Analyzed: 2011-08-01

Sample Preparation: 2011-08-01

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	u	1	<2.00	mg/Kg	1	2.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		1.98	mg/Kg	1	2.00	99	30 - 134.6
4-Bromofluorobenzene (4-BFB)	J		1.83	mg/Kg	1	2.00	92	22.4 - 149

Sample: 273131 - BH-1 55'

Laboratory: Midland

Analysis: BTEX

QC Batch: 83457

Prep Batch: 70886

Analytical Method: S 8021B

Date Analyzed: 2011-08-01

Sample Preparation: 2011-08-01

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.54	mg/Kg	1	2.00	127	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.54	mg/Kg	1	2.00	127	70.6 - 179

Sample: 273131 - BH-1 55'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 83494

Prep Batch: 70923

Analytical Method: S 8015 D

Date Analyzed: 2011-08-02

Sample Preparation: 2011-08-02

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	67.5 - 147.1

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Sample: 273131 - BH-1 55'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 83458
Prep Batch: 70886

Analytical Method: S 8015 D
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	u	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.51	mg/Kg	1	2.00	126	30 - 134.6
4-Bromofluorobenzene (4-BFB)			2.30	mg/Kg	1	2.00	115	22.4 - 149

Sample: 273132 - BH-2 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 83457
Prep Batch: 70886

Analytical Method: S 8021B
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.07	mg/Kg	1	2.00	104	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.15	mg/Kg	1	2.00	108	70.6 - 179

Sample: 273132 - BH-2 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 83494
Prep Batch: 70923

Analytical Method: S 8015 D
Date Analyzed: 2011-08-02
Sample Preparation: 2011-08-02

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

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL		
Parameter	Flag	Cert	RL Result	Units	Dilution	RL		
DRO	u	1	<50.0	mg/Kg	1	50.0		
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			130	mg/Kg	1	100	130	67.5 - 147.1

Sample: 273132 - BH-2 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 83458
Prep Batch: 70886

Analytical Method: S 8015 D
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL		
GRO	u	1	<2.00	mg/Kg	1	2.00		
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.06	mg/Kg	1	2.00	103	30 - 134.6
4-Bromofluorobenzene (4-BFB)	j		1.92	mg/Kg	1	2.00	96	22.4 - 149

Sample: 273135 - BH-2 7'

Laboratory: Midland
Analysis: BTEX
QC Batch: 83457
Prep Batch: 70886

Analytical Method: S 8021B
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

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

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.11	mg/Kg	1	2.00	106	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.12	mg/Kg	1	2.00	106	70.6 - 179

Sample: 273135 - BH-2 7'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 83494
Prep Batch: 70923

Analytical Method: S 8015 D
Date Analyzed: 2011-08-02
Sample Preparation: 2011-08-02

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	67.5 - 147.1

Sample: 273135 - BH-2 7'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 83458
Prep Batch: 70886

Analytical Method: S 8015 D
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	u	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.09	mg/Kg	1	2.00	104	30 - 134.6
4-Bromofluorobenzene (4-BFB)	j		1.90	mg/Kg	1	2.00	95	22.4 - 149

Sample: 273140 - BH-2 30'

Laboratory: Midland
Analysis: BTEX
QC Batch: 83457
Prep Batch: 70886

Analytical Method: S 8021B
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.18	mg/Kg	1	2.00	109	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.20	mg/Kg	1	2.00	110	70.6 - 179

Sample: 273140 - BH-2 30'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 83494

Prep Batch: 70923

Analytical Method: S 8015 D

Date Analyzed: 2011-08-02

Sample Preparation: 2011-08-02

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			131	mg/Kg	1	100	131	67.5 - 147.1

Sample: 273140 - BH-2 30'

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 83458

Prep Batch: 70886

Analytical Method: S 8015 D

Date Analyzed: 2011-08-01

Sample Preparation: 2011-08-01

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	u	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.16	mg/Kg	1	2.00	108	30 - 134.6
4-Bromofluorobenzene (4-BFB)	j		1.97	mg/Kg	1	2.00	98	22.4 - 149

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Sample: 273142 - BH-3 3'

Laboratory: Midland

Analysis: BTEX

QC Batch: 83457

Prep Batch: 70886

Analytical Method: S 8021B

Date Analyzed: 2011-08-01

Sample Preparation: 2011-08-01

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	0.276	mg/Kg	1	0.0200
Toluene		1	0.480	mg/Kg	1	0.0200
Ethylbenzene	u	1	<0.0200	mg/Kg	1	0.0200
Xylene		1	0.633	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.10	mg/Kg	1	2.00	105	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.13	mg/Kg	1	2.00	106	70.6 - 179

Sample: 273142 - BH-3 3'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 83494

Prep Batch: 70923

Analytical Method: S 8015 D

Date Analyzed: 2011-08-02

Sample Preparation: 2011-08-02

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			128	mg/Kg	1	100	128	67.5 - 147.1

Sample: 273142 - BH-3 3'

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 83458

Prep Batch: 70886

Analytical Method: S 8015 D

Date Analyzed: 2011-08-01

Sample Preparation: 2011-08-01

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	u	1	<2.00	mg/Kg	1	2.00

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	30 - 134.6
4-Bromofluorobenzene (4-BFB)			1.93	mg/Kg	1	2.00	96	22.4 - 149

Sample: 273144 - BH-3 7'

Laboratory: Midland

Analysis: BTEX

QC Batch: 83457

Prep Batch: 70886

Analytical Method: S 8021B

Date Analyzed: 2011-08-01

Sample Preparation: 2011-08-01

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.0200	mg/Kg	1	0.0200
Toluene		1	0.150	mg/Kg	1	0.0200
Ethylbenzene	u	1	<0.0200	mg/Kg	1	0.0200
Xylene	u	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	1	2.00	100	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.98	mg/Kg	1	2.00	99	70.6 - 179

Sample: 273144 - BH-3 7'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 83494

Prep Batch: 70923

Analytical Method: S 8015 D

Date Analyzed: 2011-08-02

Sample Preparation: 2011-08-02

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			130	mg/Kg	1	100	130	67.5 - 147.1

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Sample: 273144 - BH-3 7'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 83458
Prep Batch: 70886

Analytical Method: S 8015 D
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		1.98	mg/Kg	1	2.00	99	30 - 134.6
4-Bromofluorobenzene (4-BFB)	J		1.79	mg/Kg	1	2.00	90	22.4 - 149

Sample: 273147 - BH-3 20'

Laboratory: Midland
Analysis: BTEX
QC Batch: 83457
Prep Batch: 70886

Analytical Method: S 8021B
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	1.65	mg/Kg	1	0.0200
Toluene		1	4.04	mg/Kg	1	0.0200
Ethylbenzene		1	0.738	mg/Kg	1	0.0200
Xylene		1	5.36	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.22	mg/Kg	1	2.00	111	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.39	mg/Kg	1	2.00	120	70.6 - 179

Sample: 273147 - BH-3 20'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 83494
Prep Batch: 70923

Analytical Method: S 8015 D
Date Analyzed: 2011-08-02
Sample Preparation: 2011-08-02

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

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sample 273147 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL		
Parameter	Flag	Cert	RL Result	Units	Dilution	RL		
DRO		1	129	mg/Kg	1	50.0		
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	67.5 - 147.1

Sample: 273147 - BH-3 20'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 83458
Prep Batch: 70886

Analytical Method: S 8015 D
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL		
GRO		1	146	mg/Kg	1	2.00		
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			5.13	mg/Kg	1	2.00	256	30 - 134.6
4-Bromofluorobenzene (4-BFB)			2.54	mg/Kg	1	2.00	127	22.4 - 149

Sample: 273149 - BH-3 30'

Laboratory: Midland
Analysis: BTEX
QC Batch: 83457
Prep Batch: 70886

Analytical Method: S 8021B
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.0200	mg/Kg	1	0.0200
Toluene	u	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	u	1	<0.0200	mg/Kg	1	0.0200
Xylene		1	0.377	mg/Kg	1	0.0200

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.37	mg/Kg	1	2.00	118	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			2.37	mg/Kg	1	2.00	118	70.6 - 179

Sample: 273149 - BH-3 30'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 83494
Prep Batch: 70923

Analytical Method: S 8015 D
Date Analyzed: 2011-08-02
Sample Preparation: 2011-08-02

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			114	mg/Kg	1	100	114	67.5 - 147.1

Sample: 273149 - BH-3 30'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 83458
Prep Batch: 70886

Analytical Method: S 8015 D
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	2.12	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.28	mg/Kg	1	2.00	114	30 - 134.6
4-Bromofluorobenzene (4-BFB)			2.22	mg/Kg	1	2.00	111	22.4 - 149

Sample: 273151 - BH-3 45'

Laboratory: Midland
Analysis: BTEX
QC Batch: 83457
Prep Batch: 70886

Analytical Method: S 8021B
Date Analyzed: 2011-08-01
Sample Preparation: 2011-08-01

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.69	mg/Kg	1	2.00	84	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.71	mg/Kg	1	2.00	86	70.6 - 179

Sample: 273151 - BH-3 45'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 83494

Prep Batch: 70923

Analytical Method: S 8015 D

Date Analyzed: 2011-08-02

Sample Preparation: 2011-08-02

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			128	mg/Kg	1	100	128	67.5 - 147.1

Sample: 273151 - BH-3 45'

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 83458

Prep Batch: 70886

Analytical Method: S 8015 D

Date Analyzed: 2011-08-01

Sample Preparation: 2011-08-01

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	u	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	j		1.67	mg/Kg	1	2.00	84	30 - 134.6
4-Bromofluorobenzene (4-BFB)	j		1.56	mg/Kg	1	2.00	78	22.4 - 149

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Method Blanks

Method Blank (1) QC Batch: 83457

QC Batch: 83457
Prep Batch: 70886

Date Analyzed: 2011-08-01
QC Preparation: 2011-08-01

Analyzed By: ME
Prepared By: ME

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.0118	mg/Kg	0.02
Toluene		1	<0.00600	mg/Kg	0.02
Ethylbenzene		1	<0.00850	mg/Kg	0.02
Xylene		1	<0.00613	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)			1.88	mg/Kg	1	2.00	94	48.4 - 123.1

Method Blank (1) QC Batch: 83458

QC Batch: 83458
Prep Batch: 70886

Date Analyzed: 2011-08-01
QC Preparation: 2011-08-01

Analyzed By: ME
Prepared By: ME

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.753	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.03	mg/Kg	1	2.00	102	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.69	mg/Kg	1	2.00	84	52.4 - 130

Method Blank (1) QC Batch: 83492

QC Batch: 83492
Prep Batch: 70922

Date Analyzed: 2011-08-03
QC Preparation: 2011-08-02

Analyzed By: ME
Prepared By: ME

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Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.0118	mg/Kg	0.02
Toluene		1	<0.00600	mg/Kg	0.02
Ethylbenzene		1	<0.00850	mg/Kg	0.02
Xylene		1	<0.00613	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.73	mg/Kg	1	2.00	86	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)			1.63	mg/Kg	1	2.00	82	48.4 - 123.1

Method Blank (1) QC Batch: 83493

QC Batch: 83493
Prep Batch: 70922

Date Analyzed: 2011-08-03
QC Preparation: 2011-08-02

Analyzed By: ME
Prepared By: ME

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.753	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.77	mg/Kg	1	2.00	88	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.51	mg/Kg	1	2.00	76	52.4 - 130

Method Blank (1) QC Batch: 83494

QC Batch: 83494
Prep Batch: 70923

Date Analyzed: 2011-08-02
QC Preparation: 2011-08-02

Analyzed By: kg
Prepared By: kg

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			120	mg/Kg	1	100	120	52.7 - 133.8

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Method Blank (1) QC Batch: 83539

QC Batch: 83539
Prep Batch: 70959

Date Analyzed: 2011-08-04
QC Preparation: 2011-08-03

Analyzed By: ME
Prepared By: ME

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.0118	mg/Kg	0.02
Toluene		1	<0.00600	mg/Kg	0.02
Ethylbenzene		1	<0.00850	mg/Kg	0.02
Xylene		1	<0.00613	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.75	mg/Kg	1	2.00	88	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)			1.63	mg/Kg	1	2.00	82	48.4 - 123.1

Method Blank (1) QC Batch: 83540

QC Batch: 83540
Prep Batch: 70959

Date Analyzed: 2011-08-04
QC Preparation: 2011-08-03

Analyzed By: ME
Prepared By: ME

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.753	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.80	mg/Kg	1	2.00	90	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.52	mg/Kg	1	2.00	76	52.4 - 130

Method Blank (1) QC Batch: 83544

QC Batch: 83544
Prep Batch: 70960

Date Analyzed: 2011-08-03
QC Preparation: 2011-08-03

Analyzed By: kg
Prepared By: kg

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<14.5	mg/Kg	50

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			99.5	mg/Kg	1	100	100	52.7 - 133.8

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 83457
Prep Batch: 70886

Date Analyzed: 2011-08-01
QC Preparation: 2011-08-01

Analyzed By: ME
Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.07	mg/Kg	1	2.00	<0.0118	104	77.4 - 121.7
Toluene		1	2.01	mg/Kg	1	2.00	<0.00600	100	88.6 - 121.6
Ethylbenzene		1	1.88	mg/Kg	1	2.00	<0.00850	94	74.3 - 117.9
Xylene		1	5.63	mg/Kg	1	6.00	<0.00613	94	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		1	2.04	mg/Kg	1	2.00	<0.0118	102	77.4 - 121.7	1	20
Toluene		1	1.97	mg/Kg	1	2.00	<0.00600	98	88.6 - 121.6	2	20
Ethylbenzene		1	1.85	mg/Kg	1	2.00	<0.00850	92	74.3 - 117.9	2	20
Xylene		1	5.55	mg/Kg	1	6.00	<0.00613	92	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)	2.12	1.98	mg/Kg	1	2.00	106	99	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	2.07	1.93	mg/Kg	1	2.00	104	96	56.2 - 132.1

Laboratory Control Spike (LCS-1)

QC Batch: 83458
Prep Batch: 70886

Date Analyzed: 2011-08-01
QC Preparation: 2011-08-01

Analyzed By: ME
Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	13.3	mg/Kg	1	20.0	<0.753	66	60.9 - 95.4

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

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control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.1	mg/Kg	1	20.0	<0.753	76	60.9 - 95.4	13	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)	1.86	2.03	mg/Kg	1	2.00	93	102	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.68	1.86	mg/Kg	1	2.00	84	93	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 83492
Prep Batch: 70922

Date Analyzed: 2011-08-03
QC Preparation: 2011-08-02

Analyzed By: ME
Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.07	mg/Kg	1	2.00	<0.0118	104	77.4 - 121.7
Toluene		1	1.99	mg/Kg	1	2.00	<0.00600	100	88.6 - 121.6
Ethylbenzene		1	1.84	mg/Kg	1	2.00	<0.00850	92	74.3 - 117.9
Xylene		1	5.54	mg/Kg	1	6.00	<0.00613	92	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		1	1.99	mg/Kg	1	2.00	<0.0118	100	77.4 - 121.7	4	20
Toluene		1	1.92	mg/Kg	1	2.00	<0.00600	96	88.6 - 121.6	4	20
Ethylbenzene		1	1.79	mg/Kg	1	2.00	<0.00850	90	74.3 - 117.9	3	20
Xylene		1	5.38	mg/Kg	1	6.00	<0.00613	90	73.4 - 118.8	3	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)	1.93	1.84	mg/Kg	1	2.00	96	92	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.92	1.81	mg/Kg	1	2.00	96	90	56.2 - 132.1

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Laboratory Control Spike (LCS-1)

QC Batch: 83493
Prep Batch: 70922

Date Analyzed: 2011-08-03
QC Preparation: 2011-08-02

Analyzed By: ME
Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	14.1	mg/Kg	1	20.0	<0.753	70	60.9 - 95.4

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		1	13.9	mg/Kg	1	20.0	<0.753	70	60.9 - 95.4	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)	1.93	1.76	mg/Kg	1	2.00	96	88	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.75	1.60	mg/Kg	1	2.00	88	80	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 83494
Prep Batch: 70923

Date Analyzed: 2011-08-02
QC Preparation: 2011-08-02

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	264	mg/Kg	1	250	<14.5	106	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		1	233	mg/Kg	1	250	<14.5	93	64.5 - 146.9	12	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	126	95.4	mg/Kg	1	100	126	95	65.3 - 135.8

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Laboratory Control Spike (LCS-1)

QC Batch: 83539
Prep Batch: 70959

Date Analyzed: 2011-08-04
QC Preparation: 2011-08-03

Analyzed By: ME
Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.99	mg/Kg	1	2.00	<0.0118	100	77.4 - 121.7
Toluene		1	1.90	mg/Kg	1	2.00	<0.00600	95	88.6 - 121.6
Ethylbenzene		1	1.77	mg/Kg	1	2.00	<0.00850	88	74.3 - 117.9
Xylene		1	5.32	mg/Kg	1	6.00	<0.00613	89	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		1	1.95	mg/Kg	1	2.00	<0.0118	98	77.4 - 121.7	2	20
Toluene		1	1.89	mg/Kg	1	2.00	<0.00600	94	88.6 - 121.6	0	20
Ethylbenzene		1	1.76	mg/Kg	1	2.00	<0.00850	88	74.3 - 117.9	1	20
Xylene		1	5.28	mg/Kg	1	6.00	<0.00613	88	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)	1.89	1.83	mg/Kg	1	2.00	94	92	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.90	1.82	mg/Kg	1	2.00	95	91	56.2 - 132.1

Laboratory Control Spike (LCS-1)

QC Batch: 83540
Prep Batch: 70959

Date Analyzed: 2011-08-04
QC Preparation: 2011-08-03

Analyzed By: ME
Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	13.6	mg/Kg	1	20.0	<0.753	68	60.9 - 95.4

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		1	13.8	mg/Kg	1	20.0	<0.753	69	60.9 - 95.4	1	20

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

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Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.96	1.94	mg/Kg	1	2.00	98	97	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.77	1.75	mg/Kg	1	2.00	88	88	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 83544
Prep Batch: 70960

Date Analyzed: 2011-08-03
QC Preparation: 2011-08-03

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	217	mg/Kg	1	250	<14.5	87	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		1	222	mg/Kg	1	250	<14.5	89	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	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	83.6	85.2	mg/Kg	1	100	84	85	65.3 - 135.8

Matrix Spike (MS-1) Spiked Sample: 273151

QC Batch: 83457
Prep Batch: 70886

Date Analyzed: 2011-08-01
QC Preparation: 2011-08-01

Analyzed By: ME
Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.08	mg/Kg	1	2.00	<0.0118	104	69.4 - 123.6
Toluene		1	2.06	mg/Kg	1	2.00	<0.00600	103	75.4 - 134.3
Ethylbenzene		1	1.99	mg/Kg	1	2.00	<0.00850	100	58.8 - 133.7
Xylene		1	6.12	mg/Kg	1	6.00	<0.00613	102	57 - 134.2

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

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Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.99	mg/Kg	1	2.00	<0.0118	100	69.4 - 123.6	4	20
Toluene		1	1.97	mg/Kg	1	2.00	<0.00600	98	75.4 - 134.3	4	20
Ethylbenzene		1	1.95	mg/Kg	1	2.00	<0.00850	98	58.8 - 133.7	2	20
Xylene		1	5.90	mg/Kg	1	6.00	<0.00613	98	57 - 134.2	4	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.51	2.26	mg/Kg	1	2	126	113	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.50	2.25	mg/Kg	1	2	125	112	71 - 167

Matrix Spike (MS-1) Spiked Sample: 273149

QC Batch: 83458
Prep Batch: 70886

Date Analyzed: 2011-08-01
QC Preparation: 2011-08-01

Analyzed By: ME
Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	13.9	mg/Kg	1	20.0	2.1168	59	61.8 - 114

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	13.8	mg/Kg	1	20.0	2.1168	58	61.8 - 114	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.38	2.19	mg/Kg	1	2	119	110	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	2.34	2.12	mg/Kg	1	2	117	106	37.3 - 162

Matrix Spike (MS-1) Spiked Sample: 273125

QC Batch: 83492
Prep Batch: 70922

Date Analyzed: 2011-08-03
QC Preparation: 2011-08-02

Analyzed By: ME
Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	131	mg/Kg	100	100	33.0119	98	69.4 - 123.6

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Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Toluene		1	218	mg/Kg	100	100	132.609	85	75.4 - 134.3
Ethylbenzene		1	114	mg/Kg	100	100	26.9091	87	58.8 - 133.7
Xylene		1	370	mg/Kg	100	300	179.113	64	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		1	136	mg/Kg	100	100	33.0119	103	69.4 - 123.6	4	20
Toluene		1	228	mg/Kg	100	100	132.609	95	75.4 - 134.3	4	20
Ethylbenzene		1	121	mg/Kg	100	100	26.9091	94	58.8 - 133.7	6	20
Xylene		1	385	mg/Kg	100	300	179.113	69	57 - 134.2	4	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	109	110	mg/Kg	100	100	109	110	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	116	106	mg/Kg	100	100	116	106	71 - 167

Matrix Spike (MS-1) Spiked Sample: 273125

QC Batch: 83493
Prep Batch: 70922

Date Analyzed: 2011-08-03
QC Preparation: 2011-08-02

Analyzed By: ME
Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	6090	mg/Kg	100	1000	4762.67	133	61.8 - 114

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	6550	mg/Kg	100	1000	4762.67	179	61.8 - 114	7	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	116	113	mg/Kg	100	100	116	113	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	129	129	mg/Kg	100	100	129	129	37.3 - 162

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Matrix Spike (MS-1) Spiked Sample: 273151

QC Batch: 83494
Prep Batch: 70923

Date Analyzed: 2011-08-02
QC Preparation: 2011-08-02

Analyzed By: kg
Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	220	mg/Kg	1	250	<14.5	88	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		1	169	mg/Kg	1	250	<14.5	68	38.8 - 153.3	26	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	124	97.1	mg/Kg	1	100	124	97	54.6 - 149.8

Matrix Spike (MS-1) Spiked Sample: 273126

QC Batch: 83539
Prep Batch: 70959

Date Analyzed: 2011-08-04
QC Preparation: 2011-08-03

Analyzed By: ME
Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	25.2	mg/Kg	20	20.0	4.4931	104	69.4 - 123.6
Toluene		1	40.5	mg/Kg	20	20.0	19.6157	104	75.4 - 134.3
Ethylbenzene		1	23.7	mg/Kg	20	20.0	5.0619	93	58.8 - 133.7
Xylene		1	76.6	mg/Kg	20	60.0	34.3934	70	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		1	25.4	mg/Kg	20	20.0	4.4931	104	69.4 - 123.6	1	20
Toluene		1	40.5	mg/Kg	20	20.0	19.6157	104	75.4 - 134.3	0	20
Ethylbenzene		1	23.8	mg/Kg	20	20.0	5.0619	94	58.8 - 133.7	0	20
Xylene		1	76.5	mg/Kg	20	60.0	34.3934	70	57 - 134.2	0	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	23.3	23.5	mg/Kg	20	20	116	118	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)	25.8	26.5	mg/Kg	20	20	129	132	71 - 167

Matrix Spike (MS-1) Spiked Sample: 273126

QC Batch: 83540
Prep Batch: 70959

Date Analyzed: 2011-08-04
QC Preparation: 2011-08-03

Analyzed By: ME
Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	1030	mg/Kg	20	200	843.94	93	61.8 - 114

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	1140	mg/Kg	20	200	843.94	98	61.8 - 114	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)	25.1	23.5	mg/Kg	20	20	126	118	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	26.6	26.3	mg/Kg	20	20	133	132	37.3 - 162

Matrix Spike (MS-1) Spiked Sample: 273126

QC Batch: 83544
Prep Batch: 70960

Date Analyzed: 2011-08-03
QC Preparation: 2011-08-03

Analyzed By: kg
Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	327	mg/Kg	1	250	86.8	96	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		1	335	mg/Kg	1	250	86.8	99	38.8 - 153.3	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	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	86.8	80.4	mg/Kg	1	100	87	80	54.6 - 149.8

Calibration Standards

Standard (CCV-1)

QC Batch: 83457

Date Analyzed: 2011-08-01

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.101	101	80 - 120	2011-08-01
Toluene		1	mg/Kg	0.100	0.0975	98	80 - 120	2011-08-01
Ethylbenzene		1	mg/Kg	0.100	0.0898	90	80 - 120	2011-08-01
Xylene		1	mg/Kg	0.300	0.275	92	80 - 120	2011-08-01

Standard (CCV-2)

QC Batch: 83457

Date Analyzed: 2011-08-01

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.107	107	80 - 120	2011-08-01
Toluene		1	mg/Kg	0.100	0.103	103	80 - 120	2011-08-01
Ethylbenzene		1	mg/Kg	0.100	0.0957	96	80 - 120	2011-08-01
Xylene		1	mg/Kg	0.300	0.286	95	80 - 120	2011-08-01

Standard (CCV-3)

QC Batch: 83457

Date Analyzed: 2011-08-01

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.104	104	80 - 120	2011-08-01
Toluene		1	mg/Kg	0.100	0.112	112	80 - 120	2011-08-01
Ethylbenzene		1	mg/Kg	0.100	0.0957	96	80 - 120	2011-08-01
Xylene		1	mg/Kg	0.300	0.304	101	80 - 120	2011-08-01

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Standard (CCV-1)

QC Batch: 83458

Date Analyzed: 2011-08-01

Analyzed By: ME

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	2011-08-01

Standard (CCV-2)

QC Batch: 83458

Date Analyzed: 2011-08-01

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.816	82	80 - 120	2011-08-01

Standard (CCV-3)

QC Batch: 83458

Date Analyzed: 2011-08-01

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.15	115	80 - 120	2011-08-01

Standard (CCV-1)

QC Batch: 83492

Date Analyzed: 2011-08-03

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.102	102	80 - 120	2011-08-03
Toluene		1	mg/Kg	0.100	0.0987	99	80 - 120	2011-08-03
Ethylbenzene		1	mg/Kg	0.100	0.0923	92	80 - 120	2011-08-03
Xylene		1	mg/Kg	0.300	0.277	92	80 - 120	2011-08-03

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Standard (CCV-2)

QC Batch: 83492

Date Analyzed: 2011-08-03

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0995	100	80 - 120	2011-08-03
Toluene		1	mg/Kg	0.100	0.0959	96	80 - 120	2011-08-03
Ethylbenzene		1	mg/Kg	0.100	0.0887	89	80 - 120	2011-08-03
Xylene		1	mg/Kg	0.300	0.268	89	80 - 120	2011-08-03

Standard (CCV-1)

QC Batch: 83493

Date Analyzed: 2011-08-03

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.854	85	80 - 120	2011-08-03

Standard (CCV-2)

QC Batch: 83493

Date Analyzed: 2011-08-03

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.860	86	80 - 120	2011-08-03

Standard (CCV-1)

QC Batch: 83494

Date Analyzed: 2011-08-02

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	261	104	80 - 120	2011-08-02

Report Date: August 4, 2011
114-6400956

Work Order: 11072934
COG/Sagebrush Federal TB

Page Number: 41 of 43
Eddy Co., NM

Standard (CCV-2)

QC Batch: 83494

Date Analyzed: 2011-08-02

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	287	115	80 - 120	2011-08-02

Standard (CCV-3)

QC Batch: 83494

Date Analyzed: 2011-08-02

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	285	114	80 - 120	2011-08-02

Standard (CCV-1)

QC Batch: 83539

Date Analyzed: 2011-08-04

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0981	98	80 - 120	2011-08-04
Toluene		1	mg/Kg	0.100	0.0951	95	80 - 120	2011-08-04
Ethylbenzene		1	mg/Kg	0.100	0.0889	89	80 - 120	2011-08-04
Xylene		1	mg/Kg	0.300	0.267	89	80 - 120	2011-08-04

Standard (CCV-2)

QC Batch: 83539

Date Analyzed: 2011-08-04

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.101	101	80 - 120	2011-08-04
Toluene		1	mg/Kg	0.100	0.0980	98	80 - 120	2011-08-04
Ethylbenzene		1	mg/Kg	0.100	0.0908	91	80 - 120	2011-08-04
Xylene		1	mg/Kg	0.300	0.274	91	80 - 120	2011-08-04

Report Date: August 4, 2011
114-6400956

Work Order: 11072934
COG/Sagebrush Federal TB

Page Number: 42 of 43
Eddy Co., NM

Standard (CCV-1)

QC Batch: 83540

Date Analyzed: 2011-08-04

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.895	90	80 - 120	2011-08-04

Standard (CCV-2)

QC Batch: 83540

Date Analyzed: 2011-08-04

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.926	93	80 - 120	2011-08-04

Standard (CCV-1)

QC Batch: 83544

Date Analyzed: 2011-08-03

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	218	87	80 - 120	2011-08-03

Standard (CCV-2)

QC Batch: 83544

Date Analyzed: 2011-08-03

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	214	86	80 - 120	2011-08-03

Appendix

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-10-TX	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

Attachments

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

ALW #: 11072704

Analysis Request of Chain of Custody Record

PAGE: 1 OF 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 Tavaréz

PROJECT NO.:

1146400956

PROJECT NAME:

COG / Sagebrush Federal

LAB I.D.
NUMBER

DATE
2011

TIME

MATRIX

COMP

GRAB

Eddy Co., TX
SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHOD

ETEX 8021B

PH 8015 MOD

TX1005 (Ext. to C36)

PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/624

GC/MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 809/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

273100

7/27

S

X

BH1 0-1'

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X

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X

122

5'

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20'

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127

25'

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X

XX

128

30'

1

X

XX

129

40'

1

X

XX

ALWO #: 11072934

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 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 Tavares

PROJECT NO.: 114-6400956 PROJECT NAME: COG / Sagebrush Federal

LAB I.D. NUMBER DATE TIME MATRIX COMP. GRAB Eddy Co, Tx
SAMPLE IDENTIFICATION

LAB I.D. NUMBER	DATE	TIME	MATX	CON	GRA	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC-MS Vol. 8240/8260/824	GC-MS Semi. Vol. 8270/825	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS		
273130	7/27		S		X	BH-1 50'	1				X		XX	XX																	
131	7/27					55'	1				X		XX	XX																	
132	7/28					BH-2 0-1'	1				X		XX	XX																	
133						3'	1				X																				
134						5'	1				X																				
135						7'	1				X		XX	XX																	
136						10'	1				X																				
137						15'	1				X																				
138						20'	1				X																				
139						25'	1				X																				

RELINQUISHED BY: (Signature) <u>[Signature]</u> Date: <u>7/29/11</u> Time: <u>1500</u>	RECEIVED BY: (Signature) <u>[Signature]</u> Date: <u>7/29/11</u> Time: <u>1510</u>	SAMPLED BY: (Print & Initial) <u>Kim</u> Date: <u>7/29/11</u> Time: <u>1510</u>
RELINQUISHED BY: (Signature) _____ Date: _____ Time: _____	RECEIVED BY: (Signature) _____ Date: _____ Time: _____	SAMPLE SHIPPED BY: (Circle) FEDEX ☐ BUS ☐ HAND DELIVERED ☒ UPS ☐
RELINQUISHED BY: (Signature) _____ Date: _____ Time: _____	RECEIVED BY: (Signature) _____ Date: _____ Time: _____	AIRBILL #: _____ OTHER: _____
RECEIVING LABORATORY: _____ ADDRESS: _____ CITY: _____ STATE: _____ ZIP: _____ CONTACT: _____ PHONE: _____ DATE: _____ TIME: _____	RECEIVED BY: (Signature) _____ DATE: _____ TIME: _____	TETRA TECH CONTACT PERSON: <u>Ike Tavares</u> Results by: _____ RUSH Charges Authorized: _____ Yes No

SAMPLE CONDITION WHEN RECEIVED: 410° c 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.

XWO #: 11072934

Analysis Request of Chain of Custody Record

PAGE: 3 OF: 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 Tavares

PROJECT NO.:

114-6400956

PROJECT NAME:

COG / Sagebrush Federal

Eddy Co., TX
SAMPLE IDENTIFICATIONLAB I.D.
NUMBERDATE
2011

TIME

MATRIX

COMP

GRAB

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

BTX 8021B

TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd 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

272140

7/28

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BH-2 30'

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RELINQUISHED BY: (Signature)

Date:

7/27/11

Time:

15:00

RECEIVED BY: (Signature)

Date:

7/27/11

Time:

15:00

SAMPLED BY: (Print & Initial)

Kim

Date:

7/27/11

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

XWO #: 11072934

Analysis Request of Chain of Custody Record

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

PAGE: 4 OF: 4

 ANALYSIS REQUEST
 (Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavares

PROJECT NO.:

114-6400956

PROJECT NAME:

COG / Sagebrush Federal

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP.

GRAB

 Elder Co., TX
 SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHOD
 BTEX 8021B
 TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd 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

RELINQUISHED BY: (Signature)

Date:

7/29/11

Time:

15:00

RECEIVED BY: (Signature)

Date:

7/29/11

Time:

15:00

SAMPLED BY: (Print & Initial)

Kim

Date:

7/29/11

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

AIRBILL #:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Ike Tavares

Results by:

RUSH Charges
Authorized:

Yes

No

RECEIVING LABORATORY:

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

4w.c. intact

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

Summary Report

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

Report Date: July 19, 2011

Work Order: 11071514



Project Location: Eddy Co., NM
Project Name: COG/Sagebrush Federal TB
Project Number: 114-6400956

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
272048	AH-1 0-1'	soil	2011-07-14	00:00	2011-07-15
272052	AH-1 4-4.5	soil	2011-07-14	00:00	2011-07-15
272054	AH-1 6-6.5	soil	2011-07-14	00:00	2011-07-15
272057	AH-1 9-9.5	soil	2011-07-14	00:00	2011-07-15

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)
272048 - AH-1 0-1'	7.68	2.48	4.49	70.6	346	2060
272052 - AH-1 4-4.5	6.97	2.18	3.15	52.7	497	1470
272054 - AH-1 6-6.5	8.15	0.716	6.08	80.0	439	2150
272057 - AH-1 9-9.5	34.5	1.97	12.9	236	1980	5630

Sample: 272048 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		9750	mg/Kg	4

Sample: 272052 - AH-1 4-4.5

Param	Flag	Result	Units	RL
Chloride		2500	mg/Kg	4

Sample: 272054 - AH-1 6-6.5

Report Date: July 19, 2011

Work Order: 11071514

Page Number: 2 of 2

Param	Flag	Result	Units	RL
Chloride		216	mg/Kg	4

Sample: 272057 - AH-1 9-9.5

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



5701 Alvarado Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1296
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Pasin Street, Suite A1 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 Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX, 79705

Report Date: July 19, 2011

Work Order: 11071514



Project Location: Eddy Co., NM
Project Name: COG/Sagebrush Federal TB
Project Number: 114-6400956

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
272048	AH-1 0-1'	soil	2011-07-14	00:00	2011-07-15
272052	AH-1 4-4.5	soil	2011-07-14	00:00	2011-07-15
272054	AH-1 6-6.5	soil	2011-07-14	00:00	2011-07-15
272057	AH-1 9-9.5	soil	2011-07-14	00:00	2011-07-15

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

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

Report Contents

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Sample 272048 (AH-1 0-1')	4
Sample 272052 (AH-1 4-4.5)	5
Sample 272054 (AH-1 6-6.5)	6
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Method Blanks	10
QC Batch 83084 - Method Blank (1)	10
QC Batch 83093 - Method Blank (1)	10
QC Batch 83094 - Method Blank (1)	10
QC Batch 83103 - Method Blank (1)	11
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QC Batch 83084 - LCS (1)	12
QC Batch 83093 - LCS (1)	12
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QC Batch 83093 - MS (1)	14
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Case Narrative

Samples for project COG/Sagebrush Federal TB were received by TraceAnalysis, Inc. on 2011-07-15 and assigned to work order 11071514. Samples for work order 11071514 were received intact at a temperature of 3.7 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	70585	2011-07-15 at 15:01	83093	2011-07-15 at 16:57
Chloride (Titration)	SM 4500-Cl B	70573	2011-07-15 at 12:23	83084	2011-07-15 at 15:26
TPH DRO - NEW	S 8015 D	70586	2011-07-15 at 14:37	83103	2011-07-15 at 14:37
TPH GRO	S 8015 D	70585	2011-07-15 at 15:01	83094	2011-07-15 at 16:57

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 11071514 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: July 19, 2011
114-6400956

Work Order: 11071514
COG/Sagebrush Federal TB

Page Number: 4 of 20
Eddy Co., NM

Analytical Report

Sample: 272048 - AH-1 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 83093

Prep Batch: 70585

Analytical Method: S 8021B

Date Analyzed: 2011-07-15

Sample Preparation: 2011-07-15

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	7.68	mg/Kg	10	0.0200
Toluene		1	2.48	mg/Kg	10	0.0200
Ethylbenzene		1	4.49	mg/Kg	10	0.0200
Xylene		1	70.6	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			11.6	mg/Kg	10	10.0	116	52.8 - 137
4-Bromofluorobenzene (4-BFB)			15.5	mg/Kg	10	10.0	155	38.4 - 157

Sample: 272048 - AH-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 83084

Prep Batch: 70573

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-07-15

Sample Preparation: 2011-07-15

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			9750	mg/Kg	100	4.00

Sample: 272048 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 83103

Prep Batch: 70586

Analytical Method: S 8015 D

Date Analyzed: 2011-07-15

Sample Preparation: 2011-07-15

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	346	mg/Kg	1	50.0

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			83.4	mg/Kg	1	100	83	70 - 130

Sample: 272048 - AH-1 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 83094
Prep Batch: 70585

Analytical Method: S 8015 D
Date Analyzed: 2011-07-15
Sample Preparation: 2011-07-15

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	2060	mg/Kg	10	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			11.6	mg/Kg	10	10.0	116	48.5 - 152
4-Bromofluorobenzene (4-BFB)			19.8	mg/Kg	10	10.0	198	42 - 159

Sample: 272052 - AH-1 4-4.5

Laboratory: Midland
Analysis: BTEX
QC Batch: 83093
Prep Batch: 70585

Analytical Method: S 8021B
Date Analyzed: 2011-07-15
Sample Preparation: 2011-07-15

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	6.97	mg/Kg	10	0.0200
Toluene		1	2.18	mg/Kg	10	0.0200
Ethylbenzene		1	3.15	mg/Kg	10	0.0200
Xylene		1	52.7	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			10.2	mg/Kg	10	10.0	102	52.8 - 137
4-Bromofluorobenzene (4-BFB)			13.2	mg/Kg	10	10.0	132	38.4 - 157

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Sample: 272052 - AH-1 4-4.5

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-07-15	Analyzed By:	AR
QC Batch:	83084	Sample Preparation:	2011-07-15	Prepared By:	AR
Prep Batch:	70573				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2500	mg/Kg	100	4.00

Sample: 272052 - AH-1 4-4.5

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2011-07-15	Analyzed By:	kg
QC Batch:	83103	Sample Preparation:	2011-07-15	Prepared By:	kg
Prep Batch:	70586				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	497	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			90.9	mg/Kg	1	100	91	70 - 130

Sample: 272052 - AH-1 4-4.5

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2011-07-15	Analyzed By:	ME
QC Batch:	83094	Sample Preparation:	2011-07-15	Prepared By:	ME
Prep Batch:	70585				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	1470	mg/Kg	10	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			10.3	mg/Kg	10	10.0	103	48.5 - 152
4-Bromofluorobenzene (4-BFB)			15.8	mg/Kg	10	10.0	158	42 - 159

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Sample: 272054 - AH-1 6-6.5

Laboratory: Midland

Analysis: BTEX

QC Batch: 83093

Prep Batch: 70585

Analytical Method: S 8021B

Date Analyzed: 2011-07-15

Sample Preparation: 2011-07-15

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	8.15	mg/Kg	1	0.0200
Toluene		1	0.716	mg/Kg	1	0.0200
Ethylbenzene		1	6.08	mg/Kg	1	0.0200
Xylene		1	80.0	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.60	mg/Kg	1	2.00	130	52.8 - 137
4-Bromofluorobenzene (4-BFB)			3.52	mg/Kg	1	2.00	176	38.4 - 157

Sample: 272054 - AH-1 6-6.5

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 83084

Prep Batch: 70573

Analytical Method: SM 4500-Cl B

Date Analyzed: 2011-07-15

Sample Preparation: 2011-07-15

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			216	mg/Kg	50	4.00

Sample: 272054 - AH-1 6-6.5

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 83103

Prep Batch: 70586

Analytical Method: S 8015 D

Date Analyzed: 2011-07-15

Sample Preparation: 2011-07-15

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	439	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			90.0	mg/Kg	1	100	90	70 - 130

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Sample: 272054 - AH-1 6-6.5

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 83094
Prep Batch: 70585

Analytical Method: S 8015 D
Date Analyzed: 2011-07-15
Sample Preparation: 2011-07-15

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	2150	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.22	mg/Kg	1	2.00	111	48.5 - 152
4-Bromofluorobenzene (4-BFB)			7.15	mg/Kg	1	2.00	358	42 - 159

Sample: 272057 - AH-1 9-9.5

Laboratory: Midland
Analysis: BTEX
QC Batch: 83093
Prep Batch: 70585

Analytical Method: S 8021B
Date Analyzed: 2011-07-15
Sample Preparation: 2011-07-15

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	34.5	mg/Kg	10	0.0200
Toluene		1	1.97	mg/Kg	10	0.0200
Ethylbenzene		1	12.9	mg/Kg	10	0.0200
Xylene		1	236	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			10.1	mg/Kg	10	10.0	101	52.8 - 137
4-Bromofluorobenzene (4-BFB)			20.3	mg/Kg	10	10.0	203	38.4 - 157

Sample: 272057 - AH-1 9-9.5

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 83084
Prep Batch: 70573

Analytical Method: SM 4500-Cl B
Date Analyzed: 2011-07-15
Sample Preparation: 2011-07-15

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

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sample 272057 continued ...

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

Sample: 272057 - AH-1 9-9.5

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 83103

Prep Batch: 70586

Analytical Method: S 8015 D

Date Analyzed: 2011-07-15

Sample Preparation: 2011-07-15

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	1980	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			142	mg/Kg	1	100	142	70 - 130

Sample: 272057 - AH-1 9-9.5

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 83094

Prep Batch: 70585

Analytical Method: S 8015 D

Date Analyzed: 2011-07-15

Sample Preparation: 2011-07-15

Prep Method: S 5035

Analyzed By: ME

Prepared By: ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	5630	mg/Kg	10	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			10.8	mg/Kg	10	10.0	108	48.5 - 152
4-Bromofluorobenzene (4-BFB)			24.7	mg/Kg	10	10.0	247	42 - 159

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Method Blanks

Method Blank (1) QC Batch: 83084

QC Batch: 83084
Prep Batch: 70573

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 83093

QC Batch: 83093
Prep Batch: 70585

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

Analyzed By: ME
Prepared By: ME

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.0118	mg/Kg	0.02
Toluene		1	<0.00600	mg/Kg	0.02
Ethylbenzene		1	<0.00850	mg/Kg	0.02
Xylene		1	<0.00613	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.89	mg/Kg	1	2.00	94	66.6 - 122
4-Bromofluorobenzene (4-BFB)			2.00	mg/Kg	1	2.00	100	55.4 - 124

Method Blank (1) QC Batch: 83094

QC Batch: 83094
Prep Batch: 70585

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

Analyzed By: ME
Prepared By: ME

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.753	mg/Kg	2

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.87	mg/Kg	1	2.00	94	52.4 - 130

Method Blank (1) QC Batch: 83103

QC Batch: 83103
Prep Batch: 70586

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

Analyzed By: kg
Prepared By: kg

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			105	mg/Kg	1	100	105	70 - 130

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 83084
Prep Batch: 70573

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

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			103	mg/Kg	1	100	<3.85	103	85 - 115	7	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 83093
Prep Batch: 70585

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

Analyzed By: ME
Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.13	mg/Kg	1	2.00	<0.0118	106	81.9 - 108
Toluene		1	2.15	mg/Kg	1	2.00	<0.00600	108	81.9 - 118
Ethylbenzene		1	2.10	mg/Kg	1	2.00	<0.00850	105	78.4 - 115
Xylene		1	6.32	mg/Kg	1	6.00	<0.00613	105	79.1 - 116

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.14	mg/Kg	1	2.00	<0.0118	107	81.9 - 108	0	20
Toluene		1	2.10	mg/Kg	1	2.00	<0.00600	105	81.9 - 118	2	20
Ethylbenzene		1	2.04	mg/Kg	1	2.00	<0.00850	102	78.4 - 115	3	20
Xylene		1	6.17	mg/Kg	1	6.00	<0.00613	103	79.1 - 116	2	20

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

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control spikes continued ...

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.86	1.88	mg/Kg	1	2.00	93	94	70.2 - 114
4-Bromofluorobenzene (4-BFB)	2.07	2.07	mg/Kg	1	2.00	104	104	69.8 - 121

Laboratory Control Spike (LCS-1)

QC Batch: 83094
Prep Batch: 70585

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

Analyzed By: ME
Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	16.4	mg/Kg	1	20.0	<0.753	82	60.9 - 95.4

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		1	17.0	mg/Kg	1	20.0	<0.753	85	60.9 - 95.4	4	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.08	2.07	mg/Kg	1	2.00	104	104	61.9 - 142
4-Bromofluorobenzene (4-BFB)	2.08	2.09	mg/Kg	1	2.00	104	104	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 83103
Prep Batch: 70586

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

Analyzed By: kg
Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	296	mg/Kg	1	250	<14.5	118	57.4 - 133.4

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

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control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	296	mg/Kg	1	250	<14.5	118	57.4 - 133.4	0	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	102	88.8	mg/Kg	1	100	102	89	70 - 130

Matrix Spike (MS-1) Spiked Sample: 272057

QC Batch: 83084
Prep Batch: 70573

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

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	80 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			10400	mg/Kg	100	10000	<385	104	80 - 120	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: 272057

QC Batch: 83093
Prep Batch: 70585

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

Analyzed By: ME
Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	68.9	mg/Kg	10	10.0	34.5187	344	80.5 - 112
Toluene		1	5.80	mg/Kg	10	10.0	1.9716	38	82.4 - 113
Ethylbenzene		1	26.1	mg/Kg	10	10.0	12.9125	132	83.9 - 114
Xylene		1	350	mg/Kg	10	30.0	235.503	382	84 - 114

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

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Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	48.6	mg/Kg	10	10.0	34.5187	141	80.5 - 112	35	20
Toluene		1	2.21	mg/Kg	10	10.0	1.9716	2	82.4 - 113	90	20
Ethylbenzene		1	16.8	mg/Kg	10	10.0	12.9125	39	83.9 - 114	43	20
Xylene		1	275	mg/Kg	10	30.0	235.503	132	84 - 114	24	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)	24.6	11.5	mg/Kg	10	10	246	115	41.3 - 117
4-Bromofluorobenzene (4-BFB)	25.0	19.8	mg/Kg	10	10	250	198	35.5 - 129

Matrix Spike (MS-1) Spiked Sample: 272054

QC Batch: 83094
Prep Batch: 70585

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

Analyzed By: ME
Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	1880	mg/Kg	1	20.0	1878.04	10	61.8 - 114

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	2250	mg/Kg	1	20.0	1878.04	513	61.8 - 114	18	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.84	2.17	mg/Kg	1	2	92	108	50 - 162
4-Bromofluorobenzene (4-BFB)	6.91	6.80	mg/Kg	1	2	346	340	50 - 162

Matrix Spike (MS-1) Spiked Sample: 272031

QC Batch: 83103
Prep Batch: 70586

Date Analyzed: 2011-07-15
QC Preparation: 2011-07-15

Analyzed By: kg
Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	441	mg/Kg	1	250	115	130	35.2 - 167.1

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	445	mg/Kg	1	250	115	132	35.2 - 167.1	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	91.6	97.3	mg/Kg	1	100	92	97	70 - 130

Calibration Standards

Standard (ICV-1)

QC Batch: 83084

Date Analyzed: 2011-07-15

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	101	101	85 - 115	2011-07-15

Standard (CCV-1)

QC Batch: 83084

Date Analyzed: 2011-07-15

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.1	99	85 - 115	2011-07-15

Standard (CCV-1)

QC Batch: 83093

Date Analyzed: 2011-07-15

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.108	108	80 - 120	2011-07-15
Toluene		1	mg/Kg	0.100	0.107	107	80 - 120	2011-07-15
Ethylbenzene		1	mg/Kg	0.100	0.104	104	80 - 120	2011-07-15
Xylene		1	mg/Kg	0.300	0.315	105	80 - 120	2011-07-15

Standard (CCV-2)

QC Batch: 83093

Date Analyzed: 2011-07-15

Analyzed By: ME

Report Date: July 19, 2011
114-6400956

Work Order: 11071514
COG/Sagebrush Federal TB

Page Number: 18 of 20
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	0.105	105	80 - 120	2011-07-15
Toluene		1	mg/Kg	0.100	0.103	103	80 - 120	2011-07-15
Ethylbenzene		1	mg/Kg	0.100	0.0985	98	80 - 120	2011-07-15
Xylene		1	mg/Kg	0.300	0.300	100	80 - 120	2011-07-15

Standard (CCV-1)

QC Batch: 83094

Date Analyzed: 2011-07-15

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.12	112	80 - 120	2011-07-15

Standard (CCV-2)

QC Batch: 83094

Date Analyzed: 2011-07-15

Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.16	116	80 - 120	2011-07-15

Standard (CCV-1)

QC Batch: 83103

Date Analyzed: 2011-07-15

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	258	103	80 - 120	2011-07-15

Standard (CCV-2)

QC Batch: 83103

Date Analyzed: 2011-07-15

Analyzed By: kg

Report Date: July 19, 2011
114-6400956

Work Order: 11071514
COG/Sagebrush Federal TB

Page Number: 19 of 20
Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	228	91	80 - 120	2011-07-15

Standard (CCV-3)

QC Batch: 83103

Date Analyzed: 2011-07-15

Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	273	109	80 - 120	2011-07-15

Appendix

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-10-TX	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

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

200 #11071514

Analysis Request of Chain of Custody Record



TETRA TECH

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

PAGE: 1 OF: 1

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: COG				SITE MANAGER: Ike Tavaraz				NUMBER OF CONTAINERS FILTERED (Y/N)		PRESERVATIVE METHOD		<table border="1"> <tr> <td>BTX 8021B</td> <td>TPH 8015 MOD</td> <td>TX1005 (Ext. to C35)</td> <td>PAH 8270</td> <td>RCRA Metals Ag As Ba Cd Cr Pb Hg Se</td> <td>TCLP Metals Ag As Ba Cd Vr Pd Hg Se</td> <td>TCLP Volatiles</td> <td>TCLP Semi Volatiles</td> <td>RCI</td> <td>GC/MS Vol. 8240/8260/824</td> <td>GC/MS Semi. Vol. 8270/825</td> <td>PCB's 8080/608</td> <td>Pest. 808/608</td> <td>Chloride</td> <td>Gamma Spec.</td> <td>Alpha Beta (Air)</td> <td>PLM (Asbestos)</td> <td>Major Anions/Cations, pH, TDS</td> </tr> </table>																BTX 8021B	TPH 8015 MOD	TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/824	GC/MS Semi. Vol. 8270/825	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
BTX 8021B	TPH 8015 MOD	TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles																					RCI	GC/MS Vol. 8240/8260/824	GC/MS Semi. Vol. 8270/825	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS								
PROJECT NO.: 114-6400956				PROJECT NAME: Sagebrush Federal TB																																									
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION																																							
272018	7/14		S	X		AH-1	0-1																																						
049						AH-1	1-1.5																																						
050						AH-1	2-2.5																																						
051						AH-1	3-3.5																																						
052						AH-1	4-4.5																																						
053						AH-1	5-5.5																																						
054						AH-1	6-6.5																																						
055						AH-1	7-7.5																																						
056						AH-1	8-8.5																																						
057						AH-1	9-9.5																																						
RELINQUISHED BY: (Signature)				Date: 7-15-11				RECEIVED BY: (Signature)				Date: 7-18-11				SAMPLED BY: (Print & Initial)				Date: 7-18-11																									
RELINQUISHED BY: (Signature)				Time: 11:18				RECEIVED BY: (Signature)				Time: 11:18				SAMPLED BY: (Print & Initial)				Time: 11:18																									
RELINQUISHED BY: (Signature)				Date: _____				RECEIVED BY: (Signature)				Date: _____				SAMPLED BY: (Print & Initial)				Date: _____																									
RELINQUISHED BY: (Signature)				Time: _____				RECEIVED BY: (Signature)				Time: _____				SAMPLED BY: (Print & Initial)				Time: _____																									
RECEIVING LABORATORY: Tetra				ADDRESS: Midland				STATE: TX				ZIP: _____				TETRA TECH CONTACT PERSON:				Results by:																									
CITY: Midland				PHONE: _____				DATE: _____				TIME: _____				Ike Tavaraz				RUSH Charges Authorized:																									
CONTACT: _____				REMARKS: Need Results - Monday morning 7-18-11 Pls.																																									
SAMPLE CONDITION WHEN RECEIVED: 3.7°C intact																																													

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