

SITE INFORMATION

Report Type: Closure

General Site Information:

Site:	BKU #146 Flowline					
Company:	COG Operating LLC					
Section, Township and Range	Unit B	Sec. 30	T-17-S	R-30-E		
Lease Number:	API 30-015-04394					
County:	Eddy County					
GPS:	32.81208° N			104.00906° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	Intersection of Hwy 82 and CR-216 (west of Loco Hills), south on CR-216 0.6 mi, left on Lacey C 0.6 mi, left 500' to location.					

Release Data:

Date Released:	2/2/2012	RECEIVED NOV 01 2012	
Type Release:	Produced Water		
Source of Contamination:	Steel flowline leak		
Fluid Released:	75 bbls		
Fluids Recovered:	1 bbls	NMOCD ARTESIA	

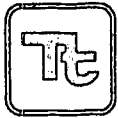
Official Communication:

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

Ranking Criteria

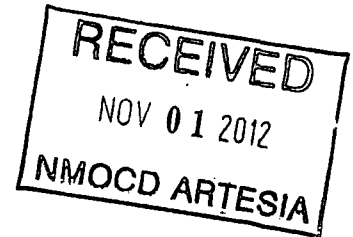
Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0
Wellhead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10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

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



TETRA TECH

October 17, 2012



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

Re: Closure Report for the COG Operating LLC., BKU #146 Flow line, Unit B, Section 30, Township 17 South, Range 30 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the BKU #146 Flow line, Unit B, Section 30, Township 17 South, Range 30 East, Eddy County, New Mexico. (Site). The spill site coordinates are N 32.81208°, W 104.00906°. The site location is shown on Figures 1 and 2.

Background

According to the C-141 Initial Report, the leak was discovered on February 2, 2012, and released approximately seventy-five (75) barrels of produced water from a steel flowline that ruptured. COG recovered approximately 1 barrel of fluid from the spill. The spill is located in sand dunes and pasture area along a two track road. The spill initiated at the flow line impacting an area south of the release, which measured approximately 155' along the two track road. The spill migrated into two fingers measuring approximately 30' and approximately 100' long, with a width of approximately 1.0' to 10.0'. The spill ended as it pooled in an area measuring approximately 45' x 55'. The initial C-141 form is enclosed in Appendix A.

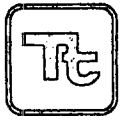
Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559

Fax 432.682.3946

www.tetrattech.com



Groundwater

No water wells were listed within Section 30. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 200' below surface. The groundwater data is shown in Appendix B.

Regulatory

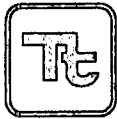
A risk-based evaluation was performed for the Site in accordance with the NMOCD Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethyl-benzene 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 5,000 mg/kg.

Soil Assessment and Analytical Results

On March 8, 2011, Tetra Tech personnel inspected and sampled the spill area. Eight (8) auger holes (AH-1 through AH-8) were installed using a stainless steel hand auger to assess the impacted soils. Soil samples were collected at 0-1' below surface and deeper samples could not be collected due to a shallow dense caliche. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory reports and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, all of the samples were below the RRAL for BTEX and TPH. The chloride impact was not vertically defined, with bottom hole samples ranging from 6,310 mg/kg to 11,000 mg/kg.

On April 20, 2012, Tetra Tech supervised the installation of eight (8) boreholes (BH-1 through BH-8) using an air rotary drilling rig to assess the soils. The boreholes were installed to a maximum depth of 49-50' below surface. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The borehole results are summarized in Table 1.



Referring to Table 1, chloride concentrations greater than 10,000 mg/kg were detected in all of the boreholes, with concentrations declining below 10,000 mg/kg at 4.0' to 24.0' below surface. The chloride impact was vertically defined in all of the boreholes. The areas of BH-4, BH-5, BH-6 and BH-8 showed a chloride spike at 29-30' below surface and significantly declined at 39-40' below surface.

Remediation and Conclusion

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. The final excavated areas, depths and liners are highlighted in Table 1 and shown on Figure 4. Approximately 4,120 cubic yards of soil were excavated and transported to the R360 facility for proper disposal. The excavation depth ranged from 4.0' to 15.0' below surface. The excavation depths of the soil remediation were met as proposed in the submitted work plan, with the exception of the areas of BH-7 and BH-8. These areas were excavated to a depth of 10.0 below surface and capped.

In addition, chloride impacted soils were removed from the east edge of the excavations to a depth of 4.0' below surface, in order to satisfy the needs of surface restoration. The chloride impact on the west edge could not be excavated due to a flow line and an underground water line running parallel to the two track road. To define the horizontal extents, three (3) backhoe trenches (T-1, T-2 and T-3) were installed on the two track road. Based on data, the impacted areas west of the lines were excavated to a depth of 4.0' below surface.

Once excavated, confirmation samples were collected for the excavation bottoms and sidewalls. The sample locations are shown in Figure 4. The sampling results are shown in Table 2. Referring to Table 2, the bottom hole samples showed elevated chloride concentrations in the soils. In addition, chloride concentrations were detected on the west wall near the lines, which was not accessible.

Once excavated to the appropriate depths, all of the excavated areas were backfilled to a depth of 4.0' and installed a 40 mil to cap the remaining impact. The excavations were then backfilled to grade with clean material. In addition, the disturbed area in the pasture were seeded with a BLM approved mixture, then ripped and added windrows to prevent erosion



TETRA TECH

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 Tavaréz, PG
Senior Project Manager

cc: Pat Ellis – COG
Terry Gregston - BLM

Figures



Figure 1
BKU #146
Topo Map 1:100,000

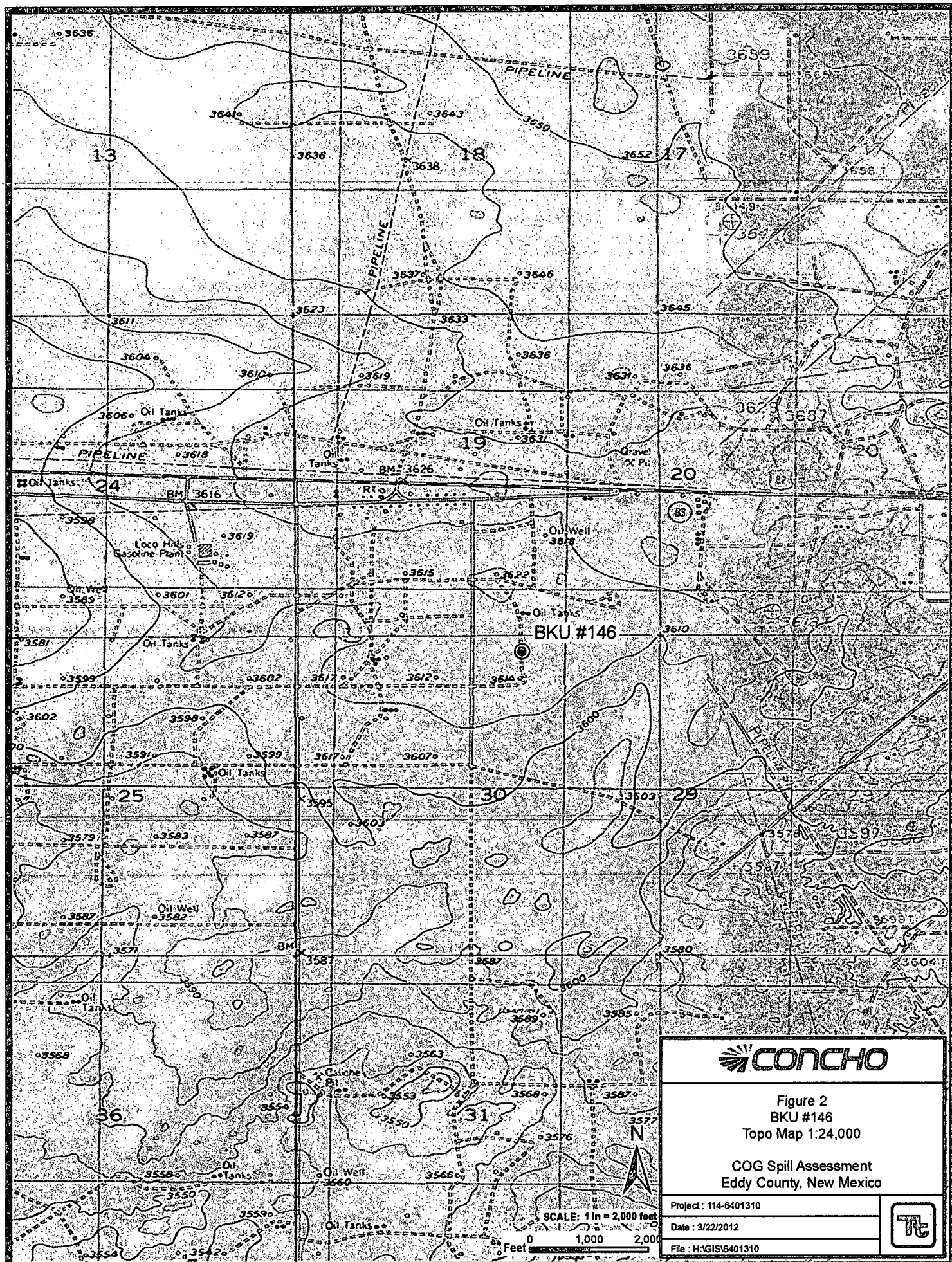
COG Spill Assessment
Eddy County, New Mexico

Project: 114-8401310

Date: 3/22/2012

File: H:\GIS\16401310





CONCHO

Figure 2
BKU #146
Topo Map 1:24,000

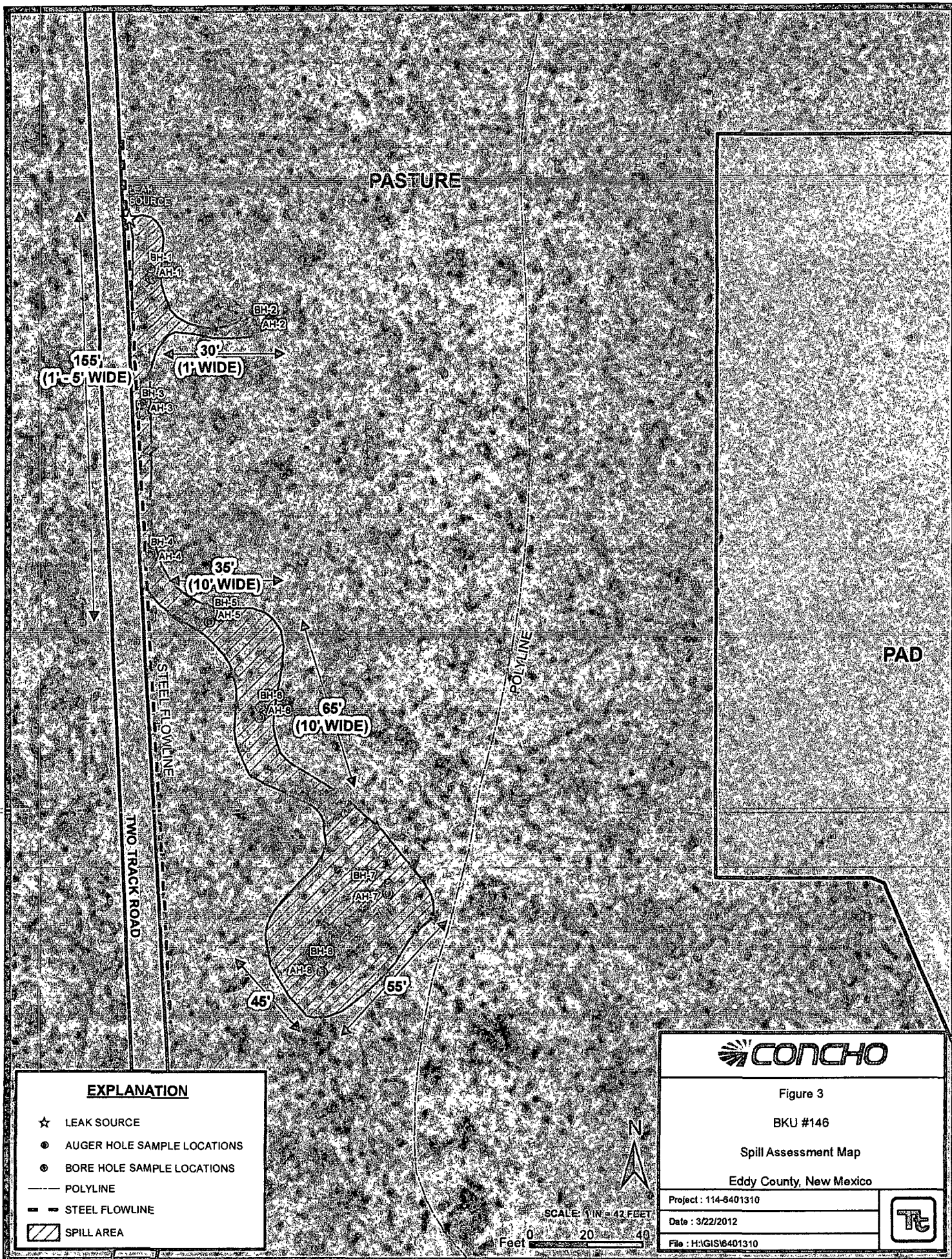
COG Spill Assessment
Eddy County, New Mexico

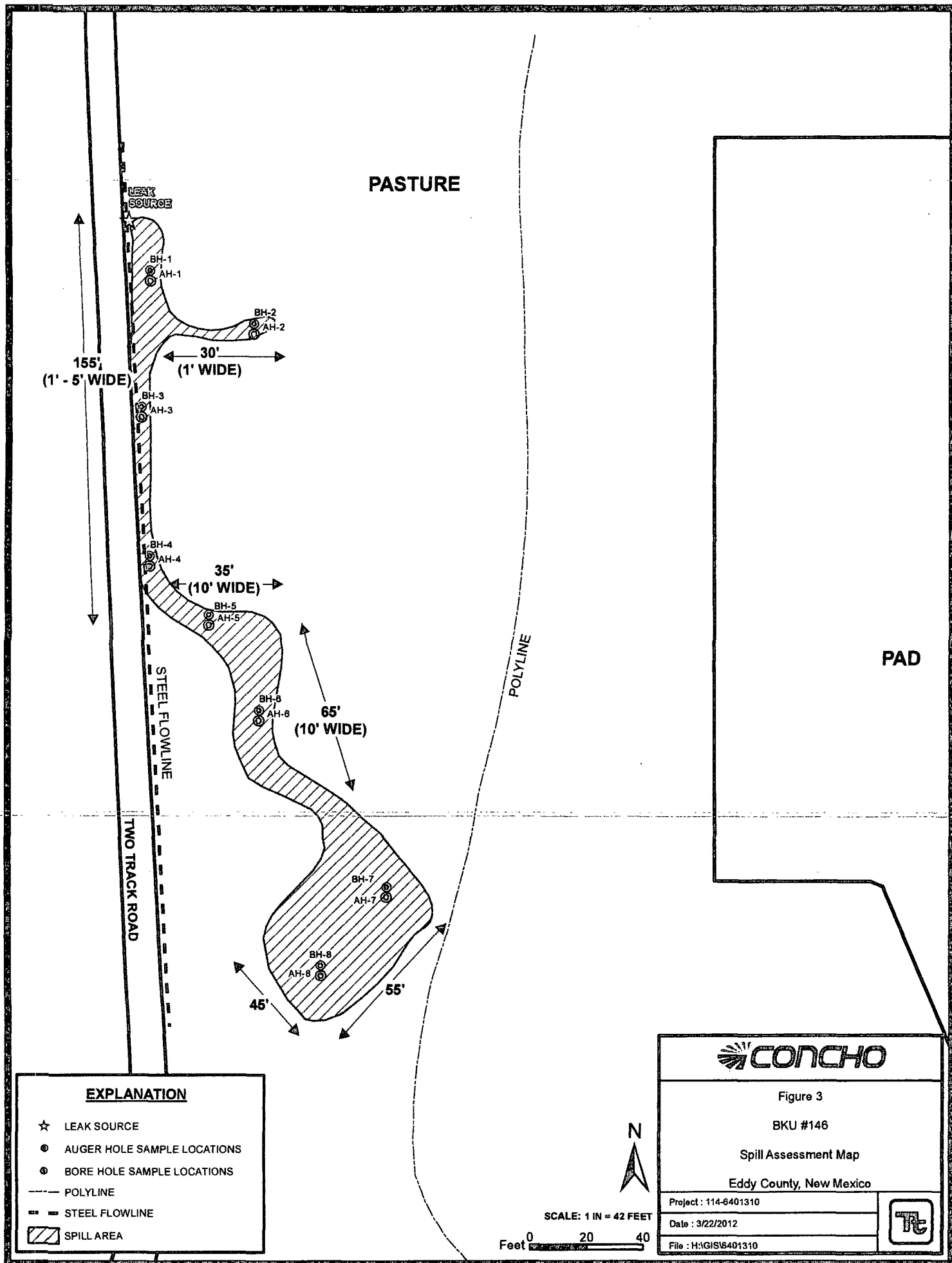
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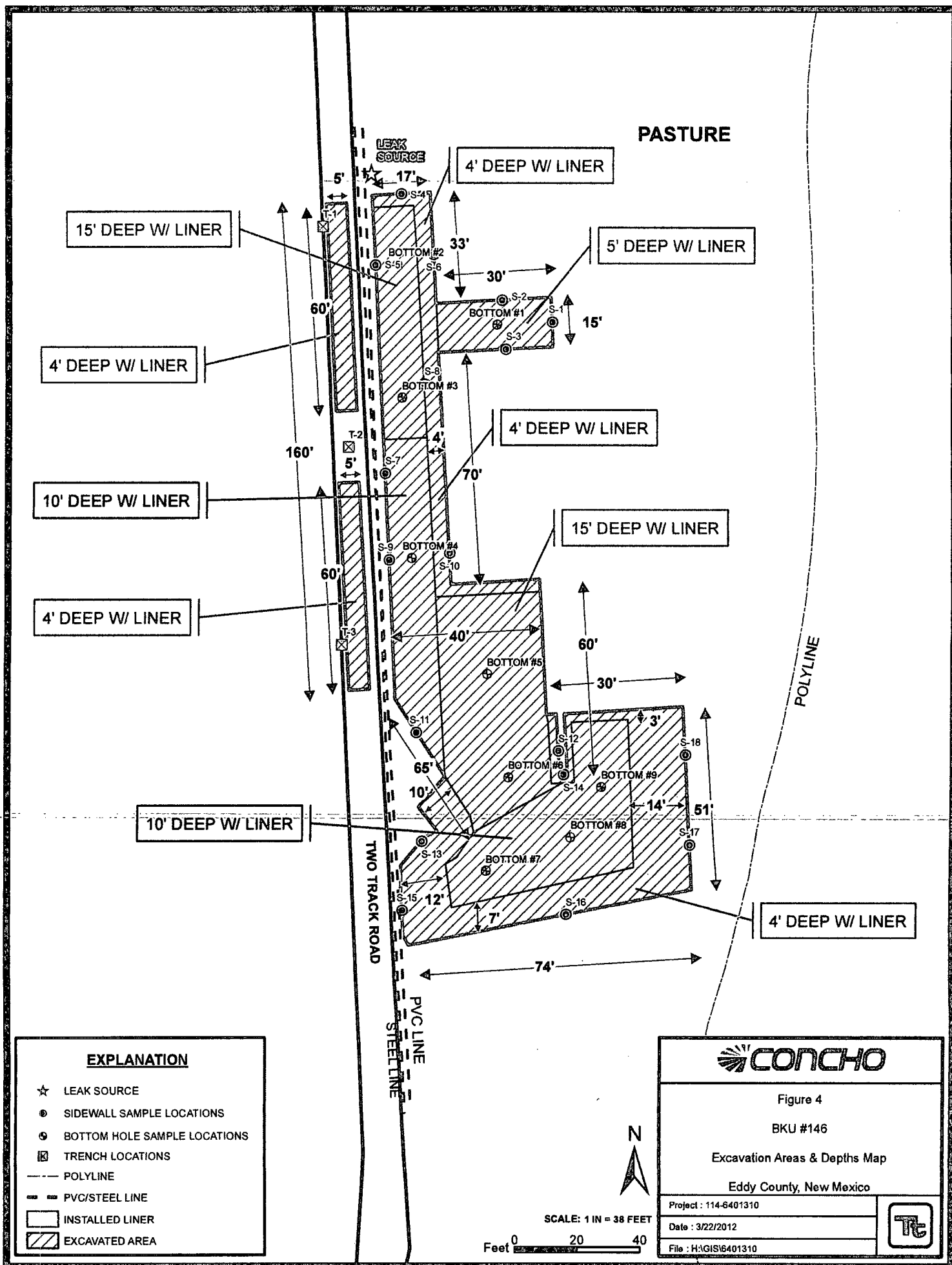
Date: 3/22/2012

File: H:\GIS\6401310









Tables

Table 1
COG Operating LLC.
BKU #146 Flowline
Eddy County, New Mexico

[illegible]

Table 1
COG Operating LLC.
BKU #146 Flowline
Eddy County, New Mexico

[illegible]

Table 1
COG Operating LLC.
BKU #146 Flowline
Eddy County, New Mexico

[illegible]

Table 1
COG Operating LLC.
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[illegible]

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COG Operating LLC.
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[illegible]

Table 1
COG Operating LLC.
BKU #146 Flowline
Eddy County, New Mexico

[illegible]

Table 1
COG Operating LLC.
BKU #146 Flowline
Eddy County, New Mexico

[illegible]

Table 1
COG Operating LLC.
BKU #146 Flowline
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-8	3/8/2012	0-1		X	291	65.4	68.3	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	6,310
BH-8	4/23/2012	0-1		X	-	-	-	-	-	-	-	-	549
	"	2-3		X	-	-	-	-	-	-	-	-	484
	"	4-5		X	-	-	-	-	-	-	-	-	8,250
	"	6-7		X	-	-	-	-	-	-	-	-	14,200
	"	9-10		X	-	-	-	-	-	-	-	-	9,890
	"	14-15	X		-	-	-	-	-	-	-	-	8,960
	"	19-20	X		-	-	-	-	-	-	-	-	1,740
	"	24-25	X		-	-	-	-	-	-	-	-	935
	"	29-30	X		-	-	-	-	-	-	-	-	5,390
	"	39-40	X		-	-	-	-	-	-	-	-	453

(-) Not Analyzed

 Excavated Depths

 40-Mil Liner Installed

Table 2
COG Operating LLC.
BKU #146 Flowline
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		Chloride (mg/kg)
			In-Situ	Removed	
T-1	7/18/2012	0	X		37.4
	7/18/2012	4	X		<20.0
	7/19/2012	8	X		46.8
T-2	7/19/2012	0	X		<20.0
	7/19/2012	4	X		159
	7/19/2012	8	X		837
T-3	7/18/2012	0	X		<20.0
	7/18/2012	4	X		28.1
	7/18/2012	8	X		309

Table 2
COG Operating LLC.
BKU #146 Flowline
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		Chloride (mg/kg)
			In-Situ	Removed	
Bottom Hole 1	7/13/2012	-	X		212
Bottom Hole 2	7/13/2012	-	X		13,900
Bottom Hole 3	7/17/2012	-	X		8,990
Bottom Hole 4	7/17/2012	-	X		5,140
Bottom Hole 5	7/19/2012	-	X		4,900
Bottom Hole 6	7/20/2012	-	X		6,730
Bottom Hole 7	7/23/2012	-	X		7,750
Bottom Hole 8	7/24/2012	-	X		11,800
Bottom Hole 9	7/24/2012	-	X		1,240

Table 2
COG Operating LLC.
BKU #146 Flowline
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		Chloride (mg/kg)
			In-Situ	Removed	
Side Wall 1	7/13/2012	-	X		<20.0
Side Wall 2	7/13/2012	-	X		<20.0
Side Wall 3	7/13/2012	-	X		1,230
Side Wall 4	7/19/2012	-	X		<20.0
Side Wall 5	7/19/2012	-	X		5,940
Side Wall 6	7/19/2012	-	X		<20.0
Side Wall 7	7/17/2012	-	X		7,220
Side Wall 8	7/19/2012	-	X		46.5
Side Wall 9	7/17/2012	-	X		3,240
Side Wall 10	7/19/2012	-	X		837
Side Wall 11	7/18/2012	-	X		172
Side Wall 12	7/18/2012	-	X		195
Side Wall 13	7/23/2012	-	X		1,480
Side Wall 14	7/23/2012	-	X		1,000
Side Wall 15	7/24/2012	-	X		1,590
Side Wall 16	7/24/2012	-	X		1,890
Side Wall 17	7/26/2012	-	X		60.8
Side Wall 18	7/26/2012	-	X		56.1

Photos

COG Operating LLC
BKU #146
Eddy County, New Mexico



TETRA TECH



View South – Area of AH-1, BH1



View Southwest – Area of AH-2, BH-2

COG Operating LLC
BKU #146
Eddy County, New Mexico



TETRA TECH

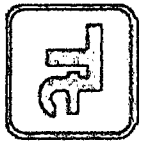


View South – Area of AH-3, BH-3

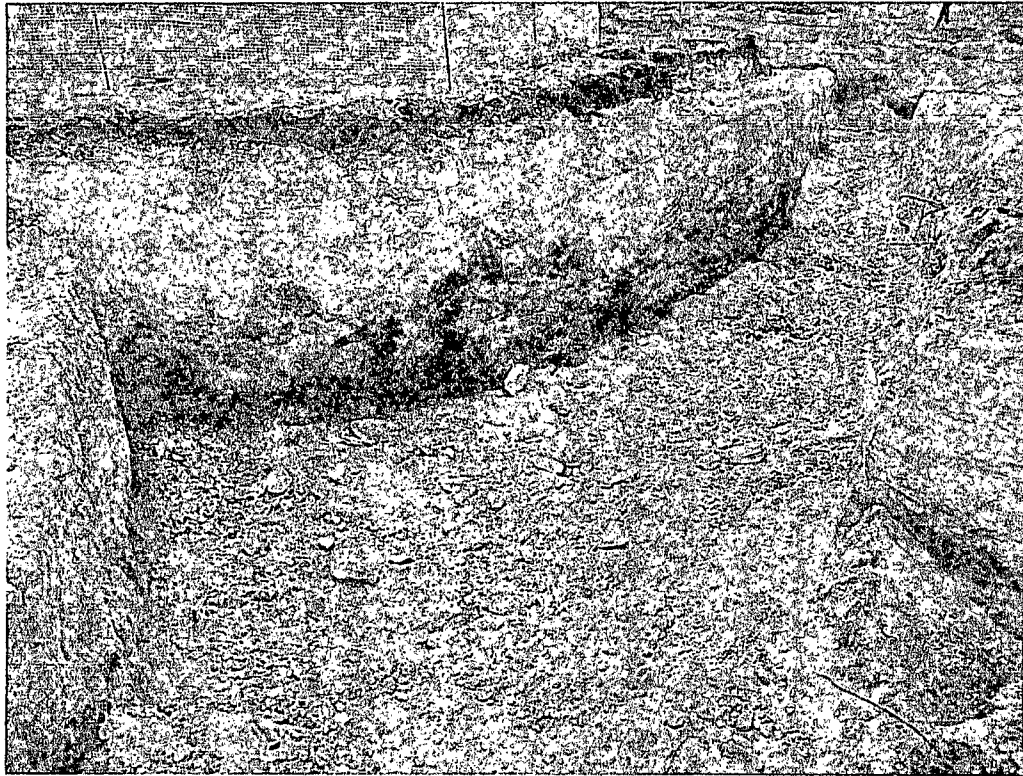


View South – Area of AH-4, BH-4

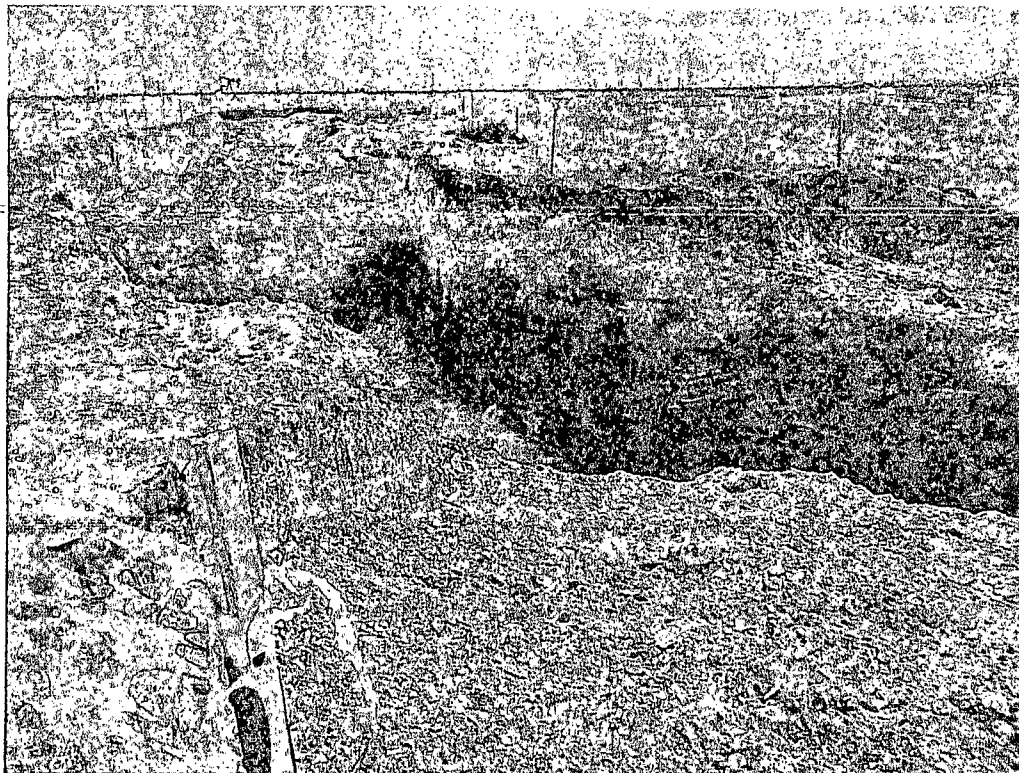
COG Operating LLC
BKU #146
Eddy County, New Mexico



TETRA TECH



View Southeast – Area of AH-5, BH-5



View North – Area of AH-6, BH-6

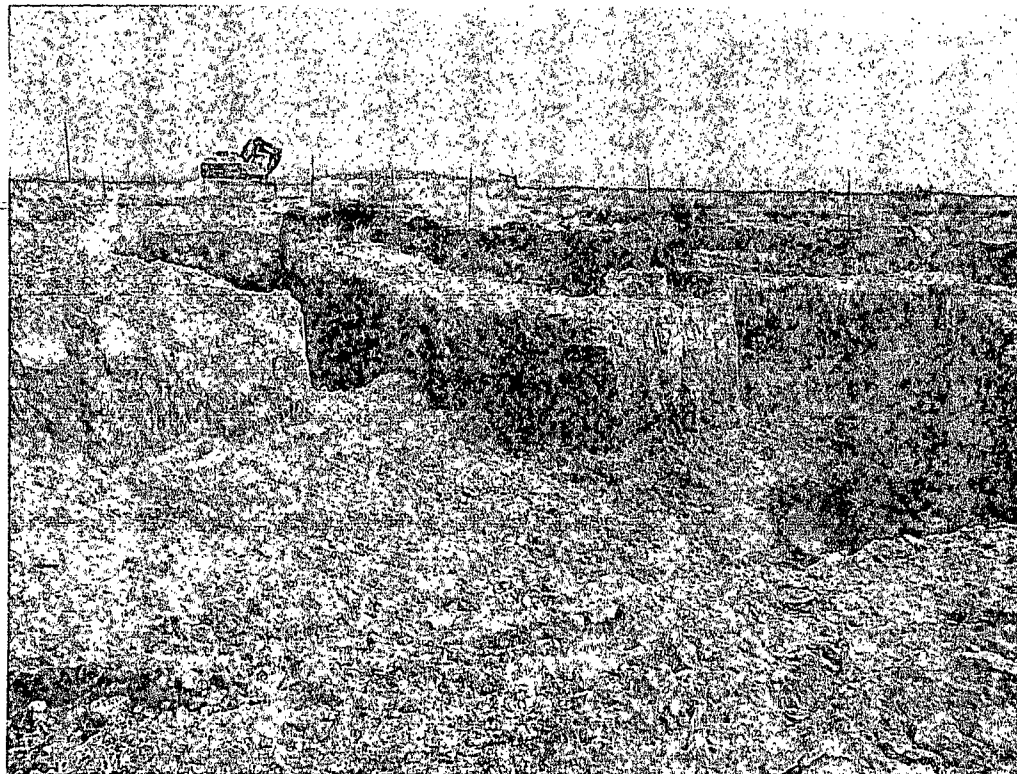
COG Operating LLC
BKU #146
Eddy County, New Mexico



TETRA TECH

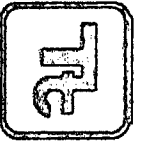


View North – Area of AH-7, BH-7

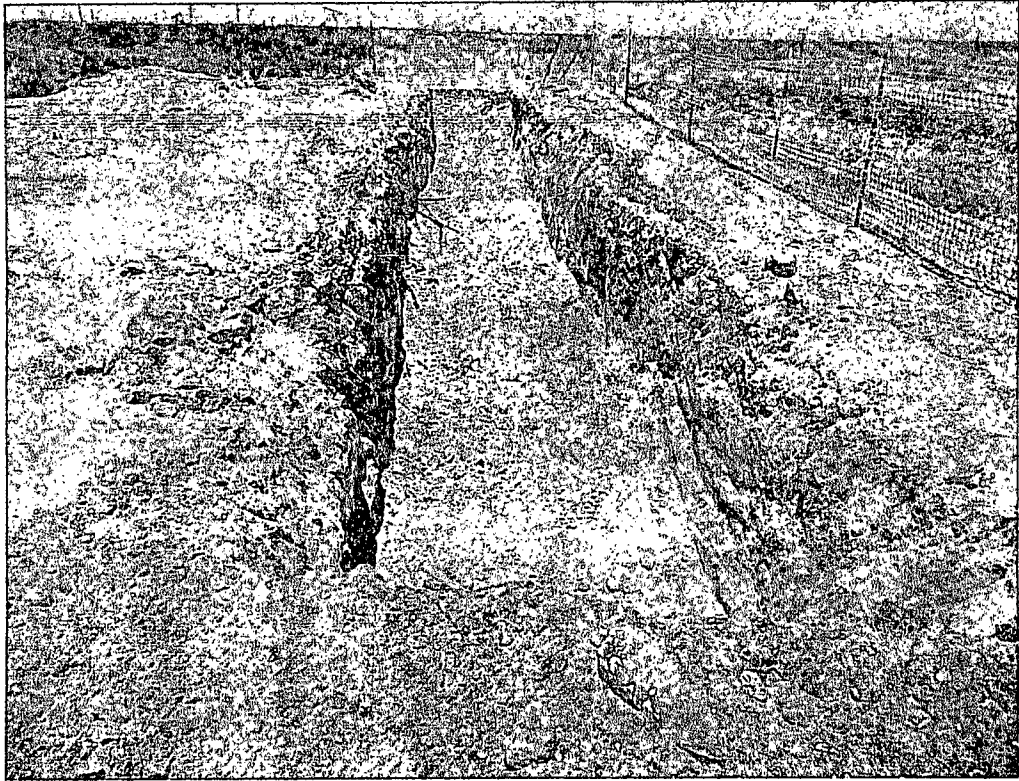


View North – Area of AH-8, BH-8

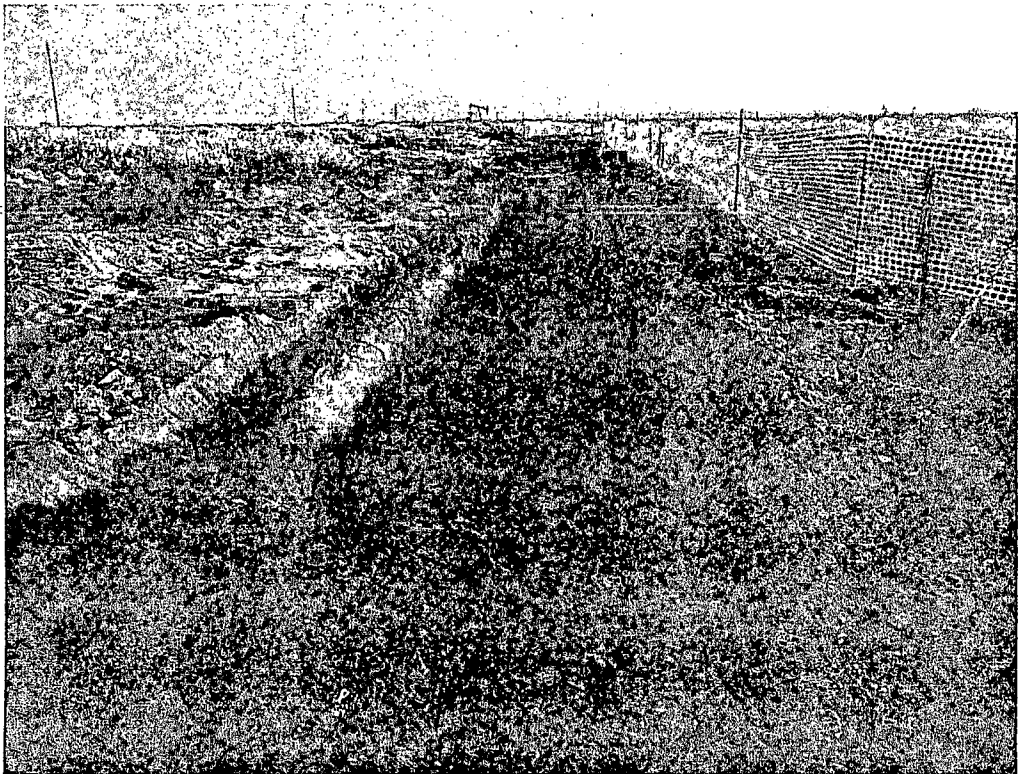
COG Operating LLC
BKU #146
Eddy County, New Mexico



TETRA TECH



View North – Area on road west of AH-1

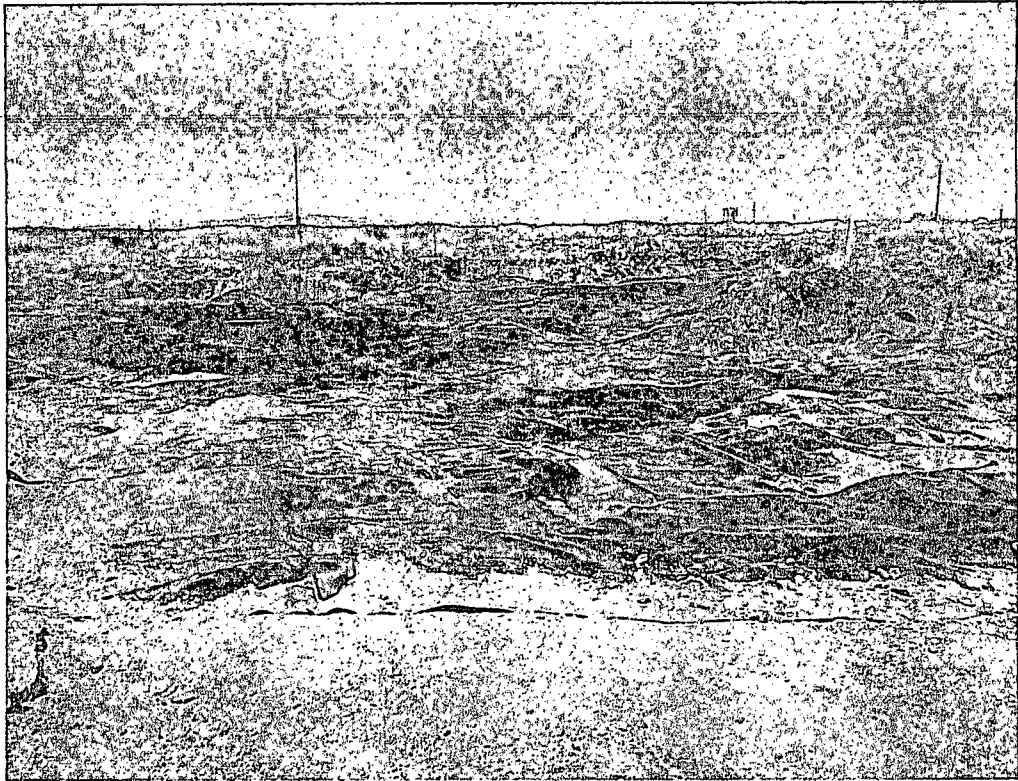


View North – Area on road west of AH-4

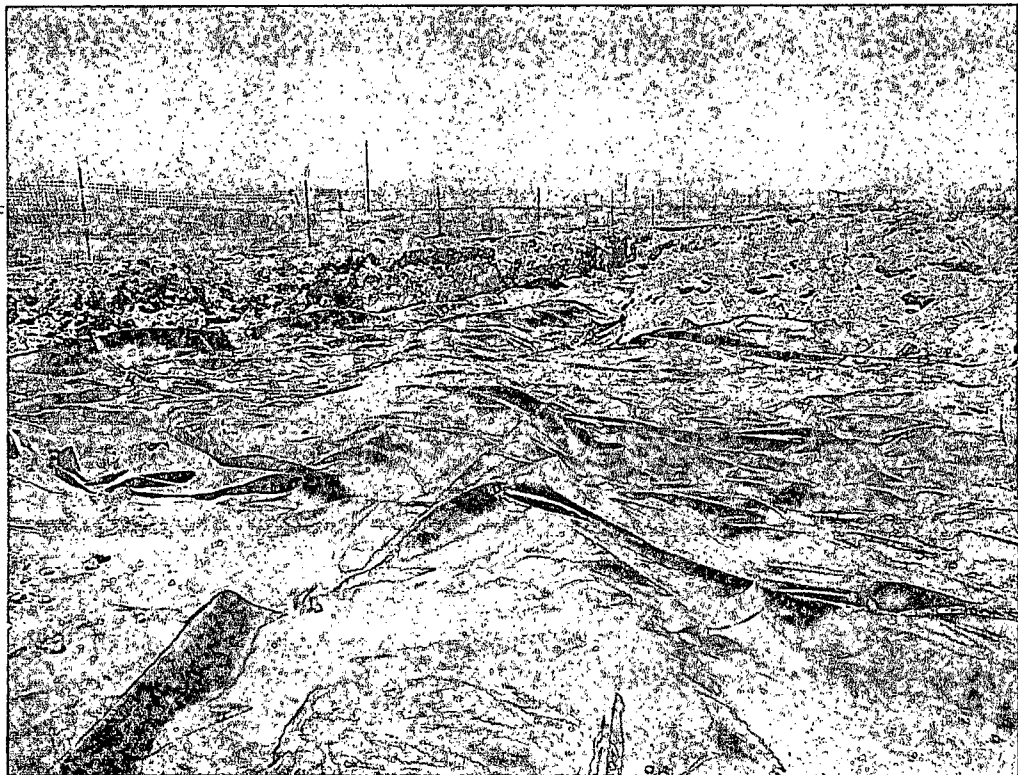
COG Operating LLC
BKU #146
Eddy County, New Mexico



TETRA TECH

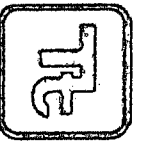


View Northwest - Liner

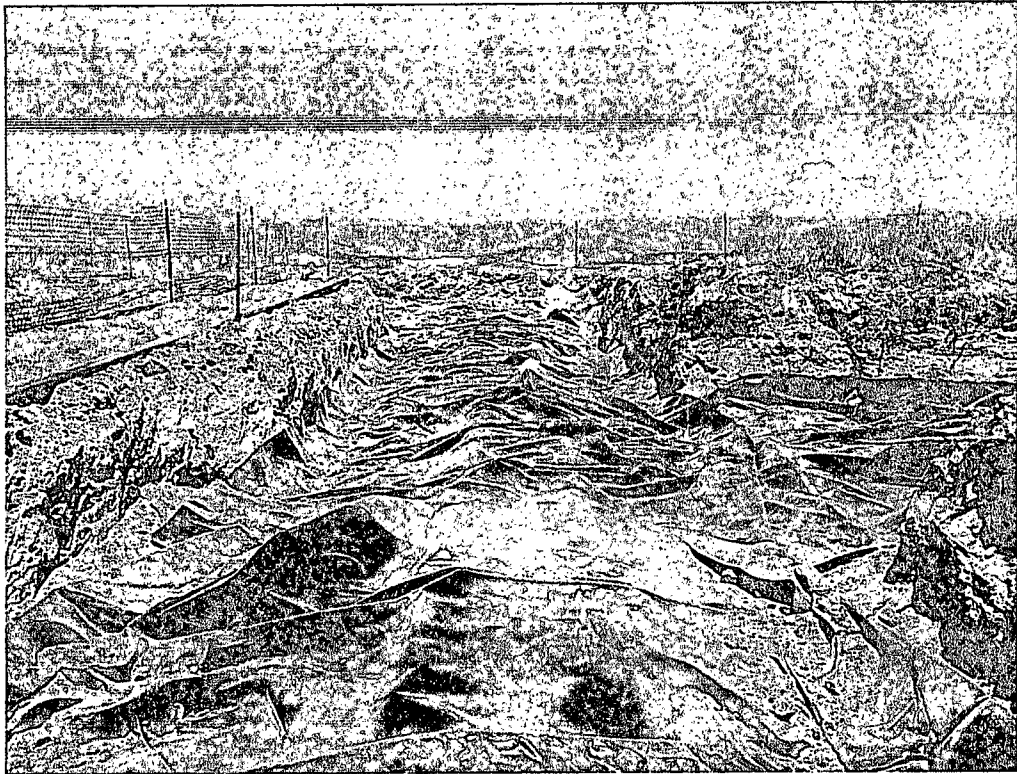


View North - Liner

COG Operating LLC
BKU #146
Eddy County, New Mexico



TETRA TECH

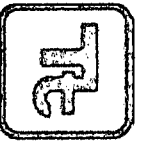


View North - Liner

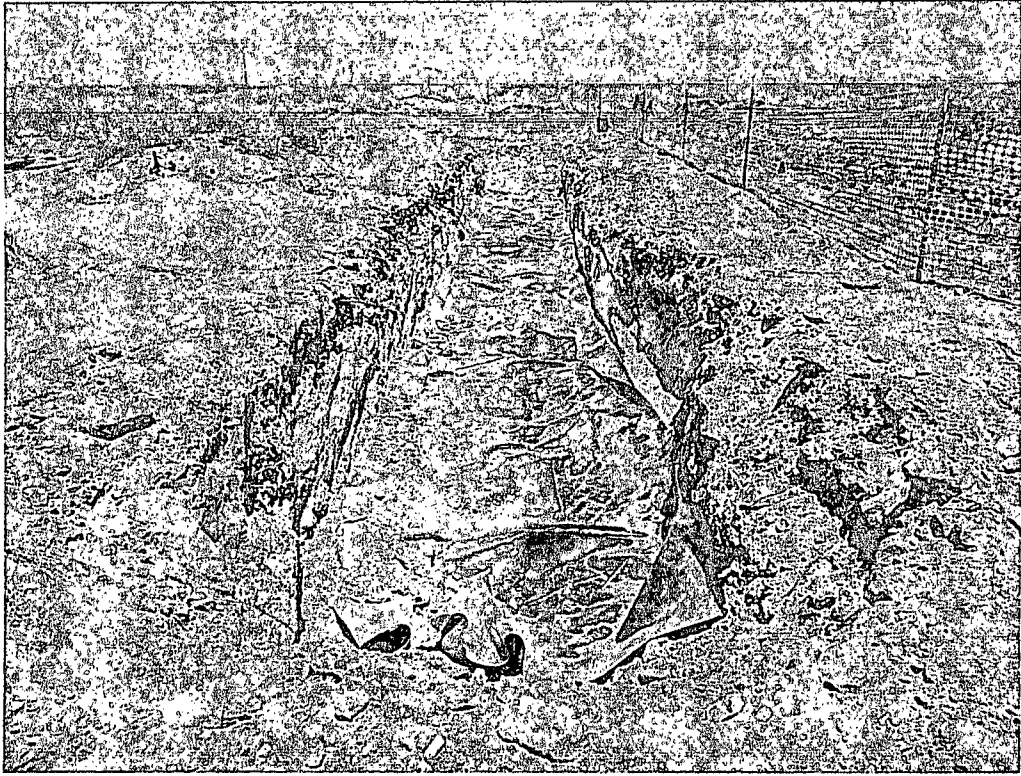


View Northeast - Liner

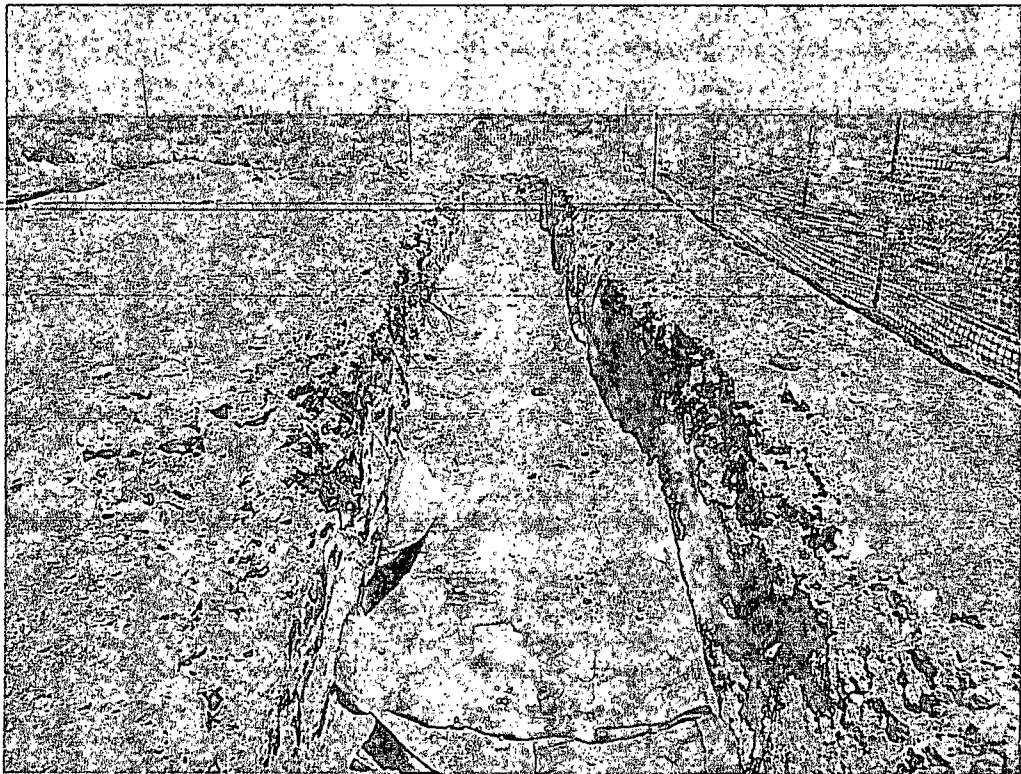
COG Operating LLC
BKU #146
Eddy County, New Mexico



TETRA TECH

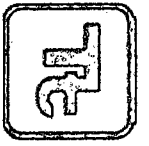


View North - Liner

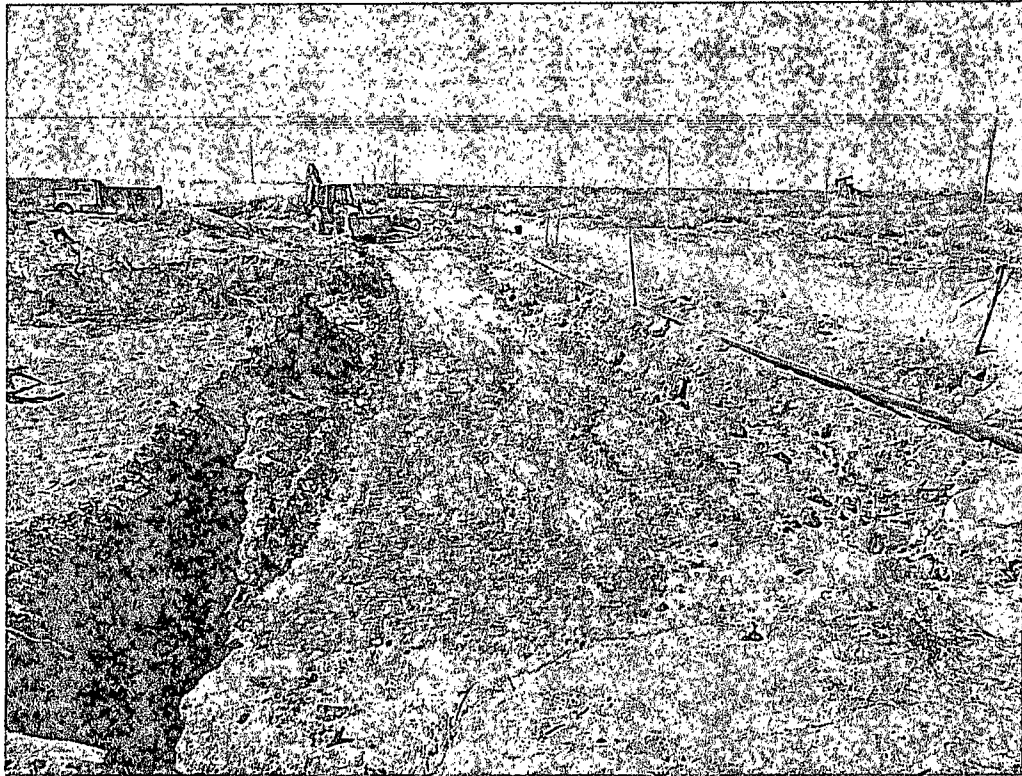


View North - Liner

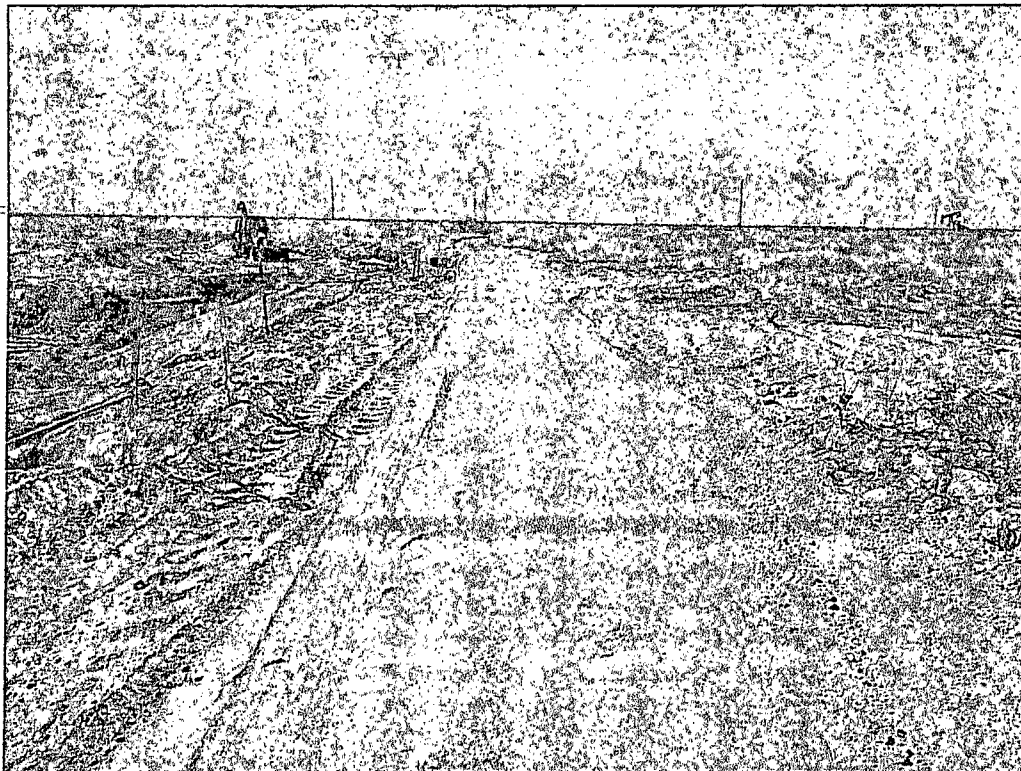
COG Operating LLC
BKU #146
Eddy County, New Mexico



TETRA TECH

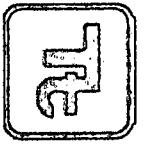


View South - Backfill

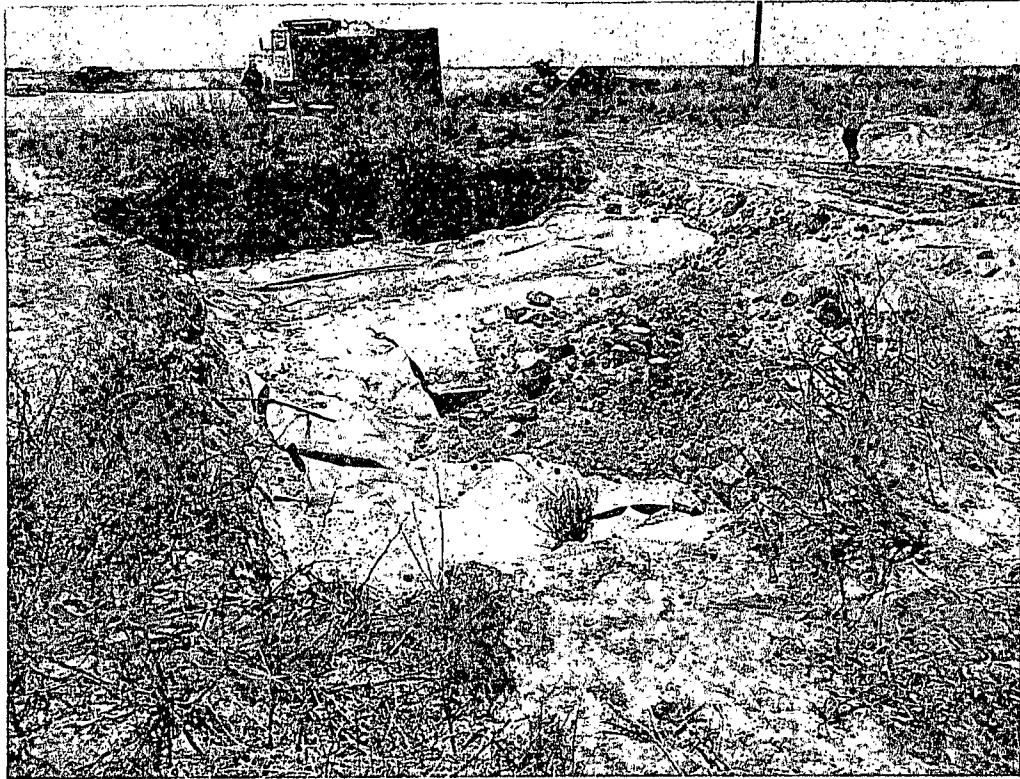


View South - Backfill

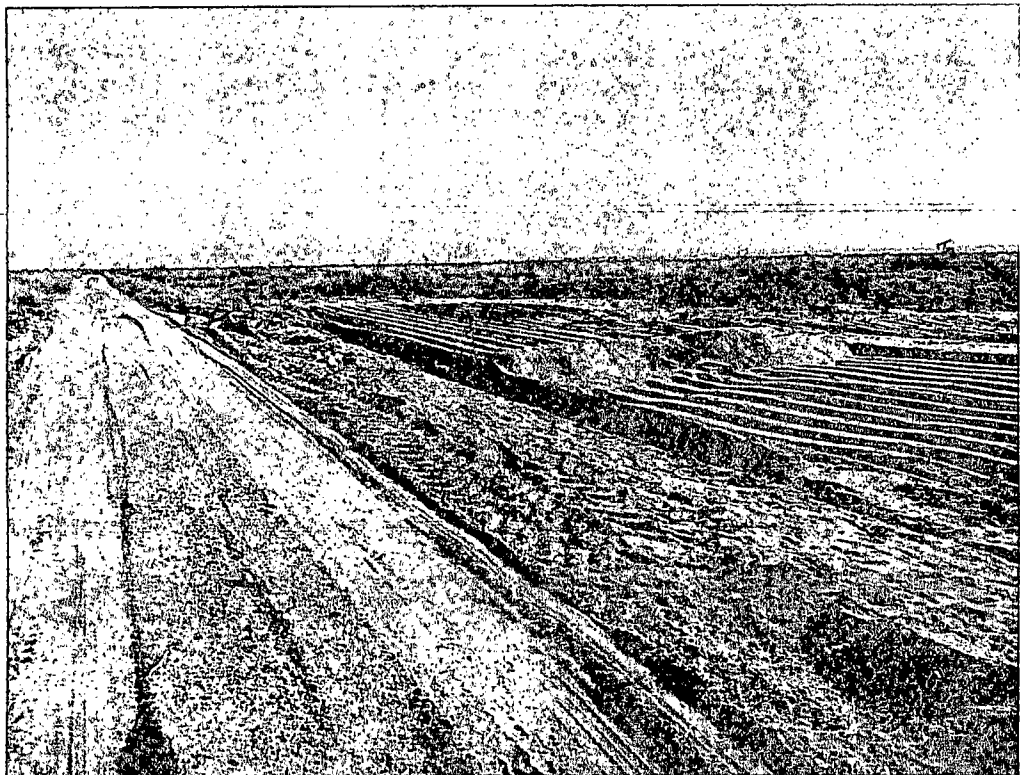
COG Operating LLC
BKU #146
Eddy County, New Mexico



TETRA TECH

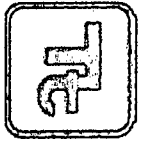


View Southeast - Backfill

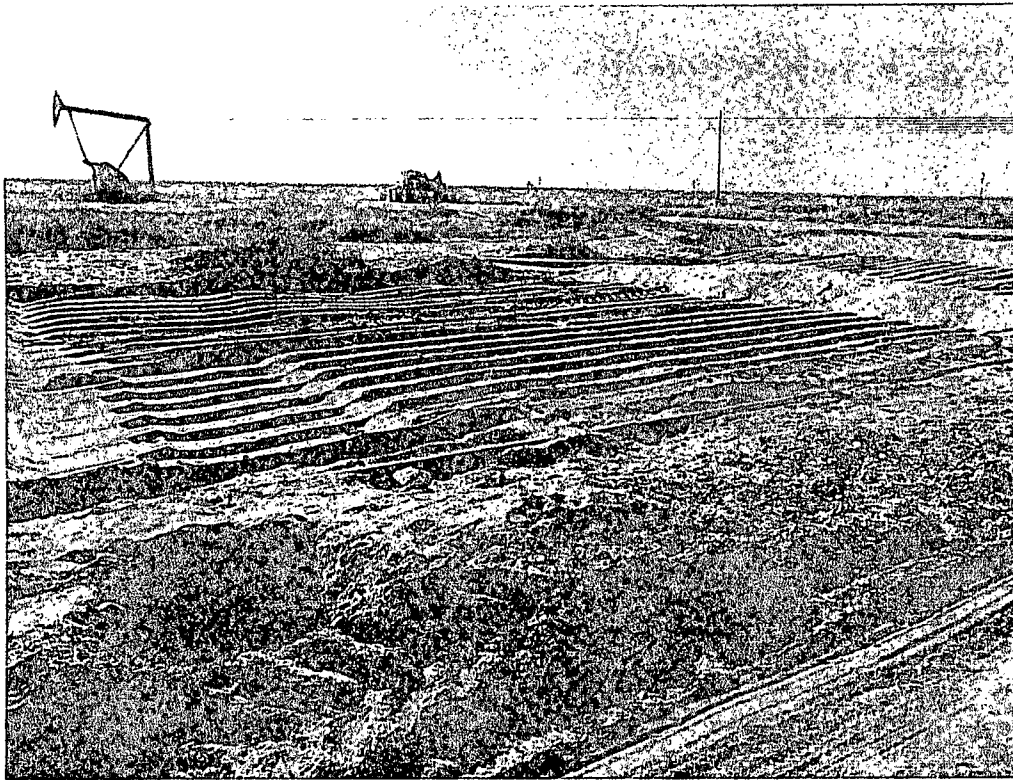


View Northeast - Windrows

COG Operating LLC
BKU #146
Eddy County, New Mexico



TETRA TECH



View Southeast - Windrows



View Southeast - Windrows

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company	COG Operating LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100 Midland, Texas 79701	Telephone No.	(432) 230-0077
Facility Name	BKU #146	Facility Type	Flowline
Surface Owner: Federal		Mineral Owner	Lease No. (API#) 30-015-04394

LOCATION OF RELEASE

Unit Letter B	Section 30	Township 17S	Range 30E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
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Latitude N 32.81208° Longitude W 104.00906°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 75 bbls	Volume Recovered 1 bbls
Source of Release: Steel Flowline	Date and Hour of Occurrence 02/02/2012	Date and Hour of Discovery 02/02/2012 8:00 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher-OCD Jim Amos-BLM Terry Gregston-BLM	
By Whom? Josh Russo	Date and Hour 02/03/2012 2:33 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	
If a Watercourse was Impacted, Describe Fully.*		
Describe Cause of Problem and Remedial Action Taken.* Steel flowline ruptured due to erosion. This section of the line has been cut and a new section has been added.		
Describe Area Affected and Cleanup Action Taken.* Tetra Tech personnel inspected the site and collected samples to define the spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. The site was then brought up to surface grade with clean backfill material. Tetra Tech prepared a closure report and submitted it to NMOCD for review.		
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.		
Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached ☐
Date: 10-10-12 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	BKU #146	Facility Type	Flowline

Surface Owner	Federal	Mineral Owner		Lease No. (API#)	30-015-04394
---------------	---------	---------------	--	------------------	--------------

LOCATION OF RELEASE

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

Latitude 32 48.725 Longitude 104 00.541

NATURE OF RELEASE

Type of Release	Produced water	Volume of Release	75bbls	Volume Recovered	1bbls
Source of Release	Steel flowline	Date and Hour of Occurrence	02/02/2012	Date and Hour of Discovery	02/02/2012 8:00 a.m.

Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Mike Bratcher-OCD Jim Amos-BLM Terry Gregston-BLM
By Whom?	Josh Russo	Date and Hour	02/03/2012 2:33 p.m.

Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	
----------------------------	---	---	--

If a Watercourse was Impacted, Describe Fully.*	
---	--

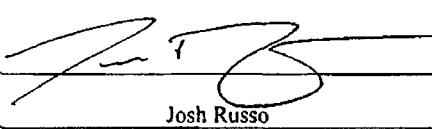
Describe Cause of Problem and Remedial Action Taken.*	
---	--

Steel flowline ruptured due to erosion. This section of the line has been cut and a new section has been added.	
---	--

Describe Area Affected and Cleanup Action Taken.*	
---	--

Initially an estimated 75bbls of produced water and a slight trace of hydrocarbons were released from the ruptured steel line. We have repaired the steel line and returned the well back into service. The closest well location to the release is the BKU #301. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD/BLM for approval prior to any significant remediation work.	
--	--

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

Signature: 	OIL CONSERVATION DIVISION		
Printed Name: Josh Russo	Approved by District Supervisor:		
Title: HSE Coordinator	Approval Date:	Expiration Date:	
E-mail Address: jrusso@conchoresources.com	Conditions of Approval:		Attached ☐
Date: 02/15/2012 Phone: 432-212-2399			

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - BKU #146
Eddy County, New Mexico

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

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

16 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	288
19	20	21	22	23	113
30	29	28	27	26	25
31	32	33	34	35	36
290					

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

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

17 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
				271	

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

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

18 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	400
19	20	21	22	23	317
30	29	28	27	26	25
31	32	33	34	35	36
				281	

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

Appendix C

Summary Report

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

Report Date: August 6, 2012

Work Order: 12073101



Project Location: Eddy Co., NM
Project Name: COG/BKU #146 Flowline
Project Number: 114-6401310

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
305252	Bottom Hole 1	soil	2012-07-13	00:00	2012-07-30
305253	Bottom Hole 2	soil	2012-07-13	00:00	2012-07-30
305254	Bottom Hole 3	soil	2012-07-17	00:00	2012-07-30
305255	Bottom Hole 4	soil	2012-07-17	00:00	2012-07-30
305256	Bottom Hole 5	soil	2012-07-19	00:00	2012-07-30
305257	Bottom Hole 6	soil	2012-07-20	00:00	2012-07-30
305258	Bottom Hole 7	soil	2012-07-23	00:00	2012-07-30
305259	Bottom Hole 8	soil	2012-07-24	00:00	2012-07-30
305260	Bottom Hole 9	soil	2012-07-24	00:00	2012-07-30
305261	Side Wall 1	soil	2012-07-13	00:00	2012-07-30
305262	Side Wall 2	soil	2012-07-13	00:00	2012-07-30
305263	Side Wall 3	soil	2012-07-13	00:00	2012-07-30
305264	Side Wall 4	soil	2012-07-19	00:00	2012-07-30
305265	Side Wall 5	soil	2012-07-19	00:00	2012-07-30
305266	Side Wall 6	soil	2012-07-19	00:00	2012-07-30
305267	Side Wall 7	soil	2012-07-17	00:00	2012-07-30
305268	Side Wall 8	soil	2012-07-19	00:00	2012-07-30
305269	Side Wall 9	soil	2012-07-17	00:00	2012-07-30
305270	Side Wall 10	soil	2012-07-19	00:00	2012-07-30
305271	Side Wall 11	soil	2012-07-18	00:00	2012-07-30
305272	Side Wall 12	soil	2012-07-18	00:00	2012-07-30
305273	Side Wall 13	soil	2012-07-23	00:00	2012-07-30
305274	Side Wall 14	soil	2012-07-23	00:00	2012-07-30
305275	Side Wall 15	soil	2012-07-24	00:00	2012-07-30
305276	Side Wall 16	soil	2012-07-24	00:00	2012-07-30
305277	Side Wall 17	soil	2012-07-26	00:00	2012-07-30
305278	Side Wall 18	soil	2012-07-26	00:00	2012-07-30
305279	T-1 0'	soil	2012-07-18	00:00	2012-07-30
305280	T-1 4'	soil	2012-07-18	00:00	2012-07-30
305281	T-1 8'	soil	2012-07-19	00:00	2012-07-30

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
305282	T-2 0'	soil	2012-07-19	00:00	2012-07-30
305283	T-2 4'	soil	2012-07-19	00:00	2012-07-30
305284	T-2 8'	soil	2012-07-19	00:00	2012-07-30
305285	T-3 0'	soil	2012-07-18	00:00	2012-07-30
305286	T-3 4'	soil	2012-07-18	00:00	2012-07-30
305287	T-3 8'	soil	2012-07-18	00:00	2012-07-30

Sample: 305252 - Bottom Hole 1

Param	Flag	Result	Units	RL
Chloride		212	mg/Kg	4

Sample: 305253 - Bottom Hole 2

Param	Flag	Result	Units	RL
Chloride		13900	mg/Kg	4

Sample: 305254 - Bottom Hole 3

Param	Flag	Result	Units	RL
Chloride		8990	mg/Kg	4

Sample: 305255 - Bottom Hole 4

Param	Flag	Result	Units	RL
Chloride		5140	mg/Kg	4

Sample: 305256 - Bottom Hole 5

Param	Flag	Result	Units	RL
Chloride		4900	mg/Kg	4

Sample: 305257 - Bottom Hole 6

Param	Flag	Result	Units	RL
Chloride		6730	mg/Kg	4

Sample: 305258 - Bottom Hole 7

Param	Flag	Result	Units	RL
Chloride		7750	mg/Kg	4

Sample: 305259 - Bottom Hole 8

Param	Flag	Result	Units	RL
Chloride		11800	mg/Kg	4

Sample: 305260 - Bottom Hole 9

Param	Flag	Result	Units	RL
Chloride		1240	mg/Kg	4

Sample: 305261 - Side Wall 1

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

Sample: 305262 - Side Wall 2

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

Sample: 305263 - Side Wall 3

Param	Flag	Result	Units	RL
Chloride		1230	mg/Kg	4

Sample: 305264 - Side Wall 4

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

Sample: 305265 - Side Wall 5

Param	Flag	Result	Units	RL
Chloride		5940	mg/Kg	4

Sample: 305266 - Side Wall 6

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

Sample: 305267 - Side Wall 7

Param	Flag	Result	Units	RL
Chloride		7220	mg/Kg	4

Sample: 305268 - Side Wall 8

Param	Flag	Result	Units	RL
Chloride		46.5	mg/Kg	4

Sample: 305269 - Side Wall 9

Param	Flag	Result	Units	RL
Chloride		3240	mg/Kg	4

Sample: 305270 - Side Wall 10

Param	Flag	Result	Units	RL
Chloride		837	mg/Kg	4

Sample: 305271 - Side Wall 11

Param	Flag	Result	Units	RL
Chloride		172	mg/Kg	4

Sample: 305272 - Side Wall 12

Param	Flag	Result	Units	RL
Chloride		195	mg/Kg	4

Sample: 305273 - Side Wall 13

Param	Flag	Result	Units	RL
Chloride		1480	mg/Kg	4

Sample: 305274 - Side Wall 14

Param	Flag	Result	Units	RL
Chloride		1000	mg/Kg	4

Sample: 305275 - Side Wall 15

Param	Flag	Result	Units	RL
Chloride		1590	mg/Kg	4

Sample: 305276 - Side Wall 16

Param	Flag	Result	Units	RL
Chloride		1890	mg/Kg	4

Sample: 305277 - Side Wall 17

Param	Flag	Result	Units	RL
Chloride		60.8	mg/Kg	4

Sample: 305278 - Side Wall 18

Param	Flag	Result	Units	RL
Chloride		56.1	mg/Kg	4

Sample: 305279 - T-1 0'

Param	Flag	Result	Units	RL
Chloride		37.4	mg/Kg	4

Sample: 305280 - T-1 4'

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

Sample: 305281 - T-1 8'

Param	Flag	Result	Units	RL
Chloride		46.8	mg/Kg	4

Sample: 305282 - T-2 0'

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

Sample: 305283 - T-2 4'

Param	Flag	Result	Units	RL
Chloride		159	mg/Kg	4

Sample: 305284 - T-2 8'

Param	Flag	Result	Units	RL
Chloride		837	mg/Kg	4

Sample: 305285 - T-3 0'

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

Sample: 305286 - T-3 4'

Param	Flag	Result	Units	RL
Chloride		28.1	mg/Kg	4

Sample: 305287 - T-3 8'

Param	Flag	Result	Units	RL
Chloride		309	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 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: August 6, 2012

Work Order: 12073101



Project Location: Eddy Co., NM
Project Name: COG/BKU #146 Flowline
Project Number: 114-6401310

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
305252	Bottom Hole 1	soil	2012-07-13	00:00	2012-07-30
305253	Bottom Hole 2	soil	2012-07-13	00:00	2012-07-30
305254	Bottom Hole 3	soil	2012-07-17	00:00	2012-07-30
305255	Bottom Hole 4	soil	2012-07-17	00:00	2012-07-30
305256	Bottom Hole 5	soil	2012-07-19	00:00	2012-07-30
305257	Bottom Hole 6	soil	2012-07-20	00:00	2012-07-30
305258	Bottom Hole 7	soil	2012-07-23	00:00	2012-07-30
305259	Bottom Hole 8	soil	2012-07-24	00:00	2012-07-30
305260	Bottom Hole 9	soil	2012-07-24	00:00	2012-07-30
305261	Side Wall 1	soil	2012-07-13	00:00	2012-07-30
305262	Side Wall 2	soil	2012-07-13	00:00	2012-07-30
305263	Side Wall 3	soil	2012-07-13	00:00	2012-07-30
305264	Side Wall 4	soil	2012-07-19	00:00	2012-07-30
305265	Side Wall 5	soil	2012-07-19	00:00	2012-07-30
305266	Side Wall 6	soil	2012-07-19	00:00	2012-07-30
305267	Side Wall 7	soil	2012-07-17	00:00	2012-07-30
305268	Side Wall 8	soil	2012-07-19	00:00	2012-07-30
305269	Side Wall 9	soil	2012-07-17	00:00	2012-07-30

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
305270	Side Wall 10	soil	2012-07-19	00:00	2012-07-30
305271	Side Wall 11	soil	2012-07-18	00:00	2012-07-30
305272	Side Wall 12	soil	2012-07-18	00:00	2012-07-30
305273	Side Wall 13	soil	2012-07-23	00:00	2012-07-30
305274	Side Wall 14	soil	2012-07-23	00:00	2012-07-30
305275	Side Wall 15	soil	2012-07-24	00:00	2012-07-30
305276	Side Wall 16	soil	2012-07-24	00:00	2012-07-30
305277	Side Wall 17	soil	2012-07-26	00:00	2012-07-30
305278	Side Wall 18	soil	2012-07-26	00:00	2012-07-30
305279	T-1 0'	soil	2012-07-18	00:00	2012-07-30
305280	T-1 4'	soil	2012-07-18	00:00	2012-07-30
305281	T-1 8'	soil	2012-07-19	00:00	2012-07-30
305282	T-2 0'	soil	2012-07-19	00:00	2012-07-30
305283	T-2 4'	soil	2012-07-19	00:00	2012-07-30
305284	T-2 8'	soil	2012-07-19	00:00	2012-07-30
305285	T-3 0'	soil	2012-07-18	00:00	2012-07-30
305286	T-3 4'	soil	2012-07-18	00:00	2012-07-30
305287	T-3 8'	soil	2012-07-18	00:00	2012-07-30

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

This report consists of a total of 26 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



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

Report Contents

Case Narrative	5
Analytical Report	6
Sample 305252 (Bottom Hole 1)	6
Sample 305253 (Bottom Hole 2)	6
Sample 305254 (Bottom Hole 3)	6
Sample 305255 (Bottom Hole 4)	6
Sample 305256 (Bottom Hole 5)	7
Sample 305257 (Bottom Hole 6)	7
Sample 305258 (Bottom Hole 7)	7
Sample 305259 (Bottom Hole 8)	8
Sample 305260 (Bottom Hole 9)	8
Sample 305261 (Side Wall 1)	8
Sample 305262 (Side Wall 2)	8
Sample 305263 (Side Wall 3)	9
Sample 305264 (Side Wall 4)	9
Sample 305265 (Side Wall 5)	9
Sample 305266 (Side Wall 6)	10
Sample 305267 (Side Wall 7)	10
Sample 305268 (Side Wall 8)	10
Sample 305269 (Side Wall 9)	10
Sample 305270 (Side Wall 10)	11
Sample 305271 (Side Wall 11)	11
Sample 305272 (Side Wall 12)	11
Sample 305273 (Side Wall 13)	12
Sample 305274 (Side Wall 14)	12
Sample 305275 (Side Wall 15)	12
Sample 305276 (Side Wall 16)	12
Sample 305277 (Side Wall 17)	13
Sample 305278 (Side Wall 18)	13
Sample 305279 (T-1 0')	13
Sample 305280 (T-1 4')	14
Sample 305281 (T-1 8')	14
Sample 305282 (T-2 0')	14
Sample 305283 (T-2 4')	14
Sample 305284 (T-2 8')	15
Sample 305285 (T-3 0')	15
Sample 305286 (T-3 4')	15
Sample 305287 (T-3 8')	16
Method Blanks	17
QC Batch 93602 - Method Blank (1)	17
QC Batch 93603 - Method Blank (1)	17
QC Batch 93604 - Method Blank (1)	17
QC Batch 93605 - Method Blank (1)	17
QC Batch 93606 - Method Blank (1)	18

Laboratory Control Spikes	19
QC Batch 93602 - LCS (1)	19
QC Batch 93603 - LCS (1)	19
QC Batch 93604 - LCS (1)	19
QC Batch 93605 - LCS (1)	20
QC Batch 93606 - LCS (1)	20
QC Batch 93602 - MS (1)	20
QC Batch 93603 - MS (1)	21
QC Batch 93604 - MS (1)	21
QC Batch 93605 - MS (1)	22
QC Batch 93606 - MS (1)	22
Calibration Standards	23
QC Batch 93602 - CCV (1)	23
QC Batch 93602 - CCV (2)	23
QC Batch 93603 - CCV (1)	23
QC Batch 93603 - CCV (2)	23
QC Batch 93604 - CCV (1)	23
QC Batch 93604 - CCV (2)	24
QC Batch 93605 - CCV (1)	24
QC Batch 93605 - CCV (2)	24
QC Batch 93606 - CCV (1)	24
QC Batch 93606 - CCV (2)	25
Appendix	26
Report Definitions	26
Laboratory Certifications	26
Standard Flags	26
Attachments	26

Case Narrative

Samples for project COG/BKU #146 Flowline were received by TraceAnalysis, Inc. on 2012-07-30 and assigned to work order 12073101. Samples for work order 12073101 were received intact at a temperature of 25.1 C. Samples were received on ice.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	79302	2012-08-01 at 09:04	93602	2012-08-03 at 16:06
Chloride (Titration)	SM 4500-Cl B	79302	2012-08-01 at 09:04	93603	2012-08-03 at 16:07
Chloride (Titration)	SM 4500-Cl B	79302	2012-08-01 at 09:04	93604	2012-08-03 at 16:08
Chloride (Titration)	SM 4500-Cl B	79302	2012-08-01 at 09:04	93605	2012-08-03 at 16:09
Chloride (Titration)	SM 4500-Cl B	79302	2012-08-01 at 09:04	93606	2012-08-03 at 16:10

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 12073101 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: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 6 of 26
Eddy Co., NM

Analytical Report

Sample: 305252 - Bottom Hole 1

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-03	Analyzed By:	AR
QC Batch:	93602	Sample Preparation:	2012-08-01	Prepared By:	AR
Prep Batch:	79302				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			212	mg/Kg	5	4.00

Sample: 305253 - Bottom Hole 2

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-03	Analyzed By:	AR
QC Batch:	93602	Sample Preparation:	2012-08-01	Prepared By:	AR
Prep Batch:	79302				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			13900	mg/Kg	10	4.00

Sample: 305254 - Bottom Hole 3

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-03	Analyzed By:	AR
QC Batch:	93602	Sample Preparation:	2012-08-01	Prepared By:	AR
Prep Batch:	79302				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			8990	mg/Kg	10	4.00

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 7 of 26
Eddy Co., NM

Sample: 305255 - Bottom Hole 4

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93602 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5140	mg/Kg	10	4.00

Sample: 305256 - Bottom Hole 5

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93602 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			4900	mg/Kg	10	4.00

Sample: 305257 - Bottom Hole 6

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93603 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6730	mg/Kg	10	4.00

Sample: 305258 - Bottom Hole 7

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93603 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 8 of 26
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			7750	mg/Kg	10	4.00

Sample: 305259 - Bottom Hole 8

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93603 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			11800	mg/Kg	10	4.00

Sample: 305260 - Bottom Hole 9

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93603 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1240	mg/Kg	10	4.00

Sample: 305261 - Side Wall 1

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93603 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

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

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 9 of 26
Eddy Co., NM

Sample: 305262 - Side Wall 2

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93603 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

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

Sample: 305263 - Side Wall 3

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93603 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

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

Sample: 305264 - Side Wall 4

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93603 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

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

Sample: 305265 - Side Wall 5

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93603 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 10 of 26
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5940	mg/Kg	10	4.00

Sample: 305266 - Side Wall 6

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93603 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

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

Sample: 305267 - Side Wall 7

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93604 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			7220	mg/Kg	10	4.00

Sample: 305268 - Side Wall 8

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93604 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			46.5	mg/Kg	5	4.00

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 11 of 26
Eddy Co., NM

Sample: 305269 - Side Wall 9

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93604 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3240	mg/Kg	10	4.00

Sample: 305270 - Side Wall 10

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93604 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			837	mg/Kg	5	4.00

Sample: 305271 - Side Wall 11

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93604 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			172	mg/Kg	5	4.00

Sample: 305272 - Side Wall 12

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93604 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 12 of 26
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			195	mg/Kg	5	4.00

Sample: 305273 - Side Wall 13

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93604 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

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

Sample: 305274 - Side Wall 14

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93604 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1000	mg/Kg	5	4.00

Sample: 305275 - Side Wall 15

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93604 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1590	mg/Kg	10	4.00

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 13 of 26
Eddy Co., NM

Sample: 305276 - Side Wall 16

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93604 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1890	mg/Kg	10	4.00

Sample: 305277 - Side Wall 17

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93605 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			60.8	mg/Kg	5	4.00

Sample: 305278 - Side Wall 18

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93605 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			56.1	mg/Kg	5	4.00

Sample: 305279 - T-1 0'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93605 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 14 of 26
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			37.4	mg/Kg	5	4.00

Sample: 305280 - T-1 4'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93605 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

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

Sample: 305281 - T-1 8'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93605 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			46.8	mg/Kg	5	4.00

Sample: 305282 - T-2 0'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 93605 Date Analyzed: 2012-08-03 Analyzed By: AR
Prep Batch: 79302 Sample Preparation: 2012-08-01 Prepared By: AR

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

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 15 of 26
Eddy Co., NM

Sample: 305283 - T-2 4'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-03	Analyzed By:	AR
QC Batch:	93605	Sample Preparation:	2012-08-01	Prepared By:	AR
Prep Batch:	79302				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			159	mg/Kg	5	4.00

Sample: 305284 - T-2 8'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-03	Analyzed By:	AR
QC Batch:	93605	Sample Preparation:	2012-08-01	Prepared By:	AR
Prep Batch:	79302				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			837	mg/Kg	5	4.00

Sample: 305285 - T-3 0'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-03	Analyzed By:	AR
QC Batch:	93605	Sample Preparation:	2012-08-01	Prepared By:	AR
Prep Batch:	79302				

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

Sample: 305286 - T-3 4'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-08-03	Analyzed By:	AR
QC Batch:	93605	Sample Preparation:	2012-08-01	Prepared By:	AR
Prep Batch:	79302				

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 16 of 26
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			28.1	mg/Kg	5	4.00

Sample: 305287 - T-3 8'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 93606

Prep Batch: 79302

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-08-03

Sample Preparation: 2012-08-01

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			309	mg/Kg	5	4.00

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 17 of 26
Eddy Co., NM

Method Blanks

Method Blank (1) QC Batch: 93602

QC Batch: 93602
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 93603

QC Batch: 93603
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 93604

QC Batch: 93604
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 93605

QC Batch: 93605
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 18 of 26
Eddy Co., NM

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

Method Blank (1) QC Batch: 93606

QC Batch: 93606
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

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

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 19 of 26
Eddy Co., NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 93602
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2740	mg/Kg	1	2500	<3.85	110	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2680	mg/Kg	1	2500	<3.85	107	85 - 115	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 93603
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2740	mg/Kg	1	2500	<3.85	110	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2680	mg/Kg	1	2500	<3.85	107	85 - 115	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 93604
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 20 of 26
Eddy Co., NM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2550	mg/Kg	1	2500	<3.85	102	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			2610	mg/Kg	1	2500	<3.85	104	85 - 115	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 93605
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2400	mg/Kg	1	2500	<3.85	96	85 - 115

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2480	mg/Kg	1	2500	<3.85	99	85 - 115	3	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: 93606
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2480	mg/Kg	1	2500	<3.85	99	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			2570	mg/Kg	1	2500	<3.85	103	85 - 115	4	20

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

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 21 of 26
Eddy Co., NM

Matrix Spike (MS-1) Spiked Sample: 305256

QC Batch: 93602
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			7180	mg/Kg	10	2500	4900	91	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			7340	mg/Kg	10	2500	4900	98	79.4 - 120.6	2	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: 305266

QC Batch: 93603
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2410	mg/Kg	1	2500	<3.85	96	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			2480	mg/Kg	1	2500	<3.85	99	79.4 - 120.6	3	20

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

Matrix Spike (MS-1) Spiked Sample: 305276

QC Batch: 93604
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			4100	mg/Kg	10	2500	1890	88	79.4 - 120.6

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

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 22 of 26
Eddy Co., NM

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			4280	mg/Kg	10	2500	1890	96	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: 305286

QC Batch: 93605
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2400	mg/Kg	5	2500	28.1	95	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			2510	mg/Kg	5	2500	28.1	99	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: 305287

QC Batch: 93606
Prep Batch: 79302

Date Analyzed: 2012-08-03
QC Preparation: 2012-08-01

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2600	mg/Kg	5	2500	309	92	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			2680	mg/Kg	5	2500	309	95	79.4 - 120.6	3	20

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

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 23 of 26
Eddy Co., NM

Calibration Standards

Standard (CCV-1)

QC Batch: 93602

Date Analyzed: 2012-08-03

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-08-03

Standard (CCV-2)

QC Batch: 93602

Date Analyzed: 2012-08-03

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-08-03

Standard (CCV-1)

QC Batch: 93603

Date Analyzed: 2012-08-03

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-08-03

Standard (CCV-2)

QC Batch: 93603

Date Analyzed: 2012-08-03

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	99.5	100	85 - 115	2012-08-03

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 24 of 26
Eddy Co., NM

Standard (CCV-1)

QC Batch: 93604

Date Analyzed: 2012-08-03

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	99.5	100	85 - 115	2012-08-03

Standard (CCV-2)

QC Batch: 93604

Date Analyzed: 2012-08-03

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-08-03

Standard (CCV-1)

QC Batch: 93605

Date Analyzed: 2012-08-03

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-08-03

Standard (CCV-2)

QC Batch: 93605

Date Analyzed: 2012-08-03

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-08-03

Standard (CCV-1)

QC Batch: 93606

Date Analyzed: 2012-08-03

Analyzed By: AR

Report Date: August 6, 2012
114-6401310

Work Order: 12073101
COG/BKU #146 Flowline

Page Number: 25 of 26
Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	102	102	85 - 115	2012-08-03

Standard (CCV-2)

QC Batch: 93606

Date Analyzed: 2012-08-03

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.4	98	85 - 115	2012-08-03

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

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.

12073101

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 Tavaraz

PROJECT NO.:

114-64013102

PROJECT NAME:

BYU #146 Flowline

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP.

GRAB

Eddy Co NM
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. 8240/8260/824

GC/MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 808/608

Chlorides

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

305252

7/13

S

X

Bottom Hole 1

1

253

7/13

1

1

" 2

1

254

7/17

1

1

" 3

1

255

7/17

1

1

" 4

1

256

7/19

1

1

" 5

1

257

7/20

1

1

" 6

1

258

7/23

1

1

" 7

1

259

7/24

1

1

" 8

1

260

7/24

1

1

" 9

1

261

7/13

1

1

Side wall 1

1

RELINQUISHED BY: (Signature)

Date: 7-28-12

Time: 1605

RECEIVED BY: (Signature)

Date: 7/29/12

Time: 1605

SAMPLED BY: (Print & Initial)

TF

Date: 7-27-12

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:

HAND DELIVERED

UPS

OTHER:

RECEIVING LABORATORY:

ADDRESS:

CITY: Midland

STATE: TX

ZIP:

CONTACT:

PHONE:

RECEIVED BY: (Signature)

DATE:

TIME:

TETRA TECH CONTACT PERSON:

Ike Tavaraz

Results by:

RUSH Charges

Authorized:

Yes

No

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

25.10

Midland - all

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

12073/01

OE. 17

1



(432) 682-4559 • Fax (432) 682-3946

PRESERVATIVE METHOD

No

1

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

12073101

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:

COLG

SITE MANAGER:

Ike Tavaroz

PROJECT NO.:

114-6401310

PROJECT NAME:

BRW #146 Flowline

 Eddy Co Wm
 SAMPLE IDENTIFICATION
LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHOD

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 8080/808

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date:

7-30-12

Time:

16:05

RECEIVED BY: (Signature)

Date:

7/30/12

Time:

16:05

SAMPLED BY: (Print & Initial)

TE

Date:

7-27-12

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

HAND DELIVERED

UPS

AIRBILL #:

OTHER:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Ike Tavaroz

Results by:

RUSH Charges

Authorized:

Yes No

RECEIVING LABORATORY:

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

25.1°

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

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1



TETRA TECH

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

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavaraz

PROJECT NO.:

114-6401310

PROJECT NAME:

3KV #146 Flowline

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

Eddy Co NM
SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

BTEX 8021B

TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

HCRA 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 8080/508

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date: 7-30-12

Time: 1605

RECEIVED BY: (Signature)

Date: 7-30-12

Time: 1605

SAMPLED BY: (Print & Initial)

TE

Date: 7-27-12

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEx BUS
HAND DELIVERED UPS

AIRBILL #:

OTHER:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Ike Tavaraz

Results by:

RUSH Charges
Authorized:

Yes No

RECEIVING LABORATORY:

ADDRESS:

CITY: Midland STATE: TX

CONTACT: PHONE: ZIP:

DATE:

TIME:

RECEIVED BY: (Signature)

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

25.1°

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.

Summary Report

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

Report Date: May 4, 2012

Work Order: 12042420



Project Location: Eddy Co., NM
Project Name: COG/BKU #146 Flowline
Project Number: 114-6401310

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
295112	BH-1 @ AH-1 0-1'	soil	2012-04-20	00:00	2012-04-24
295113	BH-1 @ AH-1 2-3'	soil	2012-04-20	00:00	2012-04-24
295114	BH-1 @ AH-1 4-5'	soil	2012-04-20	00:00	2012-04-24
295115	BH-1 @ AH-1 6-7'	soil	2012-04-20	00:00	2012-04-24
295116	BH-1 @ AH-1 9-10'	soil	2012-04-20	00:00	2012-04-24
295117	BH-1 @ AH-1 14-15'	soil	2012-04-20	00:00	2012-04-24
295118	BH-1 @ AH-1 19-20'	soil	2012-04-20	00:00	2012-04-24
295119	BH-1 @ AH-1 24-25'	soil	2012-04-20	00:00	2012-04-24
295120	BH-1 @ AH-1 29-30'	soil	2012-04-20	00:00	2012-04-24
295122	BH-1 @ AH-1 49-50'	soil	2012-04-20	00:00	2012-04-24
295123	BH-2 @ AH-2 0-1'	soil	2012-04-20	00:00	2012-04-24
295124	BH-2 @ AH-2 2-3'	soil	2012-04-20	00:00	2012-04-24
295125	BH-2 @ AH-2 4-5'	soil	2012-04-20	00:00	2012-04-24
295126	BH-2 @ AH-2 6-7'	soil	2012-04-20	00:00	2012-04-24
295127	BH-2 @ AH-2 9-10'	soil	2012-04-20	00:00	2012-04-24
295128	BH-2 @ AH-2 14-15'	soil	2012-04-20	00:00	2012-04-24
295129	BH-2 @ AH-2 19-20'	soil	2012-04-20	00:00	2012-04-24
295132	BH-3 @ AH-3 0-1'	soil	2012-04-19	00:00	2012-04-24
295133	BH-3 @ AH-3 2-3'	soil	2012-04-19	00:00	2012-04-24
295134	BH-3 @ AH-3 4-5'	soil	2012-04-19	00:00	2012-04-24
295135	BH-3 @ AH-3 6-7'	soil	2012-04-19	00:00	2012-04-24
295136	BH-3 @ AH-3 9-10'	soil	2012-04-19	00:00	2012-04-24
295137	BH-3 @ AH-3 14-15'	soil	2012-04-19	00:00	2012-04-24
295138	BH-3 @ AH-3 19-20'	soil	2012-04-19	00:00	2012-04-24
295139	BH-3 @ AH-3 24-25'	soil	2012-04-19	00:00	2012-04-24
295140	BH-3 @ AH-3 29-30'	soil	2012-04-19	00:00	2012-04-24
295141	BH-3 @ AH-3 39-40'	soil	2012-04-19	00:00	2012-04-24
295142	BH-3 @ AH-3 49-50'	soil	2012-04-19	00:00	2012-04-24
295145	BH-4 @ AH-4 0-1'	soil	2012-04-19	00:00	2012-04-24
295146	BH-4 @ AH-4 2-3'	soil	2012-04-19	00:00	2012-04-24

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
295147	BH-4 @ AH-4 4-5'	soil	2012-04-19	00:00	2012-04-24
295148	BH-4 @ AH-4 6-7'	soil	2012-04-19	00:00	2012-04-24
295149	BH-4 @ AH-4 9-10'	soil	2012-04-19	00:00	2012-04-24
295150	BH-4 @ AH-4 14-15'	soil	2012-04-19	00:00	2012-04-24
295151	BH-4 @ AH-4 19-20'	soil	2012-04-19	00:00	2012-04-24
295152	BH-4 @ AH-4 24-25'	soil	2012-04-19	00:00	2012-04-24
295153	BH-4 @ AH-4 29-30'	soil	2012-04-19	00:00	2012-04-24
295154	BH-4 @ AH-4 39-40'	soil	2012-04-19	00:00	2012-04-24

Sample: 295112 - BH-1 @ AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		8090	mg/Kg	4

Sample: 295113 - BH-1 @ AH-1 2-3'

Param	Flag	Result	Units	RL
Chloride		12500	mg/Kg	4

Sample: 295114 - BH-1 @ AH-1 4-5'

Param	Flag	Result	Units	RL
Chloride		15200	mg/Kg	4

Sample: 295115 - BH-1 @ AH-1 6-7'

Param	Flag	Result	Units	RL
Chloride		12000	mg/Kg	4

Sample: 295116 - BH-1 @ AH-1 9-10'

Param	Flag	Result	Units	RL
Chloride		12600	mg/Kg	4

Sample: 295117 - BH-1 @ AH-1 14-15'

Param	Flag	Result	Units	RL
Chloride		10200	mg/Kg	4

Sample: 295118 - BH-1 @ AH-1 19-20'

Param	Flag	Result	Units	RL
Chloride		1110	mg/Kg	4

Sample: 295119 - BH-1 @ AH-1 24-25'

Param	Flag	Result	Units	RL
Chloride		2530	mg/Kg	4

Sample: 295120 - BH-1 @ AH-1 29-30'

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

Sample: 295122 - BH-1 @ AH-1 49-50'

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

Sample: 295123 - BH-2 @ AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		5570	mg/Kg	4

Sample: 295124 - BH-2 @ AH-2 2-3'

Param	Flag	Result	Units	RL
Chloride		13800	mg/Kg	4

Sample: 295125 - BH-2 @ AH-2 4-5'

Param	Flag	Result	Units	RL
Chloride		9120	mg/Kg	4

Sample: 295126 - BH-2 @ AH-2 6-7'

Param	Flag	Result	Units	RL
Chloride		1890	mg/Kg	4

Sample: 295127 - BH-2 @ AH-2 9-10'

Param	Flag	Result	Units	RL
Chloride		517	mg/Kg	4

Sample: 295128 - BH-2 @ AH-2 14-15'

Param	Flag	Result	Units	RL
Chloride		117	mg/Kg	4

Sample: 295129 - BH-2 @ AH-2 19-20'

Param	Flag	Result	Units	RL
Chloride		43.9	mg/Kg	4

Sample: 295132 - BH-3 @ AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		6380	mg/Kg	4

Sample: 295133 - BH-3 @ AH-3 2-3'

Param	Flag	Result	Units	RL
Chloride		5280	mg/Kg	4

Sample: 295134 - BH-3 @ AH-3 4-5'

Param	Flag	Result	Units	RL
Chloride		14900	mg/Kg	4

Sample: 295135 - BH-3 @ AH-3 6-7'

Param	Flag	Result	Units	RL
Chloride		11600	mg/Kg	4

Sample: 295136 - BH-3 @ AH-3 9-10'

Param	Flag	Result	Units	RL
Chloride		10200	mg/Kg	4

Sample: 295137 - BH-3 @ AH-3 14-15'

Param	Flag	Result	Units	RL
Chloride		10800	mg/Kg	4

Sample: 295138 - BH-3 @ AH-3 19-20'

Param	Flag	Result	Units	RL
Chloride		3560	mg/Kg	4

Sample: 295139 - BH-3 @ AH-3 24-25'

Param	Flag	Result	Units	RL
Chloride		6790	mg/Kg	4

Sample: 295140 - BH-3 @ AH-3 29-30'

Param	Flag	Result	Units	RL
Chloride		6900	mg/Kg	4

Sample: 295141 - BH-3 @ AH-3 39-40'

Param	Flag	Result	Units	RL
Chloride		321	mg/Kg	4

Sample: 295142 - BH-3 @ AH-3 49-50'

Param	Flag	Result	Units	RL
Chloride		97.3	mg/Kg	4

Sample: 295145 - BH-4 @ AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		6960	mg/Kg	4

Sample: 295146 - BH-4 @ AH-4 2-3'

Param	Flag	Result	Units	RL
Chloride		11900	mg/Kg	4

Sample: 295147 - BH-4 @ AH-4 4-5'

Param	Flag	Result	Units	RL
Chloride		14900	mg/Kg	4

Sample: 295148 - BH-4 @ AH-4 6-7'

Param	Flag	Result	Units	RL
Chloride		13000	mg/Kg	4

Sample: 295149 - BH-4 @ AH-4 9-10'

Param	Flag	Result	Units	RL
Chloride		13400	mg/Kg	4

Sample: 295150 - BH-4 @ AH-4 14-15'

Param	Flag	Result	Units	RL
Chloride		6520	mg/Kg	4

Sample: 295151 - BH-4 @ AH-4 19-20'

Param	Flag	Result	Units	RL
Chloride		3080	mg/Kg	4

Sample: 295152 - BH-4 @ AH-4 24-25'

Param	Flag	Result	Units	RL
Chloride		734	mg/Kg	4

Sample: 295153 - BH-4 @ AH-4 29-30'

Param	Flag	Result	Units	RL
Chloride		2170	mg/Kg	4

Sample: 295154 - BH-4 @ AH-4 39-40'

Param	Flag	Result	Units	RL
Chloride		151	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 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: May 4, 2012

Work Order: 12042420



Project Location: Eddy Co., NM
Project Name: COG/BKU #146 Flowline
Project Number: 114-6401310

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
295112	BH-1 @ AH-1 0-1'	soil	2012-04-20	00:00	2012-04-24
295113	BH-1 @ AH-1 2-3'	soil	2012-04-20	00:00	2012-04-24
295114	BH-1 @ AH-1 4-5'	soil	2012-04-20	00:00	2012-04-24
295115	BH-1 @ AH-1 6-7'	soil	2012-04-20	00:00	2012-04-24
295116	BH-1 @ AH-1 9-10'	soil	2012-04-20	00:00	2012-04-24
295117	BH-1 @ AH-1 14-15'	soil	2012-04-20	00:00	2012-04-24
295118	BH-1 @ AH-1 19-20'	soil	2012-04-20	00:00	2012-04-24
295119	BH-1 @ AH-1 24-25'	soil	2012-04-20	00:00	2012-04-24
295120	BH-1 @ AH-1 29-30'	soil	2012-04-20	00:00	2012-04-24
295122	BH-1 @ AH-1 49-50'	soil	2012-04-20	00:00	2012-04-24
295123	BH-2 @ AH-2 0-1'	soil	2012-04-20	00:00	2012-04-24
295124	BH-2 @ AH-2 2-3'	soil	2012-04-20	00:00	2012-04-24
295125	BH-2 @ AH-2 4-5'	soil	2012-04-20	00:00	2012-04-24
295126	BH-2 @ AH-2 6-7'	soil	2012-04-20	00:00	2012-04-24
295127	BH-2 @ AH-2 9-10'	soil	2012-04-20	00:00	2012-04-24
295128	BH-2 @ AH-2 14-15'	soil	2012-04-20	00:00	2012-04-24
295129	BH-2 @ AH-2 19-20'	soil	2012-04-20	00:00	2012-04-24
295132	BH-3 @ AH-3 0-1'	soil	2012-04-19	00:00	2012-04-24

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
295133	BH-3 @ AH-3 2-3'	soil	2012-04-19	00:00	2012-04-24
295134	BH-3 @ AH-3 4-5'	soil	2012-04-19	00:00	2012-04-24
295135	BH-3 @ AH-3 6-7'	soil	2012-04-19	00:00	2012-04-24
295136	BH-3 @ AH-3 9-10'	soil	2012-04-19	00:00	2012-04-24
295137	BH-3 @ AH-3 14-15'	soil	2012-04-19	00:00	2012-04-24
295138	BH-3 @ AH-3 19-20'	soil	2012-04-19	00:00	2012-04-24
295139	BH-3 @ AH-3 24-25'	soil	2012-04-19	00:00	2012-04-24
295140	BH-3 @ AH-3 29-30'	soil	2012-04-19	00:00	2012-04-24
295141	BH-3 @ AH-3 39-40'	soil	2012-04-19	00:00	2012-04-24
295142	BH-3 @ AH-3 49-50'	soil	2012-04-19	00:00	2012-04-24
295145	BH-4 @ AH-4 0-1'	soil	2012-04-19	00:00	2012-04-24
295146	BH-4 @ AH-4 2-3'	soil	2012-04-19	00:00	2012-04-24
295147	BH-4 @ AH-4 4-5'	soil	2012-04-19	00:00	2012-04-24
295148	BH-4 @ AH-4 6-7'	soil	2012-04-19	00:00	2012-04-24
295149	BH-4 @ AH-4 9-10'	soil	2012-04-19	00:00	2012-04-24
295150	BH-4 @ AH-4 14-15'	soil	2012-04-19	00:00	2012-04-24
295151	BH-4 @ AH-4 19-20'	soil	2012-04-19	00:00	2012-04-24
295152	BH-4 @ AH-4 24-25'	soil	2012-04-19	00:00	2012-04-24
295153	BH-4 @ AH-4 29-30'	soil	2012-04-19	00:00	2012-04-24
295154	BH-4 @ AH-4 39-40'	soil	2012-04-19	00:00	2012-04-24

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



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

Report Contents

Case Narrative	5
Analytical Report	6
Sample 295112 (BH-1 @AH-1 0-1')	6
Sample 295113 (BH-1 @AH-1 2-3')	6
Sample 295114 (BH-1 @AH-1 4-5')	6
Sample 295115 (BH-1 @AH-1 6-7')	6
Sample 295116 (BH-1 @AH-1 9-10')	7
Sample 295117 (BH-1 @AH-1 14-15')	7
Sample 295118 (BH-1 @AH-1 19-20')	7
Sample 295119 (BH-1 @AH-1 24-25')	8
Sample 295120 (BH-1 @AH-1 29-30')	8
Sample 295122 (BH-1 @AH-1 49-50')	8
Sample 295123 (BH-2 @AH-2 0-1')	8
Sample 295124 (BH-2 @AH-2 2-3')	9
Sample 295125 (BH-2 @AH-2 4-5')	9
Sample 295126 (BH-2 @AH-2 6-7')	9
Sample 295127 (BH-2 @AH-2 9-10')	10
Sample 295128 (BH-2 @AH-2 14-15')	10
Sample 295129 (BH-2 @AH-2 19-20')	10
Sample 295132 (BH-3 @AH-3 0-1')	10
Sample 295133 (BH-3 @AH-3 2-3')	11
Sample 295134 (BH-3 @AH-3 4-5')	11
Sample 295135 (BH-3 @AH-3 6-7')	11
Sample 295136 (BH-3 @AH-3 9-10')	12
Sample 295137 (BH-3 @AH-3 14-15')	12
Sample 295138 (BH-3 @AH-3 19-20')	12
Sample 295139 (BH-3 @AH-3 24-25')	12
Sample 295140 (BH-3 @AH-3 29-30')	13
Sample 295141 (BH-3 @AH-3 39-40')	13
Sample 295142 (BH-3 @AH-3 49-50')	13
Sample 295145 (BH-4 @AH-4 0-1')	14
Sample 295146 (BH-4 @AH-4 2-3')	14
Sample 295147 (BH-4 @AH-4 4-5')	14
Sample 295148 (BH-4 @AH-4 6-7')	14
Sample 295149 (BH-4 @AH-4 9-10')	15
Sample 295150 (BH-4 @AH-4 14-15')	15
Sample 295151 (BH-4 @AH-4 19-20')	15
Sample 295152 (BH-4 @AH-4 24-25')	16
Sample 295153 (BH-4 @AH-4 29-30')	16
Sample 295154 (BH-4 @AH-4 39-40')	16
Method Blanks	17
QC Batch 90862 - Method Blank (1)	17
QC Batch 90863 - Method Blank (1)	17
QC Batch 90864 - Method Blank (1)	17

QC Batch 90865 - Method Blank (1)	17
Laboratory Control Spikes	19
QC Batch 90862 - LCS (1)	19
QC Batch 90863 - LCS (1)	19
QC Batch 90864 - LCS (1)	19
QC Batch 90865 - LCS (1)	20
QC Batch 90862 - MS (1)	20
QC Batch 90863 - MS (1)	20
QC Batch 90864 - MS (1)	21
QC Batch 90865 - MS (1)	21
Calibration Standards	23
QC Batch 90862 - CCV (1)	23
QC Batch 90862 - CCV (2)	23
QC Batch 90863 - CCV (1)	23
QC Batch 90863 - CCV (2)	23
QC Batch 90864 - CCV (1)	23
QC Batch 90864 - CCV (2)	24
QC Batch 90865 - CCV (1)	24
QC Batch 90865 - CCV (2)	24
Appendix	25
Report Definitions	25
Laboratory Certifications	25
Standard Flags	25
Attachments	25

Case Narrative

Samples for project COG/BKU #146 Flowline were received by TraceAnalysis, Inc. on 2012-04-24 and assigned to work order 12042420. Samples for work order 12042420 were received intact at a temperature of 1.4 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	77061	2012-05-01 at 08:50	90862	2012-05-02 at 15:09
Chloride (Titration)	SM 4500-Cl B	77061	2012-05-01 at 08:50	90863	2012-05-02 at 15:10
Chloride (Titration)	SM 4500-Cl B	77061	2012-05-01 at 08:50	90864	2012-05-03 at 15:11
Chloride (Titration)	SM 4500-Cl B	77061	2012-05-01 at 08:50	90865	2012-05-03 at 15:12

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 12042420 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: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 6 of 25
Eddy Co., NM

Analytical Report

Sample: 295112 - BH-1 @ AH-1 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90862	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			8090	mg/Kg	10	4.00

Sample: 295113 - BH-1 @ AH-1 2-3'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90862	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			12500	mg/Kg	10	4.00

Sample: 295114 - BH-1 @ AH-1 4-5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90862	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			15200	mg/Kg	10	4.00

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 7 of 25
Eddy Co., NM

Sample: 295115 - BH-1 @ AH-1 6-7'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90862	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			12000	mg/Kg	10	4.00

Sample: 295116 - BH-1 @ AH-1 9-10'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90862	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			12600	mg/Kg	10	4.00

Sample: 295117 - BH-1 @ AH-1 14-15'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90862	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			10200	mg/Kg	10	4.00

Sample: 295118 - BH-1 @ AH-1 19-20'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90862	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 8 of 25
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1110	mg/Kg	10	4.00

Sample: 295119 - BH-1 @ AH-1 24-25'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90862 Date Analyzed: 2012-05-02 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2530	mg/Kg	10	4.00

Sample: 295120 - BH-1 @ AH-1 29-30'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90863 Date Analyzed: 2012-05-02 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

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

Sample: 295122 - BH-1 @ AH-1 49-50'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90863 Date Analyzed: 2012-05-02 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

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

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 9 of 25
Eddy Co., NM

Sample: 295123 - BH-2 @ AH-2 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90863	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5570	mg/Kg	10	4.00

Sample: 295124 - BH-2 @ AH-2 2-3'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90863	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			13800	mg/Kg	10	4.00

Sample: 295125 - BH-2 @ AH-2 4-5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90863	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			9120	mg/Kg	10	4.00

Sample: 295126 - BH-2 @ AH-2 6-7'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90863	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 10 of 25
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1890	mg/Kg	10	4.00

Sample: 295127 - BH-2 @ AH-2 9-10'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90863 Date Analyzed: 2012-05-02 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			517	mg/Kg	10	4.00

Sample: 295128 - BH-2 @ AH-2 14-15'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90863 Date Analyzed: 2012-05-02 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			117	mg/Kg	5	4.00

Sample: 295129 - BH-2 @ AH-2 19-20'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90863 Date Analyzed: 2012-05-02 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			43.9	mg/Kg	5	4.00

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 11 of 25
Eddy Co., NM

Sample: 295132 - BH-3 @ AH-3 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-02	Analyzed By:	AR
QC Batch:	90863	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6380	mg/Kg	10	4.00

Sample: 295133 - BH-3 @ AH-3 2-3'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-03	Analyzed By:	AR
QC Batch:	90864	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5280	mg/Kg	10	4.00

Sample: 295134 - BH-3 @ AH-3 4-5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-03	Analyzed By:	AR
QC Batch:	90864	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			14900	mg/Kg	10	4.00

Sample: 295135 - BH-3 @ AH-3 6-7'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-03	Analyzed By:	AR
QC Batch:	90864	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 12 of 25
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			11600	mg/Kg	10	4.00

Sample: 295136 - BH-3 @ AH-3 9-10'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90864 Date Analyzed: 2012-05-03 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			10200	mg/Kg	10	4.00

Sample: 295137 - BH-3 @ AH-3 14-15'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90864 Date Analyzed: 2012-05-03 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			10800	mg/Kg	10	4.00

Sample: 295138 - BH-3 @ AH-3 19-20'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90864 Date Analyzed: 2012-05-03 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3560	mg/Kg	10	4.00

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 13 of 25
Eddy Co., NM

Sample: 295139 - BH-3 @ AH-3 24-25'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-03	Analyzed By:	AR
QC Batch:	90864	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6790	mg/Kg	10	4.00

Sample: 295140 - BH-3 @ AH-3 29-30'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-03	Analyzed By:	AR
QC Batch:	90864	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6900	mg/Kg	10	4.00

Sample: 295141 - BH-3 @ AH-3 39-40'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-03	Analyzed By:	AR
QC Batch:	90864	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			321	mg/Kg	5	4.00

Sample: 295142 - BH-3 @ AH-3 49-50'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-03	Analyzed By:	AR
QC Batch:	90864	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 14 of 25
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			97.3	mg/Kg	5	4.00

Sample: 295145 - BH-4 @ AH-4 0-1'

Laboratory: Midland						
Analysis: Chloride (Titration)		Analytical Method: SM 4500-Cl B		Prep Method: N/A		
QC Batch: 90865		Date Analyzed: 2012-05-03		Analyzed By: AR		
Prep Batch: 77061		Sample Preparation: 2012-05-01		Prepared By: AR		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6960	mg/Kg	10	4.00

Sample: 295146 - BH-4 @ AH-4 2-3'

Laboratory: Midland						
Analysis: Chloride (Titration)		Analytical Method: SM 4500-Cl B		Prep Method: N/A		
QC Batch: 90865		Date Analyzed: 2012-05-03		Analyzed By: AR		
Prep Batch: 77061		Sample Preparation: 2012-05-01		Prepared By: AR		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			11900	mg/Kg	10	4.00

Sample: 295147 - BH-4 @ AH-4 4-5'

Laboratory: Midland						
Analysis: Chloride (Titration)		Analytical Method: SM 4500-Cl B		Prep Method: N/A		
QC Batch: 90865		Date Analyzed: 2012-05-03		Analyzed By: AR		
Prep Batch: 77061		Sample Preparation: 2012-05-01		Prepared By: AR		

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			14900	mg/Kg	10	4.00

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 15 of 25
Eddy Co., NM

Sample: 295148 - BH-4 @ AH-4 6-7'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-03	Analyzed By:	AR
QC Batch:	90865	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			13000	mg/Kg	10	4.00

Sample: 295149 - BH-4 @ AH-4 9-10'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-03	Analyzed By:	AR
QC Batch:	90865	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			13400	mg/Kg	10	4.00

Sample: 295150 - BH-4 @ AH-4 14-15'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-03	Analyzed By:	AR
QC Batch:	90865	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6520	mg/Kg	10	4.00

Sample: 295151 - BH-4 @ AH-4 19-20'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-05-03	Analyzed By:	AR
QC Batch:	90865	Sample Preparation:	2012-05-01	Prepared By:	AR
Prep Batch:	77061				

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 16 of 25
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3080	mg/Kg	10	4.00

Sample: 295152 - BH-4 @ AH-4 24-25'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90865 Date Analyzed: 2012-05-03 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			734	mg/Kg	5	4.00

Sample: 295153 - BH-4 @ AH-4 29-30'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90865 Date Analyzed: 2012-05-03 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2170	mg/Kg	10	4.00

Sample: 295154 - BH-4 @ AH-4 39-40'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 90865 Date Analyzed: 2012-05-03 Analyzed By: AR
Prep Batch: 77061 Sample Preparation: 2012-05-01 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			151	mg/Kg	5	4.00

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 17 of 25
Eddy Co., NM

Method Blanks

Method Blank (1) QC Batch: 90862

QC Batch: 90862
Prep Batch: 77061

Date Analyzed: 2012-05-02
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 90863

QC Batch: 90863
Prep Batch: 77061

Date Analyzed: 2012-05-02
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 90864

QC Batch: 90864
Prep Batch: 77061

Date Analyzed: 2012-05-03
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 90865

QC Batch: 90865
Prep Batch: 77061

Date Analyzed: 2012-05-03
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 18 of 25
Eddy Co., NM

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

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 19 of 25
Eddy Co., NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 90862
Prep Batch: 77061

Date Analyzed: 2012-05-02
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2510	mg/Kg	1	2500	<3.85	100	85 - 115	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 90863
Prep Batch: 77061

Date Analyzed: 2012-05-02
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2470	mg/Kg	1	2500	<3.85	99	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2390	mg/Kg	1	2500	<3.85	96	85 - 115	3	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: 90864
Prep Batch: 77061

Date Analyzed: 2012-05-03
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 20 of 25
Eddy Co., NM

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2500	mg/Kg	1	2500	<3.85	100	85 - 115	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 90865
Prep Batch: 77061

Date Analyzed: 2012-05-03
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2470	mg/Kg	1	2500	<3.85	99	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2580	mg/Kg	1	2500	<3.85	103	85 - 115	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: 295119

QC Batch: 90862
Prep Batch: 77061

Date Analyzed: 2012-05-02
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			5070	mg/Kg	10	2500	2530	102	79.4 - 120.6

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			5250	mg/Kg	10	2500	2530	109	79.4 - 120.6	4	20

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

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 21 of 25
Eddy Co., NM

Matrix Spike (MS-1) Spiked Sample: 295132

QC Batch: 90863
Prep Batch: 77061

Date Analyzed: 2012-05-02
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			9070	mg/Kg	10	2500	6380	108	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			9310	mg/Kg	10	2500	6380	117	79.4 - 120.6	3	20

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

Matrix Spike (MS-1) Spiked Sample: 295142

QC Batch: 90864
Prep Batch: 77061

Date Analyzed: 2012-05-03
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2420	mg/Kg	5	2500	97.3	93	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			2490	mg/Kg	5	2500	97.3	96	79.4 - 120.6	3	20

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

Matrix Spike (MS-1) Spiked Sample: 295154

QC Batch: 90865
Prep Batch: 77061

Date Analyzed: 2012-05-03
QC Preparation: 2012-05-01

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2490	mg/Kg	5	2500	151	94	79.4 - 120.6

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

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 22 of 25
Eddy Co., NM

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2660	mg/Kg	5	2500	151	100	79.4 - 120.6	7	20

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

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 23 of 25
Eddy Co., NM

Calibration Standards

Standard (CCV-1)

QC Batch: 90862

Date Analyzed: 2012-05-02

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.9	99	85 - 115	2012-05-02

Standard (CCV-2)

QC Batch: 90862

Date Analyzed: 2012-05-02

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-05-02

Standard (CCV-1)

QC Batch: 90863

Date Analyzed: 2012-05-02

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.6	100	85 - 115	2012-05-02

Standard (CCV-2)

QC Batch: 90863

Date Analyzed: 2012-05-02

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-05-02

Report Date: May 4, 2012
114-6401310

Work Order: 12042420
COG/BKU #146 Flowline

Page Number: 24 of 25
Eddy Co., NM

Standard (CCV-1)

QC Batch: 90864

Date Analyzed: 2012-05-03

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-05-03

Standard (CCV-2)

QC Batch: 90864

Date Analyzed: 2012-05-03

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.9	99	85 - 115	2012-05-03

Standard (CCV-1)

QC Batch: 90865

Date Analyzed: 2012-05-03

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.8	99	85 - 115	2012-05-03

Standard (CCV-2)

QC Batch: 90865

Date Analyzed: 2012-05-03

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-05-03

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

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.

12042420

Analysis Request of Chain of Custody Record

PAGE: 1 of 5

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

 ANALYSIS REQUEST
 (Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavaraz

PROJECT NO.:

114-6401310

PROJECT NAME:

BKU 146

LAB I.D.
NUMBERDATE
2012

TIME

MATRIX

COMP

GRAB

 Eddy Co. NM
 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

PCBs 8080/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

29512

4/20

S

X

BH-1 @ AH-1 0-1'

1

113

2-3'

1

114

4-5'

1

115

6-7'

1

116

9-10'

1

117

14-15'

1

118

19-20'

1

119

21-25'

1

120

27-30'

1

121

39-40'

1

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLED BY: (Print & Initial)

Kim

Date:

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 Tavaraz

Results by:

RUSH Charges
Authorized:

Yes No

RECEIVING LABORATORY:

ADDRESS:

CITY:

CONTACT:

TRACE

MIDLAND

STATE: TX

PHONE:

ZIP:

RECEIVED BY: (Signature)

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

12042420

Analysis Request of Chain of Custody Record

PAGE: 2 5

**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.:

114-6401310

PROJECT NAME:

BKU 146

LAB I.D.
NUMBER

DATE

TIME

MATRIX
COMP.
GRAB
 Eddy Co., NM
 SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHOD

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

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLED BY: (Print & Initial)

Kim

Date:

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

HAND DELIVERED

UPS

AIRBILL #:

OTHER:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Results by:

RECEIVING LABORATORY:

ADDRESS:

CITY: MIDLAND

STATE: TX

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

RECEIVED BY: (Signature)

Ike Tavares

RUSH Charges
Authorized:

Yes No

SAMPLE CONDITION WHEN RECEIVED:

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.

Analysis Request of Chain of Custody Record

PAGE: 3 of 5



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:

C06

SITE MANAGER:

Ike Tavares

PROJECT NO.:

114-640310

PROJECT NAME:

BKV 146

LAB I.D.
NUMBER

DATE
2012

TIME

MATRIX
COMP
GRAB

132

4/19

S

X

133

134

135

136

12042420

Analysis Request of Chain of Custody Record

PAGE: 4 OF: 5

**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.:

114-640 1310

PROJECT NAME:

ISKU 146

LAB I.D.
NUMBERDATE
2012

TIME

MATRIX
COMP
GRAB
 Edley Co., NM
 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. 8240/8260/824

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

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLED BY: (Print & Initial)

Kim

Date:

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

AIRBILL #:

HAND DELIVERED

UPS

OTHER:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Ike Tavares

Results by:

RECEIVING LABORATORY:

TRACE

RECEIVED BY: (Signature)

ADDRESS:

CITY: MIDLAND

STATE: TX

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

40 intact

RUSH Charges

Authorized:

Yes

No

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

Analysis Request of Chain of Custody Record



ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

PROJECT NO.:

LAB I.D.
NUMBER

152

RELINQUISHED BY: (Signature)

RELINQUISHED BY: (Signature)

RELINQUISHED BY: (Signature)

RECEIVING LABORATORY:

ADDRESS: _____

SAMPLE CONDITION WHEN RECEIVED:

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

Report Date: March 14, 2012

Work Order: 12030926



Project Location: Eddy Co., NM
Project Name: COG/BKU #146 Flowline
Project Number: 114-6401310

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
290959	AH-1 0-1'	soil	2012-03-08	00:00	2012-03-09
290960	AH-2 0-1'	soil	2012-03-08	00:00	2012-03-09
290961	AH-3 0-1'	soil	2012-03-08	00:00	2012-03-09
290962	AH-4 0-1'	soil	2012-03-08	00:00	2012-03-09
290963	AH-5 0-1'	soil	2012-03-08	00:00	2012-03-09
290964	AH-6 0-1'	soil	2012-03-08	00:00	2012-03-09
290965	AH-7 0-1'	soil	2012-03-08	00:00	2012-03-09
290966	AH-8 0-1'	soil	2012-03-08	00:00	2012-03-09

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)
290959 - AH-1 0-1'	<0.0200 Qs	<0.0200 Qs	0.198 Qs	0.600 Qs	301	46.3
290960 - AH-2 0-1'	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	136	4.88
290961 - AH-3 0-1'	<0.100 Qs	<0.100 Qs	1.22 Qs	2.75 Qs	1260	391
290962 - AH-4 0-1'	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	569	6.18
290963 - AH-5 0-1'	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	92.1	6.21
290964 - AH-6 0-1'	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	109	<2.00
290965 - AH-7 0-1'	<0.100 Qs	0.634 Qs	1.52 Qs	3.28 Qs	3040	146
290966 - AH-8 0-1'	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	65.4	2.91

Sample: 290959 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		8580	mg/Kg	4

Sample: 290960 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		8390	mg/Kg	4

Sample: 290961 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		8730	mg/Kg	4

Sample: 290962 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		8260	mg/Kg	4

Sample: 290963 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		7630	mg/Kg	4

Sample: 290964 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		11000	mg/Kg	4

Sample: 290965 - AH-7 0-1'

Param	Flag	Result	Units	RL
Chloride		6530	mg/Kg	4

Sample: 290966 - AH-8 0-1'

Param	Flag	Result	Units	RL
Chloride		6310	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 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: tab@traceanalysis.com WEB: www.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: March 14, 2012

Work Order: 12030926



Project Location: Eddy Co., NM
Project Name: COG/BKU #146 Flowline
Project Number: 114-6401310

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
290959	AH-1 0-1'	soil	2012-03-08	00:00	2012-03-09
290960	AH-2 0-1'	soil	2012-03-08	00:00	2012-03-09
290961	AH-3 0-1'	soil	2012-03-08	00:00	2012-03-09
290962	AH-4 0-1'	soil	2012-03-08	00:00	2012-03-09
290963	AH-5 0-1'	soil	2012-03-08	00:00	2012-03-09
290964	AH-6 0-1'	soil	2012-03-08	00:00	2012-03-09
290965	AH-7 0-1'	soil	2012-03-08	00:00	2012-03-09
290966	AH-8 0-1'	soil	2012-03-08	00:00	2012-03-09

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

Blair Leftwich

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

Report Contents

Case Narrative	5
Analytical Report	6
Sample 290959 (AH-1 0-1')	6
Sample 290960 (AH-2 0-1')	7
Sample 290961 (AH-3 0-1')	8
Sample 290962 (AH-4 0-1')	10
Sample 290963 (AH-5 0-1')	11
Sample 290964 (AH-6 0-1')	13
Sample 290965 (AH-7 0-1')	14
Sample 290966 (AH-8 0-1')	16
Method Blanks	18
QC Batch 89283 - Method Blank (1)	18
QC Batch 89284 - Method Blank (1)	18
QC Batch 89285 - Method Blank (1)	18
QC Batch 89304 - Method Blank (1)	19
QC Batch 89305 - Method Blank (1)	19
Laboratory Control Spikes	20
QC Batch 89283 - LCS (1)	20
QC Batch 89284 - LCS (1)	20
QC Batch 89285 - LCS (1)	21
QC Batch 89304 - LCS (1)	21
QC Batch 89305 - LCS (1)	22
QC Batch 89283 - MS (1)	22
QC Batch 89284 - MS (1)	23
QC Batch 89285 - MS (1)	23
QC Batch 89304 - MS (1)	24
QC Batch 89305 - MS (1)	24
Calibration Standards	25
QC Batch 89283 - CCV (1)	25
QC Batch 89283 - CCV (2)	25
QC Batch 89284 - CCV (1)	25
QC Batch 89284 - CCV (2)	25
QC Batch 89284 - CCV (3)	26
QC Batch 89285 - CCV (1)	26
QC Batch 89285 - CCV (2)	26
QC Batch 89304 - ICV (1)	26
QC Batch 89304 - CCV (1)	27
QC Batch 89305 - ICV (1)	27
QC Batch 89305 - CCV (1)	27
Appendix	28
Report Definitions	28

Laboratory Certifications	28
Standard Flags	28
Attachments	28

Case Narrative

Samples for project COG/BKU #146 Flowline were received by TraceAnalysis, Inc. on 2012-03-09 and assigned to work order 12030926. Samples for work order 12030926 were received intact at a temperature of 0.8 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	75796	2012-03-09 at 09:30	89283	2012-03-10 at 03:21
Chloride (Titration)	SM 4500-Cl B	75814	2012-03-10 at 07:48	89304	2012-03-12 at 15:01
Chloride (Titration)	SM 4500-Cl B	75814	2012-03-10 at 07:48	89305	2012-03-12 at 15:02
TPH DRO - NEW	S 8015 D	75790	2012-03-10 at 12:58	89284	2012-03-12 at 09:22
TPH GRO	S 8015 D	75796	2012-03-09 at 09:30	89285	2012-03-10 at 03:48

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 12030926 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: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 6 of 28
Eddy Co., NM

Analytical Report

Sample: 290959 - AH-1 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 89283

Prep Batch: 75796

Analytical Method: S 8021B

Date Analyzed: 2012-03-10

Sample Preparation: 2012-03-09

Prep Method: S 5035

Analyzed By: tc

Prepared By: tc

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Q _a , U	1	<0.0200	mg/Kg	1	0.0200
Toluene	Q _a , U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	Q _a	1	0.198	mg/Kg	1	0.0200
Xylene	Q _a	1	0.600	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	3.02	mg/Kg	1	2.00	151	75 - 135.4
4-Bromofluorobenzene (4-BFB)			3.16	mg/Kg	1	2.00	158	63.6 - 158.9

Sample: 290959 - AH-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 89304

Prep Batch: 75814

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-03-12

Sample Preparation: 2012-03-10

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			8580	mg/Kg	100	4.00

Sample: 290959 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 89284

Prep Batch: 75790

Analytical Method: S 8015 D

Date Analyzed: 2012-03-12

Sample Preparation: 2012-03-10

Prep Method: N/A

Analyzed By: DA

Prepared By: DA

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	301	mg/Kg	1	50.0

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 7 of 28
Eddy Co., NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			123	mg/Kg	1	100	123	49.3 - 157.5

Sample: 290959 - AH-1 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 89285
Prep Batch: 75796

Analytical Method: S 8015 D
Date Analyzed: 2012-03-10
Sample Preparation: 2012-03-09

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	46.3	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.08	mg/Kg	1	2.00	154	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			3.23	mg/Kg	1	2.00	162	45.1 - 162.2

Sample: 290960 - AH-2 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 89283
Prep Batch: 75796

Analytical Method: S 8021B
Date Analyzed: 2012-03-10
Sample Preparation: 2012-03-09

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	2.84	mg/Kg	1	2.00	142	75 - 135.4
4-Bromofluorobenzene (4-BFB)			2.72	mg/Kg	1	2.00	136	63.6 - 158.9

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 8 of 28
Eddy Co., NM

Sample: 290960 - AH-2 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 89304

Prep Batch: 75814

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-03-12

Sample Preparation: 2012-03-10

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			8390	mg/Kg	100	4.00

Sample: 290960 - AH-2 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 89284

Prep Batch: 75790

Analytical Method: S 8015 D

Date Analyzed: 2012-03-12

Sample Preparation: 2012-03-10

Prep Method: N/A

Analyzed By: DA

Prepared By: DA

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	136	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			105	mg/Kg	1	100	105	49.3 - 157.5

Sample: 290960 - AH-2 0-1'

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 89285

Prep Batch: 75796

Analytical Method: S 8015 D

Date Analyzed: 2012-03-10

Sample Preparation: 2012-03-09

Prep Method: S 5035

Analyzed By: tc

Prepared By: tc

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	4.88	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.72	mg/Kg	1	2.00	136	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			2.56	mg/Kg	1	2.00	128	45.1 - 162.2

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 9 of 28
Eddy Co., NM

Sample: 290961 - AH-3 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 89283
Prep Batch: 75796

Analytical Method: S 8021B
Date Analyzed: 2012-03-10
Sample Preparation: 2012-03-09

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Qs,U	1	<0.100	mg/Kg	5	0.0200
Toluene	Qs,U	1	<0.100	mg/Kg	5	0.0200
Ethylbenzene	Qs	1	1.22	mg/Kg	5	0.0200
Xylene	Qs	1	2.75	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			6.51	mg/Kg	5	5.00	130	75 - 135.4
4-Bromofluorobenzene (4-BFB)			7.26	mg/Kg	5	5.00	145	63.6 - 158.9

Sample: 290961 - AH-3 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89305
Prep Batch: 75814

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-12
Sample Preparation: 2012-03-10

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			8730	mg/Kg	100	4.00

Sample: 290961 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 89284
Prep Batch: 75790

Analytical Method: S 8015 D
Date Analyzed: 2012-03-12
Sample Preparation: 2012-03-10

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	1260	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	214	mg/Kg	5	100	214	49.3 - 157.5

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 10 of 28
Eddy Co., NM

Sample: 290961 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 89285
Prep Batch: 75796

Analytical Method: S 8015 D
Date Analyzed: 2012-03-10
Sample Preparation: 2012-03-09

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	391	mg/Kg	5	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			6.24	mg/Kg	5	5.00	125	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			7.83	mg/Kg	5	5.00	157	45.1 - 162.2

Sample: 290962 - AH-4 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 89283
Prep Batch: 75796

Analytical Method: S 8021B
Date Analyzed: 2012-03-10
Sample Preparation: 2012-03-09

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.61	mg/Kg	1	2.00	130	75 - 135.4
4-Bromofluorobenzene (4-BFB)			2.52	mg/Kg	1	2.00	126	63.6 - 158.9

Sample: 290962 - AH-4 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89305
Prep Batch: 75814

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-12
Sample Preparation: 2012-03-10

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

continued ...

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 11 of 28
Eddy Co., NM

sample 290962 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			8260	mg/Kg	100	4.00

Sample: 290962 - AH-4 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 89284 Date Analyzed: 2012-03-12 Analyzed By: DA
Prep Batch: 75790 Sample Preparation: 2012-03-10 Prepared By: DA

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	569	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	177	mg/Kg	5	100	177	49.3 - 157.5

Sample: 290962 - AH-4 0-1'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 89285 Date Analyzed: 2012-03-10 Analyzed By: tc
Prep Batch: 75796 Sample Preparation: 2012-03-09 Prepared By: tc

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	6.18	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.49	mg/Kg	1	2.00	124	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			2.39	mg/Kg	1	2.00	120	45.1 - 162.2

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 12 of 28
Eddy Co., NM

Sample: 290963 - AH-5 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 89283

Prep Batch: 75796

Analytical Method: S 8021B

Date Analyzed: 2012-03-10

Sample Preparation: 2012-03-09

Prep Method: S 5035

Analyzed By: tc

Prepared By: tc

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.49	mg/Kg	1	2.00	124	75 - 135.4
4-Bromofluorobenzene (4-BFB)			2.44	mg/Kg	1	2.00	122	63.6 - 158.9

Sample: 290963 - AH-5 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 89305

Prep Batch: 75814

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-03-12

Sample Preparation: 2012-03-10

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			7630	mg/Kg	100	4.00

Sample: 290963 - AH-5 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 89284

Prep Batch: 75790

Analytical Method: S 8015 D

Date Analyzed: 2012-03-12

Sample Preparation: 2012-03-10

Prep Method: N/A

Analyzed By: DA

Prepared By: DA

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	92.1	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			101	mg/Kg	1	100	101	49.3 - 157.5

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 13 of 28
Eddy Co., NM

Sample: 290963 - AH-5 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 89285
Prep Batch: 75796

Analytical Method: S 8015 D
Date Analyzed: 2012-03-10
Sample Preparation: 2012-03-09

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	6.21	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.38	mg/Kg	1	2.00	119	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			2.31	mg/Kg	1	2.00	116	45.1 - 162.2

Sample: 290964 - AH-6 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 89283
Prep Batch: 75796

Analytical Method: S 8021B
Date Analyzed: 2012-03-10
Sample Preparation: 2012-03-09

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qar	Qar	2.92	mg/Kg	1	2.00	146	75 - 135.4
4-Bromofluorobenzene (4-BFB)			2.49	mg/Kg	1	2.00	124	63.6 - 158.9

Sample: 290964 - AH-6 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89305
Prep Batch: 75814

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-12
Sample Preparation: 2012-03-10

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

continued ...

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 14 of 28
Eddy Co., NM

sample 290964 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			11000	mg/Kg	100	4.00

Sample: 290964 - AH-6 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 89284 Date Analyzed: 2012-03-12 Analyzed By: DA
Prep Batch: 75790 Sample Preparation: 2012-03-10 Prepared By: DA

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	109	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	49.3 - 157.5

Sample: 290964 - AH-6 0-1'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 89285 Date Analyzed: 2012-03-10 Analyzed By: tc
Prep Batch: 75796 Sample Preparation: 2012-03-09 Prepared By: tc

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.79	mg/Kg	1	2.00	140	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			2.39	mg/Kg	1	2.00	120	45.1 - 162.2

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 15 of 28
Eddy Co., NM

Sample: 290965 - AH-7 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 89283

Prep Batch: 75796

Analytical Method: S 8021B

Date Analyzed: 2012-03-10

Sample Preparation: 2012-03-09

Prep Method: S 5035

Analyzed By: tc

Prepared By: tc

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	Q _a , U	1	<0.100	mg/Kg	5	0.0200
Toluene	Q _a	1	0.634	mg/Kg	5	0.0200
Ethylbenzene	Q _a	1	1.52	mg/Kg	5	0.0200
Xylene	Q _a	1	3.28	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			6.21	mg/Kg	5	5.00	124	75 - 135.4
4-Bromofluorobenzene (4-BFB)			6.50	mg/Kg	5	5.00	130	63.6 - 158.9

Sample: 290965 - AH-7 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 89305

Prep Batch: 75814

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-03-12

Sample Preparation: 2012-03-10

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6530	mg/Kg	100	4.00

Sample: 290965 - AH-7 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 89284

Prep Batch: 75790

Analytical Method: S 8015 D

Date Analyzed: 2012-03-12

Sample Preparation: 2012-03-10

Prep Method: N/A

Analyzed By: DA

Prepared By: DA

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	3040	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	448	mg/Kg	5	100	448	49.3 - 157.5

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 16 of 28
Eddy Co., NM

Sample: 290965 - AH-7 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 89285
Prep Batch: 75796

Analytical Method: S 8015 D
Date Analyzed: 2012-03-10
Sample Preparation: 2012-03-09

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	146	mg/Kg	5	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			5.89	mg/Kg	5	5.00	118	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			6.90	mg/Kg	5	5.00	138	45.1 - 162.2

Sample: 290966 - AH-8 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 89283
Prep Batch: 75796

Analytical Method: S 8021B
Date Analyzed: 2012-03-10
Sample Preparation: 2012-03-09

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	2.81	mg/Kg	1	2.00	140	75 - 135.4
4-Bromofluorobenzene (4-BFB)			2.70	mg/Kg	1	2.00	135	63.6 - 158.9

Sample: 290966 - AH-8 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89305
Prep Batch: 75814

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-12
Sample Preparation: 2012-03-10

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

continued ...

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 17 of 28
Eddy Co., NM

sample 290966 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			6310	mg/Kg	100	4.00

Sample: 290966 - AH-8 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 89284

Prep Batch: 75790

Analytical Method: S 8015 D

Date Analyzed: 2012-03-12

Sample Preparation: 2012-03-10

Prep Method: N/A

Analyzed By: DA

Prepared By: DA

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	65.4	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			96.6	mg/Kg	1	100	97	49.3 - 157.5

Sample: 290966 - AH-8 0-1'

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 89285

Prep Batch: 75796

Analytical Method: S 8015 D

Date Analyzed: 2012-03-10

Sample Preparation: 2012-03-09

Prep Method: S 5035

Analyzed By: tc

Prepared By: tc

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	2.91	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.68	mg/Kg	1	2.00	134	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			2.53	mg/Kg	1	2.00	126	45.1 - 162.2

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 18 of 28
Eddy Co., NM

Method Blanks

Method Blank (1) QC Batch: 89283

QC Batch: 89283
Prep Batch: 75796

Date Analyzed: 2012-03-10
QC Preparation: 2012-03-09

Analyzed By: tc
Prepared By: tc

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00470	mg/Kg	0.02
Toluene		1	<0.00980	mg/Kg	0.02
Ethylbenzene		1	<0.00500	mg/Kg	0.02
Xylene		1	<0.0170	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	78 - 123.6
4-Bromofluorobenzene (4-BFB)			1.53	mg/Kg	1	2.00	76	55.9 - 112.4

Method Blank (1) QC Batch: 89284

QC Batch: 89284
Prep Batch: 75790

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-10

Analyzed By: DA
Prepared By: DA

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			97.7	mg/Kg	1	100	98	52 - 140.8

Method Blank (1) QC Batch: 89285

QC Batch: 89285
Prep Batch: 75796

Date Analyzed: 2012-03-10
QC Preparation: 2012-03-09

Analyzed By: tc
Prepared By: tc

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 19 of 28
Eddy Co., NM

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<1.22	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.85	mg/Kg	1	2.00	92	78.6 - 109
4-Bromofluorobenzene (4-BFB)			1.50	mg/Kg	1	2.00	75	55 - 100

Method Blank (1) QC Batch: 89304

QC Batch: 89304
Prep Batch: 75814

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-10

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 89305

QC Batch: 89305
Prep Batch: 75814

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-10

Analyzed By: AR
Prepared By: AR

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

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 20 of 28
Eddy Co., NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 89283
Prep Batch: 75796

Date Analyzed: 2012-03-10
QC Preparation: 2012-03-09

Analyzed By: tc
Prepared By: tc

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.84	mg/Kg	1	2.00	<0.00470	92	86.5 - 124.9
Toluene		1	1.91	mg/Kg	1	2.00	<0.00980	96	84.7 - 122.5
Ethylbenzene		1	1.92	mg/Kg	1	2.00	<0.00500	96	79.4 - 118.9
Xylene		1	5.76	mg/Kg	1	6.00	<0.0170	96	79.5 - 118.9

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
Benzene		1	1.90	mg/Kg	1	2.00	<0.00470	95	86.5 - 124.9	3	20
Toluene		1	1.97	mg/Kg	1	2.00	<0.00980	98	84.7 - 122.5	3	20
Ethylbenzene		1	1.97	mg/Kg	1	2.00	<0.00500	98	79.4 - 118.9	3	20
Xylene		1	5.87	mg/Kg	1	6.00	<0.0170	98	79.5 - 118.9	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
Trifluorotoluene (TFT)	1.86	1.86	mg/Kg	1	2.00	93	93	73.9 - 127
4-Bromofluorobenzene (4-BFB)	1.93	1.95	mg/Kg	1	2.00	96	98	70.4 - 119

Laboratory Control Spike (LCS-1)

QC Batch: 89284
Prep Batch: 75790

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-10

Analyzed By: DA
Prepared By: DA

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	254	mg/Kg	1	250	<14.5	102	62 - 128.3

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

continued ...

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 21 of 28
Eddy Co., NM

control spikes continued ...

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	255	mg/Kg	1	250	<14.5	102	62 - 128.3	0	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
n-Tricosane	118	116	mg/Kg	1	100	118	116	58.6 - 149.6

Laboratory Control Spike (LCS-1)

QC Batch: 89285
Prep Batch: 75796

Date Analyzed: 2012-03-10
QC Preparation: 2012-03-09

Analyzed By: tc
Prepared By: tc

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.5	mg/Kg	1	20.0	<1.22	92	68.3 - 105.7

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	19.6	mg/Kg	1	20.0	<1.22	98	68.3 - 105.7	6	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)	1.79	2.16	mg/Kg	1	2.00	90	108	80 - 111.2
4-Bromofluorobenzene (4-BFB)	1.60	1.97	mg/Kg	1	2.00	80	98	66.4 - 106.6

Laboratory Control Spike (LCS-1)

QC Batch: 89304
Prep Batch: 75814

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-10

Analyzed By: AR
Prepared By: AR

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

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 22 of 28
Eddy Co., NM

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			105	mg/Kg	1	100	<3.85	105	85 - 115	5	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 89305
Prep Batch: 75814

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-10

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Rec.	Rec. Limit
Chloride			94.0	mg/Kg	1	100	<3.85	94	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.	Rec. Limit	RPD	RPD Limit
Chloride			102	mg/Kg	1	100	<3.85	102	85 - 115	8	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: 290134

QC Batch: 89283
Prep Batch: 75796

Date Analyzed: 2012-03-10
QC Preparation: 2012-03-09

Analyzed By: tc
Prepared By: tc

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Rec.	Rec. Limit
Benzene		1	4.60	mg/Kg	5	5.00	<0.0235	92	69.3 - 159.2
Toluene		1	4.81	mg/Kg	5	5.00	<0.0490	96	68.7 - 157
Ethylbenzene		1	4.60	mg/Kg	5	5.00	0.39505	84	71.6 - 158.2
Xylene		1	13.8	mg/Kg	5	15.0	1.1912	84	70.8 - 159.8

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.	Rec. Limit	RPD	RPD Limit
Benzene		1	4.87	mg/Kg	5	5.00	<0.0235	97	69.3 - 159.2	6	20
Toluene		1	5.04	mg/Kg	5	5.00	<0.0490	101	68.7 - 157	5	20
Ethylbenzene		1	4.97	mg/Kg	5	5.00	0.39505	92	71.6 - 158.2	8	20
Xylene		1	15.0	mg/Kg	5	15.0	1.1912	92	70.8 - 159.8	8	20

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 23 of 28
Eddy Co., NM

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)	5.42	6.21	mg/Kg	5	5	108	124	71.4 - 133.9
4-Bromofluorobenzene (4-BFB)	5.70	6.59	mg/Kg	5	5	114	132	72.6 - 144.1

Matrix Spike (MS-1) Spiked Sample: 290964

QC Batch: 89284
Prep Batch: 75790

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-10

Analyzed By: DA
Prepared By: DA

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	337	mg/Kg	1	250	109	91	45.5 - 127

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	336	mg/Kg	1	250	109	91	45.5 - 127	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
n-Tricosane	107	108	mg/Kg	1	100	107	108	45.4 - 145.8

Matrix Spike (MS-1) Spiked Sample: 290966

QC Batch: 89285
Prep Batch: 75796

Date Analyzed: 2012-03-10
QC Preparation: 2012-03-09

Analyzed By: tc
Prepared By: tc

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	26.9	mg/Kg	1	20.0	2.9071	120	28.2 - 157.2

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
GRO		1	25.9	mg/Kg	1	20.0	2.9071	115	28.2 - 157.2	4	20

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

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 24 of 28
Eddy Co., NM

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.58	2.54	mg/Kg	1	2	129	127	75.5 - 122.3
4-Bromofluorobenzene (4-BFB)	2.62	2.59	mg/Kg	1	2	131	130	77.9 - 122.4

Matrix Spike (MS-1) Spiked Sample: 290960

QC Batch: 89304
Prep Batch: 75814

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-10

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			18600	mg/Kg	100	10000	8390	102	79.4 - 120.6

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD Limit
Chloride			19300	mg/Kg	100	10000	8390	109	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: 290970

QC Batch: 89305
Prep Batch: 75814

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-10

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10300	mg/Kg	100	10000	487	98	79.4 - 120.6

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD Limit
Chloride			10700	mg/Kg	100	10000	487	102	79.4 - 120.6	4 20

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

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 25 of 28
Eddy Co., NM

Calibration Standards

Standard (CCV-1)

QC Batch: 89283

Date Analyzed: 2012-03-10

Analyzed By: tc

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0965	96	80 - 120	2012-03-10
Toluene		1	mg/kg	0.100	0.102	102	80 - 120	2012-03-10
Ethylbenzene		1	mg/kg	0.100	0.103	103	80 - 120	2012-03-10
Xylene		1	mg/kg	0.300	0.308	103	80 - 120	2012-03-10

Standard (CCV-2)

QC Batch: 89283

Date Analyzed: 2012-03-10

Analyzed By: tc

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0929	93	80 - 120	2012-03-10
Toluene		1	mg/kg	0.100	0.0952	95	80 - 120	2012-03-10
Ethylbenzene		1	mg/kg	0.100	0.0912	91	80 - 120	2012-03-10
Xylene		1	mg/kg	0.300	0.273	91	80 - 120	2012-03-10

Standard (CCV-1)

QC Batch: 89284

Date Analyzed: 2012-03-12

Analyzed By: DA

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	2012-03-12

Standard (CCV-2)

QC Batch: 89284

Date Analyzed: 2012-03-12

Analyzed By: DA

Report Date: March-14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 26 of 28
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	286	114	80 - 120	2012-03-12

Standard (CCV-3)

QC Batch: 89284

Date Analyzed: 2012-03-12

Analyzed By: DA

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	265	106	80 - 120	2012-03-12

Standard (CCV-1)

QC Batch: 89285

Date Analyzed: 2012-03-10

Analyzed By: tc

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.14	114	80 - 120	2012-03-10

Standard (CCV-2)

QC Batch: 89285

Date Analyzed: 2012-03-10

Analyzed By: tc

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.19	119	80 - 120	2012-03-10

Standard (ICV-1)

QC Batch: 89304

Date Analyzed: 2012-03-12

Analyzed By: AR

Report Date: March 14, 2012
114-6401310

Work Order: 12030926
COG/BKU #146 Flowline

Page Number: 27 of 28
Eddy Co., NM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.8	99	85 - 115	2012-03-12

Standard (CCV-1)

QC Batch: 89304

Date Analyzed: 2012-03-12

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-03-12

Standard (ICV-1)

QC Batch: 89305

Date Analyzed: 2012-03-12

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	96.2	96	85 - 115	2012-03-12

Standard (CCV-1)

QC Batch: 89305

Date Analyzed: 2012-03-12

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	104	104	85 - 115	2012-03-12

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-11-3	Midland

Standard Flags

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

Attachments

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

