SITE INFORMATION

Report Type: Work Plan

General Site Information:						
Site:	BKU Satellite G Injection Line					
Company:	COG Operating LLC					
Section, Township and Range	Unit C	Sec. 30	T-17-S	R-30-E		
Lease Number:	NMLC-028784B					
County:	Eddy County					
GPS:	32.81155° N			104.01222° 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 Lace C 0.3 mi, left 1000' to well location. Spill located 900' east of well.					

Release Data:	
Date Released:	9/21/2011
Type Release:	Produced Water
Source of Contamination:	Injection line leak
Fluid Released:	10 bbls
Fluids Recovered:	0 bbls

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NMOCD ARTESIA

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

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

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

TETRA TECH

March 9, 2012

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

Re: Work Plan for the COG Operating LLC., BKU Satellite G Injection Line, Unit C, 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 Satellite G Injection Line, Unit C, Section 30, Township 17 South, Range 30 East, Eddy County, New Mexico. (Site). The spill site coordinates are N 32.81155°, W 104.01222°. The site location is shown on Figures 1 and 2.

Background

According to the C-141 Initial Report, the leak was discovered on September 21, 2011, and released approximately ten (10) barrels of produced water from a corroded injection line located at the header. COG was unable to recover any fluids. The spill initiated from the injection line impacting an area of approximately 15' x 45', which pooled in a native low lying area surrounded by sand dunes. The initial C-141 form is enclosed in Appendix A.

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.

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

Regulatory

A risk-based evaluation was performed for the Site in accordance with the NMOCD Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, 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 October 7, 2011, Tetra Tech personnel inspected and sampled the spill area. One (1) auger hole (AH-1) was installed using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory reports and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole location is shown on Figure 3.

Referring to Table 1, the sample at 0-1' was below the RRAL for BTEX and TPH. The chloride impact was not vertically defined, with a bottom sample of 10,600 mg/kg at 1.5-2.0' below surface.

On March 30, 2011, Tetra Tech supervised the installation one borehole (BH-1) using an air rotary drilling rig to assess the soils. The borehole was installed to a depth of 60.0' below surface. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The boreholes results are summarized in Table 1.

Elevated chloride concentrations were detected ranging from 1,360 mg/kg at 2-3' to 16,500 mg/kg at 4-5'. The chloride concentrations declined with depth to 292 mg/kg at 39-40' below surface.

Work Plan

COG proposes to removal of impacted material as highlighted (green) in Table 1. To remove the elevated chloride concentrations, the footprint of

the spill will be excavated to a depth of 19-20' below surface. The remaining impact will be capped with a 40 mil liner at 4.0' below surface.

Based on sandy formation, the proposed excavation depth may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safely concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable. If excavation depth is not achieved, the excavated area will be capped with a 40 mil liner at 4.0' below surface and backfilled to grade.

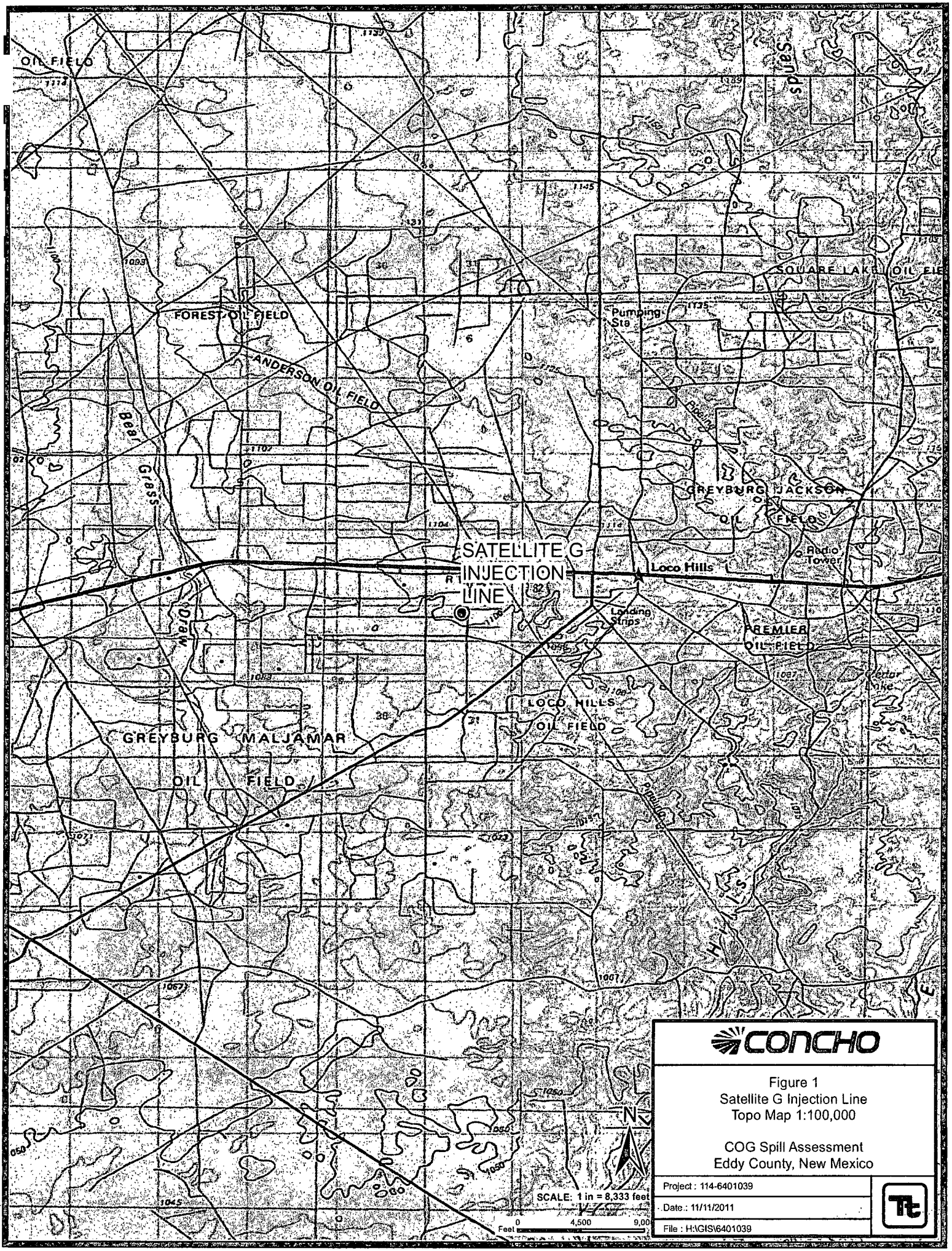
Once the areas are excavated to the appropriate depths, the excavation will be backfilled with clean soil. Upon completion a final report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez, PG
Project Manager

cc: Pat Ellis – COG
Terry Gregston - BLM

Figures



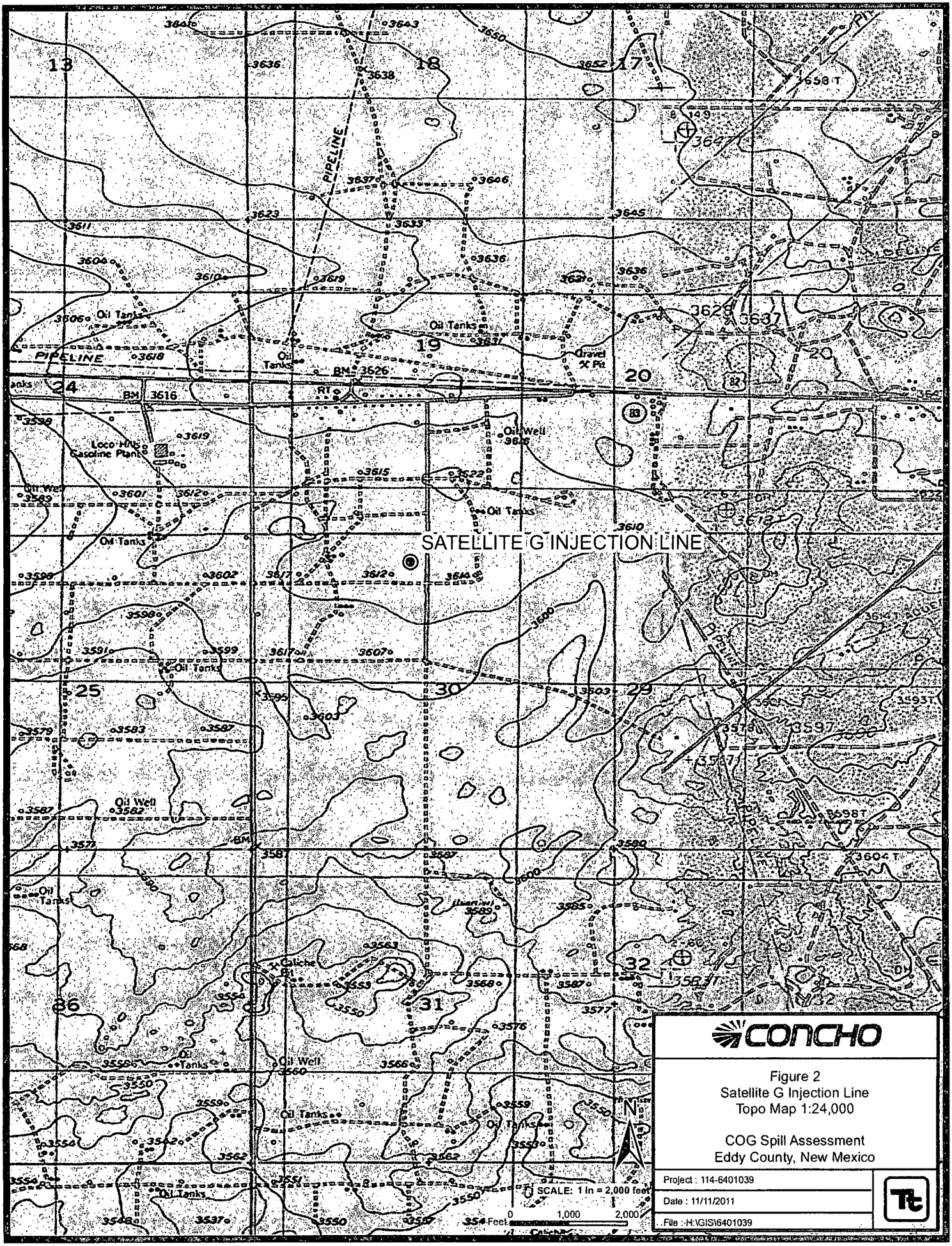
CONCHO

Figure 1
Satellite G Injection Line
Topo Map 1:100,000

COG Spill Assessment
Eddy County, New Mexico

Project : 114-6401039	
Date.: 11/11/2011	
File : H:\GIS\6401039	

Drawn By: Isabel Marmolejo



CONCHO

Figure 2
Satellite G Injection Line
Topo Map 1:24,000

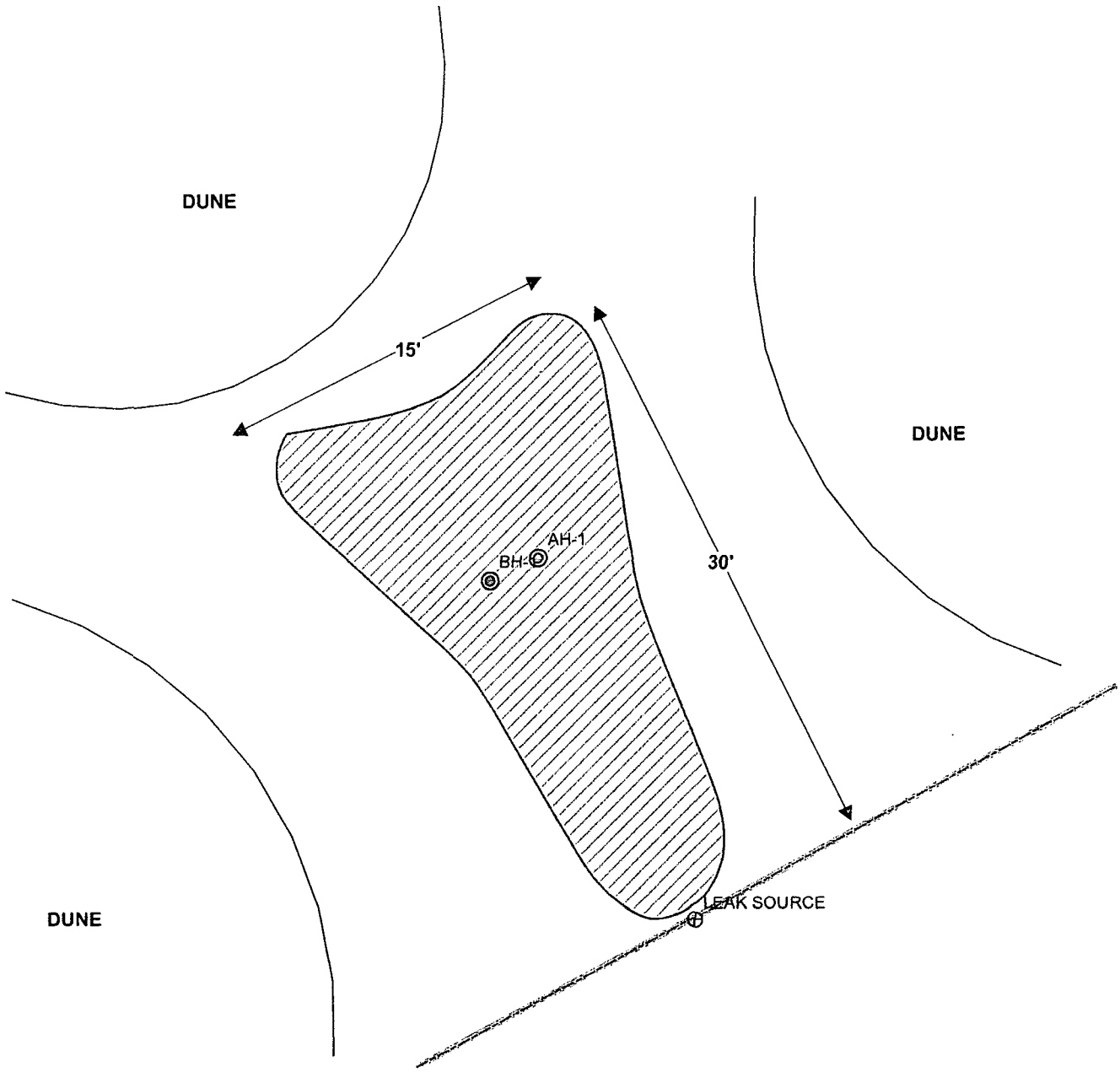
COG Spill Assessment
Eddy County, New Mexico

Project : 114-6401039

Date : 11/11/2011

File :H:\GIS\6401039

Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- BORE HOLE SAMPLE LOCATIONS
- LEAK SOURCE
- ABOVE GROUND STEEL INJECTION LINE
- SPILL AREA

N

SCALE: 1 IN = 9 FEET

Feet: 0 4 8

CONCHO

Figure 3

Sattellite G Injection Line
Spill Assessment Map

COG Spill Assessment
Eddy County, New Mexico

Project : 114-6401039	
Date : ??-??-2011	
File : H:\GIS\6401039	

Drawn By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC
BKU Satellite G Injection Line
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
AH-1	10/7/2011	0-1	-	X		3.24	<50.0	3.24	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	7,600
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	6,350
	"	1.5-2	-	X		-	-	-	-	-	-	-	-	10,600
BH-1	1/25/2012	0-1	-	X		-	-	-	-	-	-	-	-	4,160
	"	2-3	-	X		-	-	-	-	-	-	-	-	1,360
	"	4-5	-	X		-	-	-	-	-	-	-	-	16,500
	"	6-7	-	X		-	-	-	-	-	-	-	-	13,200
	"	9-10	-	X		-	-	-	-	-	-	-	-	7,100
	"	14-15	-	X		-	-	-	-	-	-	-	-	5,870
	"	19-20	-	X		-	-	-	-	-	-	-	-	10,500
	"	24-25	-	X		-	-	-	-	-	-	-	-	8,890
	"	29-30	-	X		-	-	-	-	-	-	-	-	3,710
	"	39-40	-	X		-	-	-	-	-	-	-	-	292
	"	49-50	-	X		-	-	-	-	-	-	-	-	<200
	"	59-60	-	X		-	-	-	-	-	-	-	-	<200

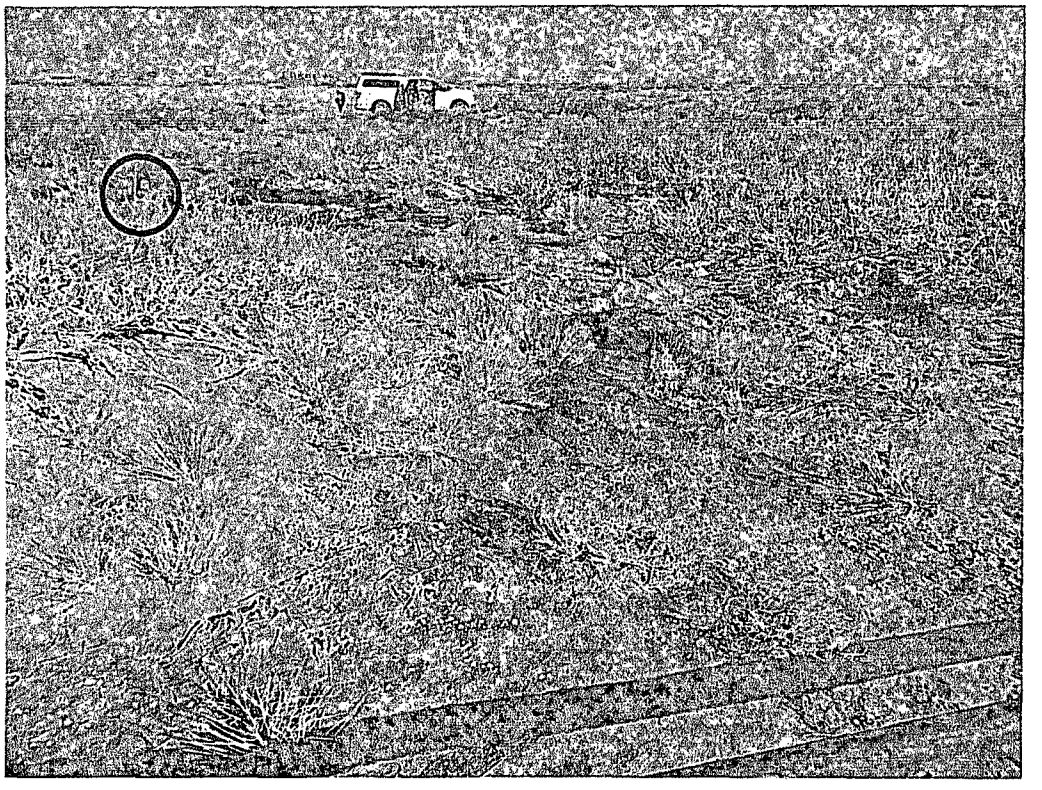
(--) Not Analyzed

Proposed Excavation Depths

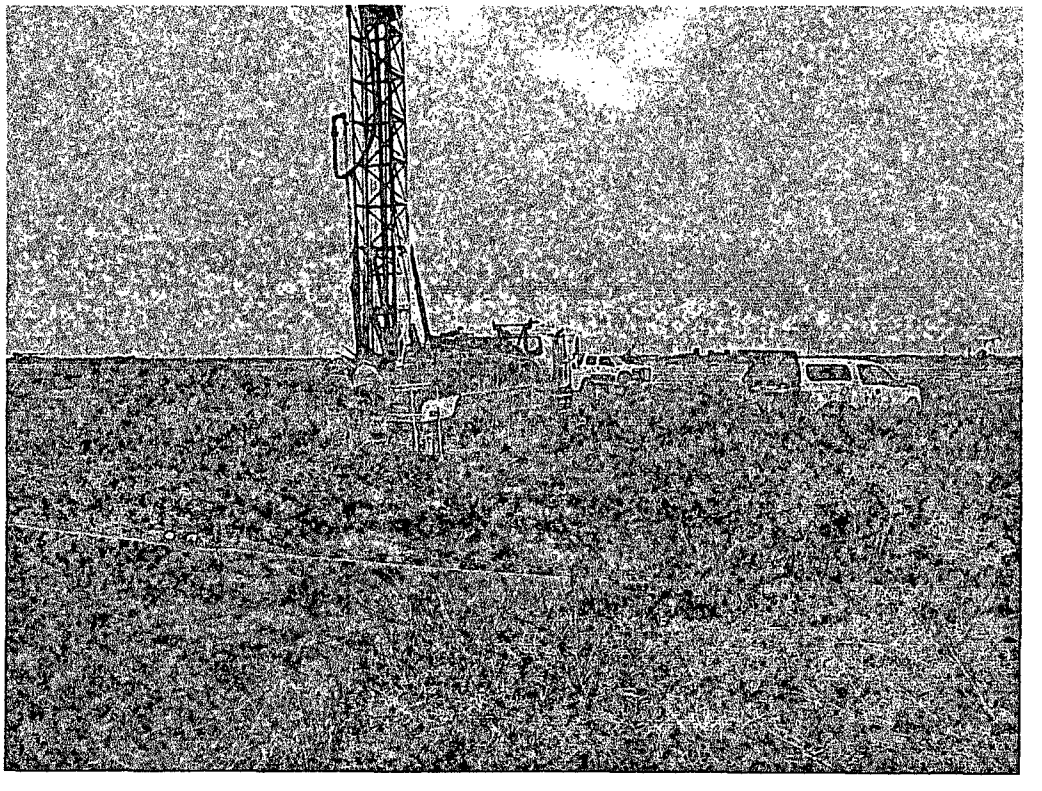
Photos

COG Operating LLC
BKU Satellite G Injection Line
Eddy County, New Mexico

TETRA TECH



View north – near injection line.
Location of AH-1 shown in red



View north – Injection line in foreground.
Installing BH-1

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

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NMOCD ARTESIA

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

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

Surface Owner Federal	Mineral Owner	Lease No. NMLC-028784B

LOCATION OF RELEASE

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

Latitude 32 48.688 **Longitude** 104 00.683

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 10bbls	Volume Recovered 0bbls
Source of Release Injection line	Date and Hour of Occurrence 09/21/2011	Date and Hour of Discovery 09/21/2011 3:00 p.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The injection line at the headers had a leak due to corroded pipe. The faulty joint of pipe has been replaced with a new joint.

Describe Area Affected and Cleanup Action Taken.*

Initially 10bbls of produced water were released from the injection line at Satellite G. The release area measured 6' x 40' in the pasture. (The closest well location to this release is the BKU 241 API# 30-015-20281). 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: 09/28/2011 Phone: 432-212-2399	

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - BKU Satellite G Injection Line
Eddy County, New Mexico

16 South 29 East

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

16 South 30 East

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

16 South 31 East

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

17 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 **80**	23	24
30	29 **210** **208'**	28	27	26	25
31	32	33	34	35 153	36

17 South 30 East

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

17 South 31 East

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

18 South 29 East

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

18 South 30 East

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

18 South 31 East

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

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

Appendix C

Summary Report

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

Report Date: November 10, 2011

Work Order: 11110402

Project Location: Eddy Co., NM
Project Name: COG/Satellite G Flowline
Project Number: 114-6401039

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
281502	AH-1 0-1'	water	2011-11-01	00:00	2011-11-03
281503	AH-1 1-1.5'	water	2011-11-01	00:00	2011-11-03
281504	AH-1 1.5-2.0'	water	2011-11-01	00:00	2011-11-03

	BTEX				TPH DRO - NEW	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
281502 - AH-1 0-1'	<0.0200 Qr	<0.0200 Qr	<0.0200 Qr	<0.0200 Qr	<50.0	**3.24**

Sample: 281502 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**7660**	mg/Kg	4

Sample: 281503 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**6350**	mg/Kg	4

Sample: 281504 - AH-1 1.5-2.0'

Param	Flag	Result	Units	RL
Chloride		**10600**	mg/Kg	4

Summary Report

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

Report Date: February 2, 2012

Work Order: 12013002

Project Location: Eddy Co., NM
Project Name: COG/Satellite G Flowline
Project Number: 114-6401039

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
287712	BH-1 @ AH-1 0-1'	soil	2012-01-25	00:00	2012-01-27
287713	BH-1 @ AH-1 2-3'	soil	2012-01-25	00:00	2012-01-27
287714	BH-1 @ AH-1 4-5'	soil	2012-01-25	00:00	2012-01-27
287715	BH-1 @ AH-1 6-7'	soil	2012-01-25	00:00	2012-01-27
287716	BH-1 @ AH-1 9-10'	soil	2012-01-25	00:00	2012-01-27
287717	BH-1 @ AH-1 14-15'	soil	2012-01-25	00:00	2012-01-27
287718	BH-1 @ AH-1 19-20'	soil	2012-01-25	00:00	2012-01-27
287719	BH-1 @ AH-1 24-25'	soil	2012-01-25	00:00	2012-01-27
287720	BH-1 @ AH-1 29-30'	soil	2012-01-25	00:00	2012-01-27
287721	BH-1 @ AH-1 39-40'	soil	2012-01-25	00:00	2012-01-27
287722	BH-1 @ AH-1 49-50'	soil	2012-01-25	00:00	2012-01-27
287723	BH-1 @ AH-1 59-60'	soil	2012-01-25	00:00	2012-01-27

Sample: 287712 - BH-1 @ AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**4160**	mg/Kg	4

Sample: 287713 - BH-1 @ AH-1 2-3'

Param	Flag	Result	Units	RL
Chloride		**1360**	mg/Kg	4

Sample: 287714 - BH-1 @ AH-1 4-5'

Param	Flag	Result	Units	RL
Chloride		**16500**	mg/Kg	4

Sample: 287715 - BH-1 @ AH-1 6-7'

Param	Flag	Result	Units	RL
Chloride		**13200**	mg/Kg	4

Sample: 287716 - BH-1 @ AH-1 9-10'

Param	Flag	Result	Units	RL
Chloride		**7100**	mg/Kg	4

Sample: 287717 - BH-1 @ AH-1 14-15'

Param	Flag	Result	Units	RL
Chloride		**5870**	mg/Kg	4

Sample: 287718 - BH-1 @ AH-1 19-20'

Param	Flag	Result	Units	RL
Chloride		**10500**	mg/Kg	4

Sample: 287719 - BH-1 @ AH-1 24-25'

Param	Flag	Result	Units	RL
Chloride		**8890**	mg/Kg	4

Sample: 287720 - BH-1 @ AH-1 29-30'

Param	Flag	Result	Units	RL
Chloride		**3710**	mg/Kg	4

Sample: 287721 - BH-1 @ AH-1 39-40'

Param	Flag	Result	Units	RL
Chloride		**292**	mg/Kg	4

Sample: 287722 - BH-1 @ AH-1 49-50'

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

Sample: 287723 - BH-1 @ AH-1 59-60'

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

TRACEANALYSIS, INC.

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: November 10, 2011

Work Order: 11110402

Project Location: Eddy Co., NM
Project Name: COG/Satellite G Flowline
Project Number: 114-6401039

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
281502	AH-1 0-1'	water	2011-11-01	00:00	2011-11-03
281503	AH-1 1-1.5'	water	2011-11-01	00:00	2011-11-03
281504	AH-1 1.5-2.0'	water	2011-11-01	00:00	2011-11-03

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

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

Report Contents

Case Narrative

Samples for project COG/Satellite G Flowline were received by TraceAnalysis, Inc. on 2011-11-03 and assigned to work order 11110402. Samples for work order 11110402 were received intact at a temperature of 4.3 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	73143	2011-11-04 at 12:45	86134	2011-11-05 at 02:47
Chloride (Titration)	SM 4500-Cl B	73222	2011-11-07 at 09:37	86236	2011-11-09 at 10:59
TPH DRO - NEW	S 8015 D	73148	2011-11-04 at 13:42	86138	2011-11-04 at 13:42
TPH GRO	S 8015 D	73143	2011-11-04 at 12:45	86135	2011-11-05 at 03:14

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 11110402 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 281502 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	86134	Date Analyzed:	2011-11-05	Analyzed By:	AG
Prep Batch:	73143	Sample Preparation:	2011-11-04	Prepared By:	AG

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.94	mg/Kg	1	2.00	97	70.6 - 179

Sample: 281502 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	86236	Date Analyzed:	2011-11-09	Analyzed By:	AR
Prep Batch:	73222	Sample Preparation:	2011-11-07	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**7660**	mg/Kg	100	4.00

Sample: 281502 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	86138	Date Analyzed:	2011-11-04	Analyzed By:	kg
Prep Batch:	73148	Sample Preparation:	2011-11-04	Prepared By:	kg

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

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

Sample: 281502 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	86135	Date Analyzed:	2011-11-05	Analyzed By:	AG
Prep Batch:	73143	Sample Preparation:	2011-11-04	Prepared By:	AG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO			**3.24**	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	30 - 134.6
4-Bromofluorobenzene (4-BFB)			1.84	mg/Kg	1	2.00	92	22.4 - 149

Sample: 281503 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	86236	Date Analyzed:	2011-11-09	Analyzed By:	AR
Prep Batch:	73222	Sample Preparation:	2011-11-07	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**6350**	mg/Kg	100	4.00

Sample: 281504 - AH-1 1.5-2.0'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	86236	Date Analyzed:	2011-11-09	Analyzed By:	AR
Prep Batch:	73222	Sample Preparation:	2011-11-07	Prepared By:	AR

continued ...

sample 281504 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**10600**	mg/Kg	100	4.00

Method Blanks

Method Blank (1) QC Batch: 86134

QC Batch:	86134	Date Analyzed:	2011-11-05	Analyzed By:	AG
Prep Batch:	73143	QC Preparation:	2011-11-04	Prepared By:	AG

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.88	mg/Kg	1	2.00	94	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)			1.67	mg/Kg	1	2.00	84	48.4 - 123.1

Method Blank (1) QC Batch: 86135

QC Batch:	86135	Date Analyzed:	2011-11-05	Analyzed By:	AG
Prep Batch:	73143	QC Preparation:	2011-11-04	Prepared By:	AG

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	0.915	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	67.6 - 150
4-Bromofluorobenzene (4-BFB)			1.60	mg/Kg	1	2.00	80	52.4 - 130

Method Blank (1) QC Batch: 86138

QC Batch:	86138	Date Analyzed:	2011-11-04	Analyzed By:	kg
Prep Batch:	73148	QC Preparation:	2011-11-04	Prepared By:	kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			114	mg/Kg	1	100	114	52.7 - 133.8

Method Blank (1) QC Batch: 86236

QC Batch:	86236	Date Analyzed:	2011-11-09	Analyzed By:	AR
Prep Batch:	73222	QC Preparation:	2011-11-07	Prepared By:	AR

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 86134 | Date Analyzed: 2011-11-05 | Analyzed By: AG
Prep Batch: 73143 | QC Preparation: 2011-11-04 | Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.03	mg/Kg	1	2.00	<0.0118	102	77.4 - 121.7
Toluene		1	1.98	mg/Kg	1	2.00	<0.00600	99	88.6 - 121.6
Ethylbenzene		1	1.93	mg/Kg	1	2.00	<0.00850	96	74.3 - 117.9
Xylene		1	5.83	mg/Kg	1	6.00	<0.00613	97	73.4 - 118.8

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.01	mg/Kg	1	2.00	<0.0118	100	77.4 - 121.7	1	20
Toluene		1	1.97	mg/Kg	1	2.00	<0.00600	98	88.6 - 121.6	0	20
Ethylbenzene		1	1.89	mg/Kg	1	2.00	<0.00850	94	74.3 - 117.9	2	20
Xylene		1	5.74	mg/Kg	1	6.00	<0.00613	96	73.4 - 118.8	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)	1.92	1.90	mg/Kg	1	2.00	96	95	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.93	1.94	mg/Kg	1	2.00	96	97	56.2 - 132.1

Laboratory Control Spike (LCS-1)

QC Batch: 86135 | Date Analyzed: 2011-11-05 | Analyzed By: AG
Prep Batch: 73143 | QC Preparation: 2011-11-04 | Prepared By: AG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.8	mg/Kg	1	20.0	<0.753	89	60.9 - 95.4

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

continued ...

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	18.2	mg/Kg	1	20.0	<0.753	91	60.9 - 95.4	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.97	1.96	mg/Kg	1	2.00	98	98	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.78	1.79	mg/Kg	1	2.00	89	90	56.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 86138 | Date Analyzed: 2011-11-04 | Analyzed By: kg
Prep Batch: 73148 | QC Preparation: 2011-11-04 | Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	282	mg/Kg	1	250	<14.5	113	64.5 - 146.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	290	mg/Kg	1	250	<14.5	116	64.5 - 146.9	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	131	135	mg/Kg	1	100	131	135	65.3 - 135.8

Laboratory Control Spike (LCS-1)

QC Batch: 86236 | Date Analyzed: 2011-11-09 | Analyzed By: AR
Prep Batch: 73222 | QC Preparation: 2011-11-07 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			97.8	mg/Kg	1	100	<3.85	98	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			106	mg/Kg	1	100	<3.85	106	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: 281552

QC Batch: 86134 | Date Analyzed: 2011-11-05 | Analyzed By: AG
Prep Batch: 73143 | QC Preparation: 2011-11-04 | Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.24	mg/Kg	1	2.00	<0.0118	112	69.4 - 123.6
Toluene		1	2.23	mg/Kg	1	2.00	<0.00600	112	75.4 - 134.3
Ethylbenzene		1	2.32	mg/Kg	1	2.00	<0.00850	116	58.8 - 133.7
Xylene		1	6.98	mg/Kg	1	6.00	<0.00613	116	57 - 134.2

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	Qr	Qr 1	1.72	mg/Kg	1	2.00	<0.0118	86	69.4 - 123.6	26	20
Toluene	Qr	Qr 1	1.70	mg/Kg	1	2.00	<0.00600	85	75.4 - 134.3	27	20
Ethylbenzene	Qr	Qr 1	1.76	mg/Kg	1	2.00	<0.00850	88	58.8 - 133.7	27	20
Xylene	Qr	Qr 1	5.30	mg/Kg	1	6.00	<0.00613	88	57 - 134.2	27	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	1.94	mg/Kg	1	2	97	97	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.07	2.04	mg/Kg	1	2	104	102	71 - 167

Matrix Spike (MS-1) Spiked Sample: 281555

QC Batch: 86135 | Date Analyzed: 2011-11-05 | Analyzed By: AG
Prep Batch: 73143 | QC Preparation: 2011-11-04 | Prepared By: AG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	19.9	mg/Kg	1	20.0	3.68	81	61.8 - 114

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	22.0	mg/Kg	1	20.0	3.68	92	61.8 - 114	10	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.95	1.95	mg/Kg	1	2	98	98	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	2.01	2.02	mg/Kg	1	2	100	101	37.3 - 162

Matrix Spike (MS-1) Spiked Sample: 281552

QC Batch: 86138 | Date Analyzed: 2011-11-04 | Analyzed By: kg
Prep Batch: 73148 | QC Preparation: 2011-11-04 | Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	293	mg/Kg	1	250	23.1	108	38.8 - 153.3

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	302	mg/Kg	1	250	23.1	112	38.8 - 153.3	3	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	125	122	mg/Kg	1	100	125	122	54.6 - 149.8

Matrix Spike (MS-1) Spiked Sample: 281549

QC Batch: 86236 | Date Analyzed: 2011-11-09 | Analyzed By: AR
Prep Batch: 73222 | QC Preparation: 2011-11-07 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			9130	mg/Kg	100	10000	<385	88	79.4 - 120.6

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

continued ...

matrix spikes continued ...

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			9780	mg/Kg	100	10000	<385	95	79.4 - 120.6	7	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 86134 | Date Analyzed: 2011-11-05 | Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.101	101	80 - 120	2011-11-05
Toluene		1	mg/Kg	0.100	0.0981	98	80 - 120	2011-11-05
Ethylbenzene		1	mg/Kg	0.100	0.0959	96	80 - 120	2011-11-05
Xylene		1	mg/Kg	0.300	0.289	96	80 - 120	2011-11-05

Standard (CCV-2)

QC Batch: 86134 | Date Analyzed: 2011-11-05 | Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0921	92	80 - 120	2011-11-05
Toluene		1	mg/Kg	0.100	0.0888	89	80 - 120	2011-11-05
Ethylbenzene		1	mg/Kg	0.100	0.0859	86	80 - 120	2011-11-05
Xylene		1	mg/Kg	0.300	0.260	87	80 - 120	2011-11-05

Standard (CCV-1)

QC Batch: 86135 | Date Analyzed: 2011-11-05 | Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.07	107	80 - 120	2011-11-05

Standard (CCV-2)

QC Batch: 86135 | Date Analyzed: 2011-11-05 | Analyzed By: AG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.15	115	80 - 120	2011-11-05

Standard (CCV-1)

QC Batch: 86138 Date Analyzed: 2011-11-04 Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	266	106	80 - 120	2011-11-04

Standard (CCV-2)

QC Batch: 86138 Date Analyzed: 2011-11-04 Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	237	95	80 - 120	2011-11-04

Standard (ICV-1)

QC Batch: 86236 Date Analyzed: 2011-11-09 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	96.6	97	85 - 115	2011-11-09

Standard (CCV-1)

QC Batch: 86236 Date Analyzed: 2011-11-09 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	103	103	85 - 115	2011-11-09

Appendix

Laboratory Certifications

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

Standard Flags

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

Attachments

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

*WO # 11110402

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

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

CLIENT NAME: CCG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-6401039

PROJECT NAME: Satellite G Flowline

Eddy Co, NM

LAB I.D. NUMBER	DATE 2011	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
28/502	11/1		S		X	AH-1 0-1'	1				X		X	X											X				
503						1-1.5'	1				X														X				
504						1.5-2.0'	1				X														X				

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date: 11.3.11 Time: 16:50	RECEIVED BY: (Signature)	Date: Time:	SAMPLED BY: (Print & Initial) Kim	Date: 11/1/11 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 Tavarez	Results by:
RECEIVING LABORATORY: TRACE ADDRESS: CITY: MIDLAND STATE: TX ZIP: CONTACT: PHONE:		RECEIVED BY: (Signature) DATE: 11.3.11 TIME: 16:50			RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 4.3°C intact

REMARKS: Run deeper Depths of AH-1 exceeds 5000 mg/kg

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

TRACEANALYSIS, INC.

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: February 2, 2012

Work Order: 12013002

Project Location: Eddy Co., NM
Project Name: COG/Satellite G Flowline
Project Number: 114-6401039

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
287712	BH-1 @ AH-1 0-1'	soil	2012-01-25	00:00	2012-01-27
287713	BH-1 @ AH-1 2-3'	soil	2012-01-25	00:00	2012-01-27
287714	BH-1 @ AH-1 4-5'	soil	2012-01-25	00:00	2012-01-27
287715	BH-1 @ AH-1 6-7'	soil	2012-01-25	00:00	2012-01-27
287716	BH-1 @ AH-1 9-10'	soil	2012-01-25	00:00	2012-01-27
287717	BH-1 @ AH-1 14-15'	soil	2012-01-25	00:00	2012-01-27
287718	BH-1 @ AH-1 19-20'	soil	2012-01-25	00:00	2012-01-27
287719	BH-1 @ AH-1 24-25'	soil	2012-01-25	00:00	2012-01-27
287720	BH-1 @ AH-1 29-30'	soil	2012-01-25	00:00	2012-01-27
287721	BH-1 @ AH-1 39-40'	soil	2012-01-25	00:00	2012-01-27
287722	BH-1 @ AH-1 49-50'	soil	2012-01-25	00:00	2012-01-27
287723	BH-1 @ AH-1 59-60'	soil	2012-01-25	00:00	2012-01-27

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.

Michael Abel

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

Report Contents

Case Narrative

Samples for project COG/Satellite G Flowline were received by TraceAnalysis, Inc. on 2012-01-27 and assigned to work order 12013002. Samples for work order 12013002 were received intact at a temperature of 1.1 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	74901	2012-02-01 at 11:48	88247	2012-02-01 at 11:22
Chloride (Titration)	SM 4500-Cl B	74901	2012-02-01 at 11:48	88248	2012-02-01 at 11:23

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 12013002 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 287712 - BH-1 @ AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88247	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**4160**	mg/Kg	100	4.00

Sample: 287713 - BH-1 @ AH-1 2-3'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88247	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**1360**	mg/Kg	100	4.00

Sample: 287714 - BH-1 @ AH-1 4-5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88247	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**16500**	mg/Kg	100	4.00

Sample: 287715 - BH-1 @ AH-1 6-7'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88247	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**13200**	mg/Kg	100	4.00

Sample: 287716 - BH-1 @ AH-1 9-10'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88247	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**7100**	mg/Kg	100	4.00

Sample: 287717 - BH-1 @ AH-1 14-15'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88247	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**5870**	mg/Kg	100	4.00

Sample: 287718 - BH-1 @ AH-1 19-20'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88247	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**10500**	mg/Kg	100	4.00

Sample: 287719 - BH-1 @ AH-1 24-25'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88247	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**8890**	mg/Kg	100	4.00

Sample: 287720 - BH-1 @ AH-1 29-30'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88247	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3710**	mg/Kg	100	4.00

Sample: 287721 - BH-1 @ AH-1 39-40'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88247	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**292**	mg/Kg	50	4.00

Sample: 287722 - BH-1 @ AH-1 49-50'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88248	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

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

Sample: 287723 - BH-1 @ AH-1 59-60'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	88248	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	Sample Preparation:	2012-02-01	Prepared By:	AR

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

Method Blanks

Method Blank (1) QC Batch: 88247

QC Batch:	88247	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	QC Preparation:	2012-02-01	Prepared By:	AR

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

Method Blank (1) QC Batch: 88248

QC Batch:	88248	Date Analyzed:	2012-02-01	Analyzed By:	AR
Prep Batch:	74901	QC Preparation:	2012-02-01	Prepared By:	AR

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 88247 | Date Analyzed: 2012-02-01 | Analyzed By: AR
Prep Batch: 74901 | QC Preparation: 2012-02-01 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			95.3	mg/Kg	1	100	<3.85	95	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			103	mg/Kg	1	100	<3.85	103	85 - 115	8	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 88248 | Date Analyzed: 2012-02-01 | Analyzed By: AR
Prep Batch: 74901 | QC Preparation: 2012-02-01 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			94.3	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. Limit	RPD	RPD Limit
Chloride			103	mg/Kg	1	100	<3.85	103	85 - 115	9	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: 287721

QC Batch: 88247 | Date Analyzed: 2012-02-01 | Analyzed By: AR
Prep Batch: 74901 | QC Preparation: 2012-02-01 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10100	mg/Kg	100	10000	<385	98	79.4 - 120.6

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			10700	mg/Kg	100	10000	<385	104	79.4 - 120.6	6	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: 287733

QC Batch: 88248 | Date Analyzed: 2012-02-01 | Analyzed By: AR
Prep Batch: 74901 | QC Preparation: 2012-02-01 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			12500	mg/Kg	100	10000	2560	99	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			13100	mg/Kg	100	10000	2560	105	79.4 - 120.6	5	20

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

Calibration Standards

Standard (ICV-1)

QC Batch: 88247 | Date Analyzed: 2012-02-01 | Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-02-01

Standard (CCV-1)

QC Batch: 88247 | Date Analyzed: 2012-02-01 | 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	2012-02-01

Standard (ICV-1)

QC Batch: 88248 | Date Analyzed: 2012-02-01 | Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-02-01

Standard (CCV-1)

QC Batch: 88248 | Date Analyzed: 2012-02-01 | 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	99.3	99	85 - 115	2012-02-01

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 then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

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

#12013002

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 2

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

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-6401039

PROJECT NAME: Satellite G

Eddy Co, NM

LAB I.D. NUMBER	DATE 2012	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
287712	1/25		S		X	BH-1 @ AH-1 0-1'	1				X	
713	"		"		"	2-3'	1				X	
714						4-5'	1				X	
715						6-7'	1				X	
716						9-10'	1				X	
717						14-15'	1				X	
718						19-20'	1				X	
719						24-25'	1				X	
720						29-30'	1				X	
721						39-40'	1				X	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8021B; TPH 8015 MOD. TX1005 (Ext. to C35); PAH 8270; RCRA Metals Ag As Ba Cd Cr Pb Hg Se; TCLP Metals Ag As Ba Cd Vr Pd Hg Se; TCLP Volatiles; TCLP Semi Volatiles; RCI; GC.MS Vol. 8240/8260/624; GC.MS Semi. Vol. 8270/625; PCB's 8080/608; Pest. 808/608; Chloride; Gamma Spec.; Alpha Beta (Air); PLM (Asbestos); Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature) Date: 1/27/12 Time: 1615

RECEIVED BY: (Signature) Date: 1/27/12 Time: 1615

SAMPLED BY: (Print & Initial) Kim Date: 1/27/12 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 Tavarez

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: TRACE

ADDRESS:

CITY: MIDLAND STATE: TX ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED: Iced Intact

REMARKS:

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

2013002

Analysis Request of Chain of Custody Record

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

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114640 1039

PROJECT NAME: Satellite G

LAB I.D. NUMBER	DATE 2012	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
722	1/25		S		X	BH-1 @ AH-1 49-50'	1				X													X				
723	1/25		S		X	59-60'	1				X													X				

RELINQUISHED BY: (Signature) Date: 1/27/12 Time: 1615

RECEIVED BY: (Signature) Date: 1/27/12 Time: 16:15

SAMPLED BY: (Print & Initial) Kim Date: 1/27/12 Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

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

AIRBILL #:

OTHER:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: TRACE

ADDRESS:

CITY: MIDLAND STATE: TX ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: TIME:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 1.10 Intact

REMARKS:

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