SITE INFORMATION

Report Type: Work Plan

General Site Information:						
Site:	RJ Unit #134					
Company:	COG Operating LLC					
Section, Township and Range	Unit O	Sec. 27	T-17-S	R-29-E		
Lease Number:	API-30-015-34573					
County:	Eddy County					
GPS:	32.80056° N			104.05979° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	Intersection of 529 and CR-217 travel west on 82 4.4 mi, turn left on CR-213 1.5 mi, turn right 0.2 mi, turn left 200' to location on left in right away. (Near Apache Well B440 Federal #6 well pad location)					

Release Data:	
Date Released:	3/5/2012
Type Release:	Produced Fluids
Source of Contamination:	Steel line ruptured
Fluid Released:	2 bbls oil and 8 bbls of produced water
Fluids Recovered:	1 bbls oil and 6 bbls of produced water

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

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

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

TETRA TECH

May 15, 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., RJ Unit #134 Flowline, Unit O, Section 27, Township 17 South, Range 29 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 RJ Unit #134 Flowline, Unit O, Section 27, Township 17 South, Range 29 East, Eddy County, New Mexico. (Site). The spill site coordinates are N 32.80056°, W 104.05979°. The site location is shown on Figures 1 and 2.

Background

According to the C-141 Initial Report, the leak was discovered on March 5, 2012, and released approximately eight (8) barrels of produced water and two (2) barrels of oil from a steel flowline that ruptured due to corrosion. COG repaired the line and returned it to service. COG recovered approximately six (6) barrels of produced water and one (1) barrel of oil. The spill initiated from the flowline located in the pasture impacting an area of approximately 10' x 70'. The spill is located on a COG right-of-way between flowlines and a COG water disposal line. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 27. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 150' 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 March 28, 2011, Tetra Tech personnel inspected and sampled the spill area. One (1) auger hole (AH-1) was installed in the center of the spill area using a stainless steel hand auger to assess the impacted soils. Samples were collected to a depth of 9-9.5' below surface. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. 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, all of the samples were below the RRAL for BTEX and TPH. A chloride concentration of 2,240 mg/kg (0-1') was detected in the shallow soil, which declined to <200 mg/kg at 1-1.5' down to 7.0' below surface. The bottom hole sample at 9-9.5' spiked to 6,400 mg/kg and was not vertically defined.

On April 20, 2012, Tetra Tech supervised the installation of one borehole (BH-1) using an air rotary drilling rig to assess the soils. The borehole was installed to a total depth of 60.0' 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, elevated chloride concentrations were detected from 4.0' to 20.0' below surface, with concentrations ranging from 2,160 mg/kg to 9,010 mg/kg. The deeper samples from 24-25' significantly declined with depth.

TETRA TECH

Work Plan

COG proposes to removal of impacted material as highlighted (green) in Table 1. To remove the elevated chloride concentrations, COG propose to excavate the spill area to a depth of 19-20' below surface. Based on the sandy soil at the spill location (between lines), 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 the proposed excavation are not achieved due to wall cave ins and safety concerns for onsite personnel. Tetra Tech will install a 40 mil liner at depth of 4.0' to 5.0' below surface to cap the impacted area.

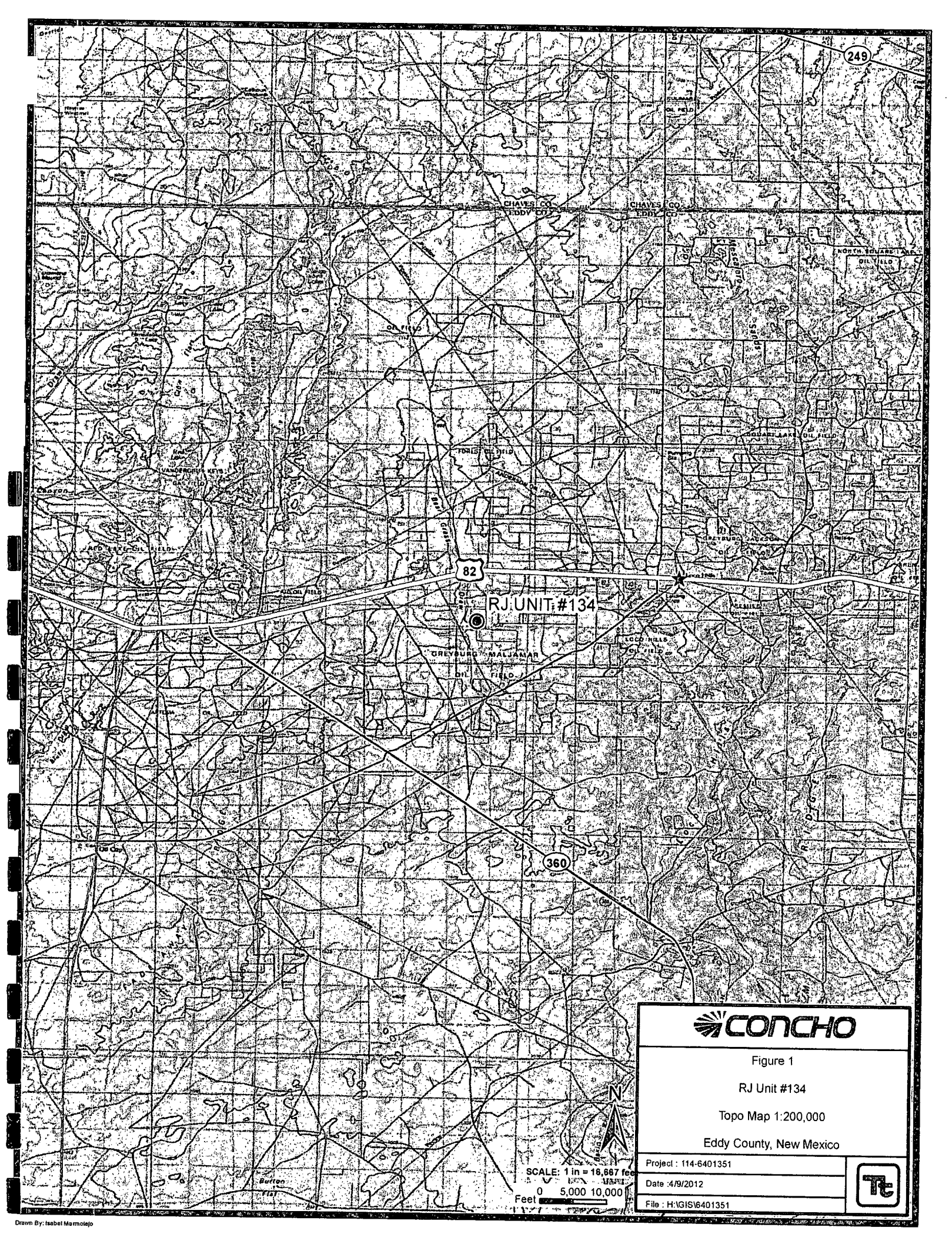
Once the areas are excavated to the appropriate depths, the excavation will be backfilled with clean soil. Upon completion a final report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me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

Respectfully submitted,
TETRA TECH

Ike Tavarez, PG
Project Manager

cc: Pat Ellis – COG
Terry Gregston - BLM

Figures



CONCHO

Figure 1

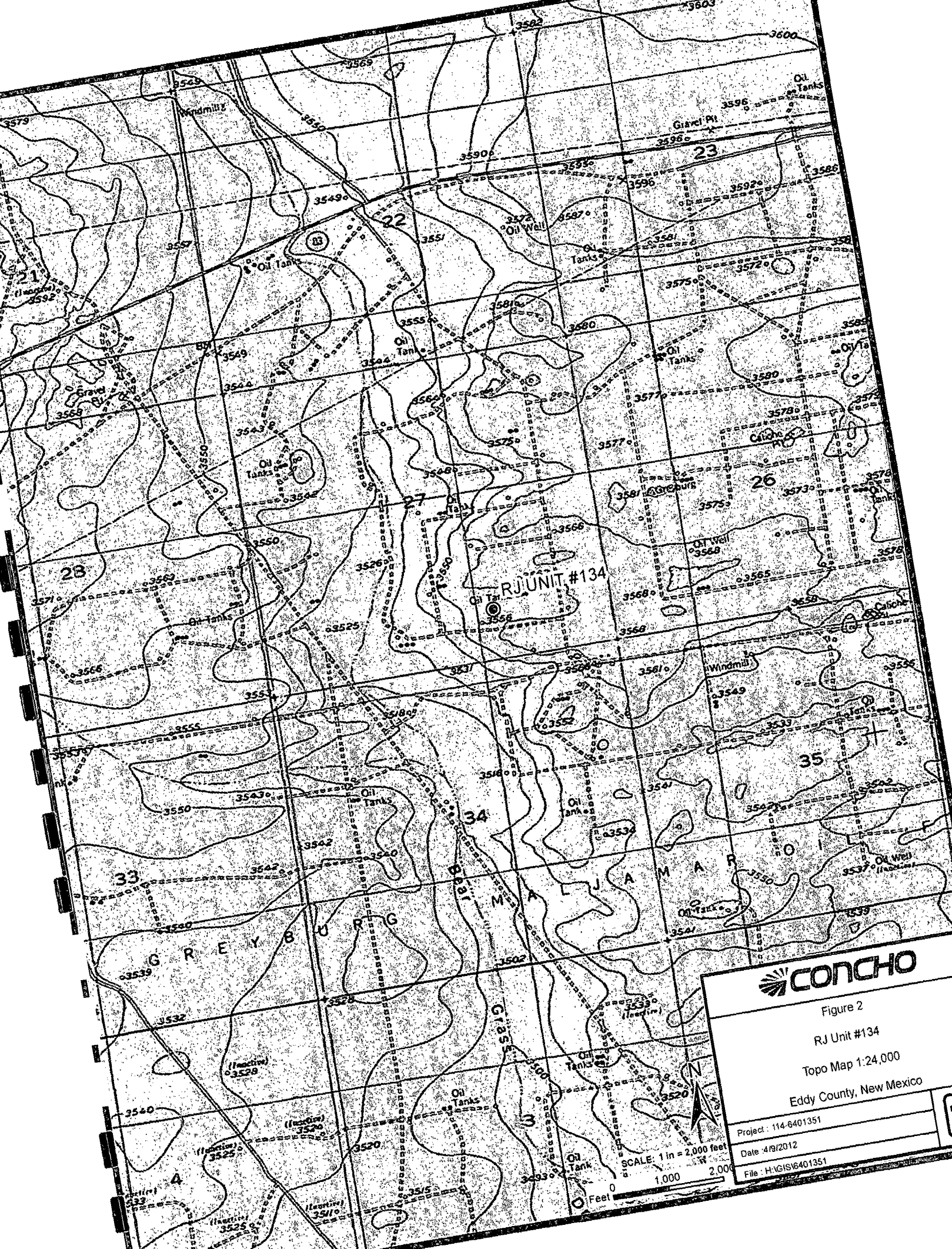
RJ Unit #134

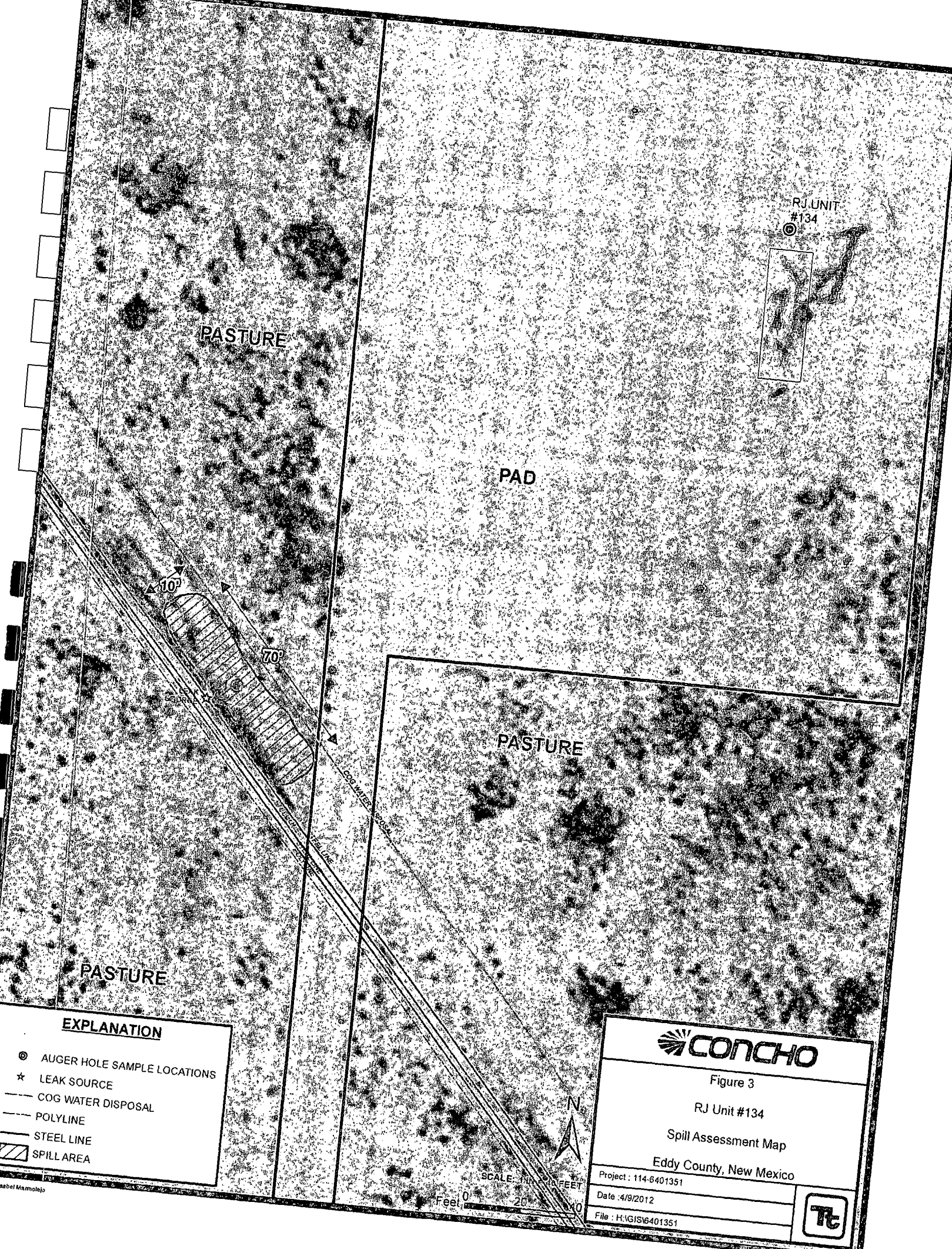
Topo Map 1:200,000

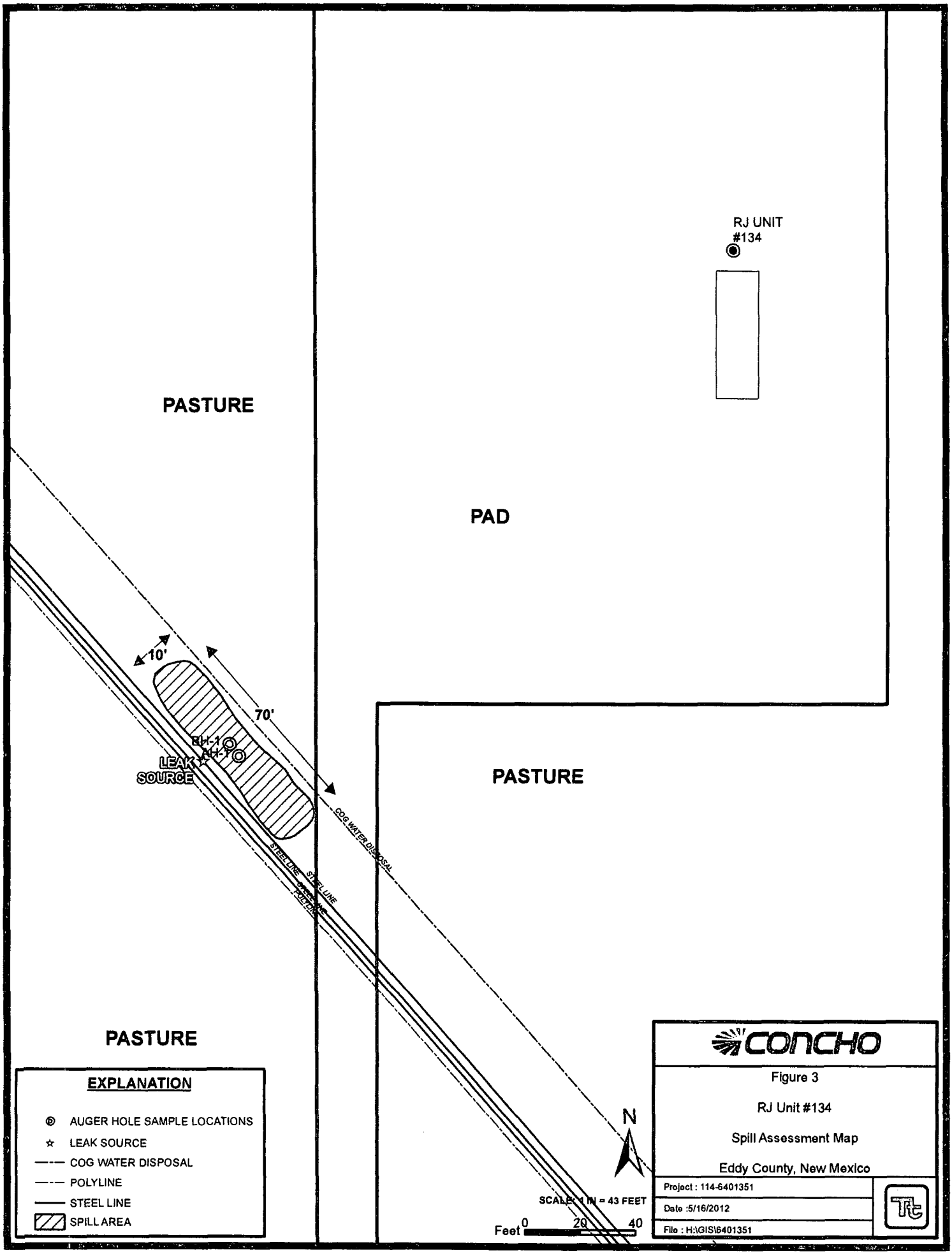
Eddy County, New Mexico

Project : 114-6401351	
Date :4/9/2012	
File : H:\GIS\6401351	

Drawn By: Isabel Marmolejo


RJ UNIT #134
GREYBURG
Bear
MALJAMAR
GRAYBURG
SCALE: 1 in = 2,000 feet
0
1,000
2,000
Feet
N
CONCHO
Figure 2
RJ Unit #134
Topo Map 1:24,000
Eddy County, New Mexico
Project : 114-6401351
Date :4/9/2012
File : H:\GIS\6401351


RJ UNIT #134
PASTURE
PAD
PASTURE
PASTURE
10'
70'
COG WATER DISPOSAL
POLYLINE
STEEL LINE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
LEAK SOURCE
COG WATER DISPOSAL
POLYLINE
STEEL LINE
SPILL AREA
N
SCALE: 1 INCH = 20 FEET
Feet 0 20 40
CONCHO
Figure 3
RJ Unit #134
Spill Assessment Map
Eddy County, New Mexico
Project : 114-6401351
Date :4/9/2012
File : H:\GIS\6401351



Drawn By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC.
RJ Unit 134
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-1	3/28/2012	0-1	X		223	1,770	1,993	<0.200	0.457	0.449	1.37	2.28	2,240
	"	1-1.5	X		-	-	-	-	-	-	-	-	<200
	"	2-2.5	X		-	-	-	-	-	-	-	-	<200
	"	3-3.5	X		-	-	-	-	-	-	-	-	<200
	"	4-4.5	X		-	-	-	-	-	-	-	-	<200
	"	5-5.5	X		-	-	-	-	-	-	-	-	<200
	"	6-6.5	X		-	-	-	-	-	-	-	-	<200
	"	7-7.5	X		-	-	-	-	-	-	-	-	<200
	"	8-8.5	X		-	-	-	-	-	-	-	-	504
	"	9-9.5	X		-	-	-	-	-	-	-	-	6,400
BH-1	4/24/2012	4-5	X		-	-	-	-	-	-	-	-	6,510
	"	6-7	X		-	-	-	-	-	-	-	-	2,160
	"	9-10	X		-	-	-	-	-	-	-	-	6,820
	"	14-15	X		-	-	-	-	-	-	-	-	9,010
	"	19-20	X		-	-	-	-	-	-	-	-	4,620
	"	24-25	X		-	-	-	-	-	-	-	-	114
	"	29-30	X		-	-	-	-	-	-	-	-	617
	"	39-40	X		-	-	-	-	-	-	-	-	203
	"	49-50	X		-	-	-	-	-	-	-	-	55.8
	"	59-60	X		-	-	-	-	-	-	-	-	20.3

(-) Not Analyzed

[ ] Proposed Excavation Depth

COG Operating LLC
RJ Unit #134
Eddy County, New Mexico

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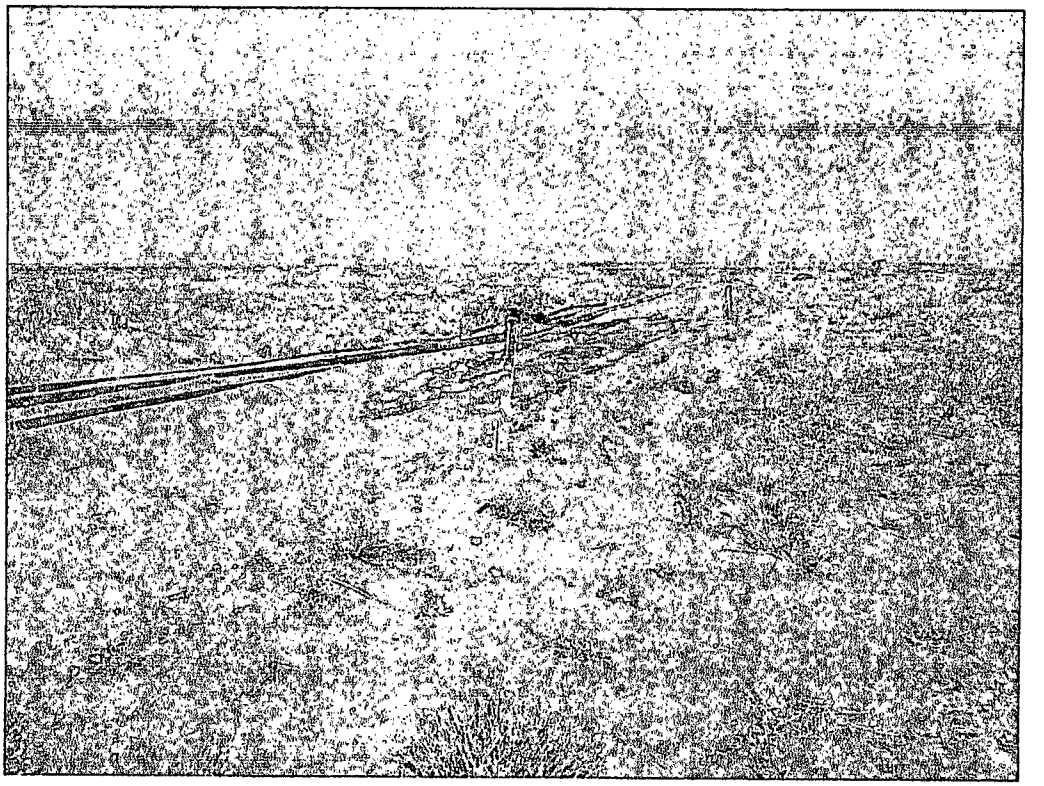
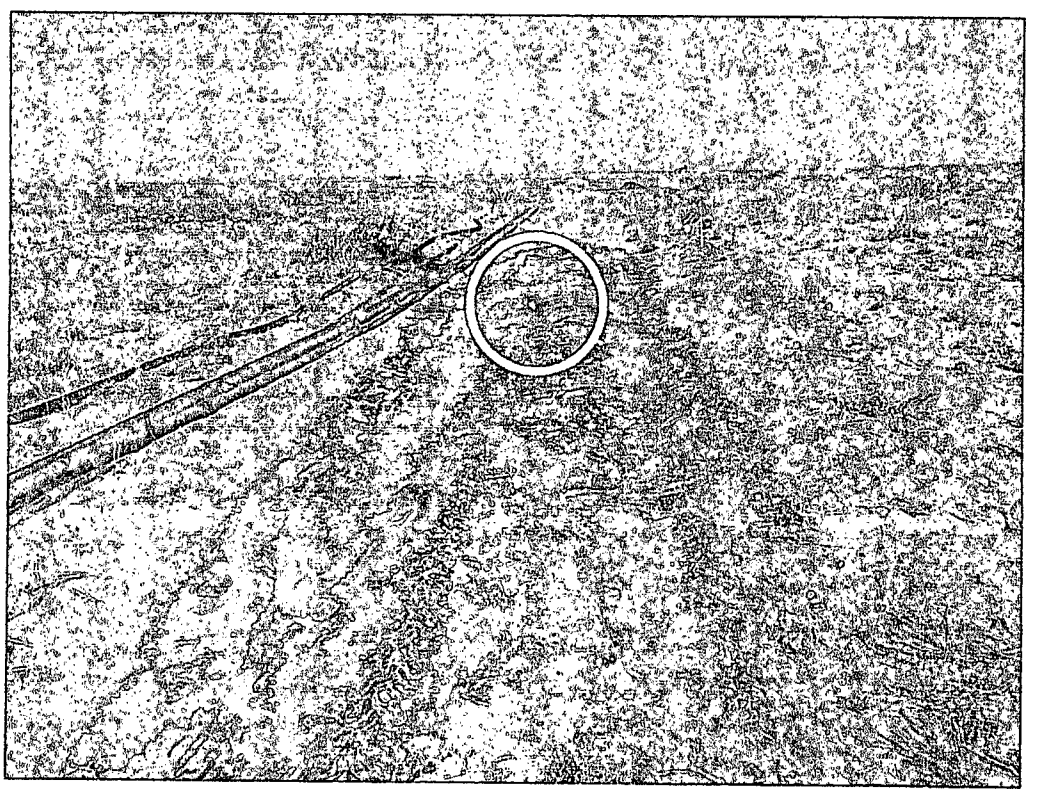


View west – Spill along COG right-of-way (two track road)



View north – Location of AH-1

Appendix A

1351

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	RJ Unit #134	Facility Type	Flowline

Surface Owner Federal	Mineral Owner	Lease No. (API#) 30-015-34573

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	27	17S	29E					Eddy

Latitude 32 48.042 **Longitude** 104 03.583

NATURE OF RELEASE

Type of Release Produced fluid	Volume of Release 8bbls PW 2bbls OIL	Volume Recovered 6bblsPW 1bbl OIL
Source of Release Steel flowline	Date and Hour of Occurrence 03/05/2012	Date and Hour of Discovery 03/05/2012 11: 30 a.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 RJ Unit #134 steel flowline ruptured due to corrosion. The flowline has been repaired.

Describe Area Affected and Cleanup Action Taken.*

Initially 10bbls of produced fluid were released from the flowline and we were able to recover 7bbls with a vacuum truck. The closest well location to the release is the RJ Unit #119 (API# 30-015-03146). The spill area measured 10' x 65' on the ROW from the RJU to the Robinson SWD. 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: 03/12/2012 Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

4/4 m. 1.5 m

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - RJ Unit #134
Eddy County, New Mexico

16 South 28 East

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

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

17 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 **79**	23	24
30	29	28	27	26	25
31	32	33	34 **53**	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	23	24
30	29	28	27 **SITE**	26	25
31	32	33	34	35	36

17 South 30 East

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

18 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 **65**	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

- New Mexico State Engineers Well Reports
- USGS Well Reports
- New Mexico Water and Infrastructure Data System
- Site Location

Appendix C

Summary Report

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

Report Date: April 5, 2012

Work Order: 12033032

Project Location: Eddy Co., NM
Project Name: COG/RJ Unit #134
Project Number: 114-6401351

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
293054	AH-1 0-1'	soil	2012-03-28	00:00	2012-03-30
293055	AH-1 1-1.5'	soil	2012-03-28	00:00	2012-03-30
293056	AH-1 2-2.5'	soil	2012-03-28	00:00	2012-03-30
293057	AH-1 3-3.5'	soil	2012-03-28	00:00	2012-03-30
293058	AH-1 4-4.5'	soil	2012-03-28	00:00	2012-03-30
293059	AH-1 5-5.5'	soil	2012-03-28	00:00	2012-03-30
293060	AH-1 6-6.5'	soil	2012-03-28	00:00	2012-03-30
293061	AH-1 7-7.5'	soil	2012-03-28	00:00	2012-03-30
293062	AH-1 8-8.5'	soil	2012-03-28	00:00	2012-03-30
293063	AH-1 9-9.5'	soil	2012-03-28	00:00	2012-03-30

	BTEX				TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
293054 - AH-1 0-1'	<0.200 Qr	**0.457** Qr	**0.449** Qr	**1.37** Qr	**1770**	**223**

Sample: 293054 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**2240**	mg/Kg	4

Sample: 293055 - AH-1 1-1.5'

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

Sample: 293056 - AH-1 2-2.5'

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

Sample: 293057 - AH-1 3-3.5'

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

Sample: 293058 - AH-1 4-4.5'

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

Sample: 293059 - AH-1 5-5.5'

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

Sample: 293060 - AH-1 6-6.5'

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

Sample: 293061 - AH-1 7-7.5'

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

Sample: 293062 - AH-1 8-8.5'

Param	Flag	Result	Units	RL
Chloride		**504**	mg/Kg	4

Sample: 293063 - AH-1 9-9.5'

Param	Flag	Result	Units	RL
Chloride		**6400**	mg/Kg	4

Summary Report

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

Report Date: May 9, 2012

Work Order: 12042611

Project Location: Eddy Co., NM
Project Name: COG/RJ Unit #134
Project Number: 114-6401351

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
295433	BH-1 @ AH-1 4-5'	soil	2012-04-24	00:00	2012-04-26
295434	BH-1 @ AH-1 6-7'	soil	2012-04-24	00:00	2012-04-26
295435	BH-1 @ AH-1 9-10'	soil	2012-04-24	00:00	2012-04-26
295436	BH-1 @ AH-1 14-15'	soil	2012-04-24	00:00	2012-04-26
295437	BH-1 @ AH-1 19-20'	soil	2012-04-24	00:00	2012-04-26
295438	BH-1 @ AH-1 24-25'	soil	2012-04-24	00:00	2012-04-26
295439	BH-1 @ AH-1 29-30'	soil	2012-04-24	00:00	2012-04-26
295440	BH-1 @ AH-1 39-40'	soil	2012-04-24	00:00	2012-04-26
295441	BH-1 @ AH-1 49-50"	soil	2012-04-24	00:00	2012-04-26
295442	BH-1 @ AH-1 59-60'	soil	2012-04-24	00:00	2012-04-26

Sample: 295433 - BH-1 @ AH-1 4-5'

Param	Flag	Result	Units	RL
Chloride		**6510**	mg/Kg	4

Sample: 295434 - BH-1 @ AH-1 6-7'

Param	Flag	Result	Units	RL
Chloride		**2160**	mg/Kg	4

Sample: 295435 - BH-1 @ AH-1 9-10'

Param	Flag	Result	Units	RL
Chloride		**6820**	mg/Kg	4

Sample: 295436 - BH-1 @ AH-1 14-15'

Param	Flag	Result	Units	RL
Chloride		**9010**	mg/Kg	4

Sample: 295437 - BH-1 @ AH-1 19-20'

Param	Flag	Result	Units	RL
Chloride		**4620**	mg/Kg	4

Sample: 295438 - BH-1 @ AH-1 24-25'

Param	Flag	Result	Units	RL
Chloride		**114**	mg/Kg	4

Sample: 295439 - BH-1 @ AH-1 29-30'

Param	Flag	Result	Units	RL
Chloride		**617**	mg/Kg	4

Sample: 295440 - BH-1 @ AH-1 39-40'

Param	Flag	Result	Units	RL
Chloride		**203**	mg/Kg	4

Sample: 295441 - BH-1 @ AH-1 49-50"

Param	Flag	Result	Units	RL
Chloride		**55.8**	mg/Kg	4

Sample: 295442 - BH-1 @ AH-1 59-60'

Param	Flag	Result	Units	RL
Chloride		**20.3**	mg/Kg	4