SITE INFORMATION

Report Type: Work Plan

General Site Information:						
Site:	Continental A State Tank Battery					
Company:	COG Operating LLC					
Section, Township and Range	Unit I	Sec. 30	T-17-S	R-29-E		
Lease Number:	API-30-015-35052					
County:	Eddy County					
GPS:	32.8121			104.11641		
Surface Owner:	State					
Mineral Owner:						
Directions:	Intersection of Hwy 82 and CR-212 (West of Loco Hills), travel west on Hwy 82 2.4 mi, turn right 0.2 mi, turn left 500' to location - Injection well location west of wellhead					

Release Data:	
Date Released:	5/23/2012
Type Release:	Produced Water
Source of Contamination:	2" bull plug failed at tank
Fluid Released:	30 bbls
Fluids Recovered:	27 bbls

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

July 24, 2012

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

Re: Assessment and Work Plan for the COG Operating LLC., Continental A State Tank Battery Located in Unit C, Section 30, 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 Continental A State Tank Battery located in Unit C, Section 30, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81210°, W 104.11641°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico Oil Conservation Division (NMOCD) Form C-141 Initial Report, the leak was discovered on May 23, 2012, and released approximately thirty (30) barrels of crude oil due to a 2" bull plug failed used at the sales tank at the facility. COG personnel replaced the defective bull plug. Approximately twenty-seven (27) barrels of oil were recovered from the spill area.

The spill initiated inside the facility firewalls impacting the area west of the tanks measuring approximately 5' x 300'. The crude oil breached the northeast and southwest firewalls measuring approximately 5' x 20' and 10' x 25'. The footprint of the spill is shown on Figure 3. The initial Form C-141 is enclosed in Appendix A.

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

Groundwater

No wells were located in Section 30. According to the NMOCD groundwater map, the depth to groundwater in this area is approximately 175' 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, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment

On July 3, 2012, Tetra Tech personnel inspected and sampled the spill area. A total of eight (8) auger holes (AH-1 through AH-8) were 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. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C.

Referring to Table 1, auger holes (AH-2, AH-3, AH-7, AH-8 and AH-9) either exceeded the RRAL for TPH, benzene or total BTEX. Auger holes (AH-8 and AH-9) did not show a chloride impact to the areas. The remaining auger holes showed elevated chloride concentrations and were not vertically defined. Due to a dense caliche layer, deeper samples could not be collected with a hand auger. During the excavation phase of remediation, backhoe trenches will be installed to collect deeper samples.

Work Plan

COG proposes to remove impacted material as highlighted (green) in Table 1 and shown on Figure 4. Auger holes (AH-2, AH-3, AH-7, AH-8 and AH-9), exceeding the RRAL for TPH, benzene or total BTEX, will be excavated to depth of 2.0' to 3.0' below surface. Once excavated to the

appropriate depths, confirmation samples will be collected for TPH and/or BTEX. In addition, the areas of AH-1, AH-3, AH-4, AH-5 and AH-7 will be excavated to remove the elevated chlorides to a depth of 2.0' to 3.0'. The excavation bottoms will be field screened for chloride to confirm the removal of the impact. If needed, backhoe trenches will be installed to define the vertical extents of the chloride impact. Based on field screening results, the areas will be excavated to the appropriate depths and backfilled with clean soil.

Due to the location of the spill, the proposed excavation depths and areas may not be achieved due to wall cave ins, oil and gas equipment, electrical, structures or lines which 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 impacted soil is not accessible, the impacted soil will be deferred until the abandonment of the facility. If deeper impact is encountered and the excavation cannot be achieved, the impacted soil will be capped with either 40 mil liner or clay material and backfilled with soil to grade.

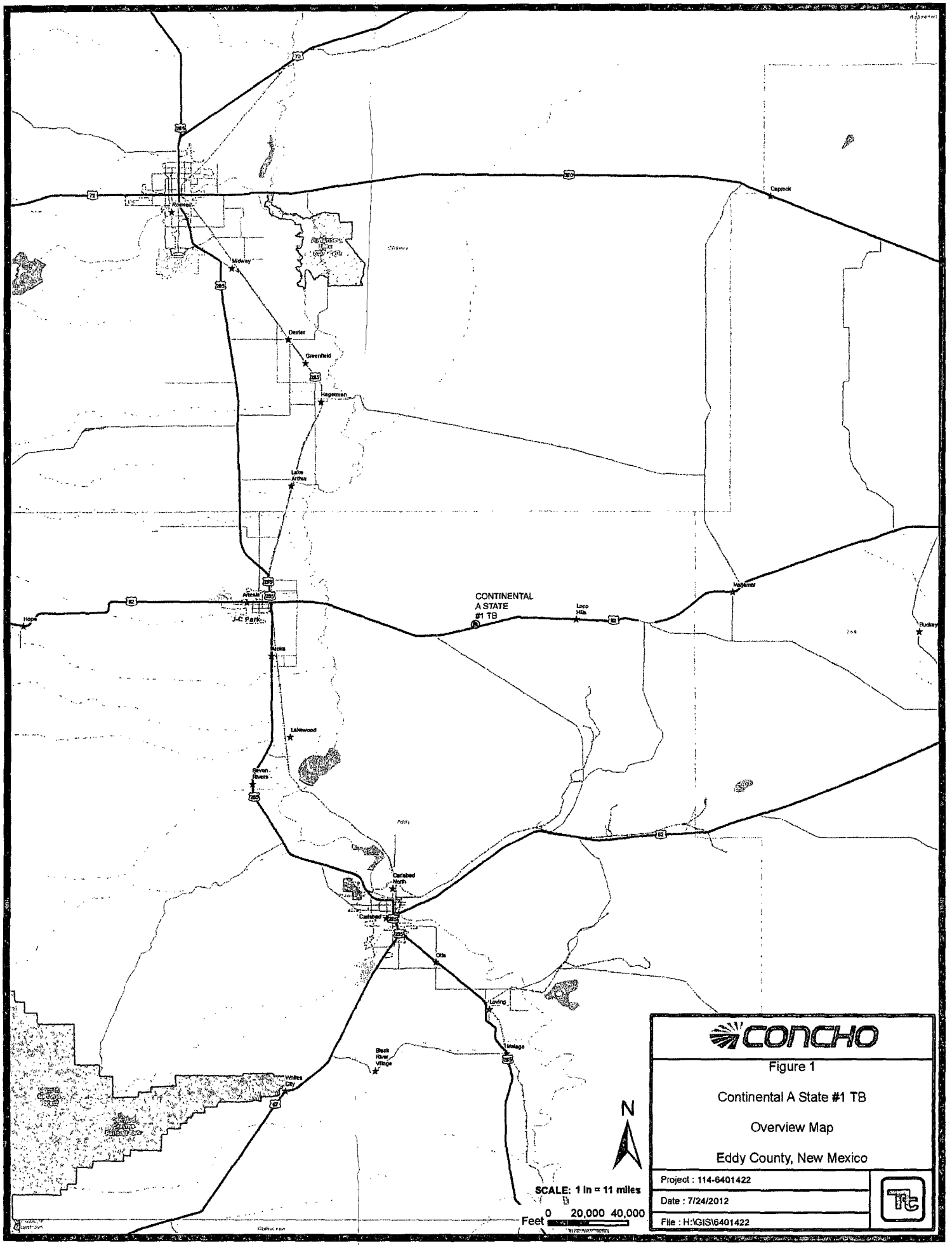
Upon completion, a final report will be submitted to the NMOCD. If you have any questions or require any additional information regarding this work plan, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez
Senior Project Manager

cc: Pat Ellis – COG

Figures



CONCHO

Figure 1

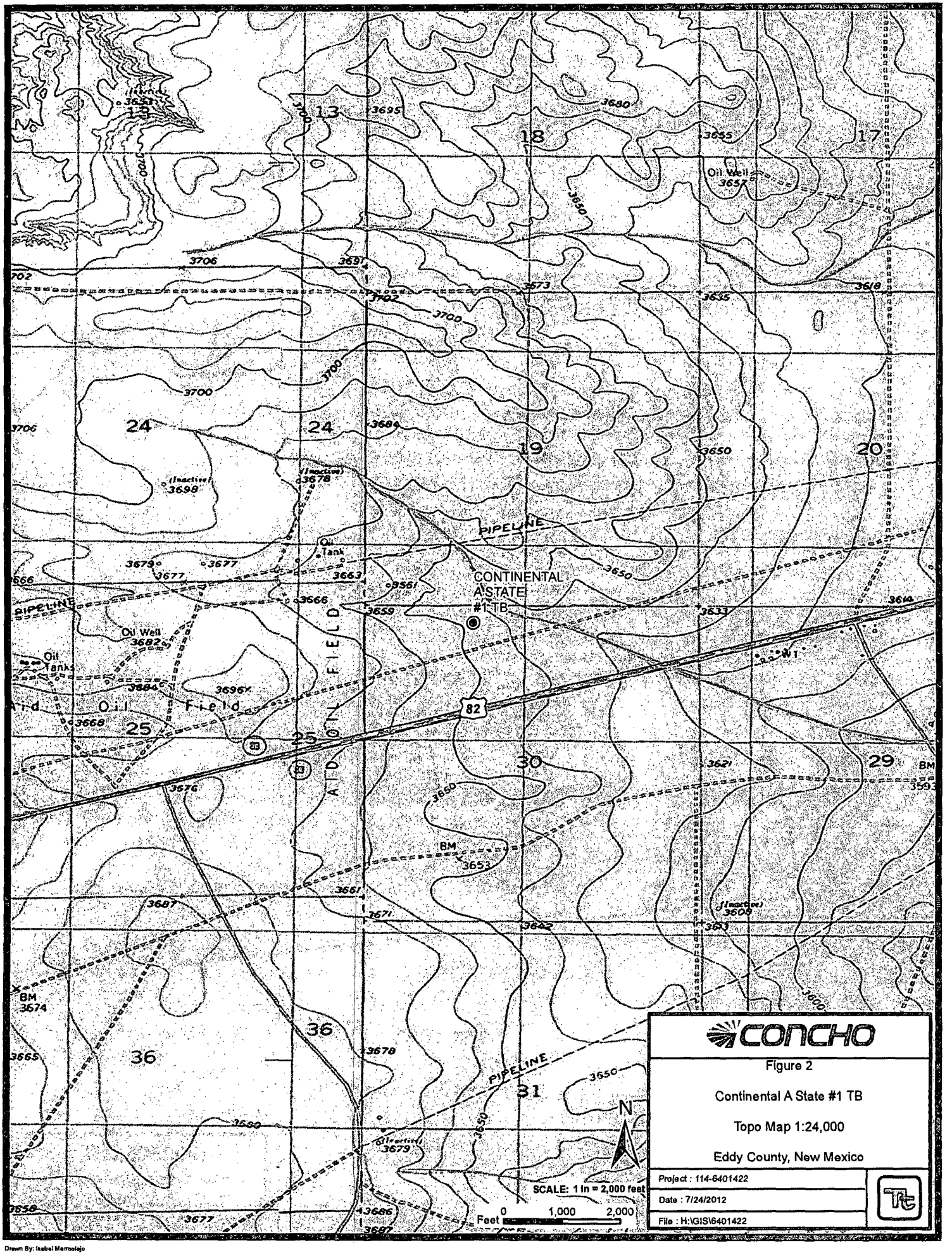
Continental A State #1 TB

Overview Map

Eddy County, New Mexico

Project : 114-6401422	
Date : 7/24/2012	
File : H:\GIS\6401422	

Drawn By: Isabel Marmolejo



CONCHO

Figure 2

Continental A State #1 TB

Topo Map 1:24,000

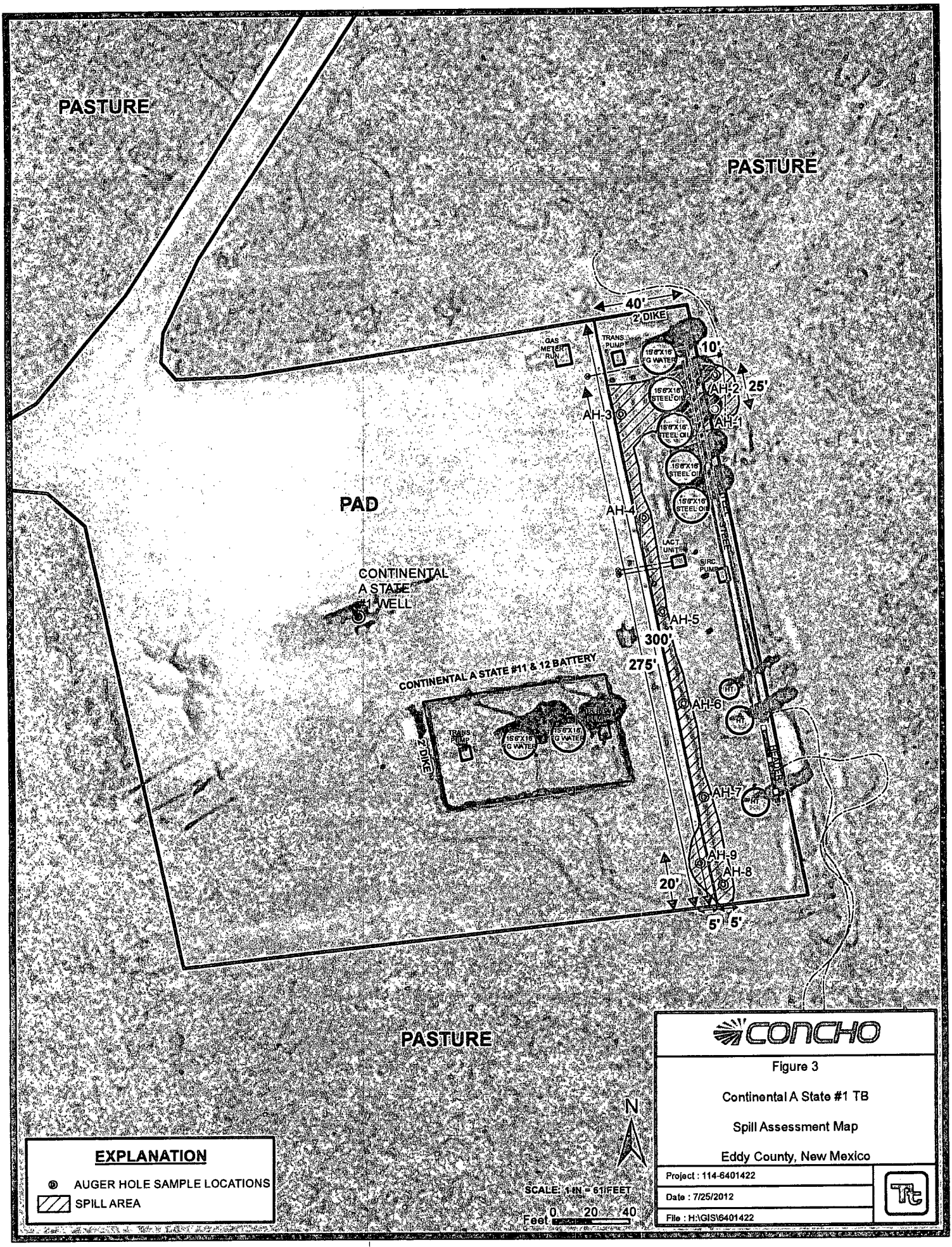
Eddy County, New Mexico

Project : 114-6401422

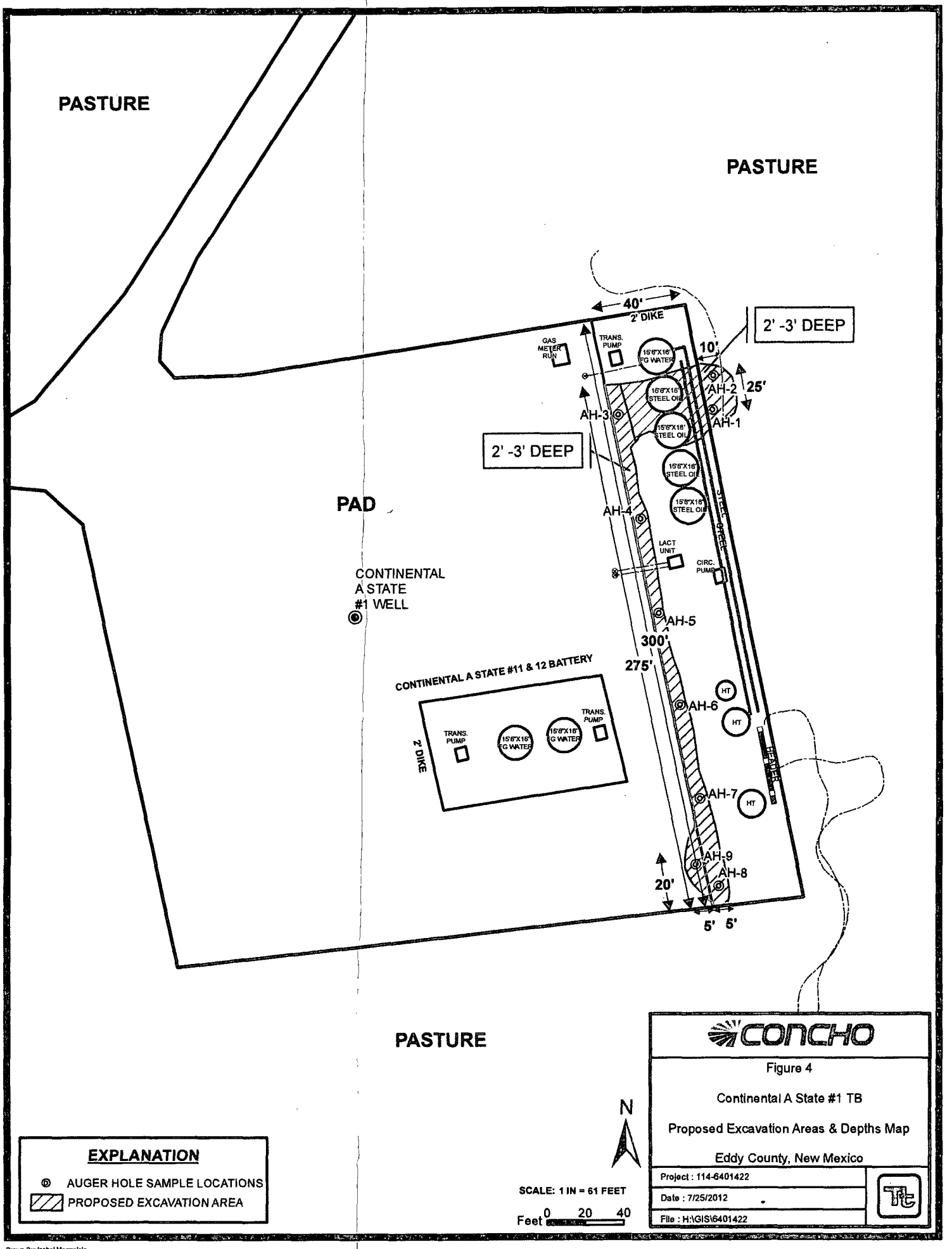
Date : 7/24/2012

File : H:\GIS\6401422

Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo

Tables

Table 2
COG Operating LLC.
Continental A State #12 Tank Battery
Eddy County, New Mexico

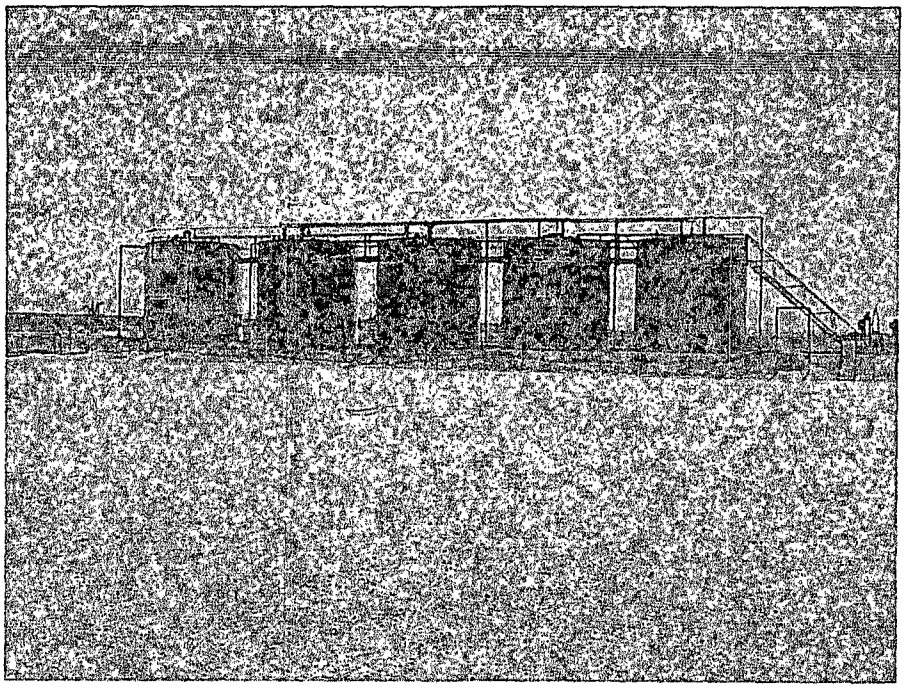
Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-1	7/3/2012	0-1	X		22.2	1,210	1,232	<0.0200	<0.0200	0.0411	0.603	0.644	2,240
	"	1-1.5	X		-	-	-	-	-	-	-	-	1,900
AH-2	7/3/2012	0-1	X		806	4,240	**5,046**	0.665	7.88	12.0	8.15	28.7	<20.0
AH-3	7/3/2012	0-1	X		746	2,280	3,026	4.04	64.1	37.2	82.8	**188**	16,700
	"	1-1.5	X		-	-	-	-	-	-	-	-	13,900
	"	2-2.5	X		-	-	-	-	-	-	-	-	5,760
AH-4	7/3/2012	0-1	X		194	1,200	1,394	2.68	0.162	1.31	2.89	7.04	12,100
AH-5	7/3/2012	0-1	X		141	1,070	1,211	<0.100	<0.100	0.213	0.494	0.707	6,920
	"	1-1.5	X		-	-	-	-	-	-	-	-	2,070
AH-6	7/3/2012	0-1	X		164	377	541	<0.100	0.260	4.13	4.75	9.14	2,650
	"	1-1.5	X		-	-	-	-	-	-	-	-	556
	"	2-2.5	X		-	-	-	-	-	-	-	-	1,420
	"	3-3.5	X		-	-	-	-	-	-	-	-	1,730
	"	4-4.5	X		-	-	-	-	-	-	-	-	1,270
	"	5-5.5	X		-	-	-	-	-	-	-	-	886
AH-7	7/3/2012	0-1	X		5,360	4,940	**10,300**	**24.3**	219	130	191	**564**	1,490
	"	1-1.5	X		3,100	8,500	**11,600**	**30.5**	258	134	193	**616**	1,490
AH-8	7/3/2012	0-1	X		11,800	8,060	**19,860**	**79.2**	532	266	379	**1,256**	103
	"	1-1.5	X		4,190	8,570	**12,760**	**75.1**	405	184	273	**937**	44.3
AH-9	7/3/2012	0-1	X		5,880	6,580	**12,460**	**18.4**	88.7	54.4	39.4	**201**	39.4
	"	1-1.5	X		3,960	5,020	**8,980**	**39.2**	259	126	182	**606**	78.4

(--) Not Analyzed

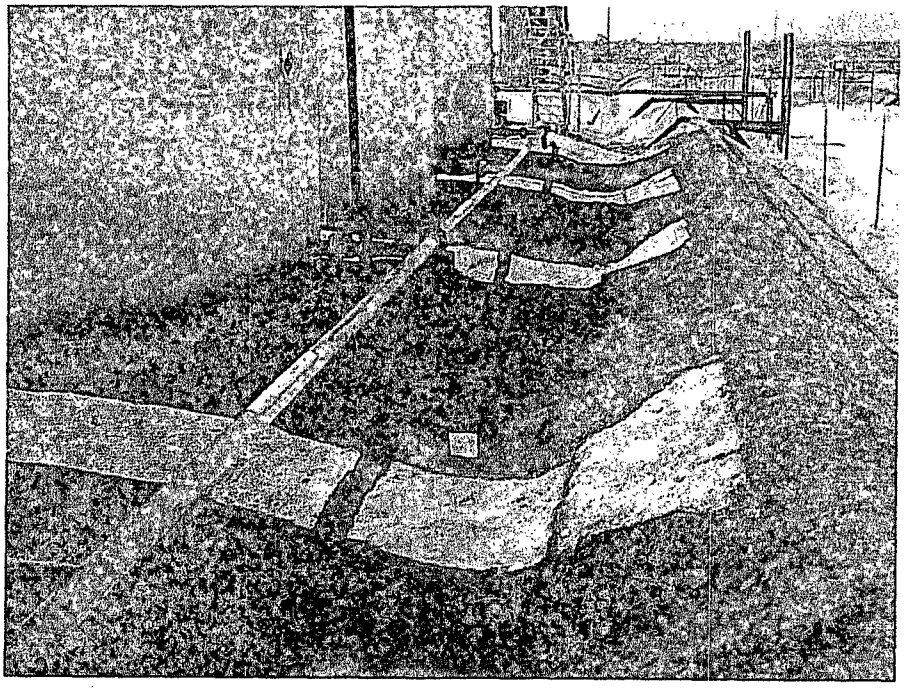
Photos

COG Operating - Continental A State Tank Battery

Eddy County, New Mexico



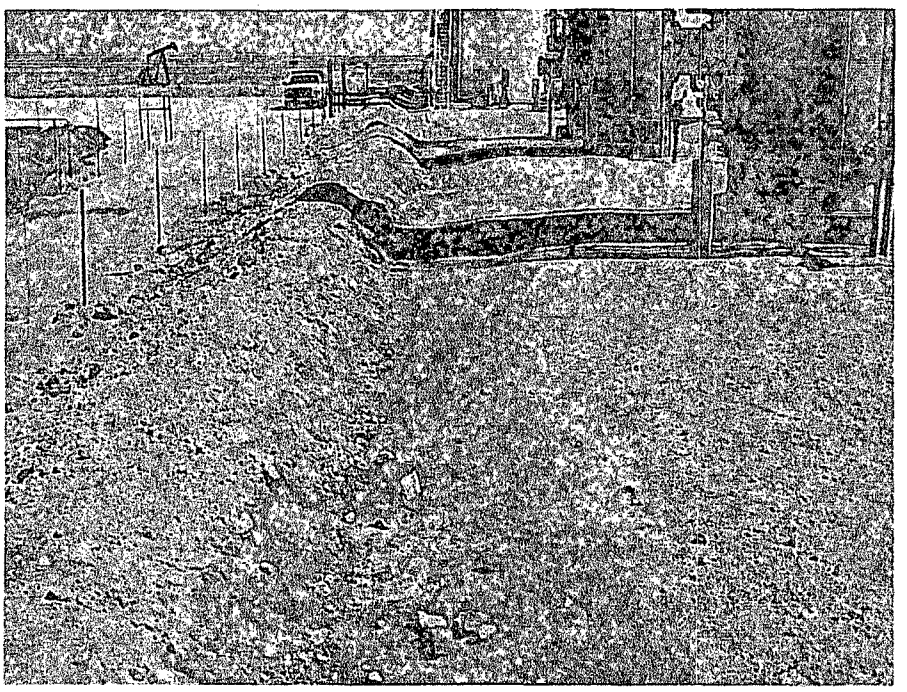
1. View of Tank Battery



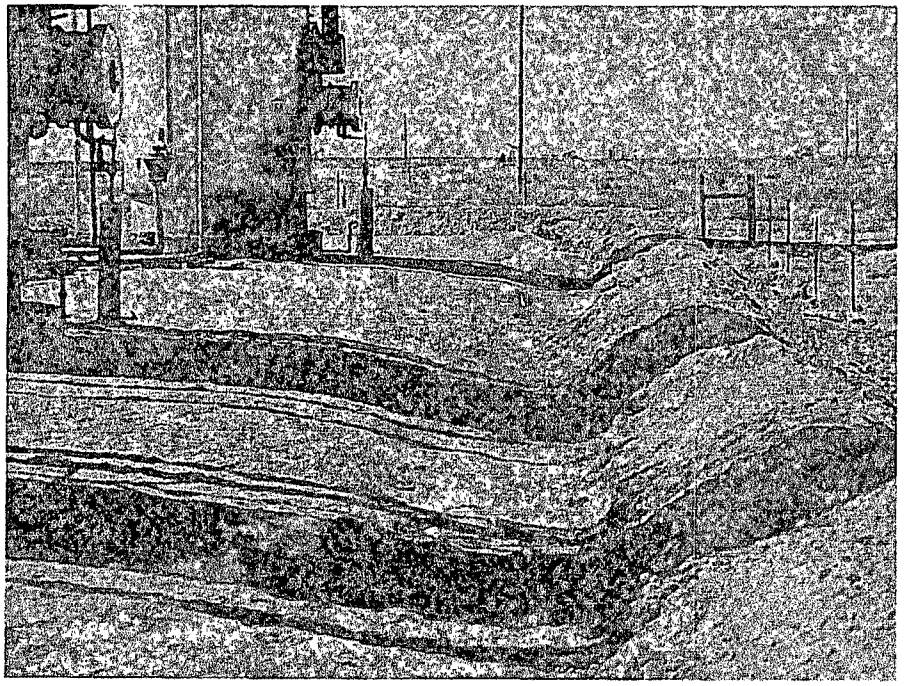
2. View of spill area front of tanks

COG Operating - Continental A State Tank Battery

Eddy County, New Mexico



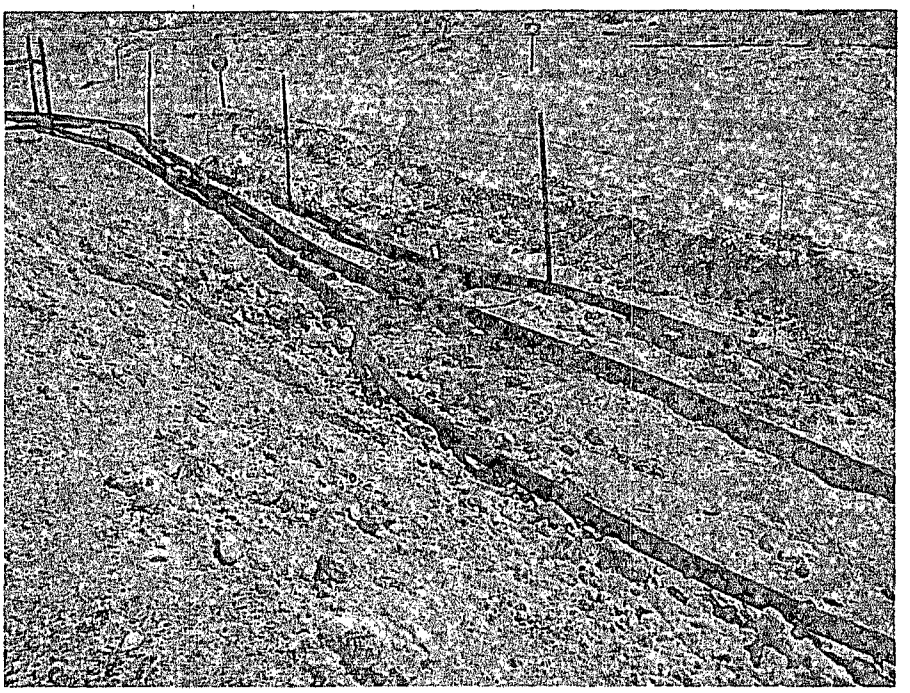
3. View of spill area front of heater treaters



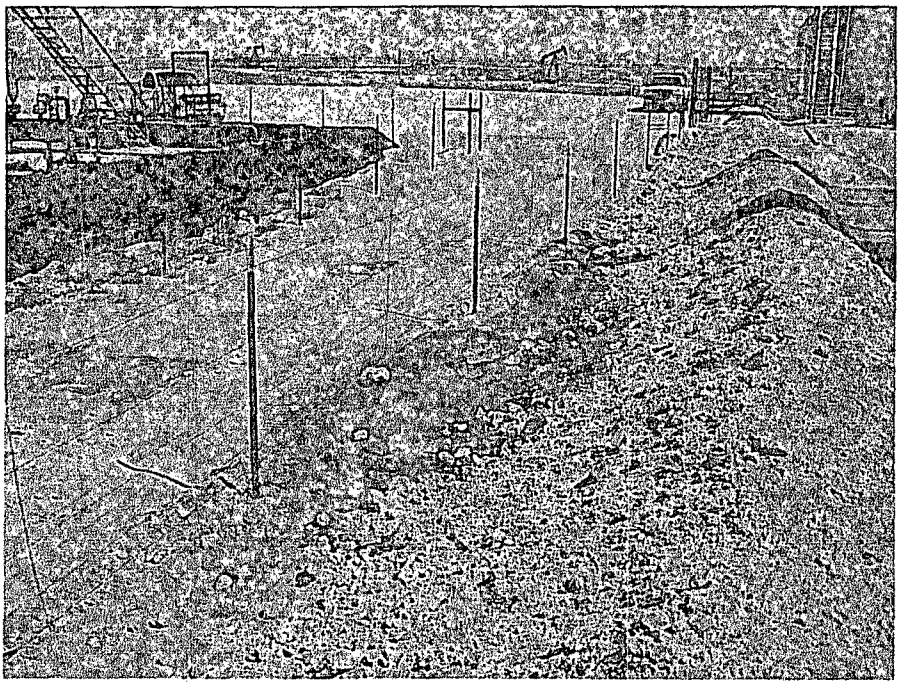
4. View of spill area front of heater treaters

COG Operating - Continental A State Tank Battery

Eddy County, New Mexico



5. View of firewall breach - area of AH-2



6. View of firewall breach - area of AH-9

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, TX 79701	Telephone No.	432-230-0077
Facility Name	Continental A State Tank Battery	Facility Type	Tank Battery

Surface Owner State	Mineral Owner	Lease No. (API#) 30-015-29696 Closest well location

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	30	17S	29E					Eddy

Latitude 32 48.726 **Longitude** 104 06.985

NATURE OF RELEASE

Type of Release Oil	Volume of Release 30bbls	Volume Recovered 27bbls
Source of Release 2" bull plug at tank	Date and Hour of Occurrence 05/23/2012	Date and Hour of Discovery 05/23/2012 7:00 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher-OCD	
By Whom? Michelle Mullins	Date and Hour 05/23/2012 8:55 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.*

A 2" bull plug came out at the sales tank releasing oil into the facility. The bull plug has been replaced.

Describe Area Affected and Cleanup Action Taken.*

Initially 30bbls of oil was released from the sales tank and we were able to recover 27bbls with a vacuum truck. All free fluids have been recovered and several inches of the contaminated soil has been removed and hauled to disposal. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation work.

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

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: 06/04/2012 Phone: 432-212-2399	

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Continental A State Tank Battery
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 SITE	29	28	27	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
Site Location - Continental A State #12

Appendix C

Summary Report

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

Report Date: July 17, 2012

Work Order: 12070601

Project Location: Eddy Co., NM
Project Name: COG/Continental A State #12 Tank Battery
Project Number: 114-6401422

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
302782	AH-1 0-1'	soil	2012-07-03	00:00	2012-07-05
302783	AH-1 1-1.5'	soil	2012-07-03	00:00	2012-07-05
302784	AH-2 0-1'	soil	2012-07-03	00:00	2012-07-05
302785	AH-3 0-1'	soil	2012-07-03	00:00	2012-07-05
302786	AH-3 1-1.5'	soil	2012-07-03	00:00	2012-07-05
302787	AH-3 2-2.5'	soil	2012-07-03	00:00	2012-07-05
302788	AH-4 0-1'	soil	2012-07-03	00:00	2012-07-05
302789	AH-5 0-1'	soil	2012-07-03	00:00	2012-07-05
302790	AH-5 1-1.5'	soil	2012-07-03	00:00	2012-07-05
302791	AH-6 0-1'	soil	2012-07-03	00:00	2012-07-05
302792	AH-6 1-1.5'	soil	2012-07-03	00:00	2012-07-05
302793	AH-6 2-2.5'	soil	2012-07-03	00:00	2012-07-05
302794	AH-6 3-3.5'	soil	2012-07-03	00:00	2012-07-05
302795	AH-6 4-4.5'	soil	2012-07-03	00:00	2012-07-05
302796	AH-6 5-5.5'	soil	2012-07-03	00:00	2012-07-05
302797	AH-7 0-1'	soil	2012-07-03	00:00	2012-07-05
302798	AH-7 1-1.5'	soil	2012-07-03	00:00	2012-07-05
302799	AH-8 0-1'	soil	2012-07-03	00:00	2012-07-05
302800	AH-8 1-1.5'	soil	2012-07-03	00:00	2012-07-05
302801	AH-9 0-1'	soil	2012-07-03	00:00	2012-07-05
302802	AH-9 1-1.5'	soil	2012-07-03	00:00	2012-07-05

	BTEX				MTBE	TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
302782 - AH-1 0-1'	<0.0200 [1]	<0.0200	**0.0411**	**0.603**		**1210** Qs	**22.2** [2] Qs

continued ...

[1]Sample weighed out of 48-hr preservation time.
[2]Sample weighed out of 48-hr preservation time.

... continued

Sample - Field Code	BTEX Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	MTBE MTBE (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
302784 - AH-2 0-1'	**0.665** [3]	**7.88**	**12.0**	**8.15**		**4240** Qs	**806** [4] Je,Qs
302785 - AH-3 0-1'	**4.04** [5]	**64.1** Je	**37.2**	**82.8** Je		**2280** Qs	**746** [6] Je,Qs
302788 - AH-4 0-1'	**2.68** [7]	**0.162**	**1.31**	**2.89**		**1200** Qs	**194** [8] Qs
302789 - AH-5 0-1'	<0.100 [9]	<0.100	**0.213**	**0.494**		**1070** Qs	**141** [10] Qs
302791 - AH-6 0-1'	<0.100 [11]	**0.260**	**4.13**	**4.75**		**377** Qs	**164** [12] Qs
302797 - AH-7 0-1'	**24.3** [13]	**219** Je	**130** Je	**191** Je		**4940** Qs	**5360** [14] Je,Qs
302798 - AH-7 1-1.5'	**30.5** [15]	**258** Je	**134**	**193** Je	<0.400	**8500** Qs	**3100** Je
302799 - AH-8 0-1'	**79.2** [16]	**532** Je	**266** Je	**379** Je		**8060** Qs	**11800** [17] Je,Qs
302800 - AH-8 1-1.5'	**75.1** [18]	**405** Je	**184** Je	**273** Je	<0.400	**8570** Qs	**4190** Je
302801 - AH-9 0-1'	**18.4** [19]	**88.7** Je	**54.4** Je	**39.4**		**6580** Qs	**5880** [20] Qs
302802 - AH-9 1-1.5'	**39.2** [21]	**259** Je	**126**	**182** Je	<0.400	**5020** Qs	**3960** Je

Sample: 302782 - AH-1 0-1'

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

Sample: 302783 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**1900**	mg/Kg	4

Sample: 302784 - AH-2 0-1'

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

[3]Sample weighed out of 48-hr preservation time.
[4]Sample weighed out of 48-hr preservation time.
[5]Sample weighed out of 48-hr preservation time.
[6]Sample weighed out of 48-hr preservation time.
[7]Sample weighed out of 48-hr preservation time.
[8]Sample weighed out of 48-hr preservation time.
[9]Sample weighed out of 48-hr preservation time. Dilution due to excessive hydrocarbons.
[10]Sample weighed out of 48-hr preservation time.
[11]Sample weighed out of 48-hr preservation time. Dilution due to excessive hydrocarbons.
[12]Sample weighed out of 48-hr preservation time.
[13]Sample weighed out of 48-hr preservation time.
[14]Sample weighed out of 48-hr preservation time.
[15]Sample weighed out of 48-hour preservation time.
[16]Sample weighed out of 48-hr preservation time.
[17]Sample weighed out of 48-hr preservation time.
[18]Sample weighed out of 48-hour preservation time.
[19]Sample weighed out of 48-hr preservation time.
[20]Sample weighed out of 48-hr preservation time.
[21]Sample weighed out of 48-hour preservation time.

Sample: 302785 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**16700**	mg/Kg	4

Sample: 302786 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**13900**	mg/Kg	4

Sample: 302787 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**5760**	mg/Kg	4

Sample: 302788 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		**12100**	mg/Kg	4

Sample: 302789 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		**6920**	mg/Kg	4

Sample: 302790 - AH-5 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**2070**	mg/Kg	4

Sample: 302791 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		**2650**	mg/Kg	4

Sample: 302792 - AH-6 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**556**	mg/Kg	4

Sample: 302793 - AH-6 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**1420**	mg/Kg	4

Sample: 302794 - AH-6 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**1730**	mg/Kg	4

Sample: 302795 - AH-6 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**1270**	mg/Kg	4

Sample: 302796 - AH-6 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**886**	mg/Kg	4

Sample: 302797 - AH-7 0-1'

Param	Flag	Result	Units	RL
Chloride		**1490**	mg/Kg	4

Sample: 302798 - AH-7 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**1490**	mg/Kg	4

Sample: 302799 - AH-8 0-1'

Param	Flag	Result	Units	RL
Chloride		**103**	mg/Kg	4

Sample: 302800 - AH-8 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**44.3**	mg/Kg	4

Sample: 302801 - AH-9 0-1'

Param	Flag	Result	Units	RL
Chloride		**39.4**	mg/Kg	4

Sample: 302802 - AH-9 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**78.4**	mg/Kg	4