SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	Dryland Shiner Federal Tank Battery					
Company:	COG Operating LLC					
Section, Township and Range	Unit I	Sec 3	T21S	R25E		
Lease Number:	API-30-015-32815					
County:	Eddy County					
GPS:	32.51975° N			104.37667° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From Carlsbad at the intersection of Hwy 285 and the George Shoup Relief Route, travel north on Hwy 285 for 6.6 miles. Turn right onto Capitan Reef (CR 30) and travel 0.2 miles, stay right and travel 0.2 miles, turn left and travel 0.1 miles to site.					

Release Data:	
Date Released:	7/18/2012
Type Release:	Produced Water
Source of Contamination:	Oil Tanks
Fluid Released:	500 bbls
Fluids Recovered:	480 bbls

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AUG 28 2013
NMOCD ARTESIA

Official Communication:			
Name:	Pat Ellis		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		1910 N. Big Spring
	600 W. Illinois Ave.		
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	20
50-99 ft	10	
>100 ft.	0	
WellHead Protection:	***Ranking Score***	***Site Data***
Water Source <1,000 ft., Private <200 ft.	*20*	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	***Ranking Score***	***Site Data***
<200 ft.	*20*	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
Total Ranking Score:	20	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	100

TETRA TECH

July 18, 2013

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

Re: Closure Report for the COG Operating LLC., Dryland Shiner Federal Tank Battery, Unit I, Section 3, Township 21 South, Range 25 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 Dryland Shiner Federal Tank Battery located in Unit I, Section 3, Township 21 South, Range 25 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.51975°, W 104.37667°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on July 18, 2012, and released approximately five hundred (500) barrels of produced water from the oil tanks. To alleviate the problem, COG personnel removed the free water knock from service while the water dumps were repaired. Four hundred eighty (480) barrels of standing fluids were recovered. The spill initiated inside the tank battery measuring approximately 30' x 85', breached the north firewall and migrated onto the caliche pad and measured approximately 100' x 200'. The initial C-141 form is enclosed in Appendix A.

Groundwater

Two water wells were listed within Section 3, with depths ranging from 33.0' to 65.0' below surface. According to the NMOCD groundwater map, the average depth to groundwater in this area is less than 50' below surface. The groundwater data is shown in Figure 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 New Mexico Oil Conservation Division (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 100 mg/kg.

Soil Assessment and Analytical Results

On January 14, 2013, Tetra Tech personnel inspected and sampled the spill area. Five (5) trenches (T-1 through T-5) were installed using a backhoe to assess the impacted soils. During the install of the trenches, a dense layer of limestone was encountered at a depth of 2.0' to 3.0' below grade surface. In order to collected deeper samples, an air rotary rig was used to install three (3) soil borings (SB-1, SB-2 and SB-3). Soil boring (SB-1) replaced T-1 and SB-2 replaced T-3. 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 analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The sample locations are shown on Figure 3.

Referring to Table 1, soil boring (SB-1) exceeded the TPH RRAL at 0-1' and 2-3', with concentrations of 3,755 mg/kg and 2,873 mg/kg, respectively. The TPH concentration declined below the RRAL at 4.0' below grade surface. A shallow chloride impact was detected in the areas of T-4 and SB-2, with a chloride concentrations significantly declining at 2.0' below surface and these areas were vertically defined.

Remedial Activities and Conclusion

On June 26, 2013, Tetra Tech personnel supervised the excavation of the spill area. The excavated areas and depths are highlighted in Table 1 and shown on Figure 4. The spill footprint and final excavation depths of the soil remediation were met as stated in the approved work plan.

As shown in Figure 4, the area of SB-1 within the tank battery was excavated to a depth of approximately 3.0' below surface. A surficial scrape was done in the area of SB-2 and the area of T-4 was excavated to approximately 1.0' below surface. Bottom hole and sidewall confirmation samples (CS-1, CS-2 and CS-3) were collected in the excavated areas and showed no remaining impact. All of the excavated areas were backfilled with clean material to surface grade and

approximately 200 cubic yards were removed and disposed of at the R360 facility.

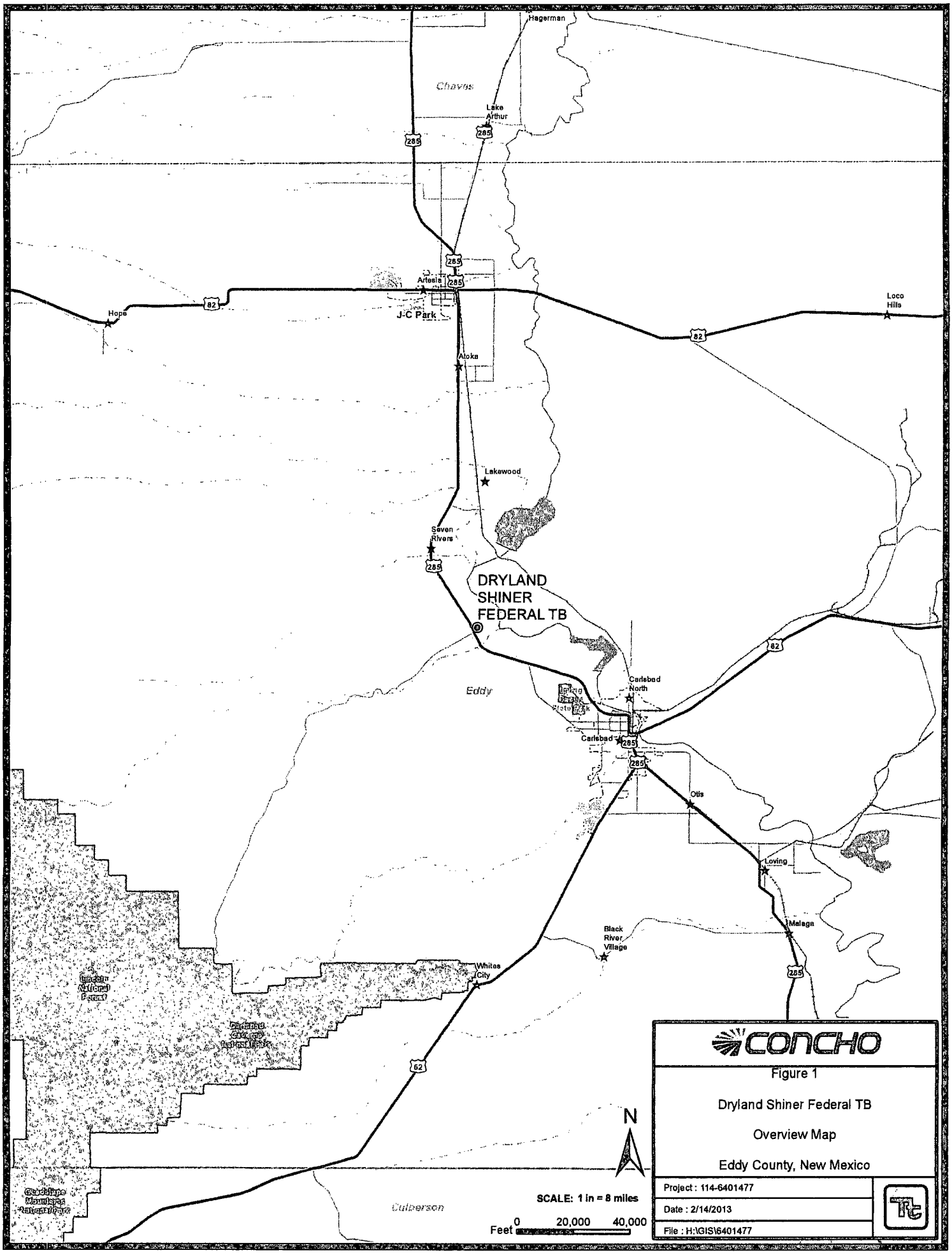
Based on the remediation activities performed at this location, COG requests closure for this site. The C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities performed at the site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez, PG
Senior Project Manager

cc: Pat Ellis – COG
James Amos – BLM
Jennifer Van Curen – BLM

Figures



CONCHO

Figure 1

Dryland Shiner Federal TB

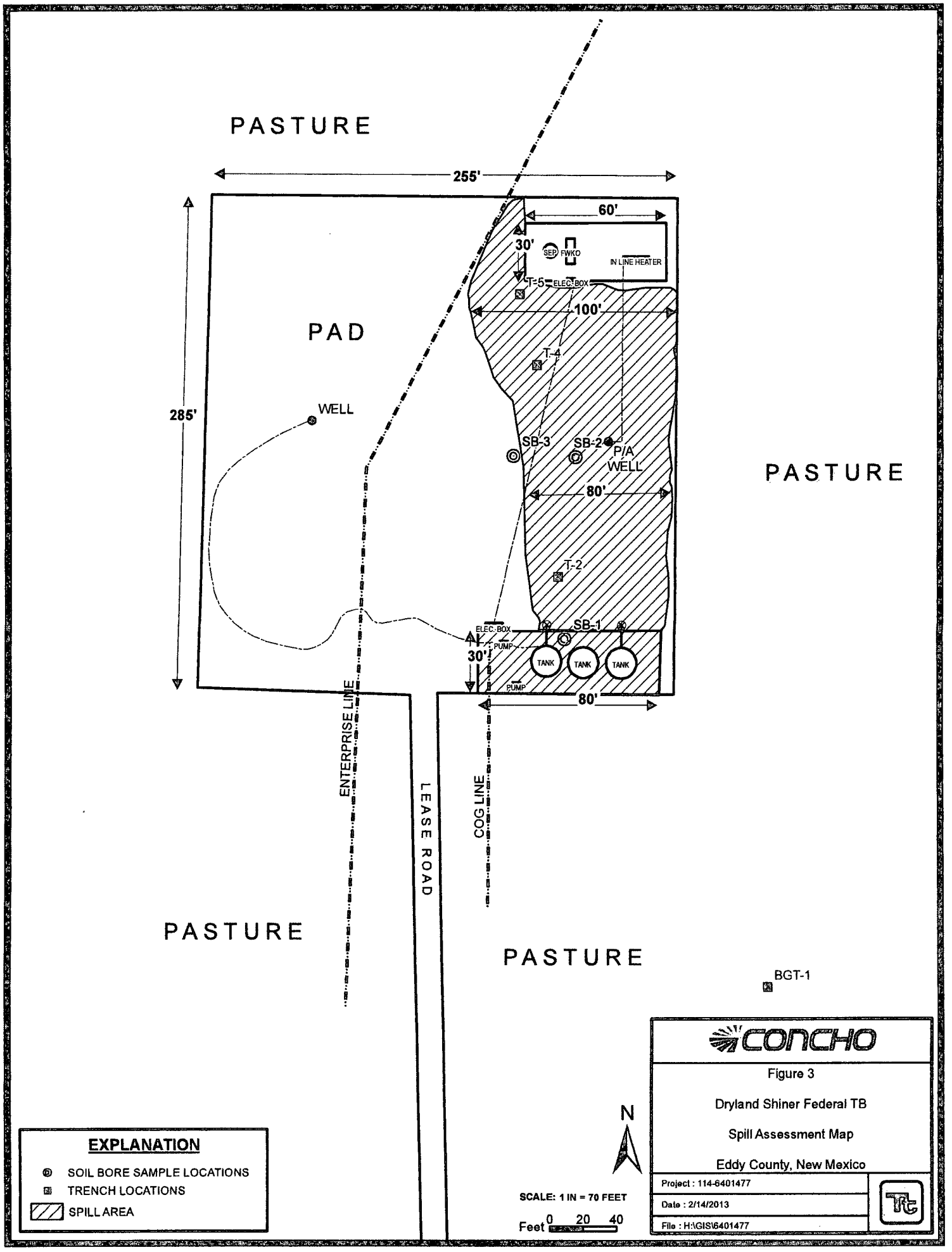
Overview Map

Eddy County, New Mexico

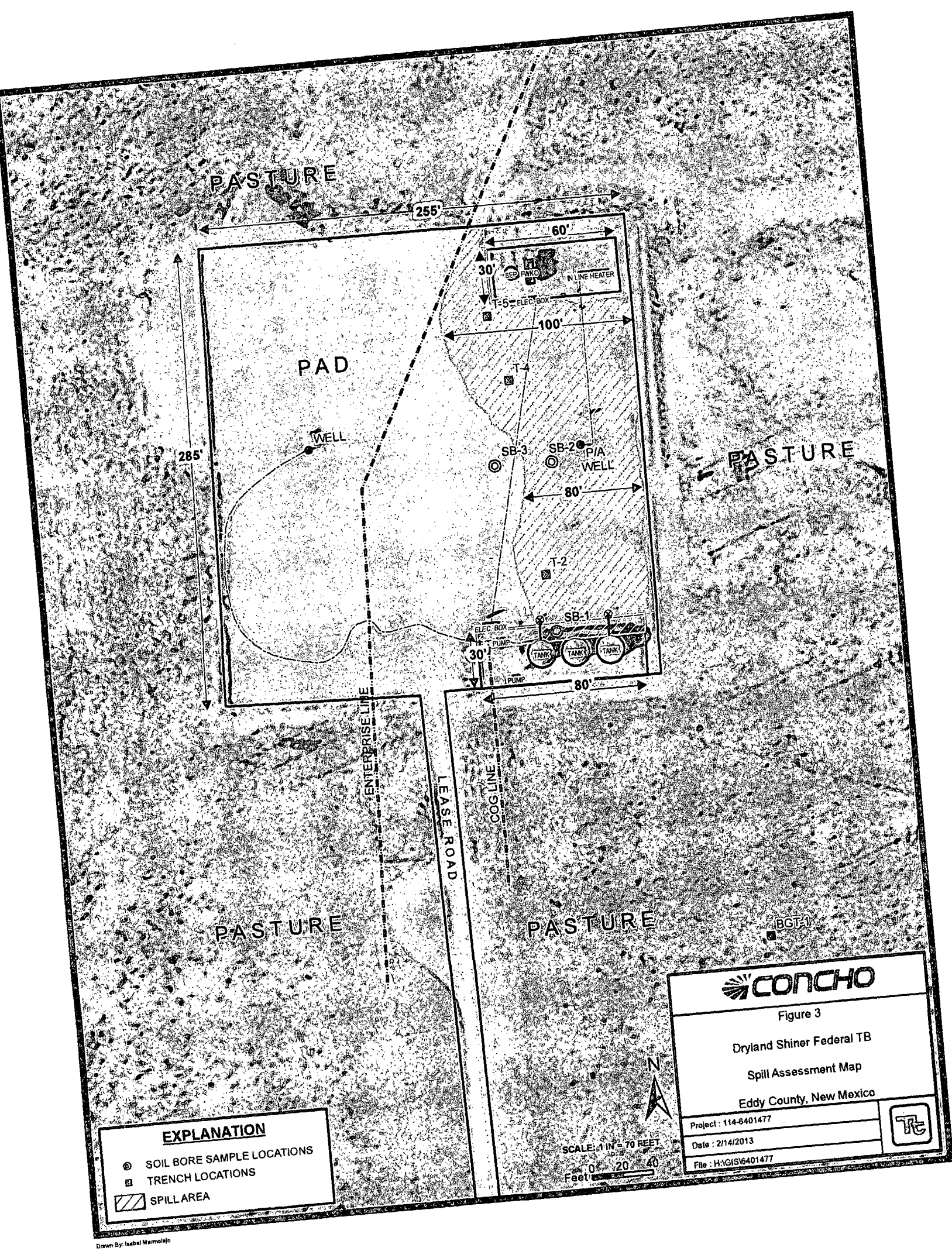
Project : 114-6401477	
Date : 2/14/2013	
File : H:\GIS\6401477	

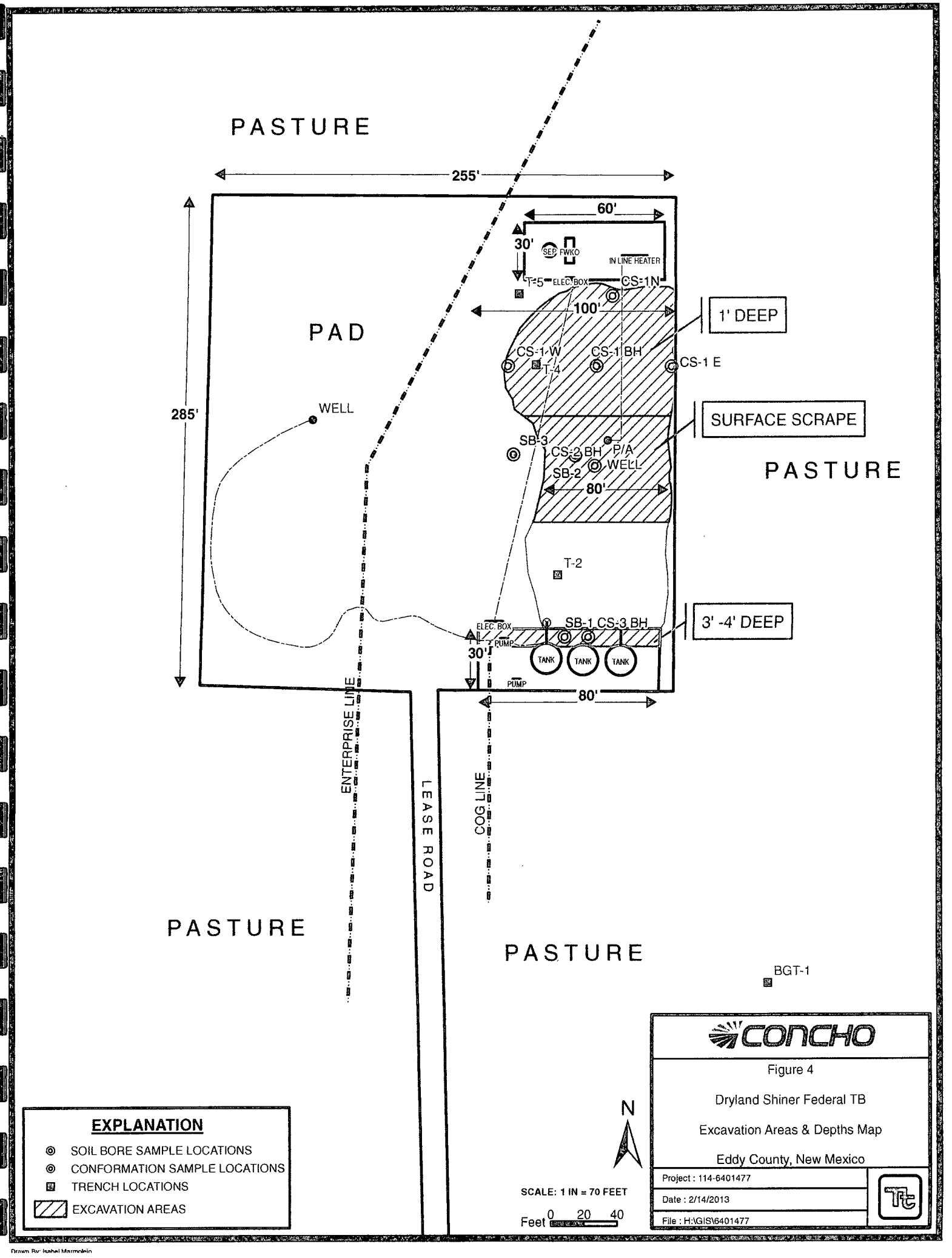
Drawn By: Isabel Marmolejo

Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo


PASTURE
255'
60'
30'
SEP
PWKO
IN LINE HEATER
T-5
ELEC. BOX
100'
PAD
T-4
WELL
285'
SB-3
SB-2
P/A WELL
PASTURE
80'
T-2
SB-1
ELEC. BOX
PUMP
TANK
TANK
TANK
30'
PUMP
80'
ENTERPRISE LINE
LEASE ROAD
COG LINE
PASTURE
PASTURE
BGT-1
EXPLANATION
SOIL BORE SAMPLE LOCATIONS
TRENCH LOCATIONS
SPILL AREA
N
SCALE: 1 IN = 70 FEET
Feet 0 20 40
CONCHO
Figure 3
Dryland Shiner Federal TB
Spill Assessment Map
Eddy County, New Mexico
Project : 114-6401477
Date : 2/14/2013
File : H:\GIS\6401477
Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo

Tables

Table 1
COG Operating
Dryland Shiner Federal 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						
Background T-1	1/14/2013	0-1	X		-	-	-	-	-	-	-	-	<20.0
	"	2	X		-	-	-	-	-	-	-	-	<20.0
	"	4	X		-	-	-	-	-	-	-	-	46.6
Trench-2	1/14/2013	0-0.5	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	583
	"	1	X		-	-	-	-	-	-	-	-	256
	"	2	X		-	-	-	-	-	-	-	-	238
Trench-4	1/14/2013	0-0.5		X	<8.00	<50.0	<50.0	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	3,230
	"	1		X	-	-	-	-	-	-	-	-	1,510
	"	2	X		-	-	-	-	-	-	-	-	392
CS-1 NSW	6/28/2013	1	X		-	-	-	-	-	-	-	-	455
CS-1 WSW	"	1	X		-	-	-	-	-	-	-	-	114
CS-1 ESW	"	1	X		-	-	-	-	-	-	-	-	667
CS-1 Bottom Hole	"	1	X		-	-	-	-	-	-	-	-	217
Trench-5	1/14/2013	0-0.5	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	494
	"	1	X		-	-	-	-	-	-	-	-	69.9
	"	2	X		-	-	-	-	-	-	-	-	<20.0

Table 1
COG Operating
Dryland Shiner Federal 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						
SB-1	1/16/2013	0-1		X	3,620	135	3,755	<0.200	2.31	<0.200	22.0	24.3	247
	"	2-3		X	2,750	123	2,873	-	-	-	-	-	294
	"	4-5	X		35.8	<50.0	35.8	-	-	-	-	-	168
	"	6-7	X		-	-	-	-	-	-	-	-	32.7
	"	9-10	X		-	-	-	-	-	-	-	-	88.7
CS-3 Bottom Hole	6/28/2013	3	X		-	-	-	-	-	-	-	-	1,110
SB-2	1/16/2013	0-1		X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,330
	"	2	X		-	-	-	-	-	-	-	-	462
	"	3	X		-	-	-	-	-	-	-	-	303
	"	4-5	X		-	-	-	-	-	-	-	-	182
	"	6-7	X		-	-	-	-	-	-	-	-	244
CS-2 Bottom Hole	6/28/2013	0.5	X		-	-	-	-	-	-	-	-	527
SB-3	1/16/2013	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	315
	"	2	X		-	-	-	-	-	-	-	-	404
	"	3	X		-	-	-	-	-	-	-	-	498
	"	4-5	X		-	-	-	-	-	-	-	-	89.2
	"	6-7	X		-	-	-	-	-	-	-	-	103

(--) Not Analyzed

Excavated Depths

Surface Scape

* Due to a dense formation, soil borings were installed in place of the trenches (T-1 and T-3)

*T-1 was replaced with SB-1

*T-3 was replaced with SB-2

Photos

COG Operating LLC
Dryland Shiner Federal Tank Battery
Eddy County, New Mexico

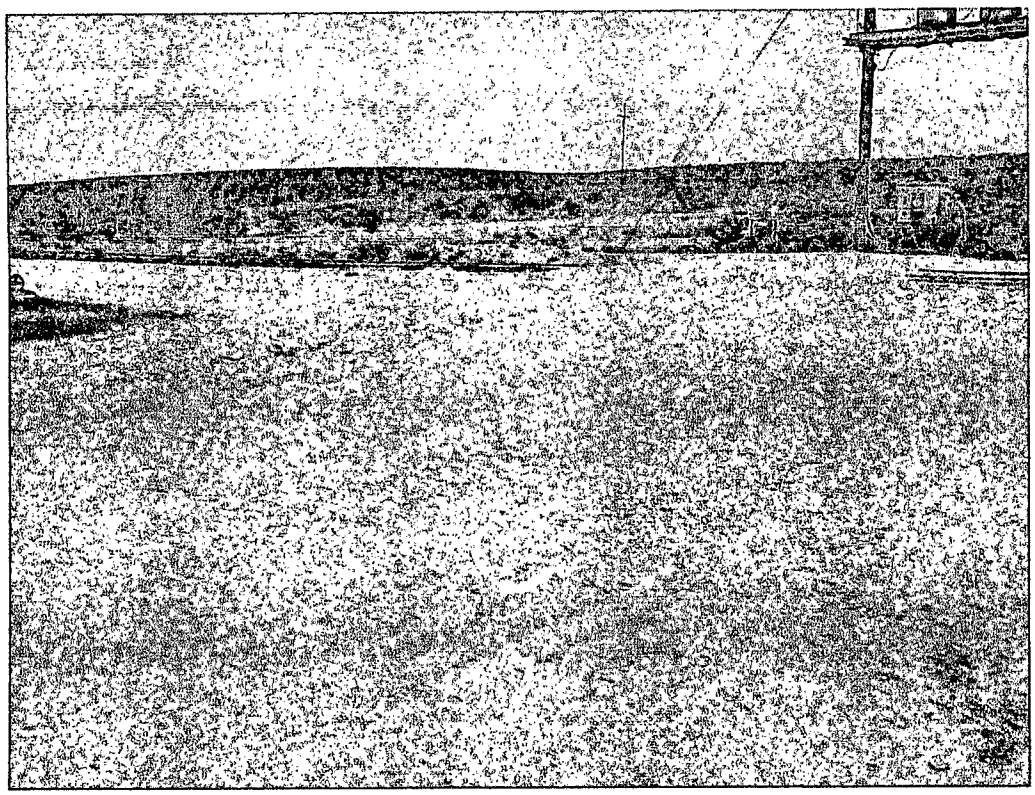
TETRA TECH

View West – Excavated area of SB-1.

View Northeast – Excavated area of T-4.

COG Operating LLC
Dryland Shiner Federal Tank Battery
Eddy County, New Mexico

TETRA TECH



View South – Backfill

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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AUG 23 2013
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	**600 W. Illinois Avenue, Midland, TX 79701**	Telephone No.	**(432) 230-0077**
Facility Name	**Dryland Shiner Federal Tank Battery**	Facility Type	**Tank Battery**

Surface Owner: Federal	Mineral Owner	Lease No. (API#) 30-015-32815

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	3	21S	25E					Eddy

Latitude N 32.51975° **Longitude** W 104.37667°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 500 bbls	Volume Recovered 480 bbls
Source of Release: Oil Tanks	Date and Hour of Occurrence 07/18/2012	Date and Hour of Discovery 07/18/2012 12:30 p.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Mike Bratcher—OCD, Jim Amos—BLM, Terry Gregston--BLM**	
By Whom? Michelle Mullins	Date and Hour 07/19/2012 2:55 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The water dumps on the FWKO failed, sending water to the oil tanks. The oil tanks overflowed causing a release of fluid. The FWKO was repaired and returned to service.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech personnel inspected the site and collected samples to define the spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. The site was then brought up to surface grade with clean backfill material. Tetra Tech prepared a closure report and submitted it to NMOCD for review.

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

Signature:	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached ☐
Date: 7-18-13 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
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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	Dryland Shiner Federal Tank Battery	Facility Type	Tank Battery

Surface Owner	Mineral Owner	Lease No. (API#)
Federal		30-015-32815

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	3	21S	25E					Eddy

Latitude 32.51975 **Longitude** 104.37667

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 500bbls	Volume Recovered 480bbls
Source of Release Oil tanks	Date and Hour of Occurrence 07/18/2012	Date and Hour of Discovery 07/18/2012 12:30 p.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher-OCD, Jim Amos-BLM, Terry Gregston-BLM	
By Whom? Michelle Mullins	Date and Hour 07/19/2012 2:55 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.*

The water dumps on the FWKO failed, sending the water to the oil tanks. The oil tanks overflowed causing the release of fluid. The FWKO has been removed from service while the water dumps are being repaired.

Describe Area Affected and Cleanup Action Taken.*

Initially 500bbls of produced water were released from the oil tanks and we were able to recover 480bbls with vacuum trucks. All free fluid has been recovered. The spill area was contained on the pad location of the facility. 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: 07/31/2012 Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Dryland Shiner Federal Tank Battery
Eddy County, New Mexico

20 South 25 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

20 South 26 East

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

20 South 27 East

6	5 **50**	4	3	2	1
7 66	8	9	10	11	12
18	17	16	15	14 **66** **74**	13
19	20	21 **150**	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

21 South 24 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

21 South 25 East

6	5	4	3 **65** 33	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

21 South 26 East

6	5 **65**	4	3	2	1 **89**
7 **66**	8 **170**	9	10 **115**	11	12
18	17 **178** **35**	16 **65**	15	14	13
19	20 **210**	21	22	23 **34**	24
30 **115**	29	28	27	26	25 **40**
31	32 **164**	33 **120**	34	35	36 **26**

22 South 24 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

22 South 25 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

22 South 26 East

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

- New Mexico State Engineers Well Reports
- USGS Well Reports
- Geology and Groundwater Conditions in Southern Eddy, County, NM
- NMOCD - Groundwater Data
- Field water level
- New Mexico Water and Infrastructure Data System

Appendix C

Summary Report

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

Report Date: January 30, 2013

Work Order: 13012303

Project Location: Eddy Co., NM
Project Name: Dryland Shiner Federal Tank Battery
Project Number: 114-6401477

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
319039	Background Trench #1 0-1'	soil	2013-01-14	00:00	2013-01-22
319040	Background Trench #1 2'	soil	2013-01-14	00:00	2013-01-22
319041	Background Trench #1 4"	soil	2013-01-14	00:00	2013-01-22
319045	Trench-2 0-0.5'	soil	2013-01-14	00:00	2013-01-22
319046	Trench-2 1'	soil	2013-01-14	00:00	2013-01-22
319047	Trench-2 2'	soil	2013-01-14	00:00	2013-01-22
319051	Trench-4 0-0.5'	soil	2013-01-14	00:00	2013-01-22
319052	Trench-4 1'	soil	2013-01-14	00:00	2013-01-22
319053	Trench-4 2'	soil	2013-01-14	00:00	2013-01-22
319054	Trench-5 0-0.5'	soil	2013-01-14	00:00	2013-01-22
319055	Trench-5 1'	soil	2013-01-14	00:00	2013-01-22
319056	Trench-5 2'	soil	2013-01-14	00:00	2013-01-22
319057	SB-1 0-1'	soil	2013-01-16	00:00	2013-01-22
319058	SB-1 2-3'	soil	2013-01-16	00:00	2013-01-22
319059	SB-1 4-5'	soil	2013-01-16	00:00	2013-01-22
319060	SB-1 6-7'	soil	2013-01-16	00:00	2013-01-22
319061	SB-1 9-10'	soil	2013-01-16	00:00	2013-01-22
319062	SB-2 0-1'	soil	2013-01-16	00:00	2013-01-22
319063	SB-2 2'	soil	2013-01-16	00:00	2013-01-22
319064	SB-2 3 '	soil	2013-01-16	00:00	2013-01-22
319065	SB-2 4-5'	soil	2013-01-16	00:00	2013-01-22
319066	SB-2 6-7'	soil	2013-01-16	00:00	2013-01-22
319067	SB-3 0-1'	soil	2013-01-16	00:00	2013-01-22
319068	SB-3 2'	soil	2013-01-16	00:00	2013-01-22
319069	SB-3 3'	soil	2013-01-16	00:00	2013-01-22
319070	SB-3 4-5'	soil	2013-01-16	00:00	2013-01-22
319071	SB-3 6-7'	soil	2013-01-16	00:00	2013-01-22

Sample - Field Code	BTEX Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
319045 - Trench-2 0-0.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
319051 - Trench-4 0-0.5'	<0.0400 [1]	<0.0400	<0.0400	<0.0400	<50.0	<8.00
319054 - Trench-5 0-0.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
319057 - SB-1 0-1'	<0.200 [2]	**2.31**	<0.200	**22.0**	**135**	**3620** Je
319058 - SB-1 2-3'					**123** Qs	**2750**
319059 - SB-1 4-5'					<50.0 Qs	**35.8**
319062 - SB-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
319067 - SB-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00

Sample: 319039 - Background Trench #1 0-1'

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

Sample: 319040 - Background Trench #1 2'

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

Sample: 319041 - Background Trench #1 4"

Param	Flag	Result	Units	RL
Chloride		**46.6**	mg/Kg	4

Sample: 319045 - Trench-2 0-0.5'

Param	Flag	Result	Units	RL
Chloride		**583**	mg/Kg	4

Sample: 319046 - Trench-2 1'

Param	Flag	Result	Units	RL
Chloride		**256**	mg/Kg	4

Sample: 319047 - Trench-2 2'

continued ...

[1]Dilution due to surfactants.
[2]Dilution due to hydrocarbons.

sample 319047 continued ...

Param	Flag	Result	Units	RL

Param	Flag	Result	Units	RL
Chloride		**238**	mg/Kg	4

Sample: 319051 - Trench-4 0-0.5'

Param	Flag	Result	Units	RL
Chloride		**3230**	mg/Kg	4

Sample: 319052 - Trench-4 1'

Param	Flag	Result	Units	RL
Chloride		**1510**	mg/Kg	4

Sample: 319053 - Trench-4 2'

Param	Flag	Result	Units	RL
Chloride		**392**	mg/Kg	4

Sample: 319054 - Trench-5 0-0.5'

Param	Flag	Result	Units	RL
Chloride		**494**	mg/Kg	4

Sample: 319055 - Trench-5 1'

Param	Flag	Result	Units	RL
Chloride		**69.9**	mg/Kg	4

Sample: 319056 - Trench-5 2'

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

Sample: 319057 - SB-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**247**	mg/Kg	4

Sample: 319058 - SB-1 2-3'

Param	Flag	Result	Units	RL
Chloride		**294**	mg/Kg	4

Sample: 319059 - SB-1 4-5'

Param	Flag	Result	Units	RL
Chloride		**168**	mg/Kg	4

Sample: 319060 - SB-1 6-7'

Param	Flag	Result	Units	RL
Chloride		**32.7**	mg/Kg	4

Sample: 319061 - SB-1 9-10'

Param	Flag	Result	Units	RL
Chloride		**88.7**	mg/Kg	4

Sample: 319062 - SB-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**1330**	mg/Kg	4

Sample: 319063 - SB-2 2'

Param	Flag	Result	Units	RL
Chloride		**462**	mg/Kg	4

Sample: 319064 - SB-2 3 '

Param	Flag	Result	Units	RL
Chloride		**303**	mg/Kg	4

Sample: 319065 - SB-2 4-5'

Param	Flag	Result	Units	RL
Chloride		**182**	mg/Kg	4

Sample: 319066 - SB-2 6-7'

Param	Flag	Result	Units	RL
Chloride		**244**	mg/Kg	4

Sample: 319067 - SB-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**315**	mg/Kg	4

Sample: 319068 - SB-3 2'

Param	Flag	Result	Units	RL
Chloride		**404**	mg/Kg	4

Sample: 319069 - SB-3 3'

Param	Flag	Result	Units	RL
Chloride		**498**	mg/Kg	4

Sample: 319070 - SB-3 4-5'

Param	Flag	Result	Units	RL
Chloride		**89.2**	mg/Kg	4

Sample: 319071 - SB-3 6-7'

Param	Flag	Result	Units	RL
Chloride		**103**	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 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: July 15, 2013

Work Order: 13070811

Project Location: Eddy Co., NM
Project Name: COG/Dryland Shiner Federal Tank Battery
Project Number: 114-6401477

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
334180	CS 1 (T4) 1' NSW	soil	2013-06-28	00:00	2013-07-08
334181	CS 1 (T4) 1' WSW	soil	2013-06-28	00:00	2013-07-08
334182	CS 1 (T4) 1' ESW	soil	2013-06-28	00:00	2013-07-08
334183	CS 1 (T4) 1' BH	soil	2013-06-28	00:00	2013-07-08
334184	CS 2 (SB2) 0.5' BH	soil	2013-06-28	00:00	2013-07-08
334185	CS 3 (SB1) 3' BH	soil	2013-06-28	00:00	2013-07-08

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.

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

Report Contents

Case Narrative

Samples for project COG/Dryland Shiner Federal Tank Battery were received by TraceAnalysis, Inc. on 2013-07-08 and assigned to work order 13070811. Samples for work order 13070811 were received intact at a temperature of 4.0 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	87260	2013-07-12 at 11:06	103058	2013-07-15 at 14:02

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 13070811 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: 334180 - CS 1 (T4) 1' NSW

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	103058	Date Analyzed:	2013-07-15	Analyzed By:	AR
Prep Batch:	87260	Sample Preparation:	2013-07-12	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**455**	mg/Kg	5	4.00

Sample: 334181 - CS 1 (T4) 1' WSW

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	103058	Date Analyzed:	2013-07-15	Analyzed By:	AR
Prep Batch:	87260	Sample Preparation:	2013-07-12	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**114**	mg/Kg	5	4.00

Sample: 334182 - CS 1 (T4) 1' ESW

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	103058	Date Analyzed:	2013-07-15	Analyzed By:	AR
Prep Batch:	87260	Sample Preparation:	2013-07-12	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**667**	mg/Kg	5	4.00

Sample: 334183 - CS 1 (T4) 1' BH

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	103058	Date Analyzed:	2013-07-15	Analyzed By:	AR
Prep Batch:	87260	Sample Preparation:	2013-07-12	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**217**	mg/Kg	5	4.00

Sample: 334184 - CS 2 (SB2) 0.5' BH

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	103058	Date Analyzed:	2013-07-15	Analyzed By:	AR
Prep Batch:	87260	Sample Preparation:	2013-07-12	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**527**	mg/Kg	5	4.00

Sample: 334185 - CS 3 (SB1) 3' BH

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	103058	Date Analyzed:	2013-07-15	Analyzed By:	AR
Prep Batch:	87260	Sample Preparation:	2013-07-12	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**1110**	mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 103058

QC Batch:	103058	Date Analyzed:	2013-07-15	Analyzed By:	AR
Prep Batch:	87260	QC Preparation:	2013-07-12	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: 103058 | Date Analyzed: 2013-07-15 | Analyzed By: AR
Prep Batch: 87260 | QC Preparation: 2013-07-12 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2670	mg/Kg	1	2500	<3.85	107	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			2520	mg/Kg	1	2500	<3.85	101	85 - 115	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: 334194

QC Batch: 103058 | Date Analyzed: 2013-07-15 | Analyzed By: AR
Prep Batch: 87260 | QC Preparation: 2013-07-12 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2780	mg/Kg	5	2500	124	106	78.9 - 121

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			2630	mg/Kg	5	2500	124	100	78.9 - 121	6	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: 103058 | Date Analyzed: 2013-07-15 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.3	98	85 - 115	2013-07-15

Standard (CCV-2)

QC Batch: 103058 | Date Analyzed: 2013-07-15 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	102	102	85 - 115	2013-07-15

Appendix

Report Definitions

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

Laboratory Certifications

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

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less 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.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
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.

13070811

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: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-640 1477

PROJECT NAME: COG- Orland Shiner

LAB I.D. NUMBER	DATE 2013	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
334180	6/28		S		X	CS1 (T4) 1' NSW	1																	X				
181			S		X	WSW	1																	X				
182			S		X	ESW	1																	X				
183			S		X	BH	1																	X				
184			S		X	CS2 (SB2) 0.5' BH	1																	X				
185	↓		S		X	CS3 (SB1) 3' BH	1																	X				

ANALYSIS REQUEST
(Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Date: 7-5-13 Time:
RECEIVED BY: (Signature) Date: 7-5-13 Time:

RELINQUISHED BY: (Signature) Date: 7-8-13 Time: 1027
RECEIVED BY: (Signature) Date: 7/8/13 Time: 10:27

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Initial) RR Date: Time:

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

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED: 4.0

REMARKS: Midland all

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