SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	West Artesia Grayburg Unit #4					
Company:	Alamo Permian Resources, LLC					
Section, Township and Range	Unit I	Sec 7	T18S	R28E		
Lease Number:	(API#) 30-015-~~00100~~-02648					
County:	Eddy County					
GPS:	32.760350° N			104.206770° W		
Surface Owner:	State					
Mineral Owner:						
Directions:	From the intersection of Hwy 82 and Illinois Camp Road, travel sout on Illinois Camp Road for 2.25 miles to Buckaroo Road. At Buckaroo Road turn southeast and travel 0.50 miles and turn south into the battery.					

Release Data:	
Date Released:	
Type Release:	
Source of Contamination:	
Fluid Released:	
Fluids Recovered:	

Official Communication:			
Name:	Steven Mastin		Ike Tavarez
Company:	Alamo Permian Resources, LLC		Tetra Tech
Address:	415 W. Wall St. Suite 500		4000 N Big Spring, Suite 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 557-5847		(432) 682-4559
Fax:			
Email:			ike.tavarez@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	**10**	**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:	**10**	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	1,000

RECEIVED
JAN 13 2014
NMOCD ARTESIA

TETRA TECH

November 5, 2013

Mr. Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
801 South First Street
Artesia, New Mexico 88210

Re: Closure Report for the Alamo Permian Resources, LLC., West Artesia Grayburg Unit, Unit I, Section 7, Township 18 South, Range 28 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by Alamo Permian Resources, LLC., (Alamo) to assess spills from the West Artesia Grayburg Unit (WAGU), Unit I, Section 7, Township 18 South, Range 28 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.7603500°, W 104.2067700°. The site location is shown on Figures 1 and 2.

Background

On August 15, 2013 Tetra Tech met with the OCD on-site to discuss the site. The spill area had been excavated by a previous consultant and the excavation was left open and the stockpiles were left at the site. Based on the data collected by Tetra Tech, it was agreed upon that AH-1 and AH-10 would be excavated to remove the elevated chlorides. In addition, the OCD required an excavation along the lease road approximately 300' long to be would be scraped to approximately 0.5' below surface. A C-141 for the site could not be found, but the OCD referenced three C-141's for the WAGU #4 under 2RP-444, however Tetra Tech could not find these C-141's on the OCD database.

Groundwater

The New Mexico State Engineer's Office data showed two wells located in Section 21 and 35, Township 18 South, Range 28 East, with

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

depths to water ranging from 65' to 225' below surface. According to the NMOCD groundwater map, the closest wells are listed in Section 7 and 8, with reported depths to groundwater of 49' and 69', respectively. According to the topographic map, the site location shows a relative surface elevation of 3622'. Based on the water wells and the relative elevations (Section 7 - 3594' and Section 8 - 3599'), the groundwater depth at the site appears to range from 75' to 90' below surface. The groundwater data is shown in Appendix A.

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. Based upon the depth to groundwater, the proposed RRAL for TPH is 1,000 mg/kg.

Assessment Work Plan

On May 8, 2013 Tetra Tech personnel inspected and sampled the WAGU #4 spill area. In the open excavation twelve (12) auger holes (AH-1 through AH-12) were installed using a stainless steel 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 sample locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B.

Referring to Table 1, AH-1 and AH-10 showed elevated chloride levels. In the area of AH-1, the chloride level was reported a 10,700 mg/kg at 0-1' and declined to 213 mg/kg at 2-2.5' below surface. AH-10 showed a chloride of 2,420 mg/kg and the deeper sample could not be collected due to the dense formation at the site. All of the auger holes were vertically defined for chlorides with the exception on AH-10.

Remediation and Conclusion

As approved, Tetra Tech personnel supervised the excavation of the site. The excavated areas and depths are highlighted in Tables 1 and shown on Figures 4. In the area of AH-10, deeper excavation could not be

completed due to the dense formation at the site. The overall excavation depths (by Tetra Tech and the previous consultant) were approximately 6.0' in AH-1, 4.0' AH-2 through AH-9, 3.0' in AH-10 and 2.0' in AH-11 and AH-12. Approximately 3,080 cubic yards of stockpiled and excavated soil (from the WAGU #4 excavations and WAGU TB) were transported to the Lea Land facility for proper disposal.

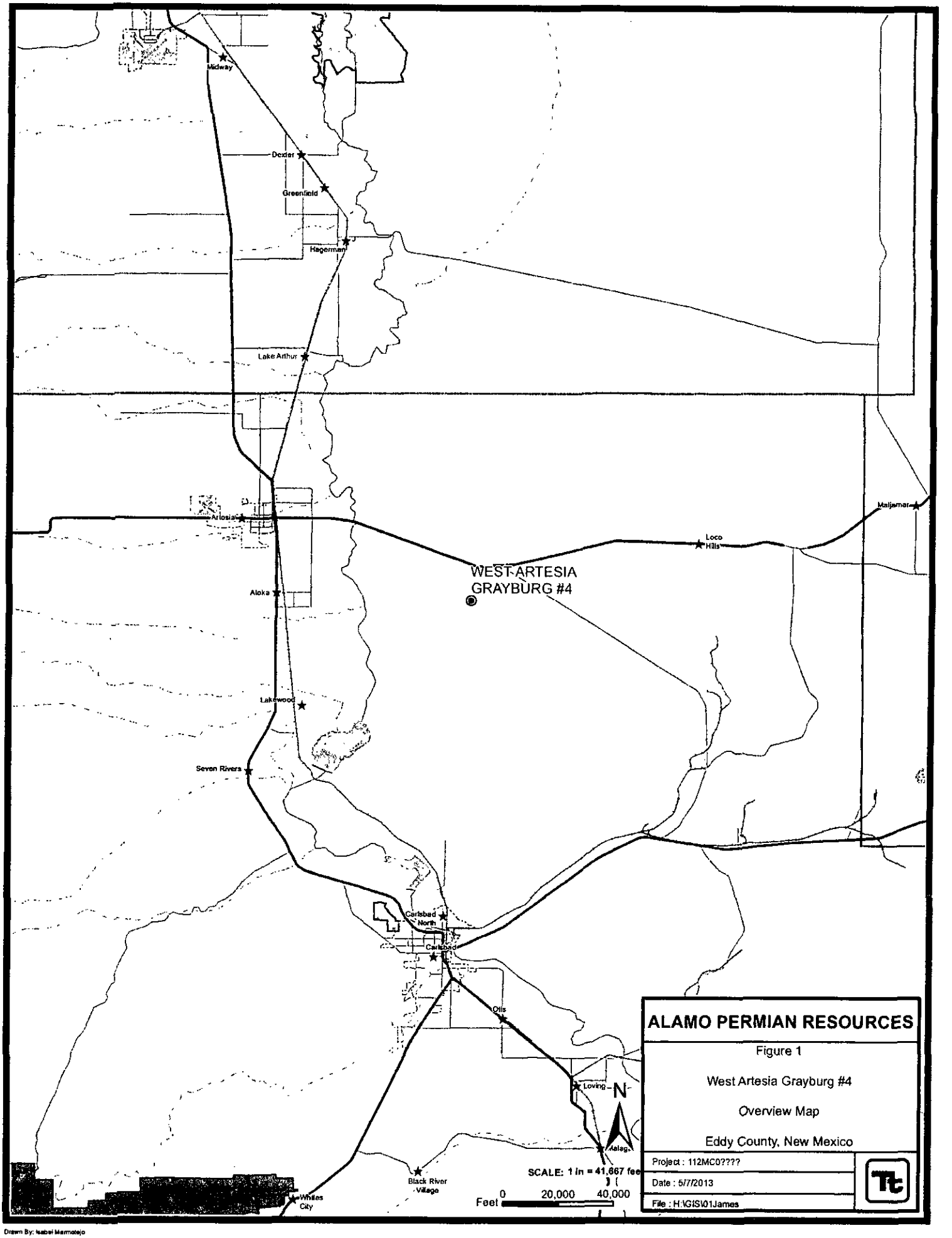
Based on the remedial activities performed, Alamo request closure of the site. If you are able to locate the C-141s for the site and need Tetra Tech to create the final C-141s, please let us know. If you have any questions or comments concerning the remedial activities, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH

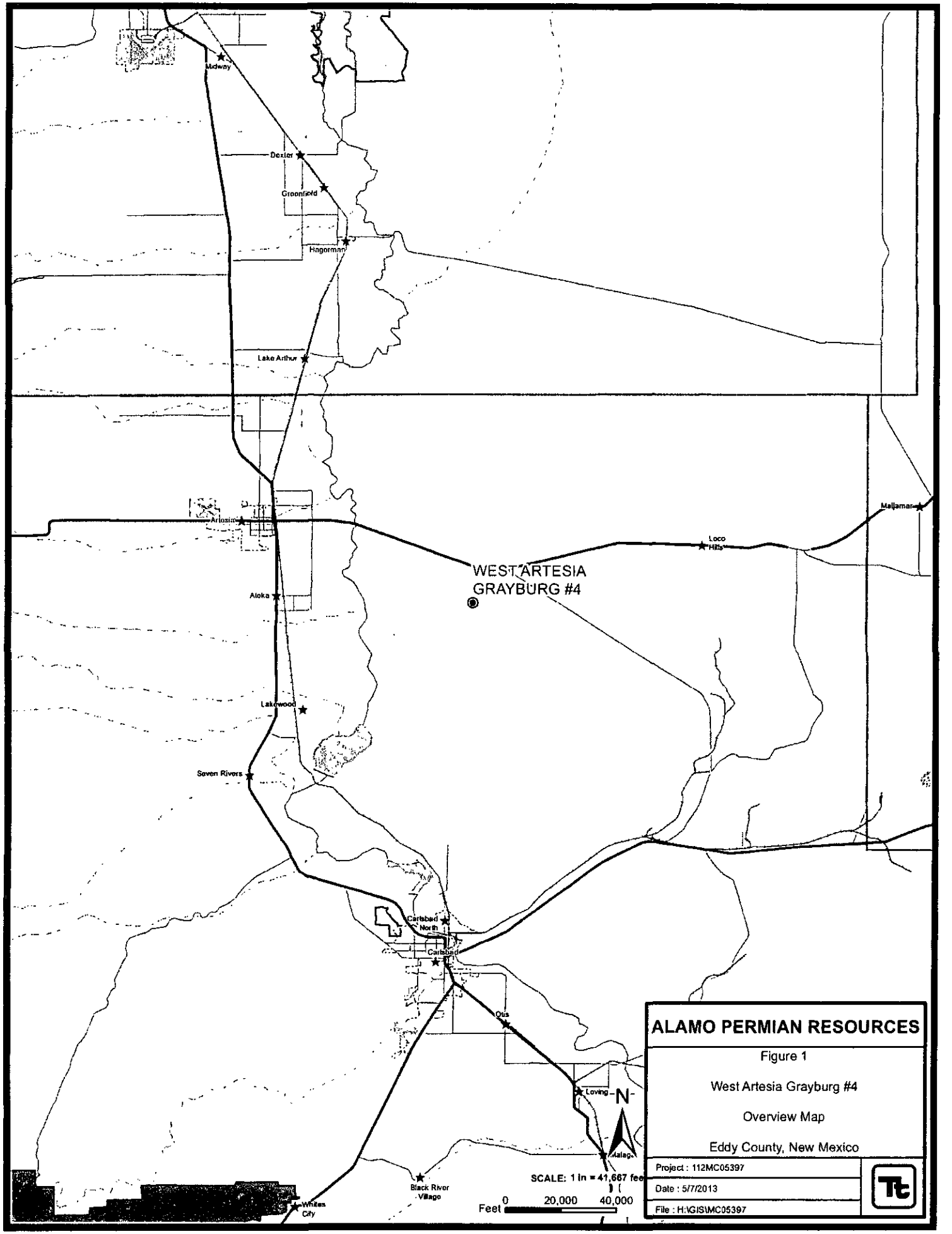
Tom Elliott
Project Manager

cc: Helms Oil – Hollie Lamb

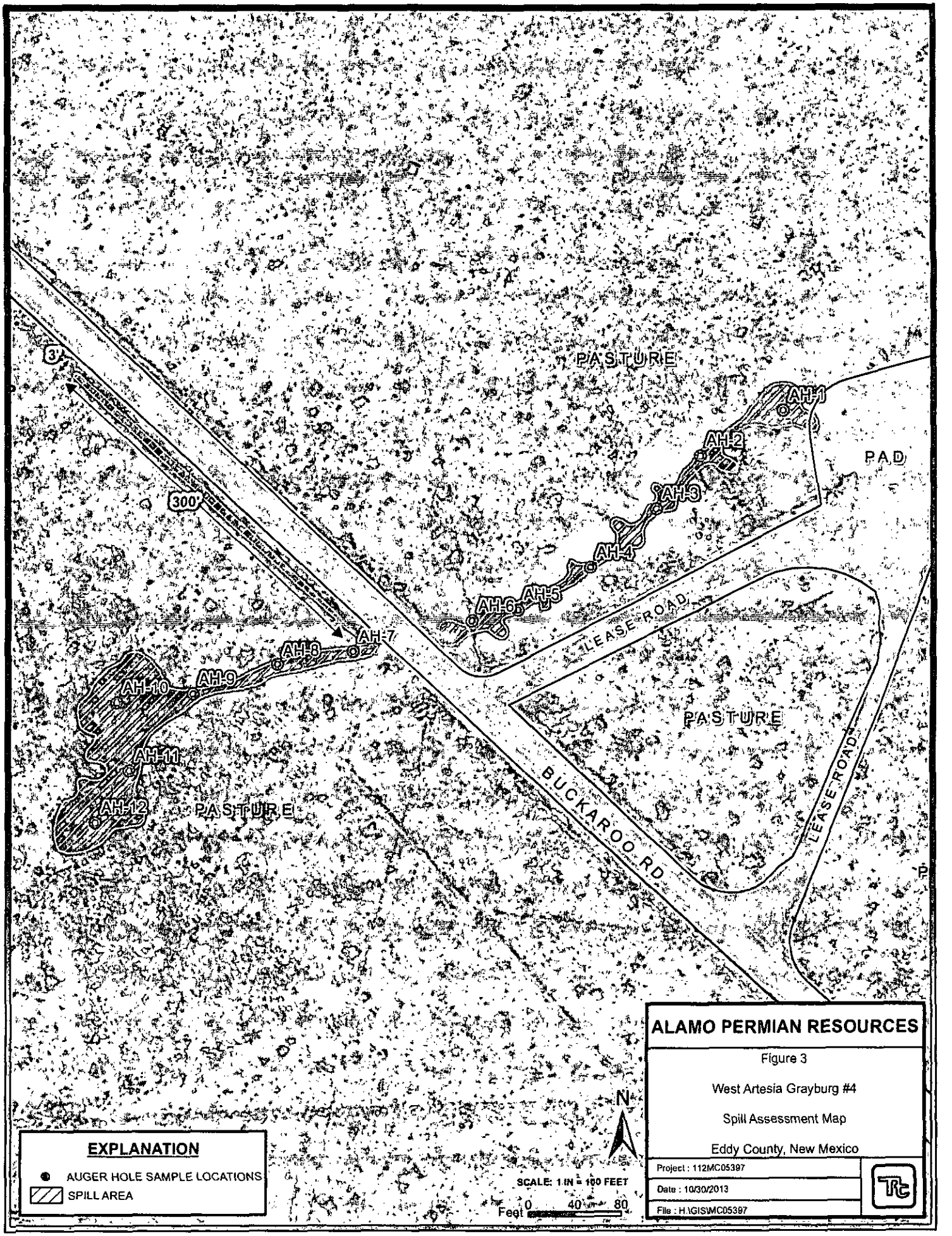
FIGURES



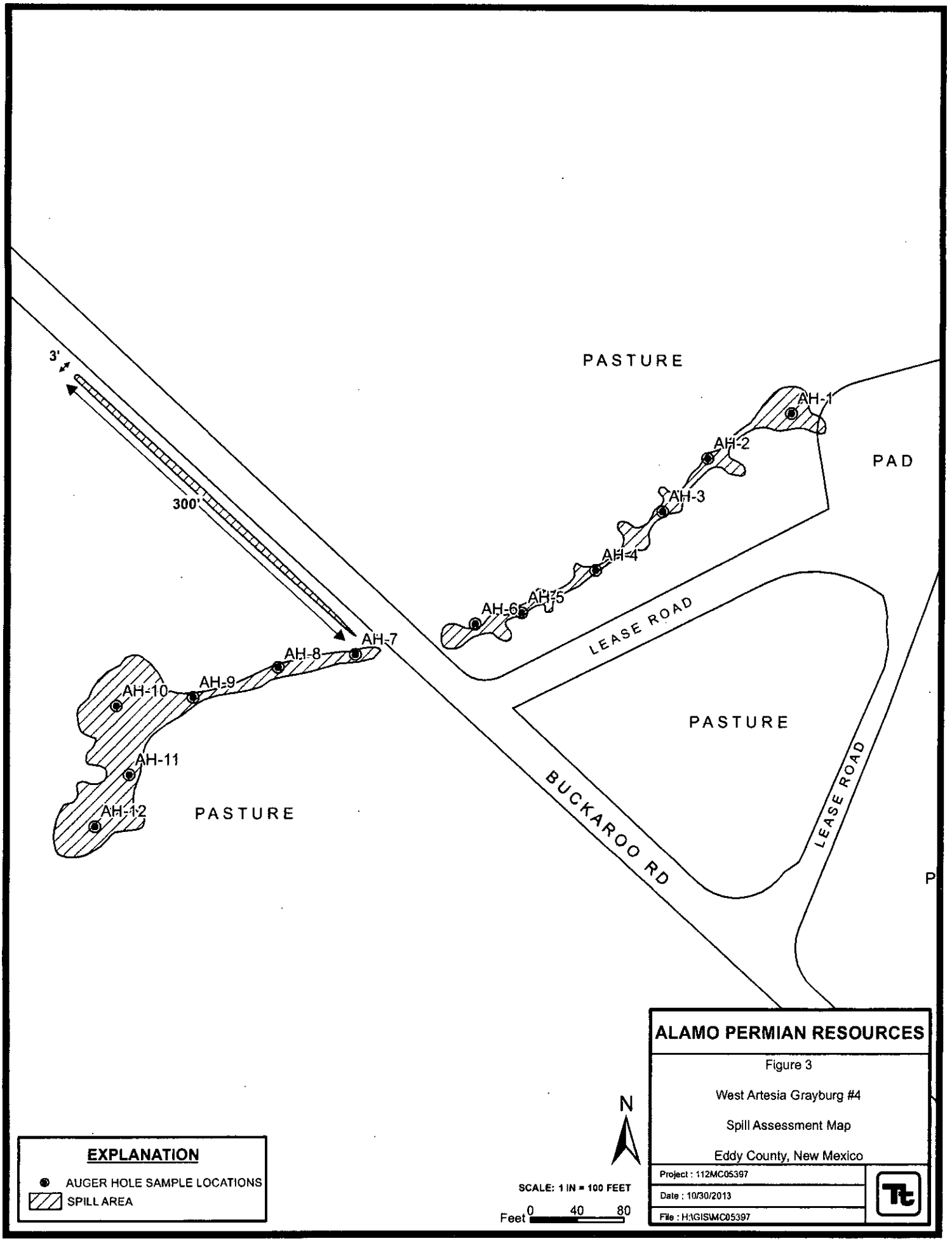
Drawn By: Isabel Marmolejo

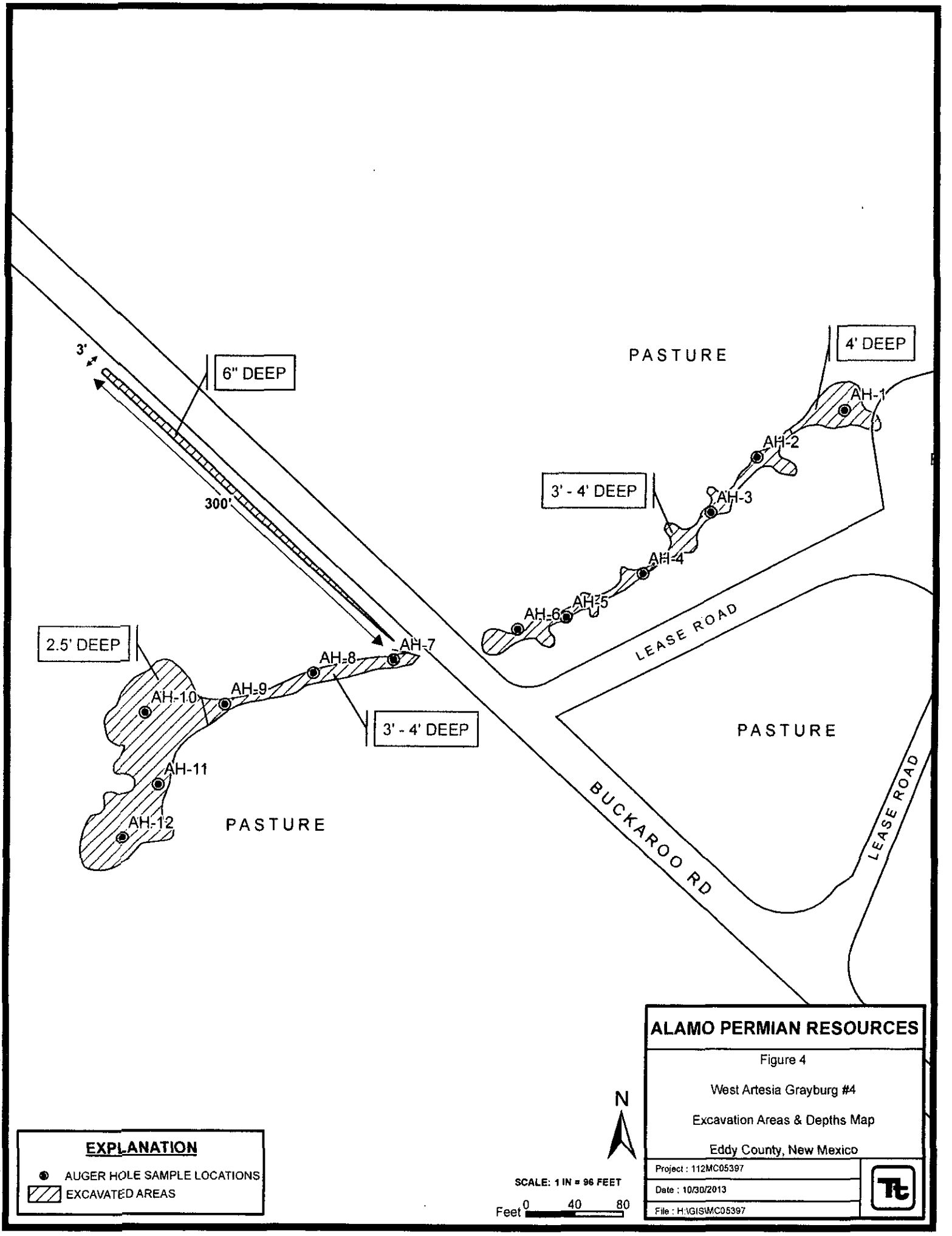


Drawn By: Isabel Manrique



Drawn By: Isabel Marmolejo


3'
300'
PASTURE
AH-1
AH-2
AH-3
AH-4
AH-5
AH-6
PAD
LEASE ROAD
AH-7
AH-8
AH-9
AH-10
AH-11
AH-12
PASTURE
PASTURE
BUCKAROO RD
LEASE ROAD
P
N
SCALE: 1 IN = 100 FEET
Feet 0 40 80
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
SPILL AREA
ALAMO PERMIAN RESOURCES
Figure 3
West Artesia Grayburg #4
Spill Assessment Map
Eddy County, New Mexico
Project : 112MC05397
Date : 10/30/2013
File : H:\GIS\MC05397
Drawn By: Isabel Marmolejo

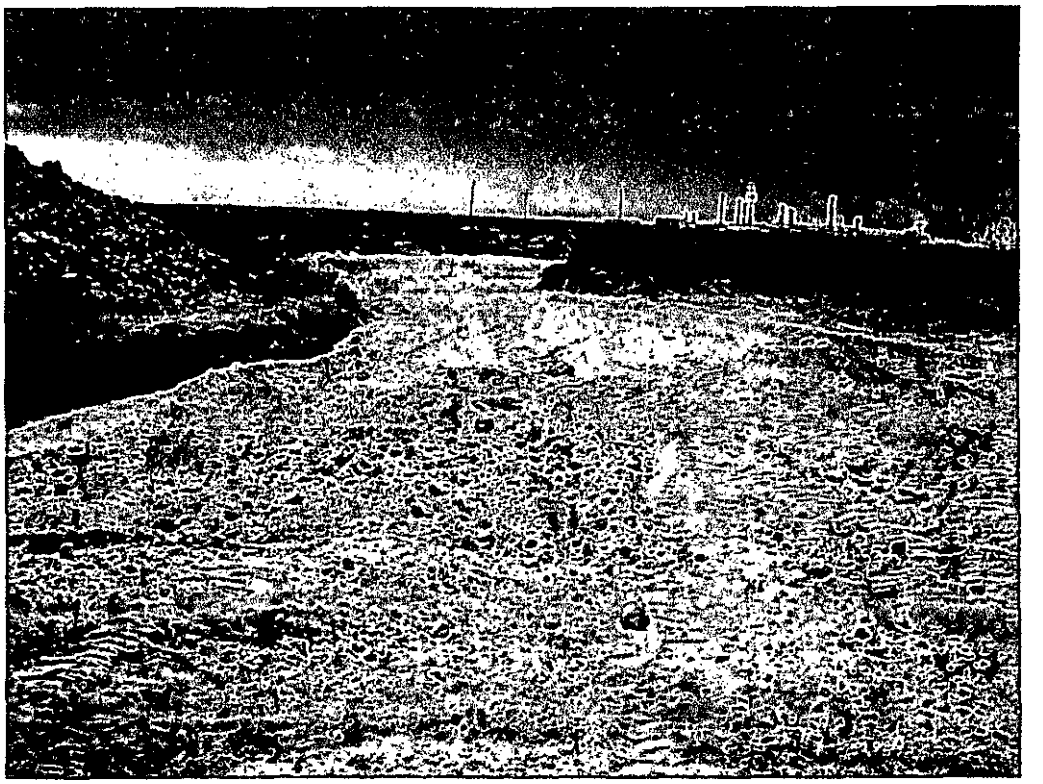

3'
6" DEEP
300'
PASTURE
4' DEEP
AH-1
AH-2
3' - 4' DEEP
AH-3
AH-4
AH-5
AH-6
AH-7
LEASE ROAD
2.5' DEEP
AH-8
AH-9
AH-10
3' - 4' DEEP
AH-11
AH-12
PASTURE
PASTURE
BUCKAROO RD
LEASE ROAD
N
SCALE: 1 IN = 96 FEET
Feet 0 40 80
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
EXCAVATED AREAS
ALAMO PERMIAN RESOURCES
Figure 4
West Artesia Grayburg #4
Excavation Areas & Depths Map
Eddy County, New Mexico
Project : 112MC05397
Date : 10/30/2013
File : H:\GIS\MC05397
Drawn By: Isabel Marmolejo

PHOTOGRAPHS

Alamo Permian Resources, LLC
West Artesia Greyburg Unit 4
Eddy County, New Mexico

TETRA TECH

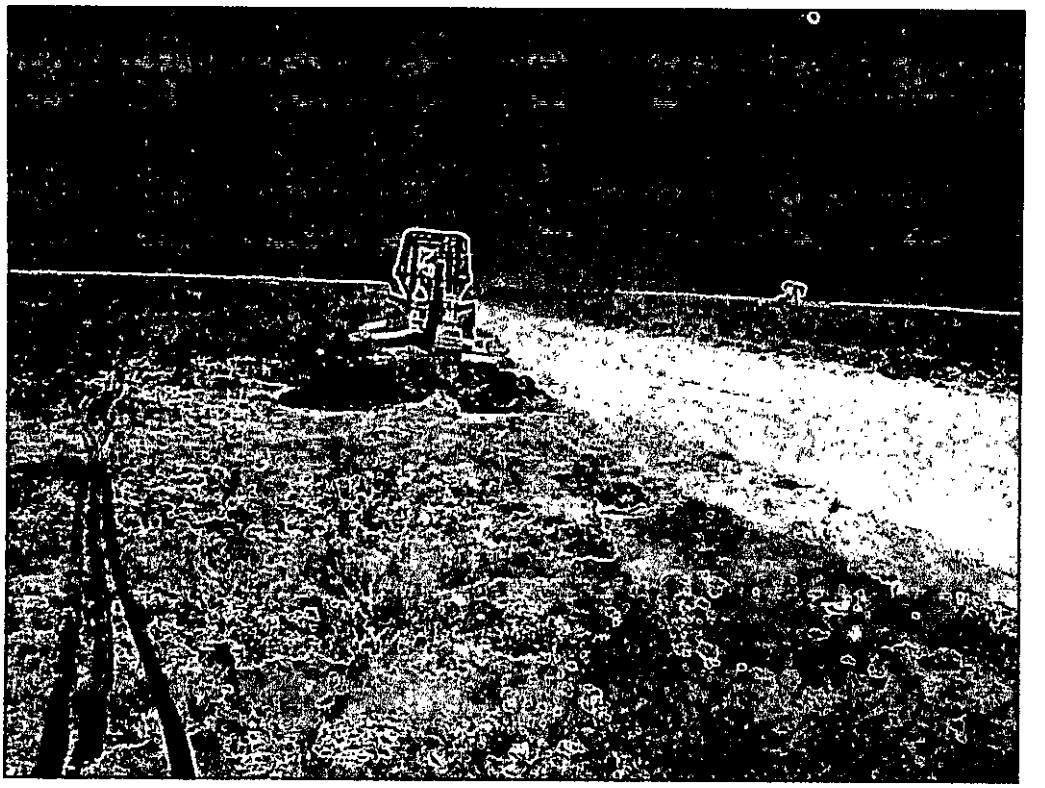
View Southwest – Area of AH-1.



View Northeast – Backfill of AH-10 and AH-11.

Alamo Permian Resources, LLC
West Artesia Greyburg Unit 4
Eddy County, New Mexico

TETRA TECH



View Northwest – Start of 300' long 0.5' deep excavation along road.

TABLES

Table 1
Alamo Permian
West Artesia Grayburg (WAGU) #4
Eddy County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom 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	5/8/2013	0-1	3-4		X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	10,700
	"	1-1.5	3-4		X	-	-	-	-	-	-	-	-	2,660
	"	2-2.5	3-4	X		-	-	-	-	-	-	-	-	213
AH-1 West Sidewall	9/24/2013	-	-	X		-	-	-	-	-	-	-	-	44.4
AH-2	5/8/2013	0-1	3-4	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	582
	"	1-1.5	3-4	X		-	-	-	-	-	-	-	-	592
	"	2-2.5	3-4	X		-	-	-	-	-	-	-	-	543
AH-2 West Sidewall	9/24/2013	-	-	X		-	-	-	-	-	-	-	-	<20.0
AH-3	5/8/2013	0-1	3-4	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	344
AH-4	5/8/2013	0-1	3-4	X		<40.0	<50.0	<50.0	-	-	-	-	-	854
AH-5	5/8/2013	0-1	3-4	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	213
	"	1-1.5	3-4	X		-	-	-	-	-	-	-	-	155
AH-6	5/8/2013	0-1	3-4	X		<4.00	<50.0	<50.0	-	-	-	-	-	136
AH-7	5/8/2013	0-1	3-4	X		<8.00	<50.0	<50.0	-	-	-	-	-	83.6
AH-8	5/8/2013	0-1	3-4	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	24.6
	"	1-1.5	3-4	X		-	-	-	-	-	-	-	-	63.9
AH-9	5/8/2013	0-0.5	3-4	X		<4.00	<50.0	<50.0	-	-	-	-	-	49.2
AH-10	5/8/2013	0-0.2	2		X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,420
AH-11	5/8/2013	0-0.5	2	X		<4.00	<50.0	<50.0	-	-	-	-	-	<20.0
AH-12	5/8/2013	0-0.5	2	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<20.0

Table 1
Alamo Permian
West Artesia Grayburg (WAGU) #4
Eddy County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom 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						
Stockpile #1	5/15/2013	-	-	X		-	-	-	-	-	-	-	-	5,380
Stockpile #2	"	-	-	X		-	-	-	-	-	-	-	-	4,500
Stockpile #2 SW	9/24/2013	-	-	X		-	-	-	-	-	-	-	-	108
Stockpile #3	"	-	-	X		-	-	-	-	-	-	-	-	9,430
Stockpile #3 SW	9/24/2013	-	-	X		-	-	-	-	-	-	-	-	789
Stockpile #4	"	-	-	X		-	-	-	-	-	-	-	-	5,830
Stockpile #5	"	-	-	X		-	-	-	-	-	-	-	-	4,430
Stockpile #5 SW	9/24/2013	-	-	X		-	-	-	-	-	-	-	-	793
Stockpile #6	"	-	-	X		-	-	-	-	-	-	-	-	5,010
Stockpile #7	"	-	-	X		-	-	-	-	-	-	-	-	3,430
Stockpile #8	"	-	-	X		-	-	-	-	-	-	-	-	3,470
Stockpile #9	"	-	-	X		-	-	-	-	-	-	-	-	4,280
Stockpile #10	"	-	-	X		-	-	-	-	-	-	-	-	5,140

(-) Not Analyzed

(BEB) Below Excavation Bottom

SW Sidewall

Excavation Depths

APPENDIX A

Water Well Data
Average Depth to Groundwater (ft)
West Artesia Grayburg Unit
Eddy County, New Mexico

17 South 27 East

6	5 30	4	3	2	1
7 14	8	9	10	11 54 50	12
18 111	17 90	16 175	15	14	13
19	20	21	22	23 40	24
30	29	28	27	26	25
31	32 140	33	34	35	36

17 South 28 East

6	5	4	3	2 28	1
7	8	9	10	11	12
18	17	16	15	14 80	13
19 224	20	21	22 45 79	23	24
30	29	28	27	26	25
31	32	33	34	35 258	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 76 80	23	24
30	29 210 208	28	27	26	25
31	32	33	34	35 153	36

18 South 27 East

6	5	4	3	2	1
7	8	9	10 50	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28 100	27	26	25
31 65	32	33 145	34	35	36

18 South 28 East

6	5	4 108	3	2 55	1
7 Site 49	8 81 69	9	10	11	12
18	17	16	15 60	14	13
19	20	21 226	22	23	24
30 137	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 95	11	12
18	17	16	15	14	13
19	20	21	22	23	24 158
30	29	28	27	26	25
31	32	33	34	35	36

19 South 27 East

6	5 20	4	3	2	1
7	8 50	9	10	11	12
18	17	16 18	15	1482.4 107.7	13 60.7
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

19 South 28 East

6	5	4	3	2	1
7	8	9 246 265	10	11	12
18 91	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

19 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13 123 101
19	20 62.9	21	22	23	24
30	29	28	27	26	25
31	32	33	34 62' 60	35 121 110	36 115

- 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

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD Code	Subbasin	County	Q 64	Q 16	Q 4	Sec	Twn	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00361			ED		1	3	09	19S	28E	576195	3615347*	365	265	100
CP 00361 EXPL			ED	3	1	3	09	19S	28E	576094	3615246*	365	265	100
CP 00502			ED		1	1	18	19S	28E	573001	3614478*	100	91	9
CP 00836			ED		1	1	18	19S	28E	573001	3614478*	110		
CP 00837			ED		1	1	18	19S	28E	573001	3614478*	110		
CP 00838			ED		1	1	18	19S	28E	573001	3614478*			

Average Depth to Water: 207 feet

Minimum Depth: 91 feet

Maximum Depth: 265 feet

Record Count: 6

PLSS Search:

Township: 19S Range: 28E

*UTM location was derived from PLSS - see Help

4/16/12 8:43 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

No records found.

PLSS Search:

Township: 17S Range: 28E

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD Code	Subbasin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
L 01142 POD1		L	LE	2	4	15	18S	28E	578921	3623453*	80		
L 01150 POD1		L	LE	1	1	35	18S	28E	578344	3619433*	135	65	70
RA 09588			ED	1	2	33	18S	28E	576976	3619384*	300		

Average Depth to Water: **65 feet**

Minimum Depth: **65 feet**

Maximum Depth: **65 feet**

Record Count: 3

PLSS Search:

Township: 18S Range: 28E

*UTM location was derived from PLSS - see Help

4/16/12 8:39 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD Code	Subbasin	County	Q 64	Q 16	Q 4	Sec	Twn	Rng	X	Y	Depth Well	Depth Water	Water Column
RA 03714			CH	4	4	2	08	18S	27E	566212	3625253*	381		
RA 03917			LE	4	1	2	10	18S	27E	569019	3625660*	130	50	80
RA 04048			LE	1	4	4	14	18S	27E	570841	3623030*	2096		
RA 04211			CH		3	1	28	18S	27E	566512	3620562*	120	100	20
RA 04298			ED		1	2	19	18S	27E	564082	3622523*	92		
RA 05524			ED		2	4	33	18S	27E	567721	3618532*	90	49	41
RA 05660			ED		3	4	31	18S	27E	564094	3618090*	305	65	240
RA 05664			ED		4	1	33	18S	27E	566914	3618936*		145	
RA 06091			ED	1	2	3	29	18S	27E	565211	3620222*	90	17	73

Average Depth to Water: 71 feet

Minimum Depth: 17 feet

Maximum Depth: 145 feet

Record Count: 9

PLSS Search:

Township: 18S Range: 27E

*UTM location was derived from PLSS - see Help

4/16/12 8:40 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (in feet)

POD Number	POD Code	POD Subbasin	County	Q 64	Q 16	Q 4	Sec	Twp	Rng	X	Y	Depth Well	Depth Water	Water Column
RA 01493			ED		2	1	27	17S	27E	568468	3630529*	876		
RA 01716 (D)	O		ED	4	4	3	16	17S	27E	566953	3632420*	1220	175	1045
RA 01716 S			ED	4	4	3	16	17S	27E	566953	3632420*	1200		
RA 02966			ED	4	4	4	05	17S	27E	566117	3635707*	80	30	50
RA 03279			ED		3	2	07	17S	27E	564020	3635011*	250	14	236
RA 03661			ED	3	2	3	32	17S	27E	565186	3628038*	330	140	190
RA 03664			CH	3	2	3	32	17S	27E	565186	3628038*	400	100	300
RA 03694			ED			4	17	17S	27E	565854	3632721*	300	90	210
RA 03818			CH			4	17	17S	27E	565854	3632721*	945	931	14
RA 04114			LE	4	4	3	16	17S	27E	566953	3632420*	1042	260	782
RA 04153			CH	4	4	3	16	17S	27E	566953	3632420*	1220	175	1045
RA 04320			ED			3	17	17S	27E	565053	3632719*	120	50	70
RA 04554			ED			1	23	17S	27E	569859	3631947*	220	40	180
RA 04561			ED		4	2	26	17S	27E	570871	3630142*	250		
RA 04788			ED	4	3	2	18	17S	27E	564133	3633277*	138	111	27
RA 06531			ED	4	1	4	17	17S	27E	565747	3632821*	200		
RA 06560			CH	2	1	2	20	17S	27E	565757	3632217*	133	80	53
RA 06635			ED	2	2	2	18	17S	27E	564531	3633852*	325	60	265
RA 07774			ED	3	2	1	11	17S	27E	569833	3635251*	100	50	50
RA 07844			ED	3	4	3	16	17S	27E	566753	3632420*	1300	180	1120
RA 07844 EXPL			ED		4	3	16	17S	27E	566854	3632521*	1300	180	1120
RA 08823			ED	1	1	3	17	17S	27E	564745	3633019*	348	60	288
RA 11691 POD1			ED	2	1	4	17	17S	27E	565800	3633029	150	0	150

Average Depth to Water: 143 feet
Minimum Depth: 0 feet
Maximum Depth: 931 feet

Record Count: 23

PLSS Search:

Township: 17S Range: 27E

*UTM location was derived from PLSS - see Help

4/16/12 8:42 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

USGS Home
Contact USGS
Search USGS

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: New Mexico | GO

News updated March, 2012

Groundwater levels for New Mexico

NM

Search Results -- 1 sites found

Search Criteria

site_no list =
- 324424104103901

Minimum number of levels = 1

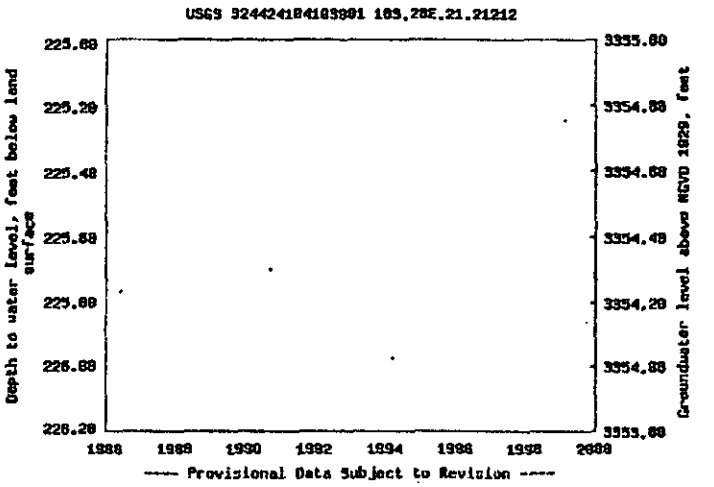
Save file of selected sites to local disk for future upload

USGS 324424104103901 18S.28E.21.21212

Available data for this site | Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°44'24", Longitude 104°10'39" NAD27
Land-surface elevation 3,580 feet above NGVD29
The depth of the well is 250.00 feet below land surface.
This well is completed in the Artesia Group (313ARTS) local aquifer.

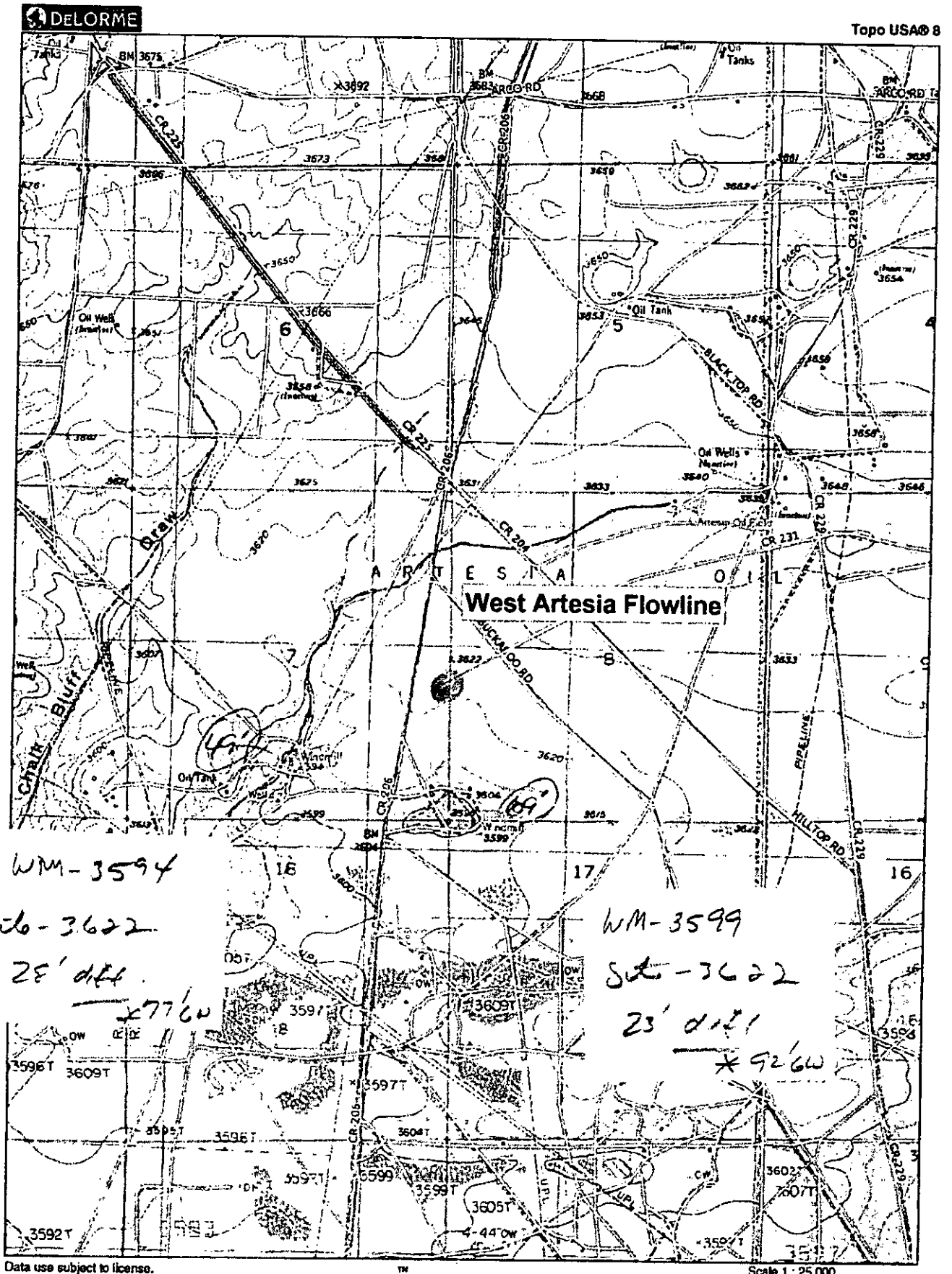
Output formats
- Table of data
- Tab-separated data
- Graph of data
- Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help

Data Tips
Explanation of terms
Subscribe for system changes
News



WM-3594
Sfc-3622
28' dtw.
*77'GW

WM-3599
Sfc-3622
23' dtw
*92'GW

APPENDIX B

Summary Report

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

Report Date: May 17, 2013

Work Order: 13051023

Project Location: Eddy Co., NM
Project Name: Alamo Permian/W. Artesia Grayburg (WAGU) #4
Project Number: 112MC05397

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
328958	AH-1 0-1'	soil	2013-05-08	00:00	2013-05-10
328959	AH-1 1-1.5'	soil	2013-05-08	00:00	2013-05-10
328960	AH-1 2-2.5'	soil	2013-05-08	00:00	2013-05-10
328961	AH-2 0-1'	soil	2013-05-08	00:00	2013-05-10
328962	AH-2 1-1.5'	soil	2013-05-08	00:00	2013-05-10
328963	AH-2 2-2.5'	soil	2013-05-08	00:00	2013-05-10
328964	AH-3 0-1'	soil	2013-05-08	00:00	2013-05-10
328965	AH-4 0-1'	soil	2013-05-08	00:00	2013-05-10
328966	AH-5 0-1'	soil	2013-05-08	00:00	2013-05-10
328967	AH-5 1-1.5'	soil	2013-05-08	00:00	2013-05-10
328968	AH-6 0-1'	soil	2013-05-08	00:00	2013-05-10
328969	AH-7 0-1'	soil	2013-05-08	00:00	2013-05-10
328970	AH-8 0-1'	soil	2013-05-08	00:00	2013-05-10
328971	AH-8 1-1.5'	soil	2013-05-08	00:00	2013-05-10
328972	AH-9 0-0.5'	soil	2013-05-08	00:00	2013-05-10
328973	AH-10 0-0.2'	soil	2013-05-08	00:00	2013-05-10
328974	AH-11 0-0.5'	soil	2013-05-08	00:00	2013-05-10
328975	AH-12 0-0.5'	soil	2013-05-08	00:00	2013-05-10

Sample - Field Code	BTEX Benzene (mg/Kg)	BTEX Toluene (mg/Kg)	BTEX Ethylbenzene (mg/Kg)	BTEX Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
328958 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 Qs	<4.00
328961 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 Qs	<4.00
328964 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 Qs	<4.00
328965 - AH-4 0-1'					<50.0 Qs	<40.0 [1]
328966 - AH-5 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 Qs	<4.00

continued ...

[1] Dilution due to surfactants.

... continued

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)
328968 - AH-6 0-1'					<50.0 Qs	<4.00
328969 - AH-7 0-1'					<50.0 Qs	<8.00 [2]
328970 - AH-8 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 Qs	<4.00
328972 - AH-9 0-0.5'					<50.0 Qs	<4.00
328973 - AH-10 0-0.2'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 Qs	<4.00
328974 - AH-11 0-0.5'					<50.0 Qs	<4.00
328975 - AH-12 0-0.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 Qs	<4.00

Sample: 328958 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**10700**	mg/Kg	4

Sample: 328959 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**2660**	mg/Kg	4

Sample: 328960 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**213**	mg/Kg	4

Sample: 328961 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**582**	mg/Kg	4

Sample: 328962 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**592**	mg/Kg	4

Sample: 328963 - AH-2 2-2.5'

continued ...

[2]Dilution due to surfactants.

sample 328963 continued . . .

Param	Flag	Result	Units	RL

Param	Flag	Result	Units	RL
Chloride		**543**	mg/Kg	4

Sample: 328964 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**344**	mg/Kg	4

Sample: 328965 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		**854**	mg/Kg	4

Sample: 328966 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		**213**	mg/Kg	4

Sample: 328967 - AH-5 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**155**	mg/Kg	4

Sample: 328968 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		**136**	mg/Kg	4

Sample: 328969 - AH-7 0-1'

Param	Flag	Result	Units	RL
Chloride		**83.6**	mg/Kg	4

Sample: 328970 - AH-8 0-1'

Param	Flag	Result	Units	RL
Chloride		**24.6**	mg/Kg	4

Sample: 328971 - AH-8 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**63.9**	mg/Kg	4

Sample: 328972 - AH-9 0-0.5'

Param	Flag	Result	Units	RL
Chloride		**49.2**	mg/Kg	4

Sample: 328973 - AH-10 0-0.2'

Param	Flag	Result	Units	RL
Chloride		**2420**	mg/Kg	4

Sample: 328974 - AH-11 0-0.5'

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

Sample: 328975 - AH-12 0-0.5'

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

Summary Report

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

Report Date: May 28, 2013

Work Order: 13052021

Project Location: Eddy Co., NM
Project Name: Alamo Permian/W. Artesia Grayburg (WAGU) #4
Project Number: 112MC05397

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
329839	Stockpile #1	soil	2013-05-15	00:00	2013-05-20
329840	Stockpile #2	soil	2013-05-15	00:00	2013-05-20
329841	Stockpile #3	soil	2013-05-15	00:00	2013-05-20
329842	Stockpile #4	soil	2013-05-15	00:00	2013-05-20
329843	Stockpile #5	soil	2013-05-15	00:00	2013-05-20
329844	Stockpile #6	soil	2013-05-15	00:00	2013-05-20
329845	Stockpile #7	soil	2013-05-15	00:00	2013-05-20
329846	Stockpile #8	soil	2013-05-15	00:00	2013-05-20
329847	Stockpile #9	soil	2013-05-15	00:00	2013-05-20
329848	Stockpile #10	soil	2013-05-15	00:00	2013-05-20

Sample: 329839 - Stockpile #1

Param	Flag	Result	Units	RL
Chloride		**5380**	mg/Kg	4

Sample: 329840 - Stockpile #2

Param	Flag	Result	Units	RL
Chloride		**4500**	mg/Kg	4

Sample: 329841 - Stockpile #3

Param	Flag	Result	Units	RL
Chloride		**9430**	mg/Kg	4

Sample: 329842 - Stockpile #4

Param	Flag	Result	Units	RL
Chloride		**5830**	mg/Kg	4

Sample: 329843 - Stockpile #5

Param	Flag	Result	Units	RL
Chloride		**4430**	mg/Kg	4

Sample: 329844 - Stockpile #6

Param	Flag	Result	Units	RL
Chloride		**5010**	mg/Kg	4

Sample: 329845 - Stockpile #7

Param	Flag	Result	Units	RL
Chloride		**3430**	mg/Kg	4

Sample: 329846 - Stockpile #8

Param	Flag	Result	Units	RL
Chloride		**3470**	mg/Kg	4

Sample: 329847 - Stockpile #9

Param	Flag	Result	Units	RL
Chloride		**4280**	mg/Kg	4

Sample: 329848 - Stockpile #10

Param	Flag	Result	Units	RL
Chloride		**5140**	mg/Kg	4