



TETRA TECH

RECEIVED  
APR 23 2012  
NMOCD ARTESIA

April 19, 2012

*Proposal  
to delineate*

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

**Re: Initial Work Plan for the Alamo Permian Resources, LLC., State  
32 Tank Battery, Unit J, Section 32, Township 17 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 a spill from the State 32 Tank Battery, Unit J, Section 32, Township 17 South, Range 28 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32° 47' 25", W 104° 11' 43". 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 March 15, 2012, and released approximately one hundred and thirty (130) barrels of crude oil due to a hole in the oil tank. The spill was contained inside the facility berms and approximately 52.5 barrels of oil was recovered. The initial C-141 form is enclosed in Appendix A.

### Groundwater

According to the USGS data, one well is located in Section 22, Township 17 South, Range 28 East, with a reported groundwater depth of 79' below surface. According to the NMOCD groundwater map and data, the groundwater depth in the area is approximately 125' below surface. The closest wells are located in Section 19, Township 17 South, Range 28 East and Section 4, Township 18 South, Range 28 East, with reported depths of 191' and 108', respectively. The groundwater data is shown in Appendix B.



## **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 5,000 mg/kg.

## **Assessment Work Plan**

Tetra Tech personnel will inspect the spill area and collect soil samples using a stainless steel, bucket type hand auger to evaluate the extent of subsurface impact at this site. If a dense formation is encountered and deeper samples cannot be collected, backhoe trenches will be installed to attempt to define the vertical extents for delineation. If the soil impact cannot be defined, boreholes will be installed using an air rotary rig.

Soil samples will be collected at selected depth intervals for field screening and sampling. A head space gas survey will be performed by collecting discrete soil samples and placing a portion of the sample in a clean plastic sample bag and measuring organic vapors using an Organic Vapor Meter (OVM). If utilized, all down hole equipment (i.e., drill rods, drill bits, etc.) will thoroughly decontaminated between each borehole with a high-pressure hot water wash and rinse. Soil cuttings from drilling will be stockpiled adjacent to the well until disposal is arranged.

The samples selected for analysis will be determined from field observation and data. All samples will be collected and preserved in laboratory prepared sample containers with standard QA/QC procedures. All samples will be shipped under proper chain-of-custody control and analyzed within the standard holding times. The soil samples will be analyzed for Total Petroleum Hydrocarbon (TPH) by method 8015 DRO/GRO, Benzene, Toluene, Ethyl benzene, and Xylene (BTEX) by method EPA Method 8021B and chloride by method EPA method 300.



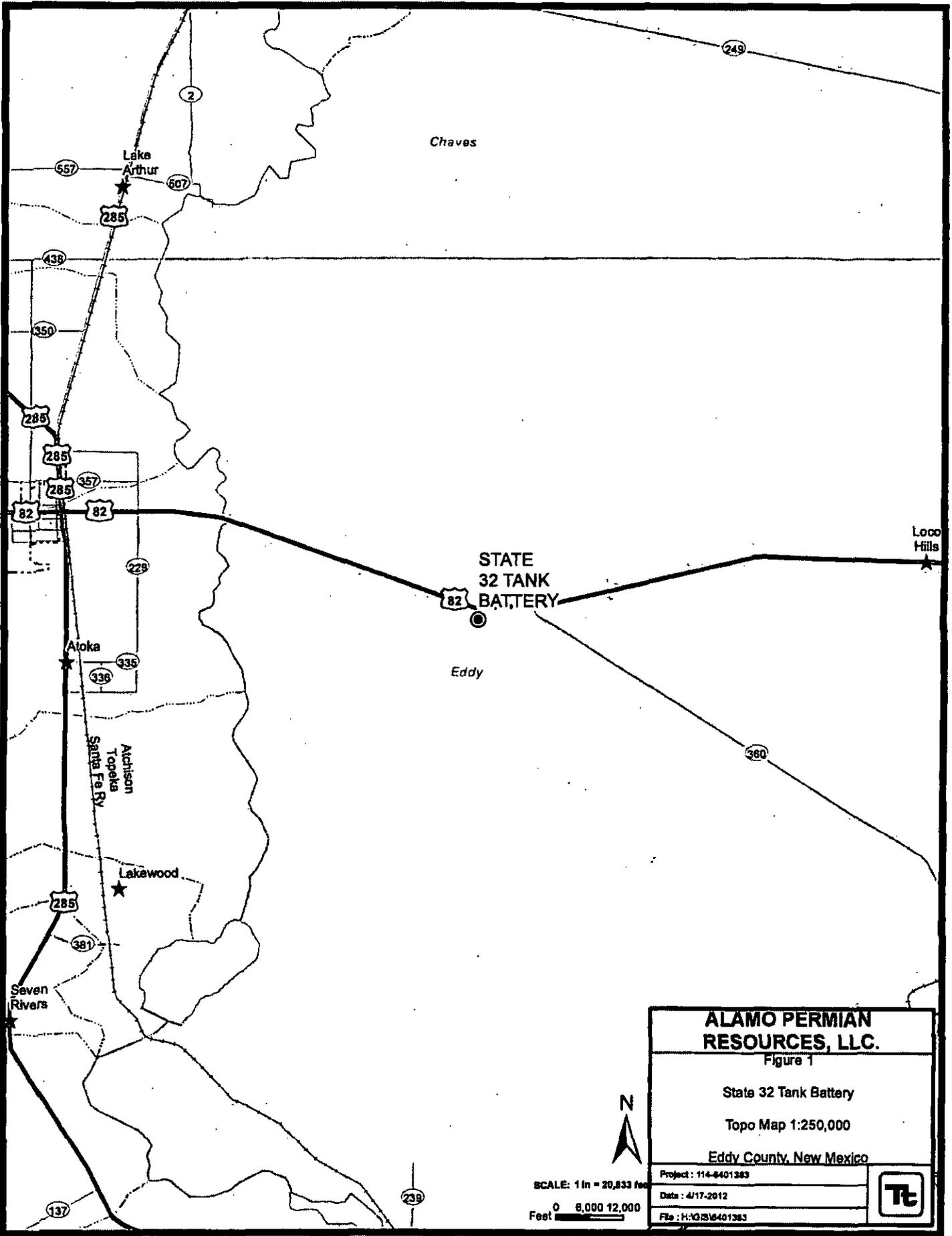
**TETRA TECH**

Once the analytical data has been received and reviewed, a remediation work plan will be prepared and submitted to the NMOCD for approval. If you have any questions or comments concerning the proposed work plan, please call me at (432) 682-4559.

Respectfully submitted,  
TETRA TECH

Ike Tavarez , PG  
Sr. Project Manager

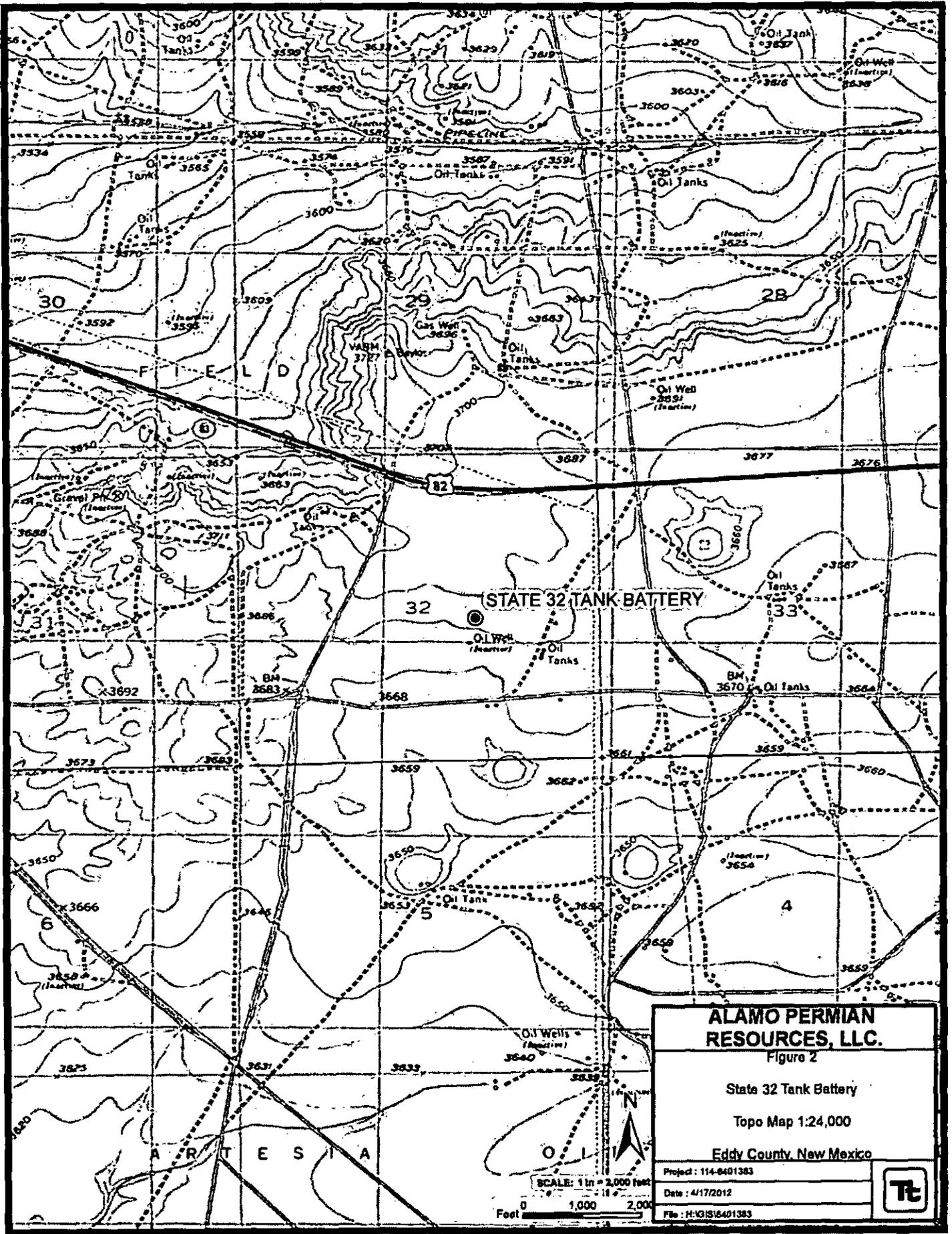
cc: Hollie Lamb -HeLM



<b>ALAMO PERMIAN RESOURCES, LLC.</b>	
Figure 1	
State 32 Tank Battery	
Topo Map 1:250,000	
Eddy County, New Mexico	
Project: 114-6401383	
Date: 4/17-2012	
File: H:\GIS\6401383	



SCALE: 1 in = 20,833 feet  
 0 6,000 12,000  
 Feet



<b>ALAMO PERMIAN RESOURCES, LLC.</b>	
Figure 2	
State 32 Tank Battery	
Topo Map 1:24,000	
Eddy County, New Mexico	
Project: 114-8401383	
Date: 4/17/2012	
File: H:\GIS\6401383	

## Appendix A

## Appendix B

**Water Well Data  
Average Depth to Groundwater (ft)  
State 32 Tank Battery  
Eddy County, New Mexico**

**16 South 27 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 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	14 220	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

**17 South 27 East**

6	5	4	3	2	1
7	30	9	10	11 54	12
14				50	
18	17	16	15	14	13
111	90	175			
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	23	24
191			79		
30	29	28	27	26	25
31	32	33	34	35	36

**17 South 29 East**

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

**18 South 27 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	65	32	33	34	35

**18 South 28 East**

6	5	4	3	2	1
7	8	9	10	11	12
49	69				
18	17	16	15	14	13
19	20	21	22	23	24
49	29	28	27	26	25
31	32	33	34	35	36

**18 South 29 East**

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

- 88 New Mexico State Engineers Well Reports
- 105 USGS Well Reports
- 90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)  
Geology and Groundwater Resources of Eddy County, NM (Report 3)
- 34 NMOCD - Groundwater Data
- 123 Tetra Tech installed temporary wells and field water level
- 143 NMOCD Groundwater map well location



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

<p>site_no list =</p> <ul style="list-style-type: none"> <li>• 324855104093101</li> </ul> <p>Minimum number of levels = 1</p>
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Save file of selected sites to local disk for future upload

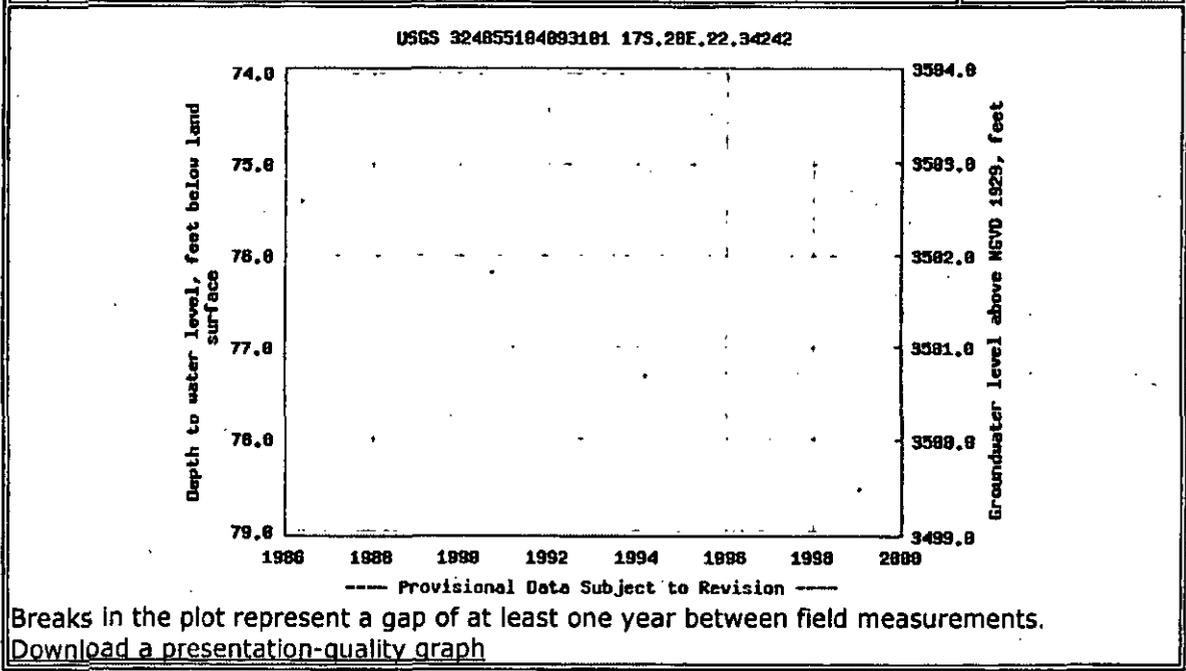
### USGS 324855104093101 17S.28E.22.34242

Available data for this site

Groundwater  Field measurements

GO

<p>Eddy County, New Mexico Hydrologic Unit Code 13060011 Latitude 32°48'55", Longitude 104°09'31" NAD27 Land-surface elevation 3,578 feet above NGVD29 The depth of the well is 95.00 feet below land surface. This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.</p>	<p><b>Output formats</b></p> <p><a href="#">Table of data</a></p> <p><a href="#">Tab-separated data</a></p> <p><a href="#">Graph of data</a></p> <p><a href="#">Reselect period</a></p>
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[Questions about sites/data?](#)

[Data Tips](#)





## 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
<u>L_01142_PQ01</u>	L		LE	2	4	15	18S	28E		578921	3623453*	80		
<u>L_01150_PQ01</u>	L		LE	1	1	35	18S	28E		579344	3619433*	135	65	70
<u>RA_09588</u>			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

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

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 Q Q				X	Y	Depth Depth Water				
				64	16	4	Sec			Tws	Rng	Well	Water	Column
<u>RA 03714</u>			CH	4	4	2	08	18S	27E	566212	3625253*	381		
<u>RA 03917</u>			LE	4	1	2	10	18S	27E	569019	3625860*	130	50	80
<u>RA 04046</u>			LE	1	4	4	14	18S	27E	570841	3623030*	2096		
<u>RA 04211</u>			CH	3	1	28	18S	27E	566512	3620562*	120	100	20	
<u>RA 04296</u>			ED	1	2	19	18S	27E	564082	3622523*	92			
<u>RA 05524</u>			ED	2	4	33	18S	27E	567721	3618532*	90	49	41	
<u>RA 05660</u>			ED	3	4	31	18S	27E	564094	3618090*	305	65	240	
<u>RA 05664</u>			ED	4	1	33	18S	27E	566914	3618936*		145		
<u>RA 06091</u>			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

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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	Subbasin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Depth Y Well	Depth Water Column	
<u>RA 01493</u>			ED	2	1	27	17S	27E	568468	3630529'	876		
<u>RA 01716 (D)</u>	O		ED	4	4	3	16	17S	27E	566953	3632420'	1220 / 1045	
<u>RA 01716 S</u>			ED	4	4	3	16	17S	27E	566953	3632420'	1200	
<u>RA 02966</u>			ED	4	4	4	05	17S	27E	568117	3635707'	80 / 30 / 50	
<u>RA 03279</u>			ED	3	2	07	17S	27E	564020	3635011'	250	14 / 236	
<u>RA 03661</u>			ED	3	2	3	32	17S	27E	565186	3628038'	330 / 140 / 190	
<u>RA 03664</u>			CH	3	2	3	32	17S	27E	565186	3628038'	400 / 100 / 300	
<u>RA 03694</u>			ED	4	17	17S	27E	565854	3632721'	300	90	210	
<u>RA 03616</u>			CH	4	17	17S	27E	565854	3632721'	945	931	14	
<u>RA 04114</u>			LE	4	4	3	16	17S	27E	566953	3632420'	1042 / 260 / 782	
<u>RA 04153</u>			CH	4	4	3	16	17S	27E	566953	3632420'	1220 / 175 / 1045	
<u>RA 04320</u>			ED	3	17	17S	27E	565053	3632719'	120	50	70	
<u>RA 04554</u>			ED	1	23	17S	27E	569859	3631947'	220	40	180	
<u>RA 04561</u>			ED	4	2	26	17S	27E	570871	3630142'	250		
<u>RA 04786</u>			ED	4	3	2	18	17S	27E	564133	3633277'	138 / 111 / 27	
<u>RA 06531</u>			ED	4	1	4	17	17S	27E	565747	3632821'	200	
<u>RA 06560</u>			CH	2	1	2	20	17S	27E	565757	3632217'	133 / 80 / 53	
<u>RA 06635</u>			ED	2	2	2	18	17S	27E	564531	3633852'	325 / 60 / 265	
<u>RA 07774</u>			ED	3	2	1	11	17S	27E	569933	3635251'	100 / 50 / 50	
<u>RA 07844</u>			ED	3	4	3	18	17S	27E	566753	3632420'	1300 / 180 / 1120	
<u>RA 07844 EXPL</u>			ED	4	3	18	17S	27E	566854	3632521'	1300 / 180 / 1120		
<u>RA 08823</u>			ED	1	1	3	17	17S	27E	564745	3633019'	348 / 60 / 268	
<u>RA 11691 POD1</u>			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

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

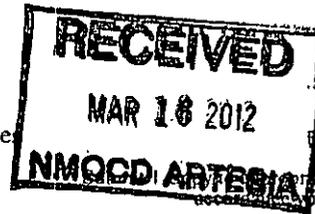
4/16/12 8:42 AM

WATER COLUMN/ AVERAGE  
DEPTH TO WATER

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., 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 August 8, 2011  
Operate District Office in  
South 19.15.29 NMAC.

**Release Notification and Corrective Action**

*NMLB1208654631*      *274841*      OPERATOR       Initial Report       Final Report

Name of Company	ALAMO PERMIAN RESOURCES, LLC	Contact	STEVEN MASTIN
Address	415 W. WALL ST. SUITE 500	Telephone No.	432 557 5847
Facility Name	STATE 32 BATTERY	Facility Type	BATTERY

Surface Owner	STATE	Mineral Owner	STATE	API No.	30-015-01655; 30-015-01656
---------------	-------	---------------	-------	---------	----------------------------

**LOCATION OF RELEASE**

*ST 32 # 2 015-01656*

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	32	17S	28E	1980	S	1980	E	EDDY

Latitude 32.7789400 Longitude -104.1792300

**NATURE OF RELEASE**

Type of Release: OIL	Volume of Release: EST 124 bbls OIL	Volume Recovered: 52 bbls
Source of Release: TANK	Date and Hour of Occurrence: 3/15/12	Date and Hour of Discovery 3/15/12
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? <i>NMOCD NOTIFIED 3/15/12 @ 2:19 PM</i> STEVEN MASTIN	
By Whom? RICKY RODRIGUEZ	Date and Hour 3/15/12 1:00 P.M.	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.\*

Describe Cause of Problem and Remedial Action Taken.\*  
Cause of problem: HOLE IN TANK 66012  
Remedial Action Taken: VAC TRUCK DISBATCHED TO LOCATION TO RECOVER AS MUCH OF THE SPILL AS POSSIBLE

Describe Area Affected and Cleanup Action Taken.\*  
THE SPILL WAS CONTAINED WITHIN THE BERM; 52 BBLS OF OIL WAS RECOVERED

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: <i>Carie Stoker</i>	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: CARIE STOKER	Signed By <i>M. L. Berman</i> Approved by Environmental Specialist:	
Title: REGULATORY COORDINATOR	Approval Date: <b>MAR 26 2012</b>	Expiration Date:
E-mail Address: cstoker@alamoresources.com	Conditions of Approval: Remediation per OCD Rules & Guidelines. <b>SUBMIT REMEDIATION PROPOSAL NOT LATER THAN:</b>	Attached <input type="checkbox"/>
Date: 03/16/2012      Phone: 432 664 7659	<i>4/26/2012</i>	<i>JRP-1069</i>

\* Attach Additional Sheets If Necessary

## SITE INFORMATION

### Report Type: Initial Work Plan

**General Site Information:**

<b>Site:</b>	State 32 Tank Battery			
<b>Company:</b>	Alamo Permian Resources, LLC.			
<b>Section, Township and Range</b>	Section 32	T17S	R28E	
<b>Lease Number:</b>	API-30-015-00169			
<b>County:</b>	Eddy County			
<b>GPS:</b>	32° 47' 25" 104° 11' 43"			
<b>Surface Owner:</b>	State			
<b>Mineral Owner:</b>				
<b>Directions:</b>	Fron intersection of Highway 82 and Illinios Camp Road, go south 0.3 miles on Illinios Camp Road, turn left (east) into lease road and go 0.1 miles and turn right (south), go 0.1 miles to tank battery			

**Release Data:**

<b>Date Released:</b>	3/15/2012
<b>Type Release:</b>	crude oil
<b>Source of Contamination:</b>	hole in tank
<b>Fluid Released:</b>	130 barrels
<b>Fluids Recovered:</b>	52.5 barrels

**Official Communication:**

<b>Name:</b>	Steven Mastin	Ike Tavarez
<b>Company:</b>	Alamo Permian Resources, LLC.	Tetra Tech
<b>Address:</b>	415 W. Wall St. Suite 500	1910 N. Big Spring
<b>P.O. Box</b>		
<b>City:</b>	Midland Texas	Midland, Texas
<b>Phone number:</b>	(432) 557-5847	(432) 682-4559
<b>Fax:</b>		
<b>Email:</b>		ike.tavarez@tetrattech.com

**Ranking Criteria**

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

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