



PHOENIX
TECHNOLOGY SERVICES

April 28, 2016

Oil Conservation Division
State of New Mexico
811 S. First St.
Artesia, New Mexico 88210

Dear District 2 - Artesia

Attention: Regulatory Department

Re: Apache Corporation
Cedar Lake Federal CA Com 549H
Eddy County, NM
API #30-015-43508
Job No. 61008

Enclosed please find the Survey Data Certification, and the original Plat and one copy of the Survey Report performed on the above referenced Well by Phoenix Technology Services, Inc. (P-5 No. 664171). Other information required by your office is as follows:

Name & Title of Surveyor	Drain Hole Number	Surveyed Depths		Dates Performed		Type of Survey
		From	To	Start	End	
Toby Thompson	549H	601	9,422	4/2/17	4/11/17	MWD

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Best Regards,

Brittany Carley

Brittany Carley
Operations Administrator

NEW MEXICO OIL CONSERVATION
ARTESIA DISTRICT
MAY 08 2017

RECEIVED

SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER 61008

Energy Company

Apache

WELL NAME Cedar Lake Federal CA Com 549H

COUNTY & STATE

Eddy Co. New Mexico

API WELL NUMBER	30-015-43508
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PROPOSED DIRECTION	82.15
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TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
480.0	479.98	0.86	183.34	-1.56	-1.21	Phoenix MWD

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
2-Apr-17	601 ft	0.86	33.92

SURVEY INSTRUMENT
TYPE
Phoenix MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
11-Apr-17	9,422 ft	89.69	87.9

TO THE BEST OF MY KNOWLEDGE I
CERTIFY THIS SURVEY DATA TO BE
TRUE AND CORRECT.

PROJECTED	PROJECTED		
TD SURVEY	TD SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
11-Apr-17	9,490 ft	89.69	87.9

Toby Thompson

PRINT YOUR NAME ABOVE

Toby Thompson

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	7.23
DECLINATION OR GRID	Grid

4/11/2017

TODAY'S DATE

MWD SUPERVISOR 1

Toby Thompson

DIRECTIONAL DRILLER 1

Justin Winn

MWD SUPERVISOR 2

Brad Chicoine

DIRECTIONAL DRILLER 2

Wilbur Trujillo



NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 08 2017

RECEIVED

Apache Corporation

**Eddy County, NM (NAD27 NME)
Cedar Lake Federal CA
#549H**

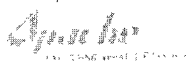
OH / Job #61008

Survey: Phoenix MWD Surveys

Standard Survey Report

26 April, 2017





Phoenix Technology Services LP

Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #549H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL + KB @ 3811.60usft (Trinidad 436)
Site:	Cedar Lake Federal CA	MD Reference:	GL + KB @ 3811.60usft (Trinidad 436)
Well:	#549H	North Reference:	Grid
Wellbore:	OH / Job #61008	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Trinidad 436)	Database:	Compass 5000 GCR

Project	Eddy County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Cedar Lake Federal CA

Site Position:		Northing:	670,624.80 usft	Latitude:	32° 50' 34.37962 N
From:	Map	Easting:	633,024.10 usft	Longitude:	103° 54' 0.75173 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.23 °

Well #549H

Well Position	+N/-S	0.00 usft	Northing:	678,229.70 usft	Latitude:	32° 51' 49.60046 N
	+E/-W	0.00 usft	Easting:	633,770.20 usft	Longitude:	103° 53' 51.63881 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,795.00 usft

Wellbore OH / Job #61008

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/30/2017	7.47	60.78	48,401

Design Surveys (Trinidad 436)

Audit Notes:

Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.00

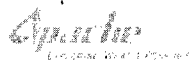
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	82.15

Survey Program Date 4/26/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
601.00	9,490.00	Phoenix MWD Surveys (OH / Job #61008)	MWD+HDGM	OWSG Rev.2 MWD + HDGM

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
480.00	0.86	183.34	479.98	-1.56	-1.21	-1.41	0.00	0.00	0.00
Tie In									
601.00	0.86	33.92	600.97	-1.71	-0.76	-0.98	1.37	0.00	-123.49
First Phoenix MWD Survey									
661.00	1.18	55.26	660.97	-0.99	0.00	-0.13	0.82	0.53	35.57
724.00	1.85	79.41	723.94	-0.43	1.54	1.46	1.45	1.06	38.33
786.00	2.89	88.30	785.89	-0.20	4.08	4.02	1.77	1.68	14.34
848.00	3.78	89.54	847.78	-0.14	7.69	7.60	1.44	1.44	2.00
911.00	3.95	89.00	910.64	-0.08	11.93	11.81	0.28	0.27	-0.86
974.00	4.00	89.63	973.49	-0.03	16.30	16.14	0.11	0.08	1.00



Phoenix Technology Services LP

Survey Report

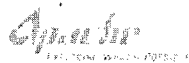


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: Cedar Lake Federal CA
Well: #549H
Wellbore: OH / Job #61008
Design: Surveys (Trinidad 436)

Local Co-ordinate Reference: Well #549H
TVD Reference: GL + KB @ 3811.60usft (Trinidad 436)
MD Reference: GL + KB @ 3811.60usft (Trinidad 436)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,036.00	3.87	84.05	1,035.34	0.20	20.54	20.38	0.65	-0.21	-9.00
1,099.00	3.66	84.01	1,098.21	0.63	24.66	24.51	0.33	-0.33	-0.06
1,162.00	3.01	76.08	1,161.10	1.24	28.26	28.17	1.26	-1.03	-12.59
1,287.00	2.10	61.68	1,285.98	3.11	33.47	33.58	0.89	-0.73	-11.52
1,349.00	1.79	53.17	1,347.94	4.23	35.24	35.49	0.68	-0.50	-13.73
1,412.00	1.58	54.47	1,410.91	5.33	36.74	37.12	0.34	-0.33	2.06
1,475.00	1.10	30.30	1,473.90	6.35	37.75	38.26	1.16	-0.76	-38.37
1,537.00	0.74	356.95	1,535.89	7.27	38.03	38.66	1.02	-0.58	-53.79
1,600.00	0.92	358.81	1,598.88	8.18	37.99	38.76	0.29	0.29	2.95
1,662.00	0.91	314.57	1,660.88	9.02	37.63	38.51	1.11	-0.02	-71.35
1,725.00	1.18	287.75	1,723.87	9.57	36.66	37.62	0.88	0.43	-42.57
1,787.00	1.07	291.17	1,785.85	9.98	35.51	36.54	0.21	-0.18	5.52
1,850.00	1.25	284.31	1,848.84	10.36	34.30	35.39	0.36	0.29	-10.89
1,911.00	0.50	233.32	1,909.83	10.36	33.44	34.54	1.66	-1.23	-83.59
1,974.00	0.76	176.92	1,972.83	9.78	33.24	34.27	1.01	0.41	-89.52
2,036.00	0.98	179.75	2,034.82	8.84	33.26	34.16	0.36	0.35	4.56
2,099.00	0.92	190.10	2,097.81	7.80	33.18	33.93	0.29	-0.10	16.43
2,161.00	1.07	182.65	2,159.80	6.74	33.06	33.67	0.32	0.24	-12.02
2,224.00	0.93	186.97	2,222.80	5.64	32.97	33.44	0.25	-0.22	6.86
2,285.00	0.94	175.31	2,283.79	4.65	32.96	33.28	0.31	0.02	-19.11
2,348.00	0.87	177.49	2,346.78	3.66	33.02	33.21	0.12	-0.11	3.46
2,410.00	1.02	184.61	2,408.77	2.64	33.00	33.05	0.31	0.24	11.48
2,473.00	0.95	188.20	2,471.76	1.56	32.88	32.78	0.15	-0.11	5.70
2,535.00	0.85	182.54	2,533.75	0.59	32.78	32.56	0.22	-0.16	-9.13
2,597.00	0.74	198.98	2,595.75	-0.24	32.63	32.29	0.41	-0.18	26.52
2,659.00	0.77	194.27	2,657.74	-1.03	32.40	31.95	0.11	0.05	-7.60
2,722.00	0.77	202.67	2,720.74	-1.83	32.13	31.58	0.18	0.00	13.33
2,784.00	0.57	198.90	2,782.73	-2.50	31.87	31.23	0.33	-0.32	-6.08
2,846.00	0.68	209.88	2,844.73	-3.11	31.59	30.87	0.26	0.18	17.71
2,909.00	0.69	233.97	2,907.72	-3.66	31.09	30.30	0.45	0.02	38.24
2,971.00	0.76	225.17	2,969.72	-4.17	30.50	29.64	0.21	0.11	-14.19
3,033.00	0.61	216.35	3,031.72	-4.73	30.01	29.09	0.30	-0.24	-14.23
3,096.00	0.61	217.08	3,094.71	-5.26	29.61	28.62	0.01	0.00	1.16
3,158.00	0.70	243.77	3,156.71	-5.69	29.07	28.02	0.51	0.15	43.05
3,221.00	0.79	228.94	3,219.70	-6.15	28.40	27.29	0.34	0.14	-23.54
3,282.00	0.74	227.39	3,280.70	-6.69	27.79	26.62	0.09	-0.08	-2.54
3,345.00	0.79	233.27	3,343.69	-7.23	27.15	25.90	0.15	0.08	9.33
3,407.00	0.83	234.74	3,405.69	-7.74	26.44	25.13	0.07	0.06	2.37
3,438.00	0.73	234.04	3,436.68	-7.99	26.09	24.76	0.32	-0.32	-2.26
3,521.00	0.96	226.81	3,519.67	-8.78	25.16	23.72	0.30	0.28	-8.71
3,583.00	1.10	233.04	3,581.66	-9.49	24.31	22.78	0.29	0.23	10.05
3,645.00	0.22	234.78	3,643.66	-9.91	23.73	22.15	1.42	-1.42	2.81
3,708.00	0.22	39.29	3,706.66	-9.89	23.71	22.14	0.69	0.00	261.13



Phoenix Technology Services LP

Survey Report

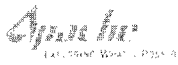


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: Cedar Lake Federal CA
Well: #549H
Wellbore: OH / Job #61008
Design: Surveys (Trinidad 436)

Local Co-ordinate Reference: Well #549H
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,770.00	0.18	18.90	3,768.66	-9.71	23.82	22.27	0.13	-0.06	-32.89
3,832.00	0.23	8.36	3,830.66	-9.49	23.87	22.35	0.10	0.08	-17.00
3,894.00	0.29	355.57	3,892.66	-9.21	23.87	22.39	0.13	0.10	-20.63
3,957.00	0.31	345.26	3,955.66	-8.89	23.82	22.38	0.09	0.03	-16.37
4,020.00	0.34	342.95	4,018.66	-8.54	23.72	22.33	0.05	0.05	-3.67
4,082.00	0.42	336.44	4,080.65	-8.16	23.57	22.24	0.15	0.13	-10.50
4,144.00	0.34	332.43	4,142.65	-7.79	23.40	22.11	0.14	-0.13	-6.47
4,206.00	0.39	329.92	4,204.65	-7.44	23.21	21.97	0.08	0.08	-4.05
4,269.00	0.32	329.06	4,267.65	-7.11	23.01	21.82	0.11	-0.11	-1.37
4,332.00	0.30	324.60	4,330.65	-6.82	22.82	21.68	0.05	-0.03	-7.08
4,394.00	0.26	334.98	4,392.65	-6.56	22.67	21.56	0.10	-0.06	16.74
4,456.00	0.28	328.51	4,454.65	-6.31	22.53	21.46	0.06	0.03	-10.44
4,519.00	0.29	329.43	4,517.65	-6.04	22.37	21.33	0.02	0.02	1.46
4,580.00	0.30	329.76	4,578.65	-5.77	22.21	21.21	0.02	0.02	0.54
4,643.00	0.30	334.31	4,641.65	-5.47	22.06	21.10	0.04	0.00	7.22
4,705.00	0.36	322.71	4,703.64	-5.17	21.87	20.96	0.14	0.10	-18.71
4,768.00	0.40	299.52	4,766.64	-4.91	21.56	20.68	0.25	0.06	-36.81
4,785.00	0.39	302.71	4,783.64	-4.85	21.46	20.59	0.14	-0.06	18.76
4,833.00	0.54	16.92	4,831.64	-4.54	21.38	20.56	1.20	0.31	154.60
4,895.00	4.27	60.41	4,893.58	-3.12	23.48	22.83	6.28	6.02	70.15
4,958.00	9.46	61.58	4,956.10	0.50	30.07	29.86	8.24	8.24	1.86
5,020.00	14.98	57.86	5,016.68	7.19	41.35	41.95	8.99	8.90	-6.00
5,083.00	21.05	60.86	5,076.56	17.05	58.14	59.93	9.74	9.63	4.76
5,145.00	28.40	62.72	5,132.84	29.24	81.00	84.24	11.92	11.85	3.00
5,209.00	34.40	64.98	5,187.44	43.88	110.94	115.90	9.55	9.38	3.53
5,270.00	40.35	68.16	5,235.90	58.53	144.92	151.56	10.25	9.75	5.21
5,333.00	48.32	68.08	5,280.93	74.92	185.74	194.24	12.65	12.65	-0.13
5,396.00	56.90	68.16	5,319.15	93.56	232.15	242.76	13.62	13.62	0.13
5,458.00	65.24	67.46	5,349.11	114.05	282.34	295.28	13.49	13.45	-1.13
5,520.00	73.89	67.18	5,370.74	136.43	335.90	351.39	13.96	13.95	-0.45
5,571.00	81.09	66.44	5,381.78	156.03	381.63	399.37	14.19	14.12	-1.45
5,644.00	89.52	65.52	5,387.75	185.62	448.02	469.18	11.62	11.55	-1.26
5,706.00	90.42	65.53	5,387.78	211.30	504.45	528.59	1.45	1.45	0.02
5,769.00	91.82	65.55	5,386.55	237.38	561.79	588.95	2.22	2.22	0.03
5,831.00	92.55	65.69	5,384.19	262.96	618.22	648.35	1.20	1.18	0.23
5,894.00	91.46	66.28	5,381.98	288.58	675.73	708.82	1.97	-1.73	0.94
5,955.00	92.04	67.02	5,380.12	312.75	731.70	767.57	1.54	0.95	1.21
6,017.00	91.88	70.22	5,378.00	335.33	789.39	827.81	5.16	-0.26	5.16
6,080.00	90.61	72.33	5,376.63	355.55	849.04	889.66	3.91	-2.02	3.35
6,142.00	91.12	72.61	5,375.70	374.22	908.16	950.77	0.94	0.82	0.45
6,204.00	90.17	74.35	5,375.00	391.85	967.59	1,012.06	3.20	-1.53	2.81
6,267.00	90.59	74.56	5,374.58	408.73	1,028.28	1,074.49	0.75	0.67	0.33
6,330.00	91.54	74.67	5,373.41	425.45	1,089.01	1,136.93	1.52	1.51	0.17
6,392.00	92.27	75.01	5,371.35	441.65	1,148.82	1,198.40	1.30	1.18	0.55



Phoenix Technology Services LP

Survey Report



Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: Cedar Lake Federal CA
Well: #549H
Wellbore: OH / Job #61008
Design: Surveys (Trinidad 436)

Local Co-ordinate Reference: Well #549H
TVD Reference: GL + KB @ 3811.60usft (Trinidad 436)
MD Reference: GL + KB @ 3811.60usft (Trinidad 436)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,455.00	91.68	76.77	5,369.18	457.00	1,209.88	1,260.98	2.94	-0.94	2.79
6,518.00	92.04	76.84	5,367.13	471.37	1,271.19	1,323.67	0.58	0.57	0.11
6,580.00	91.34	79.49	5,365.30	484.08	1,331.84	1,385.49	4.42	-1.13	4.27
6,642.00	90.70	81.27	5,364.20	494.44	1,392.95	1,447.45	3.05	-1.03	2.87
6,704.00	89.94	83.42	5,363.85	502.70	1,454.40	1,509.44	3.68	-1.23	3.47
6,767.00	88.96	84.74	5,364.46	509.20	1,517.06	1,572.40	2.61	-1.56	2.10
6,829.00	88.91	87.18	5,365.61	513.56	1,578.89	1,634.25	3.94	-0.08	3.94
6,891.00	88.85	88.62	5,366.82	515.83	1,640.83	1,695.93	2.32	-0.10	2.32
6,954.00	89.66	88.56	5,367.64	517.38	1,703.81	1,758.52	1.29	1.29	-0.10
7,016.00	90.09	88.87	5,367.78	518.77	1,765.79	1,820.11	0.85	0.69	0.50
7,079.00	88.69	89.95	5,368.45	519.42	1,828.78	1,882.60	2.81	-2.22	1.71
7,141.00	89.21	89.63	5,369.58	519.65	1,890.77	1,944.04	0.98	0.84	-0.52
7,204.00	87.73	88.93	5,371.26	520.44	1,953.74	2,006.53	2.60	-2.35	-1.11
7,266.00	88.60	89.05	5,373.25	521.53	2,015.70	2,068.06	1.42	1.40	0.19
7,328.00	89.27	89.02	5,374.40	522.58	2,077.68	2,129.60	1.08	1.08	-0.05
7,391.00	89.52	88.92	5,375.07	523.71	2,140.66	2,192.15	0.43	0.40	-0.16
7,453.00	87.90	88.89	5,376.46	524.89	2,202.63	2,253.70	2.61	-2.61	-0.05
7,515.00	88.43	88.62	5,378.45	526.24	2,264.59	2,315.25	0.96	0.85	-0.44
7,578.00	89.24	89.07	5,379.73	527.51	2,327.56	2,377.81	1.47	1.29	0.71
7,640.00	90.03	89.32	5,380.12	528.38	2,389.55	2,439.34	1.34	1.27	0.40
7,702.00	90.50	89.05	5,379.84	529.26	2,451.55	2,500.87	0.87	0.76	-0.44
7,765.00	89.02	89.01	5,380.10	530.33	2,514.54	2,563.42	2.35	-2.35	-0.06
7,827.00	89.52	89.04	5,380.89	531.39	2,576.52	2,624.96	0.81	0.81	0.05
7,890.00	89.69	88.85	5,381.33	532.55	2,639.51	2,687.52	0.40	0.27	-0.30
7,952.00	87.93	89.29	5,382.61	533.55	2,701.48	2,749.05	2.93	-2.84	0.71
8,015.00	88.49	88.91	5,384.58	534.54	2,764.45	2,811.56	1.07	0.89	-0.60
8,077.00	89.27	89.53	5,385.79	535.38	2,826.43	2,873.07	1.61	1.26	1.00
8,139.00	90.10	89.89	5,386.13	535.70	2,888.42	2,934.53	1.46	1.34	0.58
8,202.00	90.34	89.60	5,385.89	535.98	2,951.42	2,996.98	0.60	0.38	-0.46
8,264.00	88.91	89.21	5,386.30	536.62	3,013.42	3,058.48	2.39	-2.31	-0.63
8,326.00	89.58	88.94	5,387.12	537.62	3,075.40	3,120.02	1.17	1.08	-0.44
8,388.00	88.41	88.56	5,388.20	538.98	3,137.38	3,181.60	1.98	-1.89	-0.61
8,450.00	86.69	88.27	5,390.85	540.69	3,199.30	3,243.17	2.81	-2.77	-0.47
8,513.00	87.20	87.97	5,394.21	542.75	3,262.17	3,305.74	0.94	0.81	-0.48
8,575.00	87.81	88.05	5,396.91	544.90	3,324.08	3,367.35	0.99	0.98	0.13
8,638.00	88.57	88.26	5,398.90	546.93	3,387.01	3,429.98	1.25	1.21	0.33
8,700.00	89.16	88.23	5,400.13	548.83	3,448.97	3,491.61	0.95	0.95	-0.05
8,762.00	89.80	88.28	5,400.69	550.72	3,510.94	3,553.26	1.04	1.03	0.08
8,824.00	90.14	88.04	5,400.72	552.71	3,572.91	3,614.92	0.67	0.55	-0.39
8,887.00	89.16	87.65	5,401.11	555.08	3,635.86	3,677.60	1.67	-1.56	-0.62
8,949.00	89.52	87.38	5,401.82	557.76	3,697.80	3,739.33	0.73	0.58	-0.44
9,011.00	89.72	87.11	5,402.23	560.74	3,759.72	3,801.08	0.54	0.32	-0.44
9,074.00	90.22	86.96	5,402.27	564.00	3,822.64	3,863.85	0.83	0.79	-0.24



Phoenix Technology Services LP

Survey Report



Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: Cedar Lake Federal CA
Well: #549H
Wellbore: OH / Job #61008
Design: Surveys (Trinidad 436)

Local Co-ordinate Reference: Well #549H
TVD Reference: GL + KB @ 3811.60usft (Trinidad 436)
MD Reference: GL + KB @ 3811.60usft (Trinidad 436)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,136.00	91.01	87.16	5,401.60	567.18	3,884.55	3,925.62	1.31	1.27	0.32
9,199.00	89.75	87.94	5,401.18	569.88	3,947.49	3,988.34	2.35	-2.00	1.24
9,261.00	90.06	87.73	5,401.29	572.22	4,009.45	4,050.03	0.60	0.50	-0.34
9,323.00	90.53	87.42	5,400.97	574.84	4,071.39	4,111.75	0.91	0.76	-0.50
9,385.00	89.30	87.68	5,401.06	577.49	4,133.33	4,173.47	2.03	-1.98	0.42
9,422.00	89.69	87.90	5,401.38	578.92	4,170.30	4,210.29	1.21	1.05	0.59
Final Phoenix MWD Survey									
9,490.00	89.69	87.90	5,401.75	581.41	4,238.26	4,277.95	0.00	0.00	0.00
Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
480.00	479.98	-1.56	-1.21	Tie In
601.00	600.97	-1.71	-0.76	First Phoenix MWD Survey
9,422.00	5,401.38	578.92	4,170.30	Final Phoenix MWD Survey
9,490.00	5,401.75	581.41	4,238.26	Projection to TD

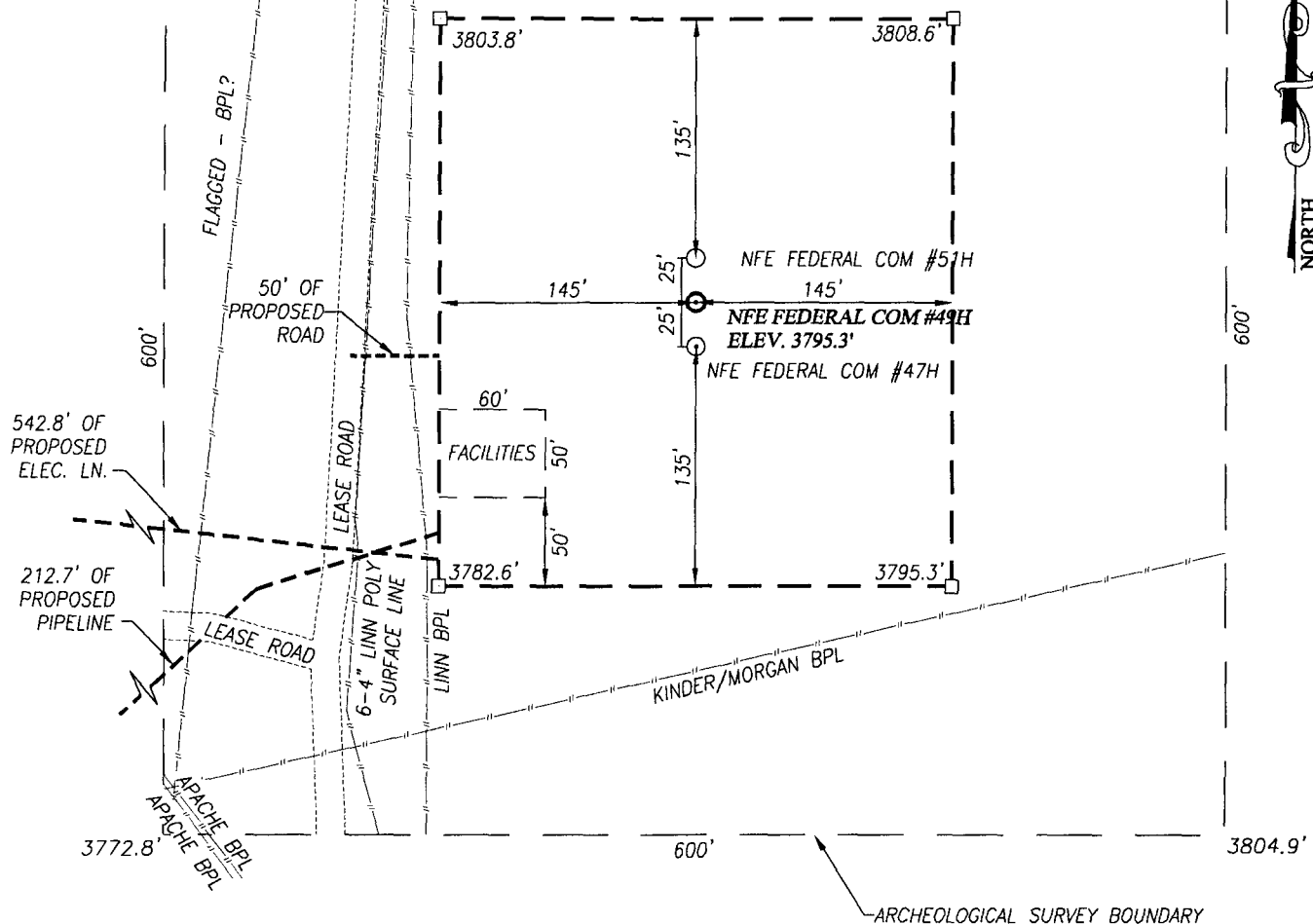
3794.9'

600'

3818.2'

GEODETIC COORDINATES
 NAD 27 NME
 Y=678229.7 N
 X=633770.2 E
 LAT.=32.863778° N
 LONG.=103.897677° W
 LAT.=32° 51' 50" N
 LONG.=103° 53' 52" W

GEODETIC COORDINATES
 NAD 83 NME
 Y=678293.8 N
 X=674948.8 E
 LAT.=32.863895° N
 LONG.=103.898185° W
 LAT.=32° 51' 50" N
 LONG.=103° 53' 53" W



NOTE:

1) SEE "TOPOGRAPHICAL AND ACCESS
 ROAD MAP" FOR PROPOSED ROAD
 LOCATION.

DIRECTIONS TO NFE FEDERAL COM #49H:

FROM THE INTERSECTION OF U.S. HWY. 82 AND CO. RD. 221
 (SKELLY RD.), GO NORTH ON CO. RD. 221 APPROX. 1.45 MILES.
 TURN RIGHT AND GO NORTHEAST ON LEASE ROAD APPROX.
 0.6 MILES. TURN RIGHT AND GO EAST APPROX. 0.6 MILES. TURN
 LEFT AND GO NORTH APPROX. 1.2 MILES TO PROPOSED ROAD
 SURVEY. FOLLOW STAKED ROAD 50 FEET EAST TO THIS LOCATION.

100 0 100 200 Feet

Scale: 1"=100'

APACHE CORPORATION

NFE FEDERAL COM #49H WELL
 LOCATED 2510 FEET FROM THE NORTH LINE
 AND 715 FEET FROM THE WEST LINE OF SECTION 5,
 TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M.,
 EDDY COUNTY, NEW MEXICO



PROVIDING SURVEYING SERVICES
 SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DAL PASO HOBBS, N.M. 88240
 (575) 393-3117 www.jwsc.biz
 TBPLS# 10021000

Survey Date: 2/9/15

CAD Date: 2/26/15

Drawn By: ACK

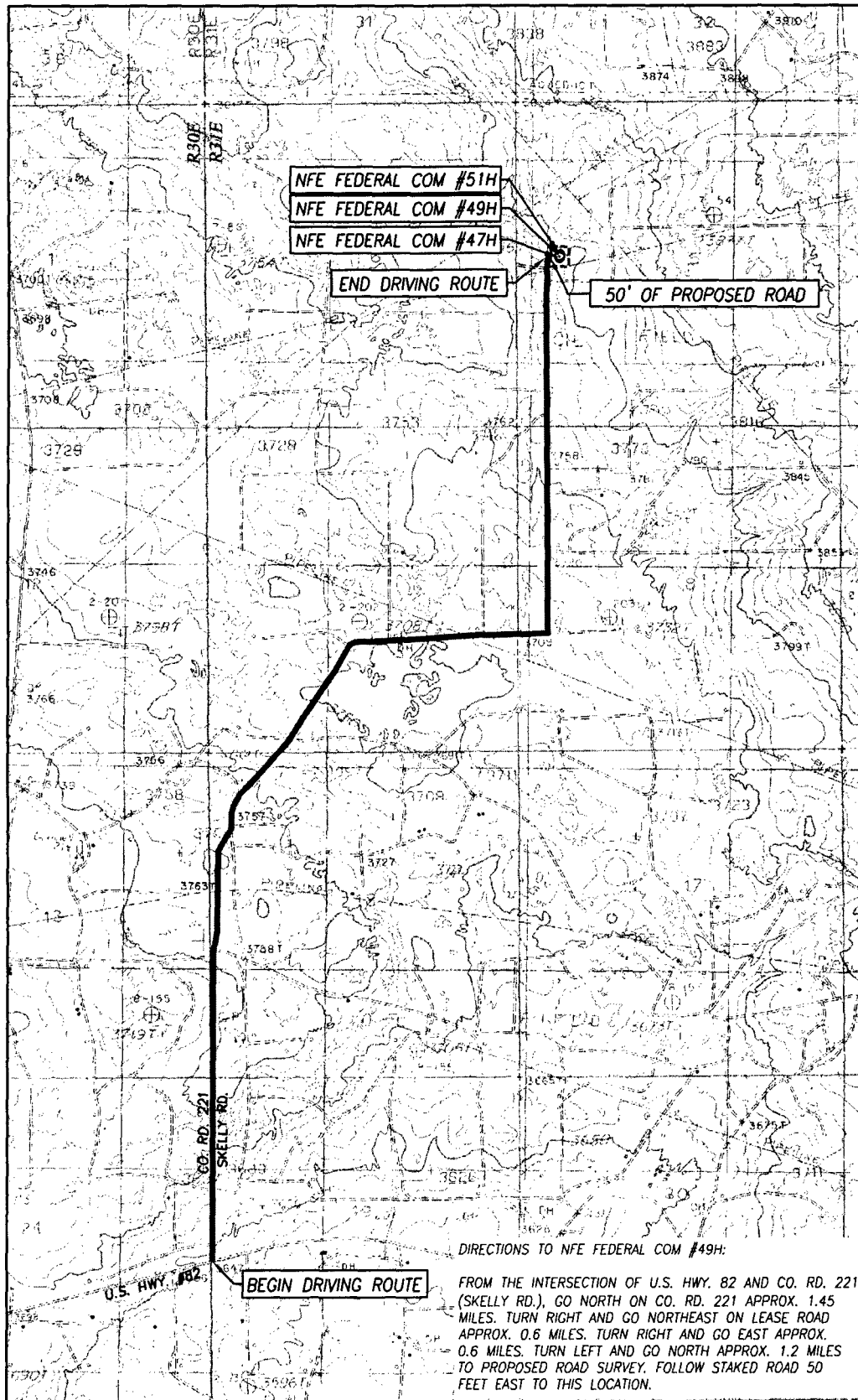
W.O. No.: 15130285

Rev: 3/4/15

Rel. W.O.: 14111417

Sheet 1 of 1

TOPOGRAPHICAL AND ACCESS ROAD MAP



SEC. 5 TWP. 17-S RGE. 31-E
 COUNTY EDDY STATE NEW MEXICO
 DESCRIPTION 2510' FNL & 715' FWL
 ELEVATION 3795'
 OPERATOR APACHE CORPORATION
 LEASE NFE FEDERAL COM
 U.S.G.S. TOPOGRAPHIC MAP
 LOCO HILLS, N.M. SURVEY N.M.P.M.

SCALE: 1" = 2000'

CONTOUR INTERVAL:
 LOCO HILLS, N.M. - 10'

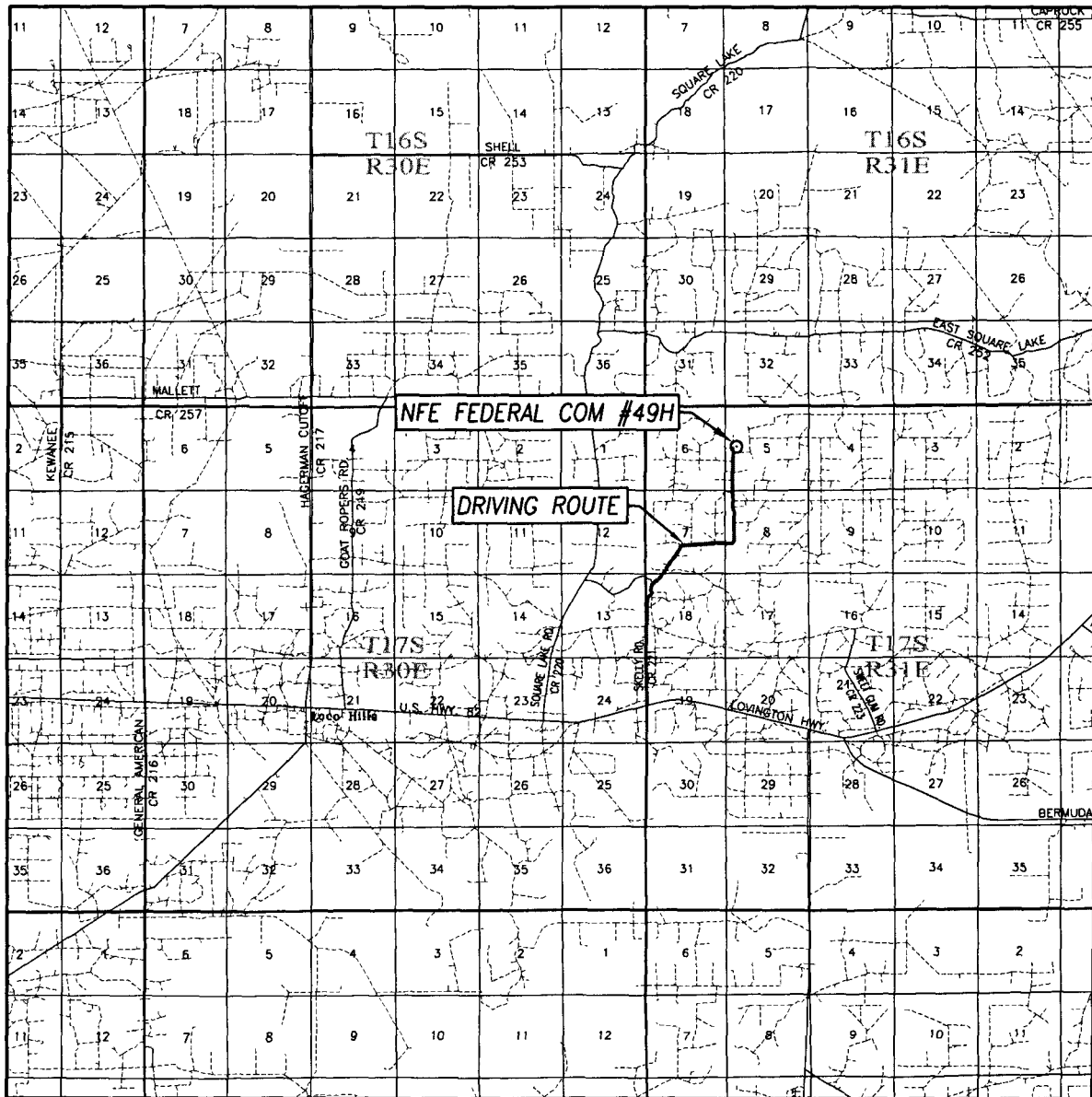
DIRECTIONS TO NFE FEDERAL COM #49H:

FROM THE INTERSECTION OF U.S. HWY. 82 AND CO. RD. 221 (SKELLY RD.), GO NORTH ON CO. RD. 221 APPROX. 1.45 MILES. TURN RIGHT AND GO NORTHEAST ON LEASE ROAD APPROX. 0.6 MILES. TURN RIGHT AND GO EAST APPROX. 0.6 MILES. TURN LEFT AND GO NORTH APPROX. 1.2 MILES TO PROPOSED ROAD SURVEY. FOLLOW STAKED ROAD 50 FEET EAST TO THIS LOCATION.



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VICINITY MAP



SCALE: 1" = 2 MILES

DRIVING ROUTE: SEE TOPOGRAPHICAL AND ACCESS ROAD MAP

SEC. 5 TWP. 17-S RGE. 31-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 2510' FNL & 715' FWL

ELEVATION 3795'

OPERATOR APACHE CORPORATION

LEASE NFE FEDERAL COM



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