STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

August 31, 1994

Parker & Parsley Development Company
P.O. Box 3178
Midland, Texas 79702-3178

Attention: Bob Yeates

Administrative Order DD-100

Dear Mr. Yeates:

Under the provisions of the Division's General Rules and Regulations concerning directional drilling, Rule 111 (c), (d) and (e), Parker & Parsley Development Company made application to the New Mexico Oil Conservation Division on August 26, 1994, for authorization to directionally drill its proposed ARCO Federal Well No. 2, into the Old Millman Ranch-Bone Spring Associated Pool, Eddy County, New Mexico.

The Division Director Finds That:

(1) By Division Order No. R-5353-M, dated August 31, 1993, special rules and regulations were established for the Old Millman Ranch-Bone Spring Associated Pool including provisions for 80-acre oil spacing and proration units and limited well location requirements whereby an oil well can only be within 150 feet of the center of a quarter-quarter section or lot.

(2) The application has been duly filed under the provisions of Rules 111(d) and (e) of the Division General Rules and Regulations;

(3) Satisfactory information has been provided that all offset operators and mineral interest owners have been duly notified;

(4) The applicant has presented satisfactory evidence that all requirements prescribed in General Rule 111 have either been or will be met; and,

(5) A waiver of objection from the other offset operators other than Parker & Parsley was received by the Division.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Parker & Parsley Development Company, is hereby authorized to directionally drill its ARCO Federal Well No. 2, the surface location of which shall be 1010 feet from the South line and 1980 feet from the West line (Unit N) of Section 34, Township 19 South, Range 28 East, NMPM, Eddy County, New Mexico, by kicking off from the vertical at a depth of approximately 1200 feet and drilling in such a manner as to bottom in the Bone Spring formation at a standard oil well location within the SE/4 SW/4 of said Section 34.

PROVIDED HOWEVER THAT prior to commencing directional drilling operations into said wellbore, the applicant shall establish the location of the kick-off point by means of a directional survey acceptable to the Division.

PROVIDED HOWEVER THAT during or upon completion of directional drilling operations, the applicant shall conduct an accurate wellbore survey from the kick-off point to total depth in order that the subsurface bottomhole location, as well as the wellbore's true depth and course, may be determined.

(2) The applicant shall notify the supervisor of the Artesia district office of the Division of the date and time said wellbore surveys are to be conducted so that they may be witnessed. The applicant shall further provide a copy of said wellbore surveys to the Santa Fe and Artesia offices of the Division upon completion.

(3) Form C-105 shall be filed in accordance with Division Rule 1105 and the operator shall indicate thereon true vertical depth in addition to measured depths.

(4) The S/2 SW/4 of said Section 34 shall be dedicated to said well to form a standard 80-acre oil spacing and proration unit for the subject pool.

(5) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director

S E A L

WJL/MES/amg

cc: Oil Conservation Division - Artesia
US Bureau of Land Management - Carlsbad

E-mailed as DD-100 Rec. 8/26/94
Release 8/30/94

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

August 30, 1994

Parker & Parsley Development Company
P.O. Box 3178
Midland, Texas 79702-3178

Attention: Bob Yeates

Administrative Order DD-100

Dear Mr. Yeates:

Under the provisions of the Division's General Rules and Regulations concerning directional drilling, Rule 111 (c), (d) and (e), Parker & Parsley Development Company made application to the New Mexico Oil Conservation Division on August 26, 1994, for authorization to directionally drill its proposed ARCO Federal Well No. 2, into the Old Millman Ranch-Bone Spring Associated Pool, Eddy County, New Mexico.

The Division Director Finds That:

(1) By Division Order No. R-5353-M, dated August 31, 1993, special rules and regulations were established for the Old Millman Ranch-Bone Spring Associated Pool including provisions for 80-acre oil spacing and proration units and limited well location requirements whereby an oil well can only be within 150 feet of the center of a quarter-quarter section or lot.

(2) The application has been duly filed under the provisions of Rules 111(d) and (e) of the Division General Rules and Regulations;

(3) Satisfactory information has been provided that all offset operators and mineral interest owners have been duly notified;

(4) The applicant has presented satisfactory evidence that all requirements prescribed in General Rule 111 have either been or will be met; and,

(5) A waiver of objection from the other offset operators other than Parker & Parsley was received by the Division.

IT IS THEREFORE ORDERED THAT:

BRUCE KING
GOVERNOR
ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

(1) The applicant, Parker & Parsley Development Company, is hereby authorized to directionally drill its ARCO Federal Well No. 2, the surface location of which shall be 1650 feet from the South line and 1980 feet from the West line (Unit N) of Section 34, Township 19 South, Range 28 East, NMPM, Eddy County, New Mexico, by kicking off from the vertical at a depth of approximately 1200 feet and drilling in such a manner as to bottom in the Bone Spring formation at a standard oil well location within the SE/4 SW/4 of said Section 34.

PROVIDED HOWEVER THAT prior to commencing directional drilling operations into said wellbore, the applicant shall establish the location of the kick-off point by means of a directional survey acceptable to the Division.

PROVIDED HOWEVER THAT during or upon completion of directional drilling operations, the applicant shall conduct an accurate wellbore survey from the kick-off point to total depth in order that the subsurface bottomhole location, as well as the wellbore's true depth and course, may be determined.

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(3) Form C-105 shall be filed in accordance with Division Rule 1105 and the operator shall indicate thereon true vertical depth in addition to measured depths.

(4) The S/2 SW/4 of said Section 34 shall be dedicated to said well to form a standard 80-acre oil spacing and proration unit for the subject pool.

(5) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director

S E A L

WJL/MES/amg

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

CC: Oil Conservation Division - Artesia
US Bureau of Land Management - Carlsbad

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

OIL CONSERVATION DIVISION
RECEIVED
'94 NOV 14 AM 8 52

DD-100

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

November 8, 1994

State Of New Mexico
Oil Conservation Division
2040 S. Pacheco St.
Santa Fe, NM 87505

Attn: Michael Stogner

Re: Arco Federal No. 2
Eddy County, NM

Attached for your files are copies of the magnetic survey record for the subject well. The bottomhole location (BHL) was placed at 534.15' FS & 2038.64' FWL, Section 34, T-19-S, R-28-E by slant-directional drilling procedures. Production casing was set at 6522' on 10-28-94.

Placement of the BHL successfully complies with the OCD approved intent as indicated in C-102 dated 8-25-94, to establish an orthodox location under the quarter-quarter section Unit Letter N as designated in the said C-102, for a proposed 80-acre oil well. Subsequent reports will be submitted to the district office, under normal procedures.

Sincerely,

Bob Yeates, Consulting Engineer

Attch: Magnetic Survey record

xc: Offset operators
BLM, Carlsbad Resource Area
M. Reeves
W. Dover
files

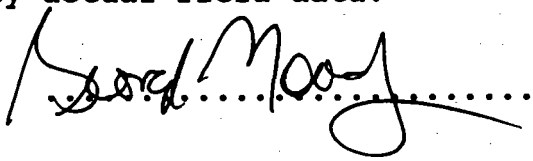
SCIENTIFIC DRILLING INTERNATIONAL

MIDLAND, TEXAS

PARKER & PARSLEY

Well Name	: ARCO FEDERAL UNIT #2
Location	: EDDY COUNTY, NEW MEXICO
SHL	: 1010' FSL & 1980' FWL SEC 34 T-19-S R-28-E
BHL	:
ACTUAL BHL	: 534.15' FSL & 2038.64' FWL SEC 34 T-19-S R-28-E
Date Surveyed	: 27 OCTOBER 1994
Job Number	: 32F1094343/32D1094344
Surveyor	: DESPAIN/HOFFMAN

This survey is correct to the best of my knowledge
and is supported by actual field data.



..... COMPANY REPRESENTATIVE

SCIENTIFIC DRILLING INTERNATIONAL

Company : PARKER & PARSLEY
Well Name : ARCO FEDERAL UNIT #2
Location : EDDY COUNTY, NEW MEXICO
SHL : 1010' FSL & 1980' FWL SEC 34 T-19-S R-28-E
BHL :
ACTUAL BHL : 534.15' FSL & 2038.64' FWL SEC 34 T-19-S R-28-E
No Interpolation
Height Of WELLSITE Datum Above Field Datum 0.00 ft

Date 27 OCTOBER 1994
Filename : ARCOF#2

MD ft	INC deg	DIR deg	TVD ft	LAT ft	DEP ft	VS ft	D'LEG °/100
0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.0
100.0	0.25	303.98	100.00	0.12	-0.18	-0.12	0.3
200.0	0.20	326.47	200.00	0.39	-0.46	-0.39	0.1
300.0	0.23	314.16	300.00	0.67	-0.70	-0.67	0.1
400.0	0.38	6.48	400.00	1.14	-0.81	-1.14	0.3
500.0	0.44	12.19	499.99	1.85	-0.69	-1.85	0.1
600.0	0.40	19.11	599.99	2.55	-0.49	-2.55	0.1
700.0	0.53	14.27	699.99	3.33	-0.26	-3.33	0.1
800.0	0.59	24.24	799.98	4.25	0.06	-4.25	0.1
900.0	0.58	30.34	899.98	5.16	0.53	-5.16	0.1
1000.0	0.39	23.22	999.97	5.91	0.92	-5.91	0.2
1100.0	0.44	29.86	1099.97	6.55	1.24	-6.55	0.1
1200.0	0.30	15.51	1199.97	7.14	1.51	-7.14	0.2
1300.0	0.23	302.36	1299.97	7.50	1.41	-7.50	0.3
1400.0	0.37	207.67	1399.97	7.32	1.09	-7.32	0.5
1500.0	0.42	211.17	1499.97	6.72	0.75	-6.72	0.1
1600.0	0.47	213.14	1599.96	6.06	0.33	-6.06	0.1
1700.0	0.54	221.25	1699.96	5.36	-0.20	-5.36	0.1
1800.0	0.73	205.13	1799.95	4.43	-0.78	-4.43	0.3
1900.0	0.82	193.87	1899.94	3.16	-1.23	-3.16	0.2
2000.0	0.85	193.82	1999.93	1.75	-1.57	-1.75	0.0
2100.0	0.84	205.21	2099.92	0.36	-2.06	-0.36	0.2
2200.0	0.70	222.18	2199.91	-0.75	-2.79	0.75	0.3
2300.0	0.53	232.52	2299.91	-1.49	-3.56	1.49	0.2
2400.0	0.54	238.69	2399.90	-2.01	-4.33	2.01	0.1
2500.0	0.64	228.62	2499.90	-2.63	-5.15	2.63	0.1
2600.0	0.70	239.53	2599.89	-3.31	-6.10	3.31	0.1
2700.0	0.66	250.39	2699.88	-3.81	-7.17	3.81	0.1
2800.0	0.72	266.65	2799.88	-4.04	-8.34	4.04	0.2
2900.0	0.69	271.15	2899.87	-4.06	-9.57	4.06	0.1
3000.0	0.68	268.05	2999.86	-4.07	-10.76	4.07	0.0
3100.0	0.80	253.84	3099.85	-4.29	-12.03	4.29	0.2
3200.0	0.83	257.84	3199.84	-4.63	-13.40	4.63	0.1
3300.0	1.03	257.89	3299.83	-4.97	-14.99	4.98	0.2
3400.0	1.26	257.89	3399.81	-5.39	-16.95	5.39	0.2

SCIENTIFIC DRILLING INTERNATIONAL

Company : PARKER & PARSLEY
Well Name : ARCO FEDERAL UNIT #2
Location : EDDY COUNTY, NEW MEXICO
SHL : 1010' FSL & 1980' FWL SEC 34 T-19-S R-28-E
BHL :
ACTUAL BHL : 534.15' FSL & 2038.64' FWL SEC 34 T-19-S R-28-E
No Interpolation
Height Of WELLSITE Datum Above Field Datum 0.00 ft

Date 27 OCTOBER 1994
Filename : ARCOF#2

MD ft	INC deg	DIR deg	TVD ft	LAT ft	DEP ft	VS ft	D'LEG °/100
3500.0	1.59	268.13	3499.78	-5.67	-19.41	5.67	0.4
3600.0	1.89	276.75	3599.73	-5.52	-22.43	5.52	0.4
3700.0	2.31	278.98	3699.67	-5.01	-26.06	5.01	0.4
3800.0	2.64	281.99	3799.57	-4.22	-30.30	4.22	0.4
3900.0	2.74	282.23	3899.46	-3.24	-34.89	3.24	0.1
3995.0	2.88	280.92	3994.35	-2.30	-39.45	2.30	0.2
4053.0	2.80	272.00	4052.28	-1.98	-42.30	1.98	0.8
4146.0	0.50	210.10	4145.24	-2.25	-44.77	2.25	2.8
4238.0	1.90	163.00	4237.21	-4.05	-44.53	4.05	1.7
4418.0	4.80	173.70	4416.89	-14.40	-42.83	14.40	1.6
4508.0	6.80	174.00	4506.42	-23.44	-41.86	23.44	2.2
4598.0	8.40	168.00	4595.63	-35.17	-39.94	35.17	2.0
4688.0	10.10	168.70	4684.46	-49.34	-37.02	49.34	1.9
4778.0	12.10	167.00	4772.77	-66.27	-33.35	66.27	2.3
4870.0	13.50	166.00	4862.48	-86.09	-28.59	86.09	1.5
4942.0	14.25	166.00	4932.38	-102.84	-24.41	102.84	1.0
5065.0	14.75	166.00	5051.46	-132.72	-16.96	132.72	0.4
5159.0	14.75	166.00	5142.37	-155.94	-11.17	155.94	0.0
5250.0	15.50	166.00	5230.21	-178.98	-5.43	178.98	0.8
5340.0	15.75	168.00	5316.89	-202.60	0.02	202.60	0.7
5432.0	16.50	168.00	5405.27	-227.59	5.33	227.59	0.8
5524.0	16.00	168.00	5493.59	-252.77	10.69	252.77	0.5
5587.0	15.50	168.00	5554.23	-269.50	14.24	269.50	0.8
5647.0	14.75	168.00	5612.15	-284.81	17.50	284.81	1.2
5707.0	14.50	167.00	5670.20	-299.60	20.78	299.60	0.6
5800.0	13.75	167.00	5760.39	-321.72	25.88	321.72	0.8
5891.0	13.50	167.00	5848.83	-342.60	30.70	342.60	0.3
5983.0	13.75	165.00	5938.24	-363.63	35.95	363.63	0.6
6015.0	13.00	163.00	5969.37	-370.74	37.99	370.74	2.8
6074.0	13.00	165.00	6026.86	-383.50	41.64	383.50	0.8
6136.0	13.00	169.00	6087.27	-397.08	44.78	397.08	1.5
6166.0	12.75	171.00	6116.52	-403.66	45.94	403.66	1.7
6228.0	12.50	171.00	6177.02	-417.05	48.06	417.05	0.4
6290.0	12.50	170.00	6237.55	-430.28	50.27	430.28	0.3
6440.0	11.25	169.00	6384.34	-460.63	55.89	460.63	0.8

SCIENTIFIC DRILLING INTERNATIONAL

Company : PARKER & PARSLEY
Well Name : ARCO FEDERAL UNIT #2
Location : EDDY COUNTY, NEW MEXICO
SHL : 1010' FSL & 1980' FWL SEC 34 T-19-S R-28-E
BHL :
ACTUAL BHL : 534.15' FSL & 2038.64' FWL SEC 34 T-19-S R-28-E
No Interpolation
Height Of WELLSITE Datum Above Field Datum 0.00 ft

Date 27 OCTOBER 1994
Filename : ARCOF#2

MD ft	INC deg	DIR deg	TVD ft	LAT ft	DEP ft	VS ft	D'LEG °/100
6480.0	10.75	170.00	6423.60	-468.14	57.28	468.14	1.3
6522.0	10.75	170.00	6464.87	-475.85	58.64	475.85	0.0

Origin of Bottom Hole Closure WELLSITE CENTRE
Bottom Hole Closure 479 ft 172.97°

FSRG 0'-3995' BY DESPAIN
SS 4053'-TVD ' BY HOFFMAN
PROJECTED TO 6522' M.D.

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 25, 1994

State of New Mexico
Oil Conservation Division
Attn: Michael Stogner
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

Re: Arco Federal No. 2

This company requests administrative approval to drill a controlled directional hole in the Old Millman Ranch (Bone Spring) Associated Gas Pool in Eddy County. It has been our intention to complete a well at an orthodox location being 660 FS & 1980 FWL, Section 34, T-19-S, R-28-E. Archeological investigations revealed the above surface location to be within a Category 2 Ceramic Period occupation site. To preserve the integrity of this historic site, an alternate location has been staked 1010 FS & 1980 FWL of Section 34, or 350 feet north of the original stake. This latter surface area falls within a work area clear of any archaeological consequences, and has been accepted by Mr. Barry Hunt of the BLM.

It is respectfully requested that the 1010 X 1980 unorthodox surface hole location (SHL) be approved for drilling to an orthodox bottom hole location (BHL) by controlled directional drilling into a plane target area defined by a 150 foot radial about a TVD vertically drawn down to approximately 6350' below the SHL. Administrative approval is being sought under the authority granted by OCD Case No. 5813, Order No. R-5353, for oil wells in S.E. New Mexico, and by temporary special rules for the aforementioned pool designating an 80 acre oil spacing, and by Rule 111 C,D (1) & (2) and E, enabling your authorization of the foregoing requests.

Enclosed for your consideration are:

1) Form C-102 including certified SHL with proposed BHL locations
2) Form C-103 & Archaeology Study
3) Base map indicating proposed well and offsets
4) The proposed directional drilling procedures
5) The complete Drilling Program format
6) Copy of notification/waiver letter to Reeves County Systems, Inc., et al

If additional information is needed, please call the undersigned. Your prompt attention to this matter will be sincerely appreciated.

Sincerely,

Bob Yeates

Consulting Engineer
Permian Basin West Area

Attachments

cc: Bureau of Land Management
L. Anderson

BY/mm

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised February 10, 1994
Instruction on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
		OLD MILLMAN RANCH (BONE SPRING) ASSOC.

Property Code	Property Name	Well Number
	ARCO FEDERAL	2

OGRID No.	Operator Name	Elevation
	PARKER & PARSLEY DEVELOPMENT CO.	3295'

Surface Location

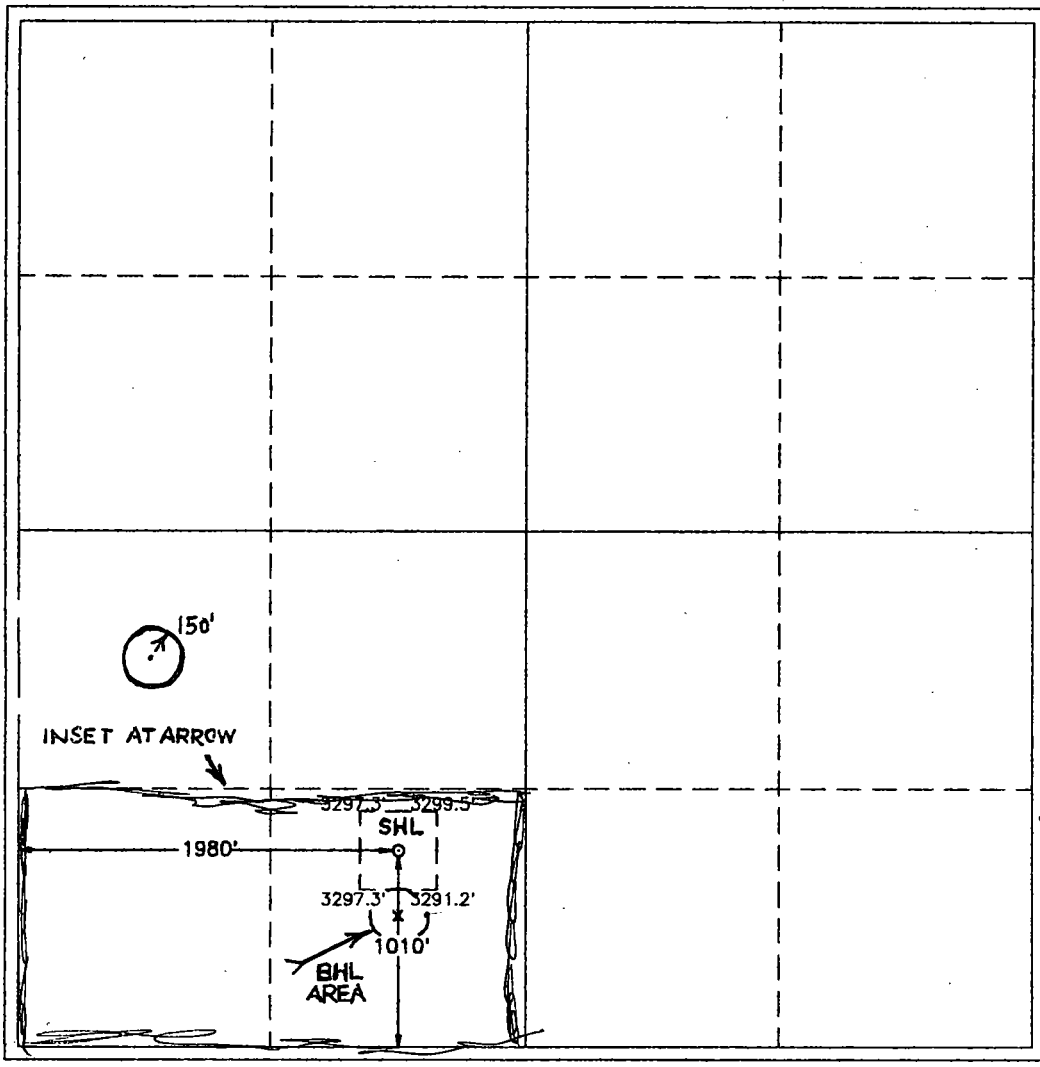
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	34	19 S	28 E		1010	SOUTH	1980	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	34	19-S	28-E		660 ±	SOUTH	1980 ±	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
80			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.

Bob Yeates
Signature

BOB YEATES
Printed Name

CONSULTING ENGINEER
Title

8-4-94
Date

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

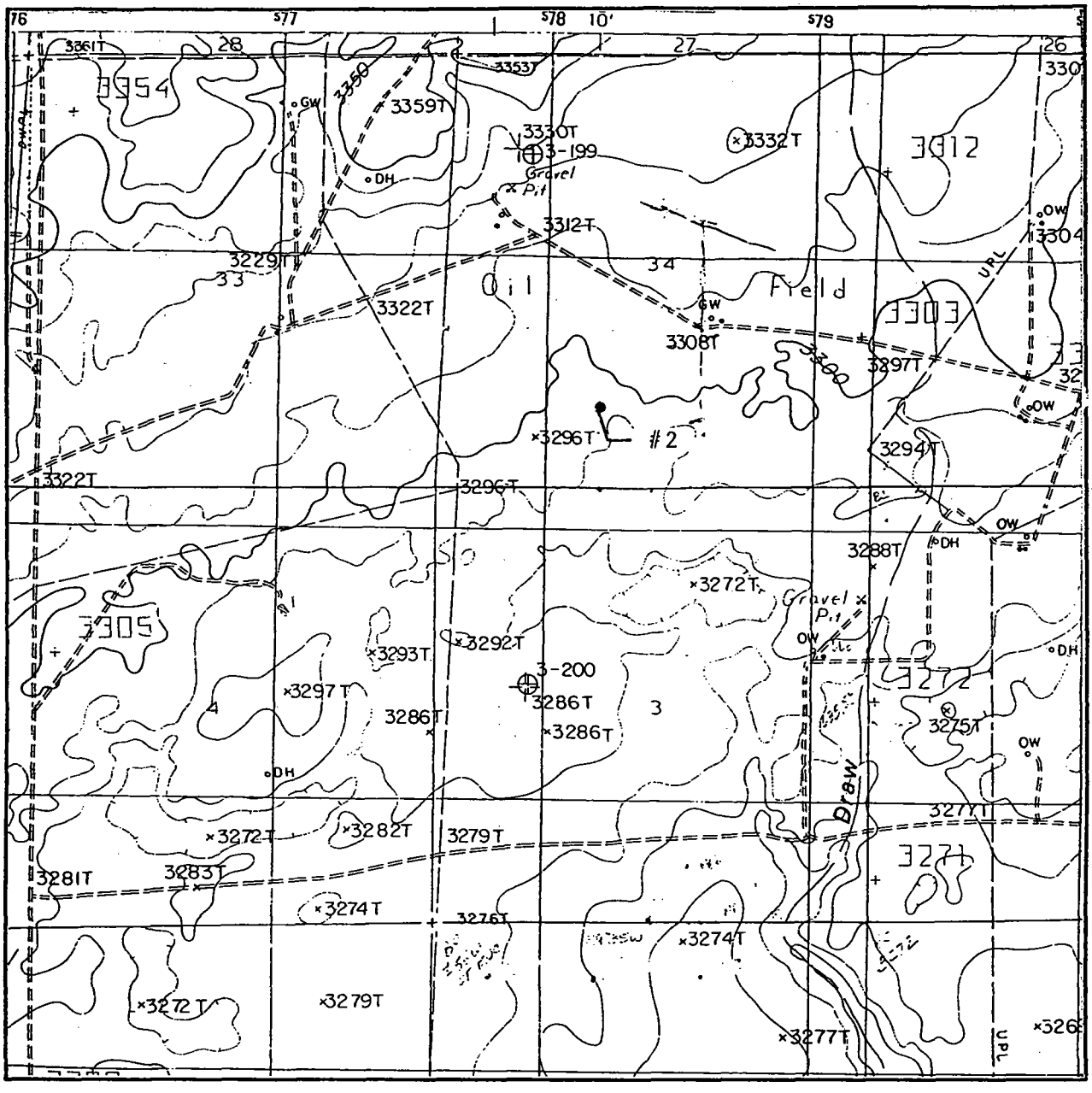
GARY L. JONES
NEW MEXICO
JULY 21, 1994
REGISTERED PROFESSIONAL LAND SURVEYOR

Date Surveyed 7977
Signature & Seal of Professional Surveyor

W.O. Num. 94-11-1349

Certificate No. JOHN W. WEST, 676
RONALD J. EIDSON, 3239
GARY L. JONES, 7977

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL 5'

SEC. 34 TWP. 19 S RGE. 28 E

SURVEY N.M.P.M.

COUNTY EDDY STATE N.M.

DESCRIPTION 1010' FSL & 1980' FWL

ELEVATION 3295'

OPERATOR PARKER & PARSLEY DEVELOPMENT CO.

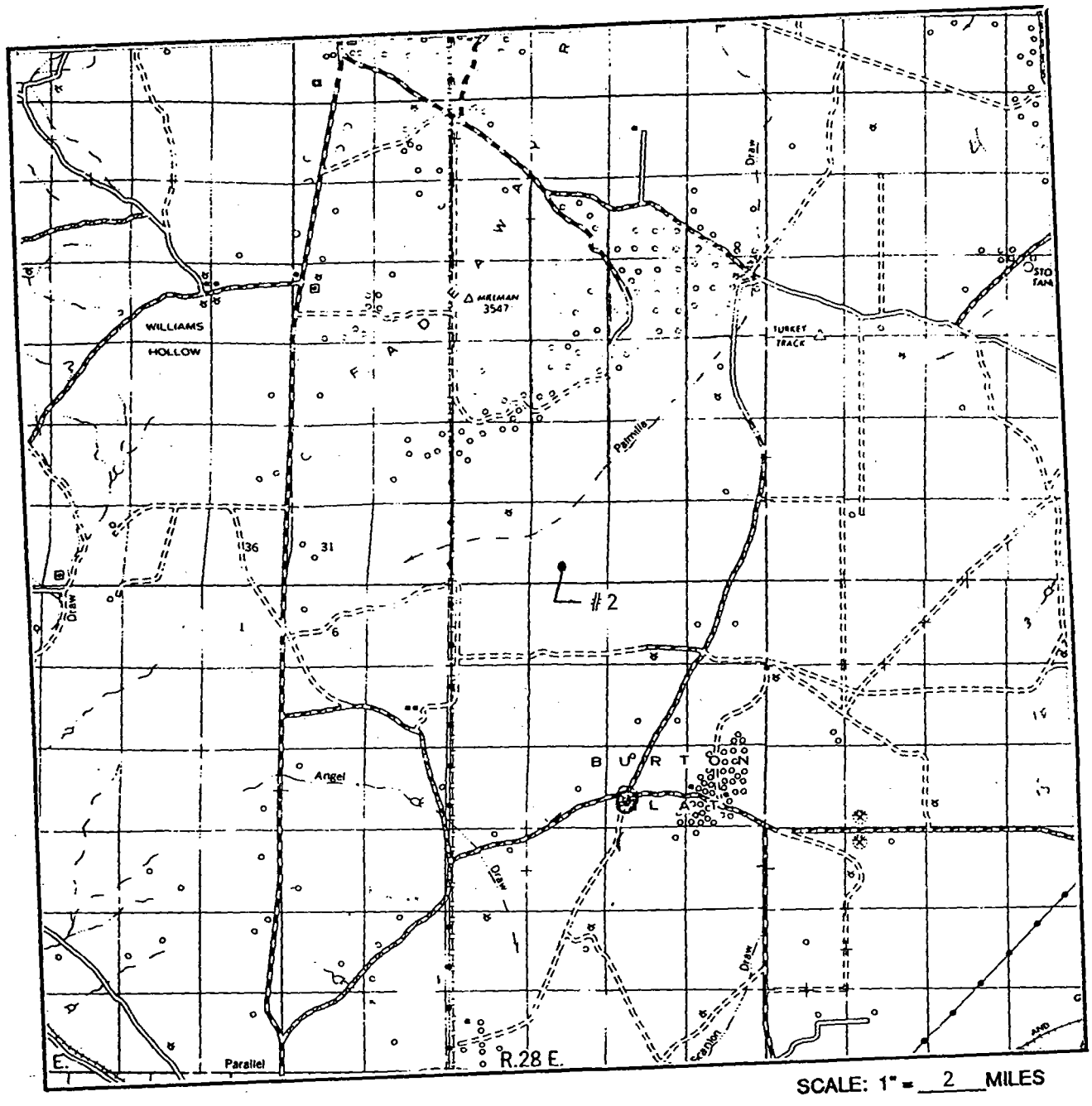
LEASE ARCO FED.

U.S.G.S. TOPOGRAPHIC MAP

ANGEL DRAW, N.M.

JOHN WEST ENGINEERING
HOBBS, NEW MEXICO
(505) 393-3117

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 34 TWP. 19 S RGE. 28 E

SURVEY N.M.P.M.

COUNTY EDDY STATE N.M.

DESCRIPTION 1010' FSL & 1980' FWL

ELEVATION 3295'

OPERATOR PARKER & PARSLEY DEVELOPMENT CO.

LEASE ARCO FED.

JOHN WEST ENGINEERING
HOBBS, NEW MEXICO
(505) 393-3117

Submit 3 Copies to Appropriate District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL API NO.

5. Indicate Type of Lease (BLM) STATE ☐ FEE ☐

6. State Oil & Gas Lease No. NM-0428657

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: Arco Federal

1. Type of Well: OIL WELL [X] GAS WELL ☐ OTHER

2. Name of Operator: Parker & Parsley Development Co.

8. Well No. 2

3. Address of Operator: P. O. Box 3178 Midland, Texas 79702

9. Pool name or Wildcat: Old Millman Ranch (Bone Spr) Assoc.

4. Well Location
Unit Letter N : 1010 Feet From The South Line and 1980 Feet From The West Line

Section 34 Township 19S Range 28E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.) GR (stake)

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐			CASING TEST AND CEMENT JOB	☐		
OTHER: Drill deviated, directional hole	[X]			OTHER:			☐

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

The Proposed Operations: To drill a directional hole from an unorthodox (SHL) surface hole location (item 4 above), to an orthodox bottom hole location (BHL) to fall within a 150 foot radius from the TVD below the center of the quarter-quarter section as staked 660 FS & 1980 FWL, Sec. 34, T19S, R28E Eddy Co, NM.

Administrative approval is requested, under Rule No. 111-C, D & E and Case No. 5813, Order No. R-5353 pertaining to the 80 acre spacing rule for an oil and associated gas pool.

Attached are the modified drilling program, incl an engineered directional procedure.

Attachments: Drilling Program with sidetrack plans, staking plats.

3295

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bob Yeates TITLE Consulting Engineer DATE 8-25-94

TYPE OR PRINT NAME Bob Yeates TELEPHONE NO. 915/ 683-4768

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

CULTURAL RESOURCE SURVEY OF THE PROPOSED ARCO FEDERAL NO. 2 WELL PAD ALTERNATES AND ACCESS ROADS EDDY COUNTY, NEW MEXICO

Prepared for

PARKER AND PARSLEY DEVELOPMENT COMPANY
Midland, Texas

By

Christopher A. Turnbow

Submitted by

John C. Acklen
Christopher A. Turnbow
Co-Principal Investigators

Under

Bureau of Land Management
Antiquities Permit Number 45-2920-94P

Mariah Associates, Inc.
Albuquerque, New Mexico
MAI Project 1215

August 1994

ABSTRACT

The results of Class I (site records check) and Class III (intensive, 100% coverage, pedestrian survey) cultural resource inventories for four well pad locations and two access roads in Eddy County, New Mexico are summarized in the following report. The proposed undertaking is on Bureau of Land Management property. The total area represented by this survey project is approximately 20.7 acres (8.4 ha).

The survey was conducted by Mariah Associates, Inc. on July 21, 1994. Two cultural resource sites and four isolated cultural occurrences were located during the investigation. The original ARCO Federal No. 2 well pad location contains site LA 105624, a Category 2 Ceramic Period occupation with intact features and dark stained soil. This site is recommended as eligible to the National Register of Historic Places and should be avoided by the undertaking. If avoidance is not feasible, site LA 105624 is recommended for further archaeological testing. Alternate 1 well pad location to ARCO Federal No. 2 contains a small Category 1 prehistoric site (LA 105625) that is not recommended as eligible to the National Register of Historic Places. Alternates 2 and 3 contained no archaeological sites. Provided that LA 105624 can be avoided, archaeological clearance for the proposed undertaking is recommended.

1.0 PROJECT BACKGROUND

On July 21, 1994, Mariah Associates, Inc. (Mariah) conducted Class I (site records check) and Class III (intensive, 100% coverage, pedestrian survey) cultural resource inventories of approximately 20.7 acres (8.4 ha) for four alternate locations of a well pad and two proposed access roads in Eddy County, New Mexico. The survey was conducted by Mariah Project Archaeologist Christopher A. Turnbow. John C. Acklen and Christopher A. Turnbow served as Co-Principal Investigators. The survey was requested by Robert Yeates, Operations Engineer of Parker and Parsley Development Company, Midland, Texas.

The proposed project, situated on land administered by the Carlsbad Resource Area of the Roswell District, Bureau of Land Management (BLM), involves construction of a 400 x 400 ft (122 x 122 m) ARCO Federal No. 2 well pad and associated access road. Because an archaeological site exists on the originally proposed ARCO Federal No. 2 location, the cultural resource survey was expanded to include three alternate well pad locations, also measuring 400 x 400 ft (122 x 122 m), designated Alternates 1, 2, and 3. Proposed access road routes surveyed to these locations include a 1,350 x 100 ft (412 x 30 m) corridor which extends northeast from the proposed Alternate 1 to Alternate 2 will pad locations then eastward to an existing access road and a 1,280 x 100 ft (390 x 30 m) corridor that goes southeast from the proposed Alternate 3 well pad to an existing access road. Surveyors from John West Engineering, Hobbs, New Mexico, staked the various pads and roads during the cultural resource investigation.

Because the proposed project will involve ground disturbing activities on federally owned land, the survey was required by federal legislation designed to identify and record nonrenewable cultural resources. The survey was conducted under BLM Antiquities Permit Number 45-2920-94P.

The project area is located in Eddy County, New Mexico, in Township 19 South, Range 28 East, Section 34. The original ARCO Federal No. 2 well pad center point is 660 ft (201 m)

from the south line and 1,980 ft (604 m) from the west line. Alternate 1 is 660 ft (201 m) from the south line and 1,560 ft (476 m) from the west line. Alternate 2 is 1,010 ft (308 m) from the south line and 1,980 ft (604 m) from the west line. Alternate 3 is 1,980 ft (604 m) from the south line and 1,980 ft (604 m) from the west line. The center and four corners of each well pad were staked during or prior to initiation of the survey. The centerlines of the proposed access roads were also staked during the cultural resource survey. These flagged stakes were used for field identification of the inventory area. The corresponding U.S. Geological Survey (USGS) 7.5′ quadrangle map for the project areas is Angel Draw, New Mexico (Provisional 1985) (Figure 1.1).

2.0 ENVIRONMENTAL SETTING

The project area is located northeast of the town of Carlsbad, New Mexico. Prominent physiographic features include Burton Flat, located approximately 2.5 mi (4.0 km) southeast, and Angel Draw, located approximately 3.5 mi (5.6 km) southwest of the project area. Elevation of the project area is approximately 3,290 ft (1,003 m) above mean sea level (amsl). The project area is characterized as nearly flat with very little, if any, topographic relief. Low dune fields cover the southern portion of the project area.

Soils generally consist of the Reeves-Gypsum land-Cottonwood association (Chugg et al. 1971). These loamy soils are characterized as being shallow to moderately deep over gypsum beds and gypsum land. The nearest potential water source is Angel Draw located approximately 3.5 mi (5.6 km) to the southwest. The flora of the survey area is characterized by desert scrubland. Principal species include various grasses., prickly pear, creosote, black bush, and mesquite.

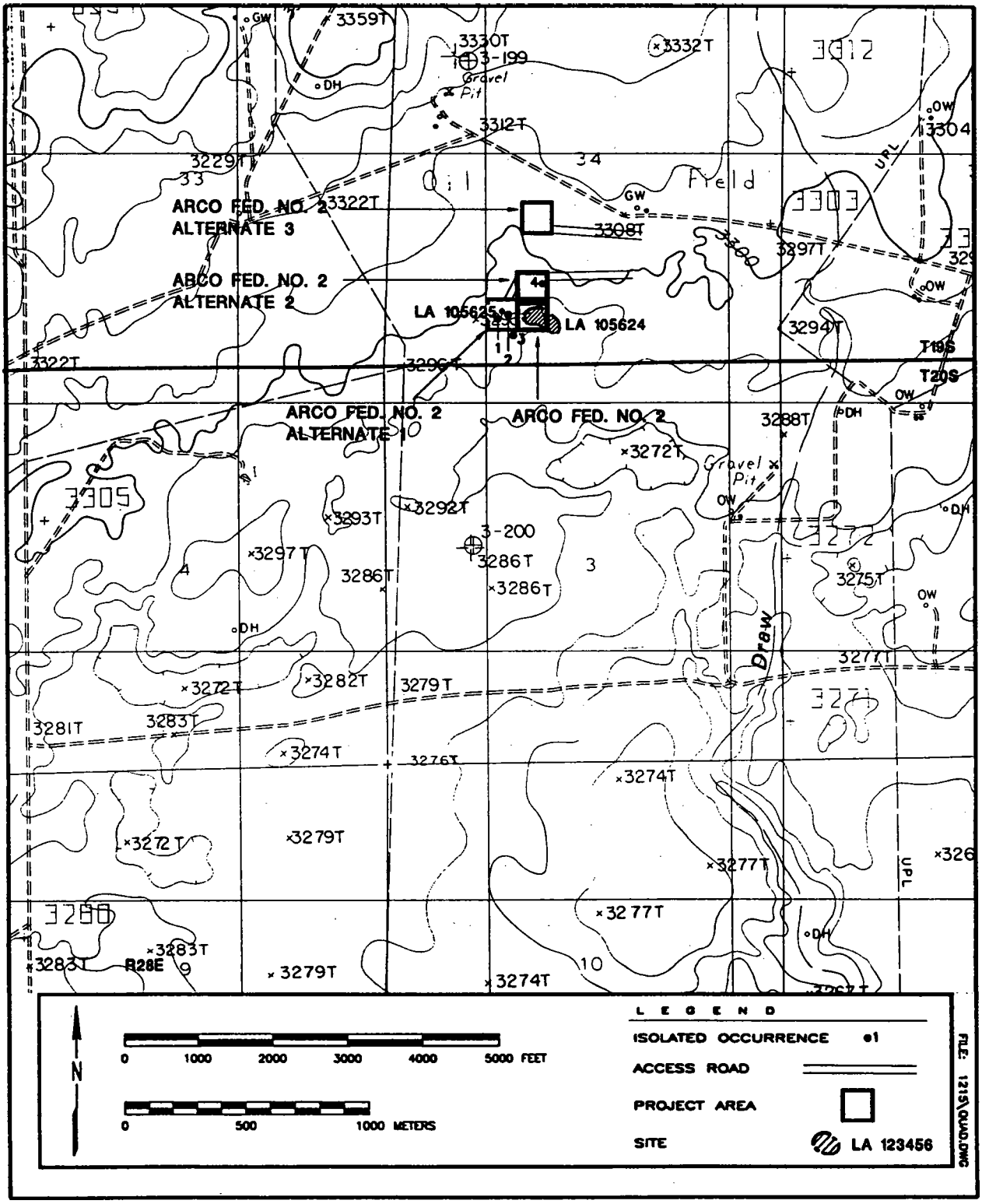


Figure 1.1 **Project Location. Based on Angel Draw, New Mexico Quadrangle, (Provisional Edition 1985), USGS 7.5′ Series (1:24,000 Scale).**

3.0 SURVEY METHODS

Prior to fieldwork, a Class I site records check of the Archaeological Records Management System (ARMS) was conducted via remote terminal to determine if any cultural resources were previously recorded within 1.0 mi (1.6 km) of the project area. The ARMS check revealed that four sites have been previously located within 1.0 mi (1.6 km) of the project area including two lithic scatters (LA 35455 and LA 38128) and two ceramic and lithic scatters (LA 16537 and LA 43380). The ARMS check was followed with a review of the BLM site files in the Carlsbad Resource Area office on July 21, 1994, which revealed four additional recorded sites (LA 102327, LA 102329, LA 104430, and BLM 5641). Site LA 104430 is a large campsite containing numerous burned caliche features and a probable Archaic period dart point. Finally, the State Register of Cultural Properties and the National Register of Historic Places (NRHP) show no listed sites located within the project areas.

The project area was surveyed by a single archaeologist walking nonoverlapping parallel transects spaced at 15 m intervals. Transect lines were marked with pin flags. Once the perimeter was reached, the surveyor reversed course and followed new transects adjacent to the previous line back to the opposite end. If cultural remains were encountered, survey was suspended and an intensive examination conducted to determine if the artifacts were isolated or part of a site.

Operational definitions of site and isolated occurrences (IOs) guided cultural resource detection and documentation. In compliance with federal standards, all cultural manifestations older than 50 years were recorded. Archaeological sites are defined as features or scatters generally consisting of 10 or more artifacts. Fewer artifacts may be documented as a site if they are associated with features or if, in the opinion of the supervisory archaeologist, subsurface cultural deposits are likely. IOs consist of archaeological manifestations displaying limited informational potential beyond that

recorded during survey. These generally include fewer than 10 artifacts; artifacts redeposited and lacking locational context; and single, undatable features. No artifacts were collected.

Light and weather conditions were excellent during the field session. Surface visibility in most of the survey area was excellent at 85%.

4.0 CULTURAL RESOURCE OVERVIEW AND RESEARCH DESIGN

4.1 CULTURAL RESOURCE OVERVIEW

Although specific terminologies may differ, most archaeologists would agree on four fundamental cultural periods in southeastern New Mexico: Paleoindian, Archaic, Ceramic, and Historic.

The Paleoindian period (ca. 10,500-5,500 B.C.) represents the earliest uncontested human occupation in the Southwest. Paleoenvironmental data suggest that the climate was cooler than at present with considerably less variation in temperature between seasons. Paleoindian subsistence is commonly understood to be a focal economy which emphasized big game hunting (Judge 1982). Tool assemblages include relatively large, often fluted, lanceolate unstemmed points frequently found in association with large extinct Pleistocene animals, including mammoth, bison, camel, horse, and modern species of elk, deer, and bear.

The Archaic period (ca. 5,500 B.C.-A.D. 900) coincides with the beginning of the Sand Canyon Postpluvial, when essentially modern climatic conditions commenced. Archaic subsistence is characterized by a diffuse economy (Judge 1982) reflecting a greater reliance on small bodied game and especially, wild plant foods. Mobility was more restricted in extent and cyclical. Advantageous site locations were frequently re-used on a seasonal basis. The archaeological record reflects considerable diversity in tool forms with a greater

emphasis on grinding tools. Archaic points tend to be somewhat shorter and to show extensive morphological variability and less precision in the quality of manufacture. The Archaic period has been divided into at least two periods. Early Archaic sites are fairly uncommon in the area; whereas, Late Archaic sites are better represented (Sebastian and Larralde 1989).

The Ceramic period (ca. A.D. 600/900-1540) is marked by the appearance of brown ware pottery, small points, and, later, sedentism and some horticulture in certain areas. Beginning dates are variously placed between A.D. 100 and 900. The initial appearance of Ceramic period traits occurred primarily along major river valleys and probably reflects the addition of new traits to the Late Archaic assemblage base. Throughout the duration of the Ceramic period, the western edge of the Llano Estacado seems to have been a boundary between the Anasazi/Mogollon and the Plains culture areas. Two primary chronological sequences have been used to characterize Ceramic period developments in southeastern New Mexico (Sebastian and Larralde 1989). These include classifications developed by Lehmer (1948) and Leslie (1979) based on Corley (1965).

The Historic period (after A.D. 1540) commences with the earliest Anglo-American use of southeastern New Mexico. Occupation during the early 1860s was largely related to the subsistence requirements of early forts built and staffed to deal with the Indian "problem." Once the Indians were contained and the Homestead Act of 1862 was passed, cattle ranchers and settlers began to move into the area. With the construction of the railroad in the late 1890s, homesteaders began to arrive in large numbers. The railroad facilitated the area's integration into the national economy. Increasingly, the huge cattle ranches characteristic of the late 1800s were broken up into smaller ranches and farms. Homesteaders practiced a mixture of agriculture and herding on small parcels of land. Droughts between 1909 and 1912 discouraged a number of "nesters." Droughts and the Great Depression of the 1930s effectively ended the feasibility of subsistence farming and

ranching on small plots of land. Since that time, the size of farms and ranches in the area has substantially increased.

4.2 RESEARCH DESIGN FOR THE PROJECT

The primary goal of archaeological surveys on federal property is to provide an inventory of cultural resources. This information is necessary to properly protect and manage those resources. Additionally, information obtained about archaeological resources can serve to address general and regional research domains about past occupations, which include the chronology of occupation, site subsistence, and settlement.

5.0 SURVEY RESULTS

Two archaeological sites and four IOS were located during the course of the survey.

5.1 SITES

5.1.1 LA 105624 (MA 1215-1)

This large site is characterized as an artifact scatter with features located in a prominent dune field (Figure 5.1). The site measures 120 m northwest-southeast by 100 m northeast-southwest and is situated at an elevation of 3,290 ft (1,003 m) amsl. The dunes are covered in a fine-grained sand with areas of sandy loam in the blowouts. Vegetation is sparse and limited to mesquite and grasses. Ground visibility was around 85%.

The artifact assemblage of the site was sparse and consists of chipped- and ground-stone artifacts as well as a single ceramic. Most artifacts were found in the northern portion of the site. Ground-stone and chipped-stone artifacts roughly occur in equal numbers. A

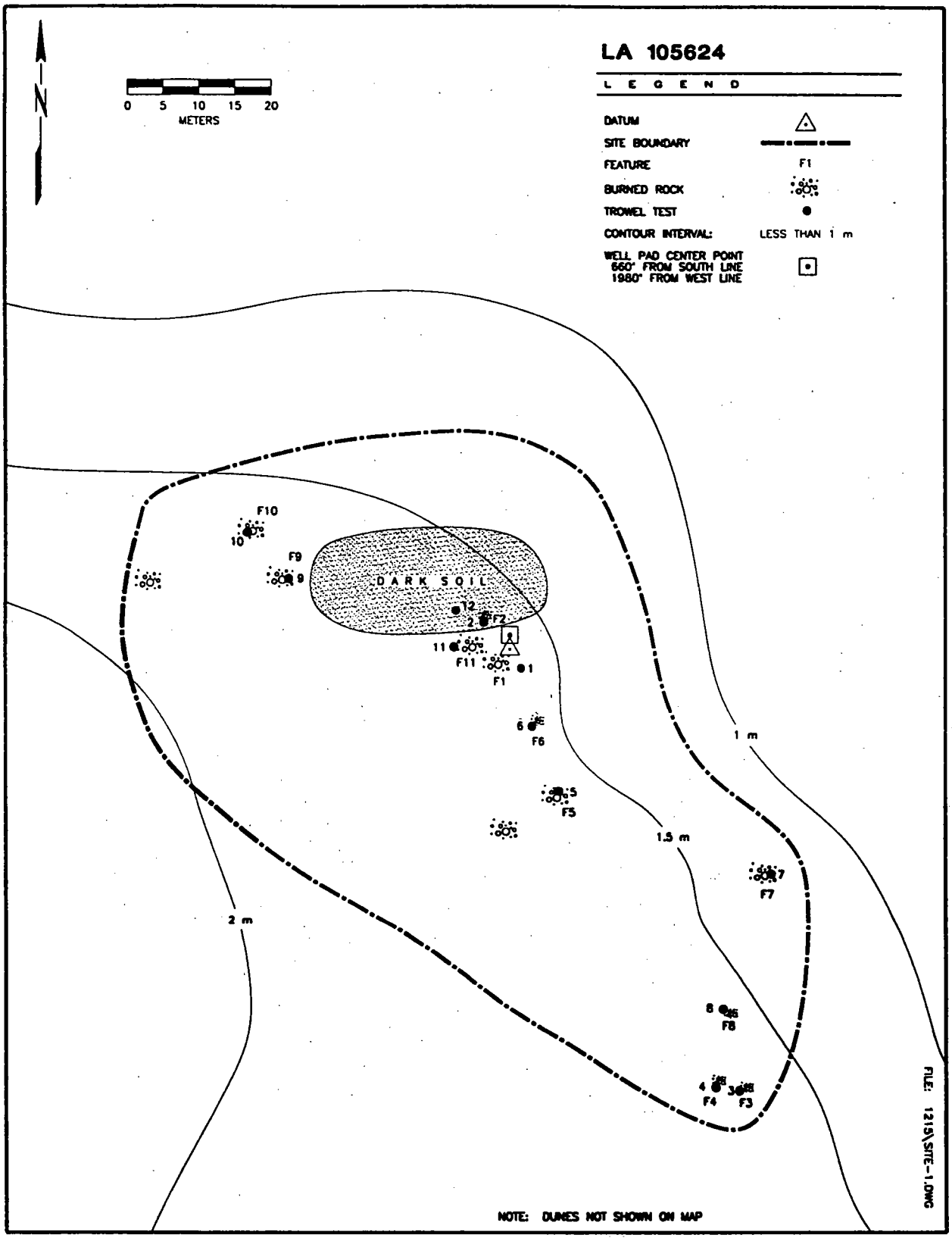


Figure 5.1 Site LA 105624, Site Plan.

sample of 21 specimens was analyzed in the field and represents approximately 25% of the assemblage.

Chipped-stone artifacts observed on the site included only debitage. The inventoried chipped stone includes three cores, three cortical flakes, and three noncortical flakes. Two hammer stones were also documented. Most of the raw material used in the chipped-stone production were purple, red, and gray quartzites although red cherts and a cherty limestone or dolomite were also exploited.

Ground-stone artifacts include eight metate fragments, a mano fragment, and an unidentified ground stone fragment. The metate fragments include a nearly complete, slightly ground slab metate and a possible trough metate. They exhibit plano, concave, or biconcave ground surfaces and were manufactured from well cemented, fine- and coarse-grained sandstones.

A single coarse tempered El Paso Brown body sherd was found near the center of the site. This specimen indicates a site occupation during the Ceramic Period which dates between A.D. 400 and 1500s.

Eleven thermal features were documented on the site. They are characterized as deflated or semi-deflated scatters of thermally-altered rock. Table 5.1 provides information on the features. In general, they contain 20 or more pieces of burned caliche in a reasonably tight cluster. Feature measurements range from 0.75 x 0.90 m to 2.0 x 4.0 m. Although burned caliche represents the bulk of the thermally-altered rock, sandstone and broken ground-stone fragments, also of sandstone, were observed in the features. Three of the features (Features 2, 9, and 10) contained dark, discolored soil or ashy fill, but no charcoal was identified in any of the tests.

Table 5.1 Site LA 105624 Features.

Feature No.	Dimensions	Contents	Test Results
1	0.5 x 1.0 m	20+ burned caliche	Trowel Test 1, negative
2	4.0 x 2.0 m	50+ burned caliche (small), 1 sandstone metate fragment, 1 flake	Trowel Test 2, soil darker but no artifacts or charcoal
3	1.25 x 1.25 m	40+ burned caliche, 2 sandstone	Trowel Test 3, negative
4	2.5 x 1.0 m	20+ burned caliche	Trowel Test 4, negative
5	2.5 x 1.0 m	20+ burned caliche	Trowel Test 5, 1 burned caliche in upper few cm
6	3.0 x 2.0 m	40+ burned caliche (small)	Trowel Test 6, negative
7	0.75 x 0.65 m	25+ burned caliche	Trowel Test 7, negative
8	1.0 x 1.0 m	18+ burned caliche, 1 core	Trowel Test 8, negative
9	0.9 x 0.75 m	30+ burned caliche, ground stone, 2 sandstone	Trowel Test 9, 1 burned caliche, darker soil, no charcoal
10	2.0 x 1.5 m	25+ burned caliche, 4 sandstone metate fragments, Plano-Convex basin metate (sandstone)	Trowel Test 10, very dark stain with burned caliche at 5 cm bgs
11	3.0 x 2.0 m	30+ burned caliche	Trowel Test 11, dark soil to 5 cm

A large area of light brown soil staining is located in the northern portion of the site. Large dunes are found in the area and may cover some of these deposits. The discolored soil is interpreted as a possible midden deposit. This area also produced the highest density of artifacts on the site. A trowel test into this deposit revealed only 5 cm of loose brown sand resting on a compact, tan sand stratum.

Trowel tests were placed along the edge of each feature and in the dark soil area on the north side of the site. In all, twelve were excavated to a maximum depth of from 5 to 20 cm below ground surface (bgs). Four contained discolored or dark soil. Test 2 in Feature 2 and Test 9 in Feature 9 yielded dark fill soil to 5 cm bgs. Test 10 in Feature 10 produced a very dark, ashy fill with buried, buried caliche at 5 to 8 cm bgs. This feature may be the best preserved and suggests an intact basin-shaped pit filled with ashy soil and burned caliche. Test 12, located in the possible midden area on the north side of the site, was excavated to 20 cm bgs. The discolored soil extended only from the surface to 5 cm bgs. Below that depth, a compact, light brown sand was encountered.

From the data collected, site LA 105624 is interpreted as a camp or series of camps with at least one component dating to the Ceramic Period. The features are clustered in four areas, suggesting the possibility of discreet social groups or periods of occupation. The presence of numerous ground-stone artifacts could argue that plant food processing was a major activity on the site.

The site is classified as a Category 2 resource and contains well preserved features and a large area of dark discolored soil that may represent a midden deposit. It also has an artifact assemblage not sufficiently analyzed during the survey. Given the site's potential to contribute further meaningful data on its prehistoric occupations, the site is recommended as eligible to the NRHP. The site area should be avoided by the proposed undertaking. If avoidance is not feasible, a program of archaeological test excavations and/or mitigation should be initiated.

5.1.2 LA 105625 (MA 1215-2)

This small site consists of a sparse artifact scatter located in a large blowout surrounded by low dunes of less than 1.0 m in height (Figure 5.2). The site measures 6 m northwest-southeast by 4 m northeast-southwest and lies at an elevation of 3,295 ft (1,004 m) amsl. The soils are fine sands and sandy loams. Vegetation in the area is limited to mesquites and a few low grasses. Surface visibility in the area was approximately 95%.

The artifact assemblage was completely analyzed in the field. A total of 12 artifacts were present on the surface. They included five fragments of a single coarse sandstone metate, five cortical core flakes, one noncortical core flake, and one noncortical angular shatter. The metate was manufactured from a coarse sandstone and exhibits one slightly concave ground surface. Five of the core flakes and the angular shatter fragment were produced from a single chalcedony pebble. The other flake was a tan quartzite. In addition, a single piece of burned caliche was found on the site.

Two trowel tests were excavated in the scatter. Test 1 was located 25 cm east of datum and Test 2 was adjacent to the burned caliche and a metate fragment at 1.9 m northwest of datum. The stratigraphy of both showed loose, tan fine-grained sand from the surface to 9-11 cm bgs followed by a well cemented, compact, whitish-tan sand to 25 cm bgs. No artifacts or cultural deposits were found in either test.

The site is interpreted as a very short-term camp. A single chalcedony pebble was initially reduced at the site. The broken metate and the burned caliche may reflect the scattered remains of a deflated hearth. Since no diagnostic artifacts were observed, the temporal affiliation of the site is unknown.

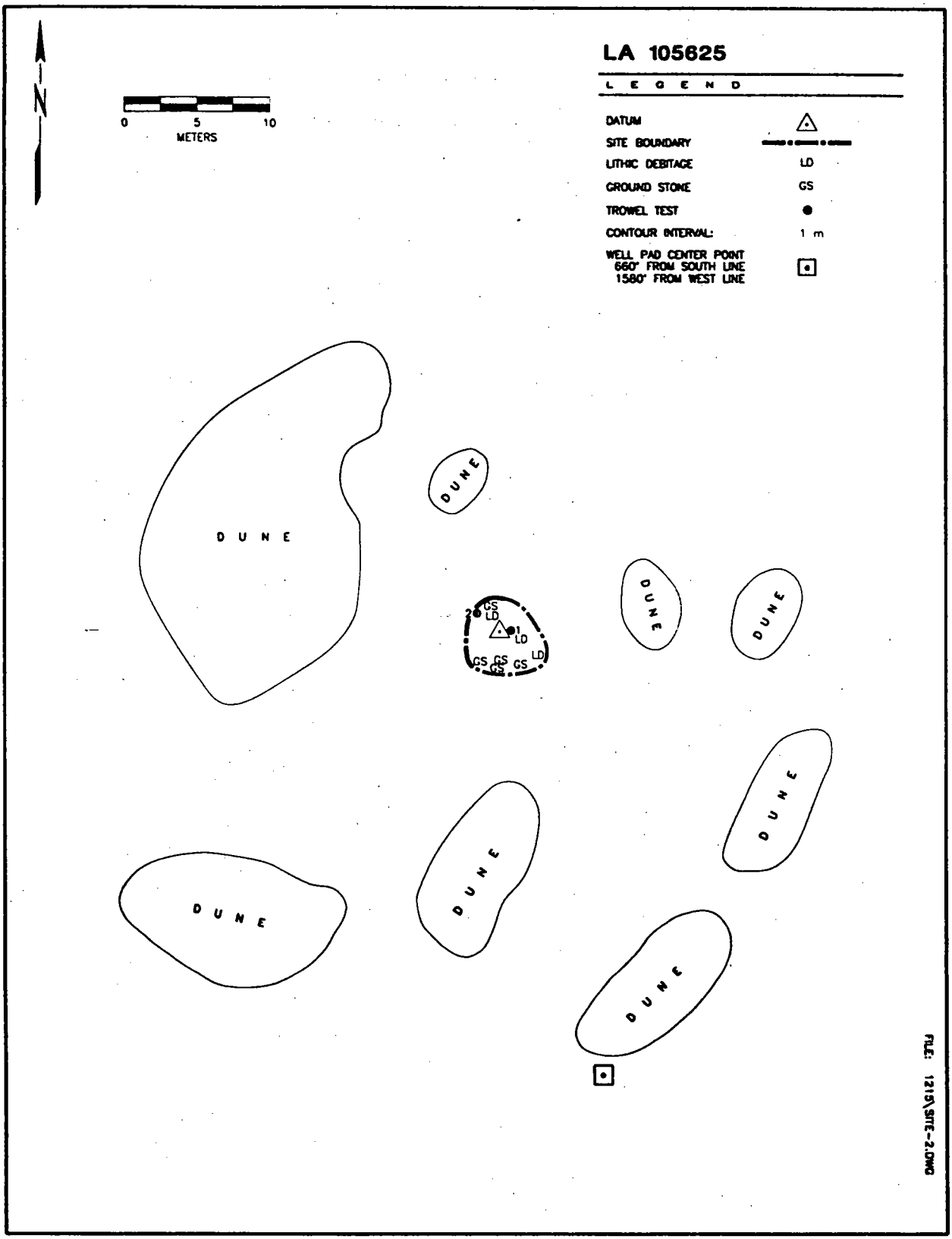


Figure 5.2 Site LA 105625, Site Plan.

Given the absence of subsurface cultural deposits and the complete documentation of the surface assemblage, the data potential of the resource has been exhausted. This Category 1 site is not eligible to the NRHP, and no further archaeological work is deemed warranted.

5.2 ISOLATED OCCURRENCES

Four IOs were located during the field investigations. Two IOs (IO 1-2) were noted in ARCO Federal No. 2 Alternate 1. One (IO 3) was located 20 m south of the southeast corner of that same proposed well pad location. It consisted of a pile of four artifacts that may suggest recent collecting. The last one (IO 4) was found in ARCO Federal No. 2 Alternate 2. Table 5.2 contains the specific information on these finds.

Table 5.2 Isolated Occurrences.

IO No.	Description	Legal
1	Two pieces of burned caliche, 3.0-4.0 cm in diameter	T19S, R28E, Sec. 34 SW¼, SE¼, SW¼
2	One piece of burned caliche, 4.0 cm diameter	T19S, R28E, Sec. 34 SW¼, SE¼, SW¼
3	One red quartzite core, 50% cortex, 4 flakes removed, 6.0 x 4.8 x 3.1 cm; 1 red chert primary core flake, 100% cortex, 3.4 x 2.6 x 0.6 cm; 1 gray chert primary core flake, 10% cortex, 1.8 x 1.2 x 0.6 cm; 1 gray chert angular shatter, 30% cortex, 1.6 x 1.5 x 1.4 cm.	T19S, R28E, Sec. 34 SW¼, SE¼, SW¼
4	One piece of burned caliche, 8.0 m diameter	T19S, R28E, Sec. 34 NE¼, SE¼, SW¼

6.0 SUMMARY AND RECOMMENDATIONS

The cultural resource survey of the four well pads and related access roads for ARCO Federal No. 2 identified two archaeological sites (LA 105624 and LA 105625) and four IOs. The data potential of the IOs was exhausted during their recordation, and they are not recommended for further investigation.

The original ARCO Federal No. 2 well pad contains a Category 2 archaeological site dating to the Ceramic Period. This site is considered to be a significant cultural resource with data potential beyond that recorded during the survey and, therefore, is recommended as eligible to the NRHP. It is further recommended that LA 105624 be completely avoided during the proposed undertaking. This includes restricting vehicular traffic across the area. If avoidance is not practical, an archaeological program of test excavations and/or mitigation should be initiated.

The survey of Alternate 1 well pad identified LA 105625 (a Category 1 site) and two IOs. None of the cultural resources found in Alternate 1 are recommended as eligible to the NRHP. The Alternate 2 and 3 well pads and the ROWs for the two access roads contained no archaeological sites. For these reasons, archaeological clearance of all three alternate well pad locations and the proposed access roads is recommended.

Provided that site LA 105624 is avoided by the undertaking, cultural resource clearance is recommended for the construction of ARCO Federal No. 2 using Alternate 1, 2, or 3 well pad and access road. If cultural remains are unearthed during ground moving activities, the BLM should be notified immediately, and an assessment of the find should be conducted by a qualified archaeologist.

7.0 REFERENCES CITED

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PARKER & PARSLEY DEVELOPMENT CO.
ARCO FEDERAL NO. 2
EDDY COUNTY, N.M.

RECOMMENDED BASIC DRILLING PROGRAM

Directional Control

1. Plan: To guide the wellbore from a 1010 FS & 1980 FWL SHL to a target area at 6350' TVD, at an orthodox (standard) location under the (originally) preferred well location 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E in Old Millman Ranch (Bone Spring) Associated field.

2. Method:
   a) Surface, 0-450', no control
   b) Intermediate, 450-1000', maintain conventional straight hole.
   c) Longstring, 1000 - 6500 (to drill a 4° deviated hole, 1230'- T.D.)
      1) Run gyro - directional survey at 100' intervals inside 8 5/8 csg before drilling out, determining BHL (950'md).
      2) Plan deviation and directional control measures.
      3) Drill out in 7 7/8 hole w/ slick dc's, make 230' new hole. run S. S. survey & POH for appropriate BHA (1230')
         a) Run DHM to: 1] build angle, &/or
            2] turn hole south
         b) Or, if angle & direction acceptable, RIH NMDC on bit, proper stabilization to achieve short term objectives and drill ahead.
         c) Run single shot surveys at 4 to 8 connections, permitting acceptable deviation & directional control down to 4300'
         d) Run (2nd) gyro survey inside dp (4300 - 750'md)
            1] make motor (DHM) run, if direction off,
            2] Make any necessary changes in stabilization and drill ahead.
      4) Drill to T.D. Run (3rd) gyro inside drill string, f/ T.D. - 4100' for correct BHL & NMOCD. The desired BHL is to fall within a 150' radial area encircling the (verticle) TVD under a 660 X 1980' surface location.

Bob Yeates

PARKER & PARSLEY DEVELOPMENT CO.
P. O. BOX 3178
MIDLAND, TEXAS 79702

DRILLING PROGRAM
DATE: 8/4/94
FOR: Contractor & Files

CONTRACTOR: McGee Drlg. Corp.-Rig #2 FIELD: Old Millman Rch(Bone Spring)
LEASE: Arco Federal WELL NO: 2
LOCATION: * 1010' FS & 1980 FWL, Sec. 34, T-19-S, R-28-E, Eddy Co., NM
DIRECTIONS: Go 8 mi. E. from carlsbad on 62/180. Turn L. (N) on CR 242 at mile marker 44. Go 6 mi. N & W to Oxy plant, turn Right (N) on wide caliche road, CR 242. Proceed 3 mi. North, turn Left (W) at P&P sign. Go West 2 1/2 mi. turn L. (S) 1/4 mi.

*SHL: A DEVIATED HOLE WILL BE DIRECTED TO 150' TARGET AT TVD, 660 FS & 1980 FWL
ELEVATIONS: (Surveyor's GL 3295) ACTUAL GL _____ DF _____ KB _____

CASING PROGRAM

CONDUCTOR =	" Hole		Csg @		Depth
SURFACE =	17 1/2" Hole	13 3/8, 48# H-40 STC	Csg @	450	Depth
PROTECTIVE =	11 " Hole	8 5/8", 24# K-55 STC	Csg @	1000	Depth
PRODUCTION =	7 7/8 " Hole	5 1/2, 15.50# K-55 L&STC	Csg @	6500	Depth

MUD PROGRAM

INTERVALS	TYPE	PROPERTIES	REMARKS
0 - 450	Spud Mud	8.4 - 9.5, 32 - 62 vis	Steel pits
* 450 - 1000	Brine	N/C, paper sweeps *	Reserve pits,lime-pH
1000 - 6000	Fresh Water	N/C, PHB-LCM sweeps *	Outer reserve,caust-pH
6000 0 T.D.	FW Gel - PAC	8.5-8.8,34-36 vis,10c.c. W.L.*	Stell pits,caustic-pH

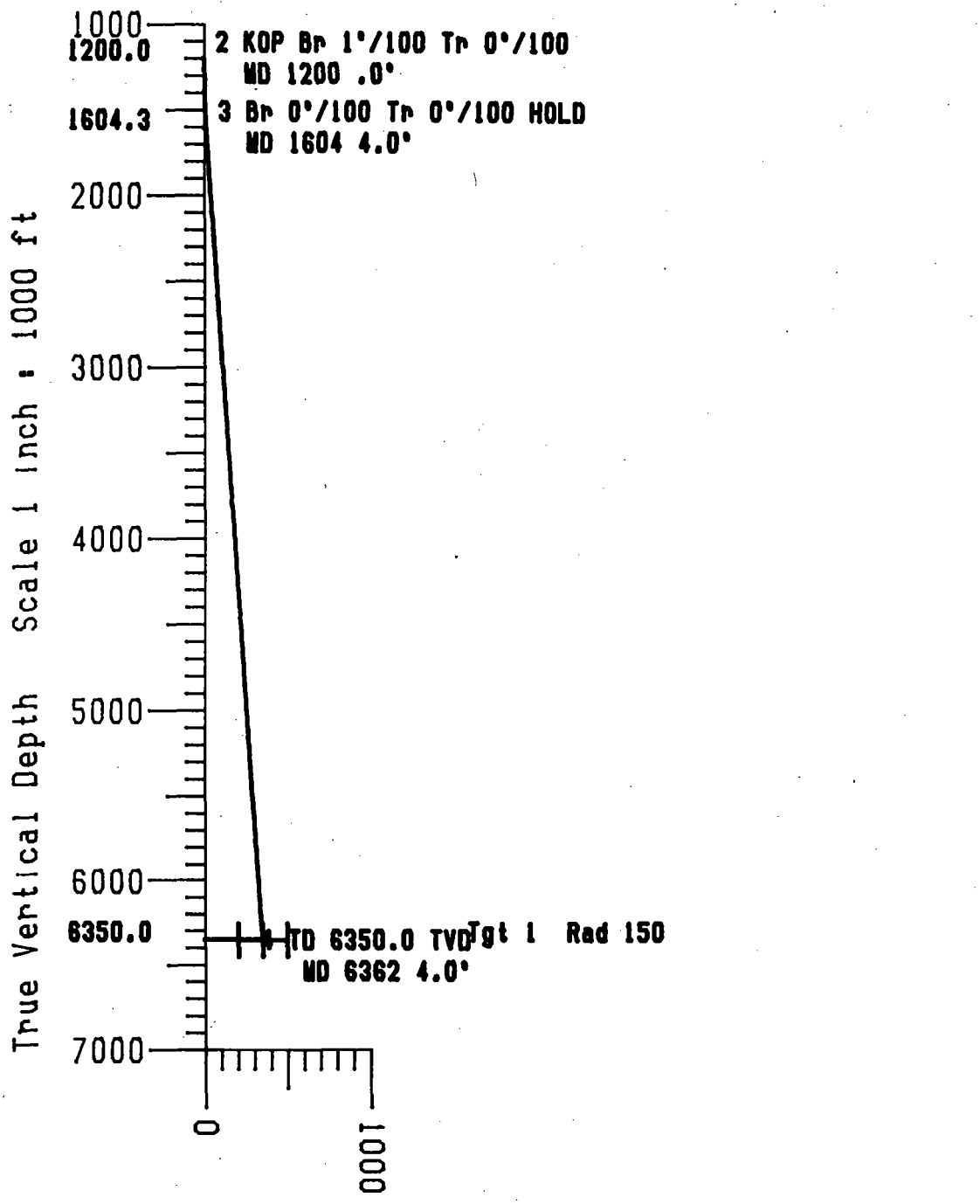
* FW GEL-LCM SWEEPS FOR SEEPAGE & CUTTINGS REMOVAL, AS REQUIRED.

GEOLOGICAL FORMATION	TOPS, INTERVAL DEPTHS	REMARKS
T/Salt	750 - 800	Wash-outs,boulders
B/Salt	900 - 950	
Delaware	3030	Possible wt.increase
Bowchy Canyon	3150	due to formation wtr

SCIENTIFIC DRILLING
FOR
PARKER AND PARSLEY
ARCO FEDERAL #2

IN
EDDY COUNTY, NEW MEXICO

DATE: 08-02-94

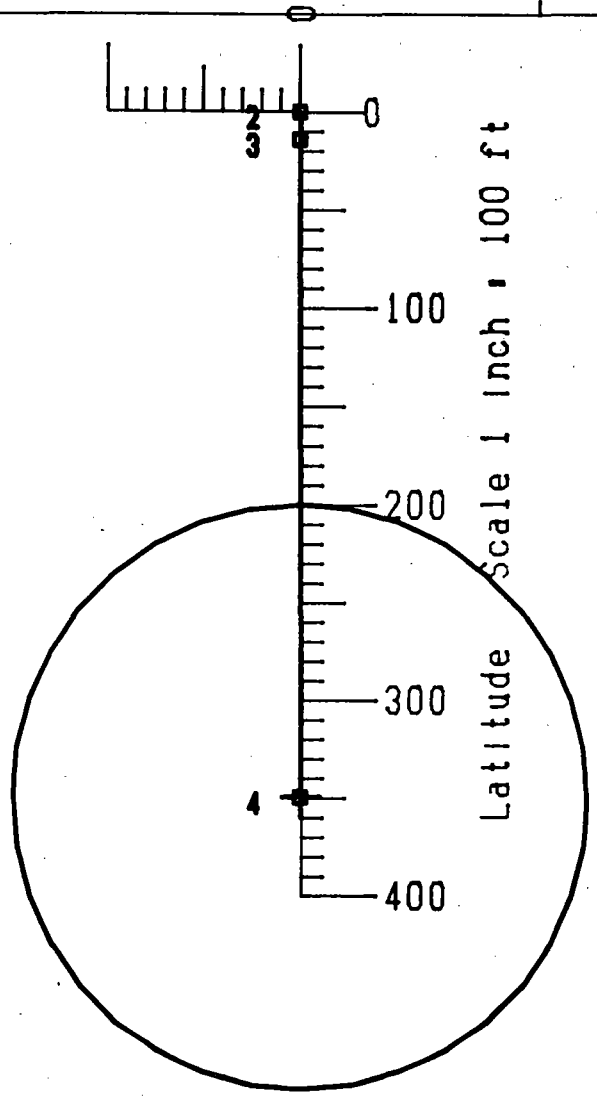


PLANE OF VERT SECTn S00.00E

SCIENTIFIC DRILLING
FOR
PARKER AND PARSLEY
ARCO FEDERAL #2

IN
EDDY COUNTY, NEW MEXICO

DATE: 09-02-94



PLANE OF VERT SECTn 900.00E
PLOT DATE 09-02-1994

TARGET DETAILS

No	TVD	Lat	Dep
1	6350.0	-350.0	0.0

WELL PROPOSAL

Sec	MD	TVD	VS	INC	DIR	LAT	DEP	TGT
1	0.0	0.0	0.0	0.0	900.00E	0.0	0.0	
2	1200.0	1200.0	0.0	0.0	900.00E	0.0	0.0	
3	1804.8	1804.3	14.3	4.0	900.00E	-14.3	0.0	
4	6362.2	6350.0	350.0	4.0	900.00E	-350.0	0.0	1

ARCOFED2 ARCO FEDERAL #2 8-01-94
Plane of Vertical Section 180.00

Section 1 (Hold Section)

MD	Inc	Dir	Tvd	Vsec	Lat	Dep	Values to be applied Build	Turn	Dleg	T Face
1200.0	0.00	180.00	1200.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0
1300.0	1.00	180.00	1300.0	0.9	-0.9	-0.0	1.0	0.0	1.0	0.0
1400.0	2.00	180.00	1400.0	3.5	-3.5	-0.0	1.0	0.0	1.0	0.0
1500.0	3.00	180.00	1499.9	7.9	-7.9	-0.0	1.0	0.0	1.0	0.0
1600.0	4.00	180.00	1599.7	14.0	-14.0	-0.0	1.0	0.0	1.0	0.0

Section 3 (Hold Section)

MD	Inc	Dir	Tvd	Vsec	Lat	Dep	Values to be applied Build	Turn	Dleg	T Face
1604.6	4.05	180.00	1604.3	14.3	-14.3	0.0	0.0	0.0	0.0	0.0
1700.0	4.05	180.00	1699.4	21.0	-21.0	-0.0	0.0	0.0	0.0	0.0
1800.0	4.05	180.00	1799.2	28.1	-28.1	-0.0	0.0	0.0	0.0	0.0
1900.0	4.05	180.00	1898.9	35.1	-35.1	-0.0	0.0	0.0	0.0	0.0
2000.0	4.05	180.00	1998.7	42.2	-42.2	-0.0	0.0	0.0	0.0	0.0
2100.0	4.05	180.00	2098.4	49.2	-49.2	-0.0	0.0	0.0	0.0	0.0
2200.0	4.05	180.00	2198.2	56.3	-56.3	-0.0	0.0	0.0	0.0	0.0
2300.0	4.05	180.00	2297.9	63.4	-63.4	-0.0	0.0	0.0	0.0	0.0
2400.0	4.05	180.00	2397.7	70.4	-70.4	-0.0	0.0	0.0	0.0	0.0
2500.0	4.05	180.00	2497.4	77.5	-77.5	-0.0	0.0	0.0	0.0	0.0
2600.0	4.05	180.00	2597.2	84.5	-84.5	-0.0	0.0	0.0	0.0	0.0
2700.0	4.05	180.00	2696.9	91.6	-91.6	-0.0	0.0	0.0	0.0	0.0
2800.0	4.05	180.00	2796.7	98.6	-98.6	-0.0	0.0	0.0	0.0	0.0
2900.0	4.05	180.00	2896.4	105.7	-105.7	-0.0	0.0	0.0	0.0	0.0
3000.0	4.05	180.00	2996.2	112.7	-112.7	-0.0	0.0	0.0	0.0	0.0
3100.0	4.05	180.00	3095.9	119.8	-119.8	-0.0	0.0	0.0	0.0	0.0
3200.0	4.05	180.00	3195.7	126.9	-126.9	-0.0	0.0	0.0	0.0	0.0
3300.0	4.05	180.00	3295.4	133.9	-133.9	-0.0	0.0	0.0	0.0	0.0
3400.0	4.05	180.00	3395.2	141.0	-141.0	-0.0	0.0	0.0	0.0	0.0
3500.0	4.05	180.00	3494.9	148.0	-148.0	-0.0	0.0	0.0	0.0	0.0

ARCOFED2 ARCO FEDERAL #2

MD	Inc	Dir	Tvd	Vsec	Lat	Dep	Values to be applied Build	Turn	Dleg	T Face
3600.0	4.05	180.00	3594.7	155.1	-155.1	-0.0	0.0	0.0	0.0	0.0
3700.0	4.05	180.00	3694.4	162.1	-162.1	-0.0	0.0	0.0	0.0	0.0
3800.0	4.05	180.00	3794.2	169.2	-169.2	-0.0	0.0	0.0	0.0	0.0
3900.0	4.05	180.00	3893.9	176.3	-176.3	-0.0	0.0	0.0	0.0	0.0
4000.0	4.05	180.00	3993.7	183.3	-183.3	-0.0	0.0	0.0	0.0	0.0
4100.0	4.05	180.00	4093.4	190.4	-190.4	-0.0	0.0	0.0	0.0	0.0
4200.0	4.05	180.00	4193.2	197.4	-197.4	-0.0	0.0	0.0	0.0	0.0
4300.0	4.05	180.00	4292.9	204.5	-204.5	-0.0	0.0	0.0	0.0	0.0
4400.0	4.05	180.00	4392.7	211.5	-211.5	-0.0	0.0	0.0	0.0	0.0
4500.0	4.05	180.00	4492.4	218.6	-218.6	-0.0	0.0	0.0	0.0	0.0
4600.0	4.05	180.00	4592.2	225.7	-225.7	-0.0	0.0	0.0	0.0	0.0
4700.0	4.05	180.00	4691.9	232.7	-232.7	-0.0	0.0	0.0	0.0	0.0
4800.0	4.05	180.00	4791.7	239.8	-239.8	-0.0	0.0	0.0	0.0	0.0
4900.0	4.05	180.00	4891.4	246.8	-246.8	-0.0	0.0	0.0	0.0	0.0
5000.0	4.05	180.00	4991.2	253.9	-253.9	-0.0	0.0	0.0	0.0	0.0
5100.0	4.05	180.00	5091.0	260.9	-260.9	-0.0	0.0	0.0	0.0	0.0
5200.0	4.05	180.00	5190.7	268.0	-268.0	-0.0	0.0	0.0	0.0	0.0
5300.0	4.05	180.00	5290.5	275.1	-275.1	-0.0	0.0	0.0	0.0	0.0
5400.0	4.05	180.00	5390.2	282.1	-282.1	-0.0	0.0	0.0	0.0	0.0
5500.0	4.05	180.00	5490.0	289.2	-289.2	-0.0	0.0	0.0	0.0	0.0
5600.0	4.05	180.00	5589.7	296.2	-296.2	-0.0	0.0	0.0	0.0	0.0
5700.0	4.05	180.00	5689.5	303.3	-303.3	-0.0	0.0	0.0	0.0	0.0
5800.0	4.05	180.00	5789.2	310.3	-310.3	-0.0	0.0	0.0	0.0	0.0
5900.0	4.05	180.00	5889.0	317.4	-317.4	-0.0	0.0	0.0	0.0	0.0
6000.0	4.05	180.00	5988.7	324.5	-324.5	-0.0	0.0	0.0	0.0	0.0
6100.0	4.05	180.00	6088.5	331.5	-331.5	-0.0	0.0	0.0	0.0	0.0
6200.0	4.05	180.00	6188.2	338.6	-338.6	-0.0	0.0	0.0	0.0	0.0
6300.0	4.05	180.00	6288.0	345.6	-345.6	-0.0	0.0	0.0	0.0	0.0
6362.2	4.05	180.00	6350.0	350.0	-350.0	0.0	0.0	0.0	0.0	0.0

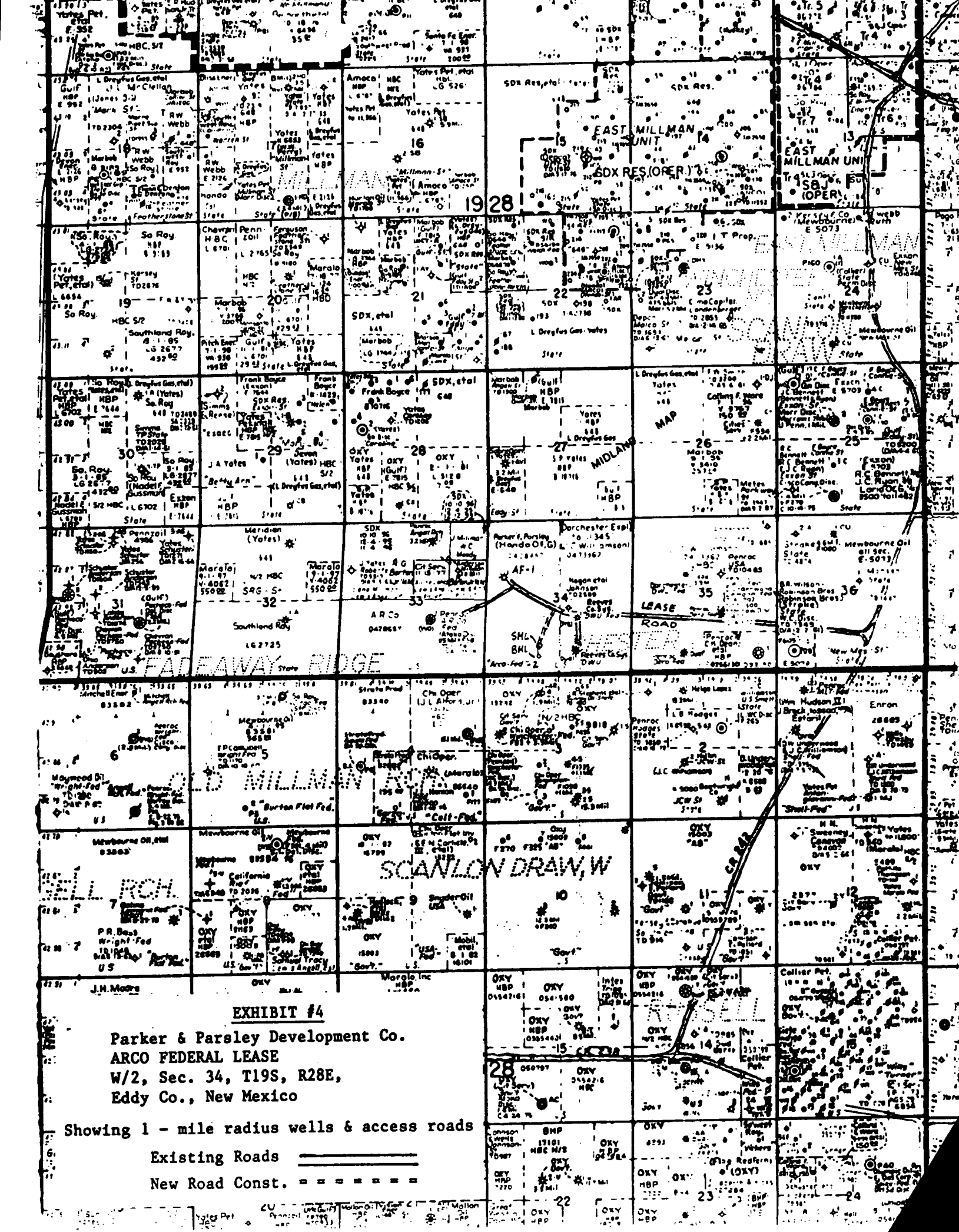


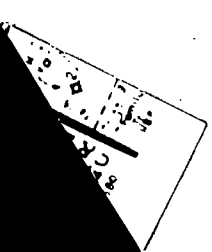
EXHIBIT #4

Parker & Parsley Development Co.
ARCO FEDERAL LEASE
W/2, Sec. 34, T19S, R28E,
Eddy Co., New Mexico

Showing 1 - mile radius wells & access roads

Existing Roads ———

New Road Const. - - - - - -



PARKER & PARSLEY
DEVELOPMENT COMPANY

P O Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

Reeves County Systems, Inc.
Attn: Mr. Robert Hillin
P.O. Box 152
Odessa, TX 79760

Re: Arco Federal No. 2
Eddy County, New Mexico

Dear Mr. Hillin:

This is to inform you of Parker & Parsley's intent to directionally drill the aforementioned well from a site 1010 FS & 1980 FWL of Sec. 34 to an orthodox bottomhole location under the preferred location being 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E, offsetting your acreage. The surface hole location was necessarily moved to an acceptable area appropriately out of an identified archaeological site. A base map with designated access roads and our drilling plans are enclosed.

Please waive your rights to any objections to our above mentioned plans by signifying in the space provided notarizing and returning one copy of this letter. I would be pleased to provide any additional information should the need arise. Thank you for your attention to this matter.

Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Bob Yeates
Consulting Engineer

Please mail me a copy of surveys @ T.D.

Waiver: R. D. Hillin
Mr. Robert Hillin
Reeves County Systems, Inc.

cc: Michael Stogner, NMOCD, Santa Fe, NM
L. Anderson/Well File
W. Gibson - S. Owen

BY/mm

T.M. Reeves
Well File (1379)

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

CHI Operating
Attn: David Harrison
P.O. Box 1799
Midland, TX 79702

Re: Arco Federal No. 2
Eddy County, New Mexico

Dear Mr. ~~Hillin~~ Harrison

This is to inform you of Parker & Parsley's intent to directionally drill the aforementioned well from a site 1010 FS & 1980 FWL of Sec. 34 to an orthodox bottomhole location under the preferred location being 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E, offsetting your acreage. The surface hole location was necessarily moved to an acceptable area appropriately out of an identified archaeological site. A base map with designated access roads and our drilling plans are enclosed.

Please waive your rights to any objections to our above mentioned plans by signifying in the space provided notarizing and returning one copy of this letter. I would be pleased to provide any additional information should the need arise. Thank you for your attention to this matter.

Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Bob Yeates
Consulting Engineer

Waiver:
David Harrison
CHI Operating

cc: Michael Stogner, NMOCO, Santa Fe, NM
L. Anderson/Well File
W. Gibson S. Owen

BY/mm

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

Penroc Oil Corp.
Attn: M.Y. Merchant
P.O. Box 5970
Hobbs, NM 88241

Re: Arco Federal No. 2
Eddy County, New Mexico

(typist error)

Dear Mr. ~~Hillin:~~ Merchant

This is to inform you of Parker & Parsley's intent to directionally drill the aforementioned well from a site 1010 FS & 1980 FWL of Sec. 34 to an orthodox bottomhole location under the preferred location being 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E, offsetting your acreage. The surface hole location was necessarily moved to an acceptable area appropriately out of an identified archaeological site. A base map with designated access roads and our drilling plans are enclosed.

Please waive your rights to any objections to our above mentioned plans by signifying in the space provided notarizing and returning one copy of this letter. I would be pleased to provide any additional information should the need arise. Thank you for your attention to this matter.

Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Bob Yeates
Consulting Engineer

Waiver:* [signature]
M.Y. Merchant
Penroc Oil Corp.

cc: Michael Stogner, NMOCO, Santa Fe, NM
L. Anderson/Well File
W. Gibson - S. Owen

BY/mm

* Subject to Penroc receiving copies of open hole logs - Thanks -
8/19/94

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 25, 1994

State of New Mexico
Oil Conservation Division
Attn: Michael Stogner
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

Re: Arco Federal No. 2

This company requests administrative approval to drill a controlled directional hole in the Old Millman Ranch (Bone Spring) Associated Gas Pool in Eddy County. It has been our intention to complete a well at an orthodox location being 660 FS & 1980 FWL, Section 34, T-19-S, R-28-E. Archeological investigations revealed the above surface location to be within a Category 2 Ceramic Period occupation site. To preserve the integrity of this historic site, an alternate location has been staked 1010 FS & 1980 FWL of Section 34, or 350 feet north of the original stake. This latter surface area falls within a work area clear of any archaeological consequences, and has been accepted by Mr. Barry Hunt of the BLM.

It is respectfully requested that the 1010 X 1980 unorthodox surface hole location (SHL) be approved for drilling to an orthodox bottom hole location (BHL) by controlled directional drilling into a plane target area defined by a 150 foot radial about a TVD vertically drawn down to approximately 6350' below the SHL. Administrative approval is being sought under the authority granted by OCD Case No. 5813, Order No. R-5353, for oil wells in S.E. New Mexico, and by temporary special rules for the aforementioned pool designating an 80 acre oil spacing, and by Rule 111 C,D (1) & (2) and E, enabling your authorization of the foregoing requests.

Enclosed for your consideration are:

1) Form C-102 including certified SHL with proposed BHL locations
2) Form C-103 & Archaeology Study
3) Base map indicating proposed well and offsets
4) The proposed directional drilling procedures
5) The complete Drilling Program format
6) Copy of notification/waiver letter to Reeves County Systems, Inc., et al

If additional information is needed, please call the undersigned. Your prompt attention to this matter will be sincerely appreciated.

Sincerely,

Bob Yeates
Consulting Engineer
Permian Basin West Area

Attachments

cc: Bureau of Land Management
L. Anderson

BY/mm

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-102
Revised February 10, 1994
Instruction on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
		OLD MILLMAN RANCH (BONE SPRING) ASSOCIATED

Property Code	Property Name	Well Number
NM-0428657	ARCO FEDERAL	2

OGRID No.	Operator Name	Elevation
	PARKER & PARSLEY DEVELOPMENT CO.	3295'

Surface Location

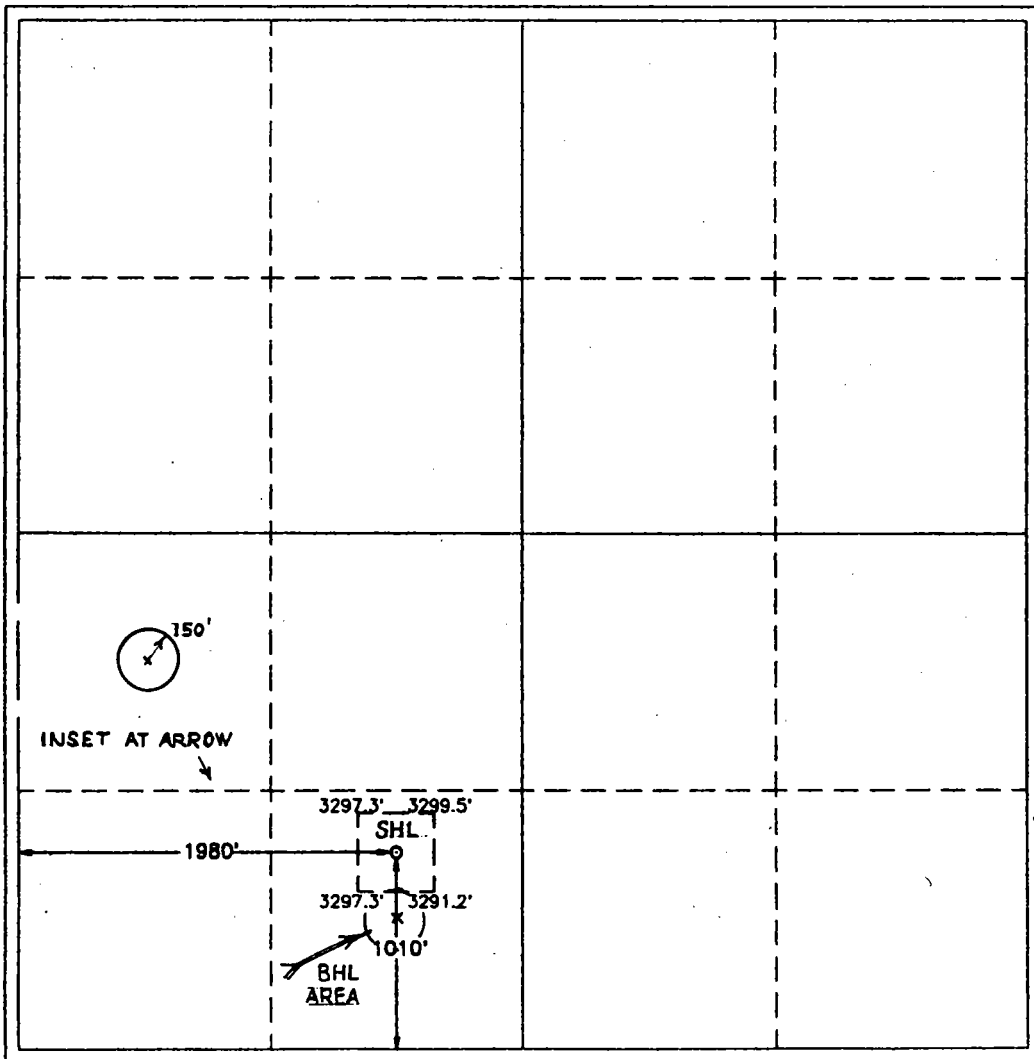
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	34	19 S	28 E		1010	SOUTH	1980	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	34	19-S	28-E		660 ±	SOUTH	1980 ±	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
80			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.

Bob Yeates
Signature

BOB YEATES
Printed Name

CONSULTING ENGINEER
Title

8-4-94
Date

SURVEYOR CERTIFICATION

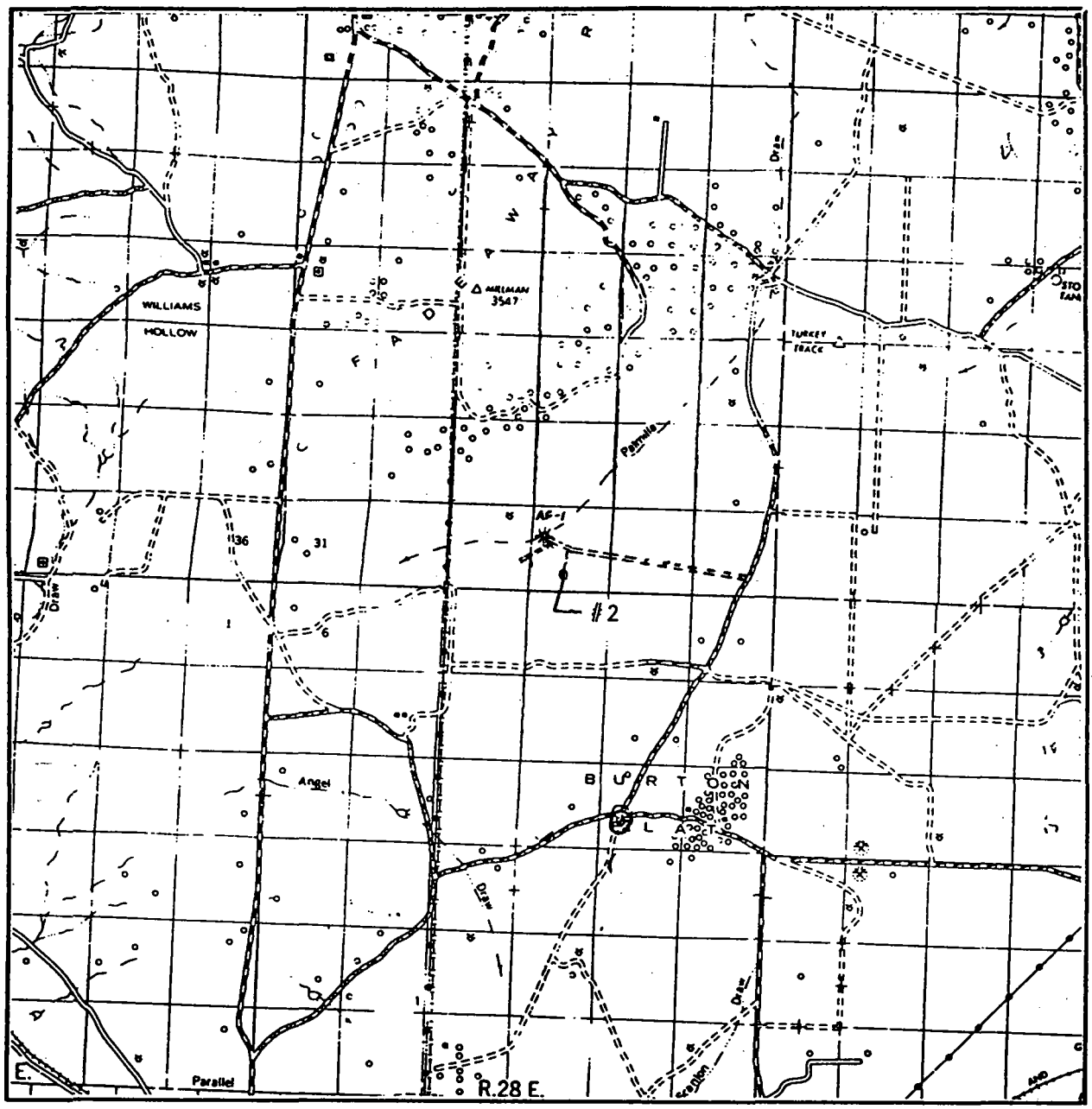
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

JULY 21, 1994
Date Surveyed
Signature & Seal of Professional Surveyor

W.O. Num. 94-11-1349

Certificate No. JOHN W. WEST, 676
RONALD J. EIDSON, 3239
GARY L. JONES, 7977

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 34 TWP. 19 S RGE. 28 E

SURVEY N.M.P.M.

COUNTY EDDY STATE N.M.

DESCRIPTION 1010' FSL & 1980' FWL

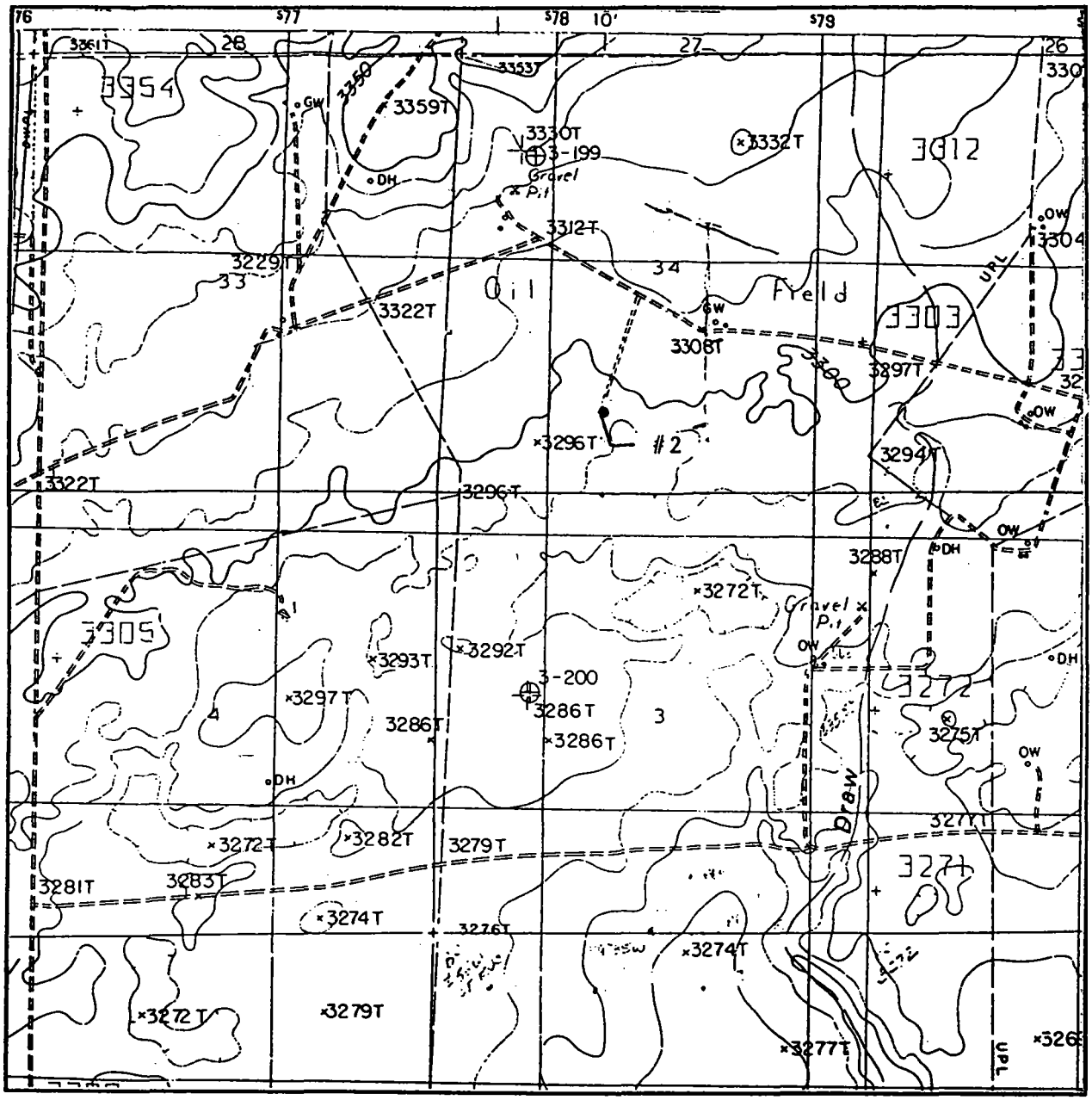
ELEVATION 3295'

OPERATOR PARKER & PARSLEY DEVELOPMENT CO.

LEASE ARCO FED.

JOHN WEST ENGINEERING
HOBBS, NEW MEXICO
(505) 393-3117

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL 5'

SEC. 34 TWP. 19 S RGE. 28 E

SURVEY N.M.P.M.

COUNTY EDDY STATE N.M.

DESCRIPTION 1010' FSL & 1980' FWL

ELEVATION 3295'

OPERATOR PARKER & PARSLEY DEVELOPMENT CO.

LEASE ARCO FED.

U.S.G.S. TOPOGRAPHIC MAP

ANGEL DRAW, N.M.

JOHN WEST ENGINEERING
HOBBS, NEW MEXICO
(505) 393-3117

Submit 3 Copies to Appropriate District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL API NO.

5. Indicate Type of Lease (BLM) STATE ☐ FEE ☐

6. State Oil & Gas Lease No. NM-0428657

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: Arco Federal

1. Type of Well: OIL WELL [X] GAS WELL ☐ OTHER

2. Name of Operator: Parker & Parsley Development Co.

8. Well No. 2

3. Address of Operator: P. O. Box 3178 Midland, Texas 79702

9. Pool name or Wildcat: Old Millman Ranch (Bone Spr) Assoc.

4. Well Location
Unit Letter N : 1010 Feet From The South Line and 1980 Feet From The West Line

Section 34 Township 19S Range 28E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.) GR (stake)

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐			CASING TEST AND CEMENT JOB	☐		
OTHER: Drill deviated, directional hole	[X]			OTHER:			☐

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

The Proposed Operations: To drill a directional hole from an unorthodox (SHL) surface hole location (item 4 above), to an orthodox bottom hole location (BHL) to fall within a 150 foot radius from the TVD below the center of the quarter-quarter section as staked 660 FS & 1980 FWL, Sec. 34, T19S, R28E Eddy Co, NM.

Administrative approval is requested, under Rule No. 111-C, D & E and Case No. 5813, Order No. R-5353 pertaining to the 80 acre spacing rule for an oil and associated gas pool.

Attached are the modified drilling program, incl an engineered directional procedure.

Attachments: Drilling Program with sidetrack plans, staking plats.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bob Yeates TITLE Consulting Engineer DATE 8-25-94

TYPE OR PRINT NAME Bob Yeates TELEPHONE NO. 915/ 683-4768

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

CULTURAL RESOURCE SURVEY OF THE PROPOSED ARCO FEDERAL NO. 2 WELL PAD ALTERNATES AND ACCESS ROADS EDDY COUNTY, NEW MEXICO

Prepared for

PARKER AND PARSLEY DEVELOPMENT COMPANY
Midland, Texas

By

Christopher A. Turnbow

Submitted by

John C. Acklen
Christopher A. Turnbow
Co-Principal Investigators

Under

Bureau of Land Management
Antiquities Permit Number 45-2920-94P

Mariah Associates, Inc.
Albuquerque, New Mexico
MAI Project 1215

August 1994

ABSTRACT

The results of Class I (site records check) and Class III (intensive, 100% coverage, pedestrian survey) cultural resource inventories for four well pad locations and two access roads in Eddy County, New Mexico are summarized in the following report. The proposed undertaking is on Bureau of Land Management property. The total area represented by this survey project is approximately 20.7 acres (8.4 ha).

The survey was conducted by Mariah Associates, Inc. on July 21, 1994. Two cultural resource sites and four isolated cultural occurrences were located during the investigation. The original ARCO Federal No. 2 well pad location contains site LA 105624, a Category 2 Ceramic Period occupation with intact features and dark stained soil. This site is recommended as eligible to the National Register of Historic Places and should be avoided by the undertaking. If avoidance is not feasible, site LA 105624 is recommended for further archaeological testing. Alternate 1 well pad location to ARCO Federal No. 2 contains a small Category 1 prehistoric site (LA 105625) that is not recommended as eligible to the National Register of Historic Places. Alternates 2 and 3 contained no archaeological sites. Provided that LA 105624 can be avoided, archaeological clearance for the proposed undertaking is recommended.

1.0 PROJECT BACKGROUND

On July 21, 1994, Mariah Associates, Inc. (Mariah) conducted Class I (site records check) and Class III (intensive, 100% coverage, pedestrian survey) cultural resource inventories of approximately 20.7 acres (8.4 ha) for four alternate locations of a well pad and two proposed access roads in Eddy County, New Mexico. The survey was conducted by Mariah Project Archaeologist Christopher A. Turnbow. John C. Acklen and Christopher A. Turnbow served as Co-Principal Investigators. The survey was requested by Robert Yeates, Operations Engineer of Parker and Parsley Development Company, Midland, Texas.

The proposed project, situated on land administered by the Carlsbad Resource Area of the Roswell District, Bureau of Land Management (BLM), involves construction of a 400 x 400 ft (122 x 122 m) ARCO Federal No. 2 well pad and associated access road. Because an archaeological site exists on the originally proposed ARCO Federal No. 2 location, the cultural resource survey was expanded to include three alternate well pad locations, also measuring 400 x 400 ft (122 x 122 m), designated Alternates 1, 2, and 3. Proposed access road routes surveyed to these locations include a 1,350 x 100 ft (412 x 30 m) corridor which extends northeast from the proposed Alternate 1 to Alternate 2 will pad locations then eastward to an existing access road and a 1,280 x 100 ft (390 x 30 m) corridor that goes southeast from the proposed Alternate 3 well pad to an existing access road. Surveyors from John West Engineering, Hobbs, New Mexico, staked the various pads and roads during the cultural resource investigation.

Because the proposed project will involve ground disturbing activities on federally owned land, the survey was required by federal legislation designed to identify and record nonrenewable cultural resources. The survey was conducted under BLM Antiquities Permit Number 45-2920-94P.

The project area is located in Eddy County, New Mexico, in Township 19 South, Range 28 East, Section 34. The original ARCO Federal No. 2 well pad center point is 660 ft (201 m)

from the south line and 1,980 ft (604 m) from the west line. Alternate 1 is 660 ft (201 m) from the south line and 1,560 ft (476 m) from the west line. Alternate 2 is 1,010 ft (308 m) from the south line and 1,980 ft (604 m) from the west line. Alternate 3 is 1,980 ft (604 m) from the south line and 1,980 ft (604 m) from the west line. The center and four corners of each well pad were staked during or prior to initiation of the survey. The centerlines of the proposed access roads were also staked during the cultural resource survey. These flagged stakes were used for field identification of the inventory area. The corresponding U.S. Geological Survey (USGS) 7.5′ quadrangle map for the project areas is Angel Draw, New Mexico (Provisional 1985) (Figure 1.1).

2.0 ENVIRONMENTAL SETTING

The project area is located northeast of the town of Carlsbad, New Mexico. Prominent physiographic features include Burton Flat, located approximately 2.5 mi (4.0 km) southeast, and Angel Draw, located approximately 3.5 mi (5.6 km) southwest of the project area. Elevation of the project area is approximately 3,290 ft (1,003 m) above mean sea level (amsl). The project area is characterized as nearly flat with very little, if any, topographic relief. Low dune fields cover the southern portion of the project area.

Soils generally consist of the Reeves-Gypsum land-Cottonwood association (Chugg et al. 1971). These loamy soils are characterized as being shallow to moderately deep over gypsum beds and gypsum land. The nearest potential water source is Angel Draw located approximately 3.5 mi (5.6 km) to the southwest. The flora of the survey area is characterized by desert scrubland. Principal species include various grasses., prickly pear, creosote, black bush, and mesquite.

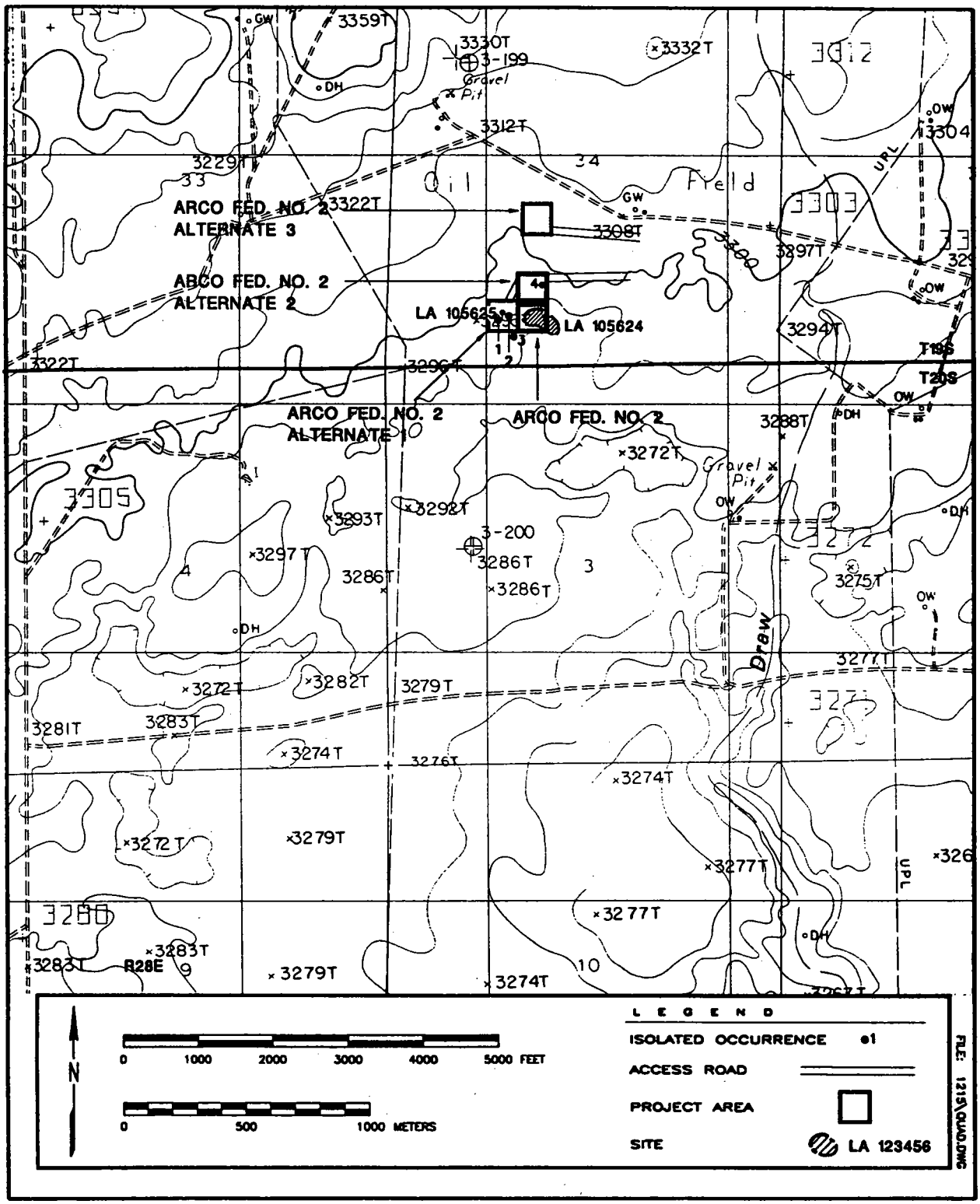


Figure 1.1 Project Location. Based on Angel Draw, New Mexico Quadrangle, (Provisional Edition 1985), USGS 7.5′ Series (1:24,000 Scale).

3.0 SURVEY METHODS

Prior to fieldwork, a Class I site records check of the Archaeological Records Management System (ARMS) was conducted via remote terminal to determine if any cultural resources were previously recorded within 1.0 mi (1.6 km) of the project area. The ARMS check revealed that four sites have been previously located within 1.0 mi (1.6 km) of the project area including two lithic scatters (LA 35455 and LA 38128) and two ceramic and lithic scatters (LA 16537 and LA 43380). The ARMS check was followed with a review of the BLM site files in the Carlsbad Resource Area office on July 21, 1994, which revealed four additional recorded sites (LA 102327, LA 102329, LA 104430, and BLM 5641). Site LA 104430 is a large campsite containing numerous burned caliche features and a probable Archaic period dart point. Finally, the State Register of Cultural Properties and the National Register of Historic Places (NRHP) show no listed sites located within the project areas.

The project area was surveyed by a single archaeologist walking nonoverlapping parallel transects spaced at 15 m intervals. Transect lines were marked with pin flags. Once the perimeter was reached, the surveyor reversed course and followed new transects adjacent to the previous line back to the opposite end. If cultural remains were encountered, survey was suspended and an intensive examination conducted to determine if the artifacts were isolated or part of a site.

Operational definitions of site and isolated occurrences (IOs) guided cultural resource detection and documentation. In compliance with federal standards, all cultural manifestations older than 50 years were recorded. Archaeological sites are defined as features or scatters generally consisting of 10 or more artifacts. Fewer artifacts may be documented as a site if they are associated with features or if, in the opinion of the supervisory archaeologist, subsurface cultural deposits are likely. IOs consist of archaeological manifestations displaying limited informational potential beyond that

recorded during survey. These generally include fewer than 10 artifacts; artifacts redeposited and lacking locational context; and single, undatable features. No artifacts were collected.

Light and weather conditions were excellent during the field session. Surface visibility in most of the survey area was excellent at 85%.

4.0 CULTURAL RESOURCE OVERVIEW AND RESEARCH DESIGN

4.1 CULTURAL RESOURCE OVERVIEW

Although specific terminologies may differ, most archaeologists would agree on four fundamental cultural periods in southeastern New Mexico: Paleoindian, Archaic, Ceramic, and Historic.

The Paleoindian period (ca. 10,500-5,500 B.C.) represents the earliest uncontested human occupation in the Southwest. Paleoenvironmental data suggest that the climate was cooler than at present with considerably less variation in temperature between seasons. Paleoindian subsistence is commonly understood to be a focal economy which emphasized big game hunting (Judge 1982). Tool assemblages include relatively large, often fluted, lanceolate unstemmed points frequently found in association with large extinct Pleistocene animals, including mammoth, bison, camel, horse, and modern species of elk, deer, and bear.

The Archaic period (ca. 5,500 B.C.-A.D. 900) coincides with the beginning of the Sand Canyon Postpluvial, when essentially modern climatic conditions commenced. Archaic subsistence is characterized by a diffuse economy (Judge 1982) reflecting a greater reliance on small bodied game and especially, wild plant foods. Mobility was more restricted in extent and cyclical. Advantageous site locations were frequently re-used on a seasonal basis. The archaeological record reflects considerable diversity in tool forms with a greater

emphasis on grinding tools. Archaic points tend to be somewhat shorter and to show extensive morphological variability and less precision in the quality of manufacture. The Archaic period has been divided into at least two periods. Early Archaic sites are fairly uncommon in the area; whereas, Late Archaic sites are better represented (Sebastian and Larralde 1989).

The Ceramic period (ca. A.D. 600/900-1540) is marked by the appearance of brown ware pottery, small points, and, later, sedentism and some horticulture in certain areas. Beginning dates are variously placed between A.D. 100 and 900. The initial appearance of Ceramic period traits occurred primarily along major river valleys and probably reflects the addition of new traits to the Late Archaic assemblage base. Throughout the duration of the Ceramic period, the western edge of the Llano Estacado seems to have been a boundary between the Anasazi/Mogollon and the Plains culture areas. Two primary chronological sequences have been used to characterize Ceramic period developments in southeastern New Mexico (Sebastian and Larralde 1989). These include classifications developed by Lehmer (1948) and Leslie (1979) based on Corley (1965).

The Historic period (after A.D. 1540) commences with the earliest Anglo-American use of southeastern New Mexico. Occupation during the early 1860s was largely related to the subsistence requirements of early forts built and staffed to deal with the Indian "problem." Once the Indians were contained and the Homestead Act of 1862 was passed, cattle ranchers and settlers began to move into the area. With the construction of the railroad in the late 1890s, homesteaders began to arrive in large numbers. The railroad facilitated the area's integration into the national economy. Increasingly, the huge cattle ranches characteristic of the late 1800s were broken up into smaller ranches and farms. Homesteaders practiced a mixture of agriculture and herding on small parcels of land. Droughts between 1909 and 1912 discouraged a number of "nesters." Droughts and the Great Depression of the 1930s effectively ended the feasibility of subsistence farming and

ranching on small plots of land. Since that time, the size of farms and ranches in the area has substantially increased.

4.2 RESEARCH DESIGN FOR THE PROJECT

The primary goal of archaeological surveys on federal property is to provide an inventory of cultural resources. This information is necessary to properly protect and manage those resources. Additionally, information obtained about archaeological resources can serve to address general and regional research domains about past occupations, which include the chronology of occupation, site subsistence, and settlement.

5.0 SURVEY RESULTS

Two archaeological sites and four IOS were located during the course of the survey.

5.1 SITES

5.1.1 LA 105624 (MA 1215-1)

This large site is characterized as an artifact scatter with features located in a prominent dune field (Figure 5.1). The site measures 120 m northwest-southeast by 100 m northeast-southwest and is situated at an elevation of 3,290 ft (1,003 m) amsl. The dunes are covered in a fine-grained sand with areas of sandy loam in the blowouts. Vegetation is sparse and limited to mesquite and grasses. Ground visibility was around 85%.

The artifact assemblage of the site was sparse and consists of chipped- and ground-stone artifacts as well as a single ceramic. Most artifacts were found in the northern portion of the site. Ground-stone and chipped-stone artifacts roughly occur in equal numbers. A

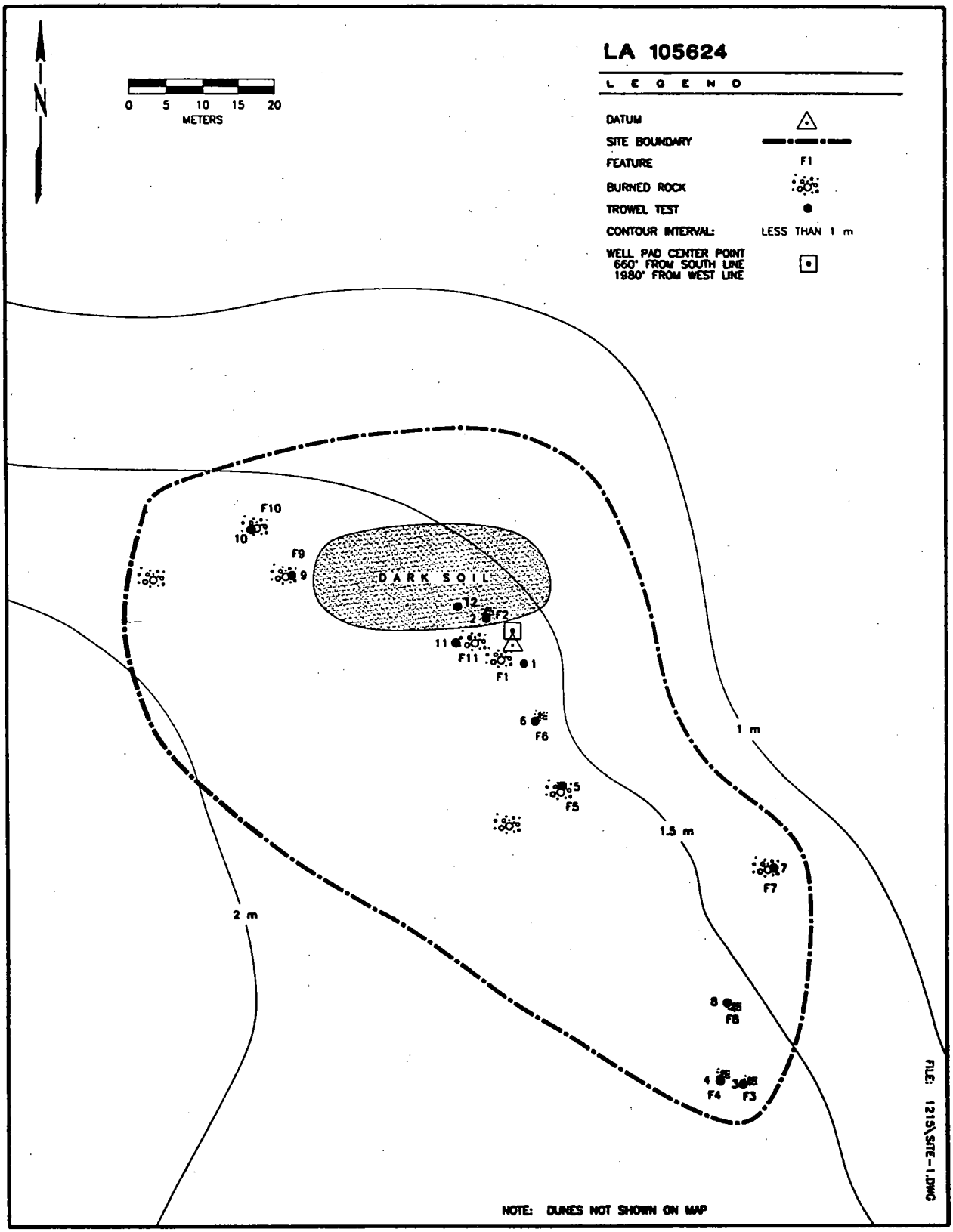


Figure 5.1 Site LA 105624, Site Plan.

sample of 21 specimens was analyzed in the field and represents approximately 25% of the assemblage.

Chipped-stone artifacts observed on the site included only debitage. The inventoried chipped stone includes three cores, three cortical flakes, and three noncortical flakes. Two hammer stones were also documented. Most of the raw material used in the chipped-stone production were purple, red, and gray quartzites although red cherts and a cherty limestone or dolomite were also exploited.

Ground-stone artifacts include eight metate fragments, a mano fragment, and an unidentified ground stone fragment. The metate fragments include a nearly complete, slightly ground slab metate and a possible trough metate. They exhibit plano, concave, or biconcave ground surfaces and were manufactured from well cemented, fine- and coarse-grained sandstones.

A single coarse tempered El Paso Brown body sherd was found near the center of the site. This specimen indicates a site occupation during the Ceramic Period which dates between A.D. 400 and 1500s.

Eleven thermal features were documented on the site. They are characterized as deflated or semi-deflated scatters of thermally-altered rock. Table 5.1 provides information on the features. In general, they contain 20 or more pieces of burned caliche in a reasonably tight cluster. Feature measurements range from 0.75 x 0.90 m to 2.0 x 4.0 m. Although burned caliche represents the bulk of the thermally-altered rock, sandstone and broken ground-stone fragments, also of sandstone, were observed in the features. Three of the features (Features 2, 9, and 10) contained dark, discolored soil or ashy fill, but no charcoal was identified in any of the tests.

Table 5.1 Site LA 105624 Features.

Feature No.	Dimensions	Contents	Test Results
1	0.5 x 1.0 m	20+ burned caliche	Trowel Test 1, negative
2	4.0 x 2.0 m	50+ burned caliche (small), 1 sandstone metate fragment, 1 flake	Trowel Test 2, soil darker but no artifacts or charcoal
3	1.25 x 1.25 m	40+ burned caliche, 2 sandstone	Trowel Test 3, negative
4	2.5 x 1.0 m	20+ burned caliche	Trowel Test 4, negative
5	2.5 x 1.0 m	20+ burned caliche	Trowel Test 5, 1 burned caliche in upper few cm
6	3.0 x 2.0 m	40+ burned caliche (small)	Trowel Test 6, negative
7	0.75 x 0.65 m	25+ burned caliche	Trowel Test 7, negative
8	1.0 x 1.0 m	18+ burned caliche, 1 core	Trowel Test 8, negative
9	0.9 x 0.75 m	30+ burned caliche, ground stone, 2 sandstone	Trowel Test 9, 1 burned caliche, darker soil, no charcoal
10	2.0 x 1.5 m	25+ burned caliche, 4 sandstone metate fragments, Plano-Convex basin metate (sandstone)	Trowel Test 10, very dark stain with burned caliche at 5 cm bgs
11	3.0 x 2.0 m	30+ burned caliche	Trowel Test 11, dark soil to 5 cm

A large area of light brown soil staining is located in the northern portion of the site. Large dunes are found in the area and may cover some of these deposits. The discolored soil is interpreted as a possible midden deposit. This area also produced the highest density of artifacts on the site. A trowel test into this deposit revealed only 5 cm of loose brown sand resting on a compact, tan sand stratum.

Trowel tests were placed along the edge of each feature and in the dark soil area on the north side of the site. In all, twelve were excavated to a maximum depth of from 5 to 20 cm below ground surface (bgs). Four contained discolored or dark soil. Test 2 in Feature 2 and Test 9 in Feature 9 yielded dark fill soil to 5 cm bgs. Test 10 in Feature 10 produced a very dark, ashy fill with buried, buried caliche at 5 to 8 cm bgs. This feature may be the best preserved and suggests an intact basin-shaped pit filled with ashy soil and burned caliche. Test 12, located in the possible midden area on the north side of the site, was excavated to 20 cm bgs. The discolored soil extended only from the surface to 5 cm bgs. Below that depth, a compact, light brown sand was encountered.

From the data collected, site LA 105624 is interpreted as a camp or series of camps with at least one component dating to the Ceramic Period. The features are clustered in four areas, suggesting the possibility of discreet social groups or periods of occupation. The presence of numerous ground-stone artifacts could argue that plant food processing was a major activity on the site.

The site is classified as a Category 2 resource and contains well preserved features and a large area of dark discolored soil that may represent a midden deposit. It also has an artifact assemblage not sufficiently analyzed during the survey. Given the site's potential to contribute further meaningful data on its prehistoric occupations, the site is recommended as eligible to the NRHP. The site area should be avoided by the proposed undertaking. If avoidance is not feasible, a program of archaeological test excavations and/or mitigation should be initiated.

5.1.2 LA 105625 (MA 1215-2)

This small site consists of a sparse artifact scatter located in a large blowout surrounded by low dunes of less than 1.0 m in height (Figure 5.2). The site measures 6 m northwest-southeast by 4 m northeast-southwest and lies at an elevation of 3,295 ft (1,004 m) amsl. The soils are fine sands and sandy loams. Vegetation in the area is limited to mesquites and a few low grasses. Surface visibility in the area was approximately 95%.

The artifact assemblage was completely analyzed in the field. A total of 12 artifacts were present on the surface. They included five fragments of a single coarse sandstone metate, five cortical core flakes, one noncortical core flake, and one noncortical angular shatter. The metate was manufactured from a coarse sandstone and exhibits one slightly concave ground surface. Five of the core flakes and the angular shatter fragment were produced from a single chalcedony pebble. The other flake was a tan quartzite. In addition, a single piece of burned caliche was found on the site.

Two trowel tests were excavated in the scatter. Test 1 was located 25 cm east of datum and Test 2 was adjacent to the burned caliche and a metate fragment at 1.9 m northwest of datum. The stratigraphy of both showed loose, tan fine-grained sand from the surface to 9-11 cm bgs followed by a well cemented, compact, whitish-tan sand to 25 cm bgs. No artifacts or cultural deposits were found in either test.

The site is interpreted as a very short-term camp. A single chalcedony pebble was initially reduced at the site. The broken metate and the burned caliche may reflect the scattered remains of a deflated hearth. Since no diagnostic artifacts were observed, the temporal affiliation of the site is unknown.

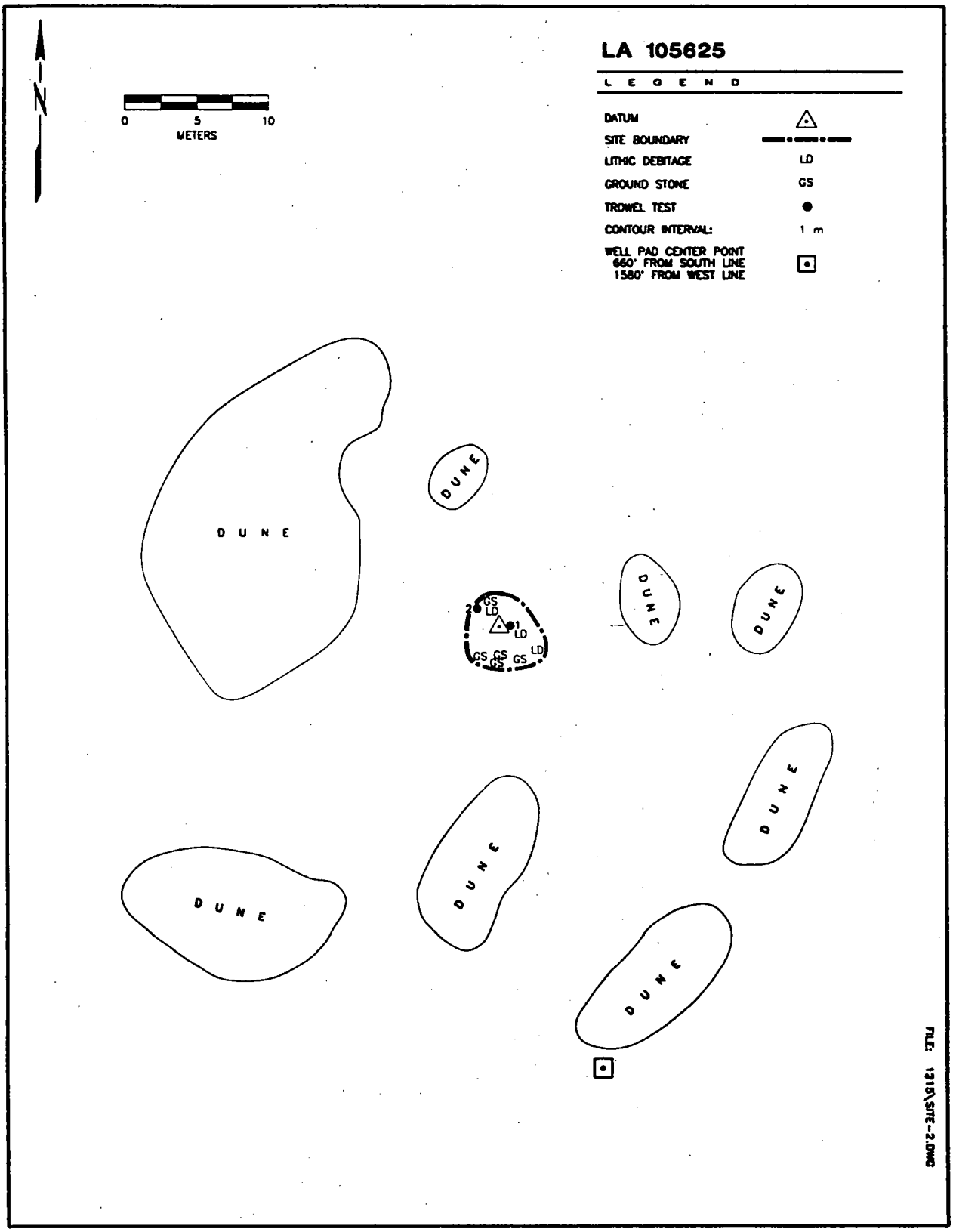


Figure 5.2 Site LA 105625, Site Plan.

Given the absence of subsurface cultural deposits and the complete documentation of the surface assemblage, the data potential of the resource has been exhausted. This Category 1 site is not eligible to the NRHP, and no further archaeological work is deemed warranted.

5.2 ISOLATED OCCURRENCES

Four IOs were located during the field investigations. Two IOs (IO 1-2) were noted in ARCO Federal No. 2 Alternate 1. One (IO 3) was located 20 m south of the southeast corner of that same proposed well pad location. It consisted of a pile of four artifacts that may suggest recent collecting. The last one (IO 4) was found in ARCO Federal No. 2 Alternate 2. Table 5.2 contains the specific information on these finds.

Table 5.2 Isolated Occurrences.

IO No.	Description	Legal
1	Two pieces of burned caliche, 3.0-4.0 cm in diameter	T19S, R28E, Sec. 34 SW¼, SE¼, SW¼
2	One piece of burned caliche, 4.0 cm diameter	T19S, R28E, Sec. 34 SW¼, SE¼, SW¼
3	One red quartzite core, 50% cortex, 4 flakes removed, 6.0 x 4.8 x 3.1 cm; 1 red chert primary core flake, 100% cortex, 3.4 x 2.6 x 0.6 cm; 1 gray chert primary core flake, 10% cortex, 1.8 x 1.2 x 0.6 cm; 1 gray chert angular shatter, 30% cortex, 1.6 x 1.5 x 1.4 cm.	T19S, R28E, Sec. 34 SW¼, SE¼, SW¼
4	One piece of burned caliche, 8.0 m diameter	T19S, R28E, Sec. 34 NE¼, SE¼, SW¼

6.0 SUMMARY AND RECOMMENDATIONS

The cultural resource survey of the four well pads and related access roads for ARCO Federal No. 2 identified two archaeological sites (LA 105624 and LA 105625) and four IOs. The data potential of the IOs was exhausted during their recordation, and they are not recommended for further investigation.

The original ARCO Federal No. 2 well pad contains a Category 2 archaeological site dating to the Ceramic Period. This site is considered to be a significant cultural resource with data potential beyond that recorded during the survey and, therefore, is recommended as eligible to the NRHP. It is further recommended that LA 105624 be completely avoided during the proposed undertaking. This includes restricting vehicular traffic across the area. If avoidance is not practical, an archaeological program of test excavations and/or mitigation should be initiated.

The survey of Alternate 1 well pad identified LA 105625 (a Category 1 site) and two IOs. None of the cultural resources found in Alternate 1 are recommended as eligible to the NRHP. The Alternate 2 and 3 well pads and the ROWs for the two access roads contained no archaeological sites. For these reasons, archaeological clearance of all three alternate well pad locations and the proposed access roads is recommended.

Provided that site LA 105624 is avoided by the undertaking, cultural resource clearance is recommended for the construction of ARCO Federal No. 2 using Alternate 1, 2, or 3 well pad and access road. If cultural remains are unearthed during ground moving activities, the BLM should be notified immediately, and an assessment of the find should be conducted by a qualified archaeologist.

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PARKER & PARSLEY DEVELOPMENT CO.
ARCO FEDERAL NO. 2
EDDY COUNTY, N.M.

RECOMMENDED BASIC DRILLING PROGRAM

Directional Control

1. Plan: To guide the wellbore from a 1010 FS & 1980 FWL SHL to a target area at 6350' TVD, at an orthodox (standard) location under the (originally) preferred well location 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E in Old Millman Ranch (Bone Spring) Associated field.

2. Method:
   a) Surface, 0-450', no control
   b) Intermediate, 450-1000', maintain conventional straight hole.
   c) Longstring, 1000 - 6500 (to drill a 4° deviated hole, 1230'- T.D.)
      1) Run gyro - directional survey at 100' intervals inside 8 5/8 csg before drilling out, determining BHL (950'md).
      2) Plan deviation and directional control measures.
      3) Drill out in 7 7/8 hole w/ slick dc's, make 230' new hole. run S. S. survey & POH for appropriate BHA (1230')
         a) Run DHM to: 1] build angle, &/or
            2] turn hole south
         b) Or, if angle & direction acceptable, RIH NMDC on bit, proper stabilization to achieve short term objectives and drill ahead.
         c) Run single shot surveys at 4 to 8 connections, permitting acceptable deviation & directional control down to 4300'
         d) Run (2nd) gyro survey inside dp (4300 - 750'md)
            1] make motor (DHM) run, if direction off,
            2] Make any necessary changes in stabilization and drill ahead.
      4) Drill to T.D. Run (3rd) gyro inside drill string, f/ T.D. - 4100' for correct BHL & NMOCD. The desired BHL is to fall within a 150' radial area encircling the (verticle) TVD under a 660 X 1980' surface location.

Lee Yeates

PARKER & PARSLEY DEVELOPMENT CO.
P. O. BOX 3178
MIDLAND, TEXAS 79702

DRILLING PROGRAM
DATE: 8/4/94
FOR: Contractor & Files

CONTRACTOR: McGee Drlg. Corp.-Rig #2 FIELD: Old Millman Rch(Bone Spring)
LEASE: Arco Federal WELL NO: 2
LOCATION: * 1010' FS & 1980 FWL, Sec. 34, T-19-S, R-28-E, Eddy Co., NM
DIRECTIONS: Go 8 mi. E. from carlsbad on 62/180. Turn L. (N) on CR 242 at mile marker 44. Go 6 mi. N & W to Oxy plant, turn Right (N) on wide caliche road, CR 242. Proceed 3 mi. North, turn Left (W) at P&P sign. Go West 2 1/2 mi. turn L. (S) 1/4 mi.

*SHL: A DEVIATED HOLE WILL BE DIRECTED TO 150' TARGET AT TVD, 660 FS & 1980 FWL
ELEVATIONS: (Surveyor's GL 3295) ACTUAL GL _____ DF _____ KB _____

CASING PROGRAM

CONDUCTOR = _____ " Hole		Csg @ _____	Depth
SURFACE = 17 1/2 " Hole	13 3/8, 48# H-40 STC	Csg @ 450	Depth
PROTECTIVE = 11 " Hole	8 5/8", 24# K-55 STC	Csg @ 1000	Depth
PRODUCTION = 7 7/8 " Hole	5 1/2, 15.50# K-55 L&STC	Csg @ 6500	Depth

MUD PROGRAM

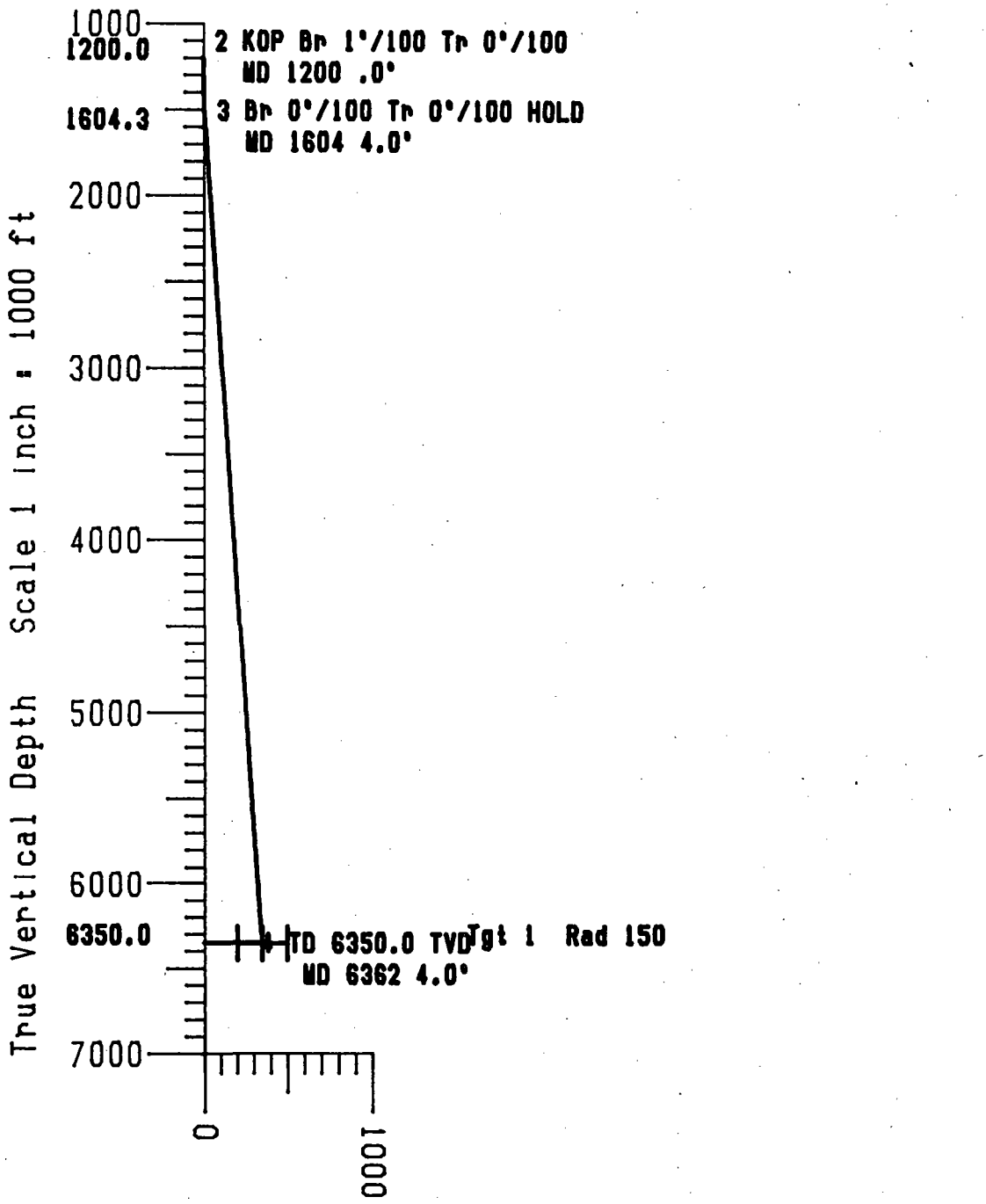
INTERVALS	TYPE	PROPERTIES	REMARKS
0 - 450	Spud Mud	8.4 - 9.5, 32 - 62 vis	Steel pits
* 450 - 1000	Brine	N/C, paper sweeps *	Reserve pits,lime-pH
1000 - 6000	Fresh Water	N/C, PHB-LCM sweeps *	Outer reserve,caust-pH
6000 0 T.D.	FW Gel - PAC	8.5-8.8,34-36 vis,10c.c. W.L.*	Stell pits,caustic-pH

* FW GEL-LCM SWEEPS FOR SEEPAGE & CUTTINGS REMOVAL, AS REQUIRED.

GEOLOGICAL FORMATION	TOPS, INTERVAL DEPTHS	REMARKS
T/Salt	750 - 800	Wash-outs,boulders
B/Salt	900 - 950	
Delaware	3030	Possible wt.increase
Brushy Canyon	3150	due to formation wtr
Bone Spring	4300	

SCIENTIFIC DRILLING
FOR
PARKER AND PARSLEY
ARCO FEDERAL #2
IN
EDDY COUNTY, NEW MEXICO
DATE: 09-02-94

True (+0)
Mag (+0)

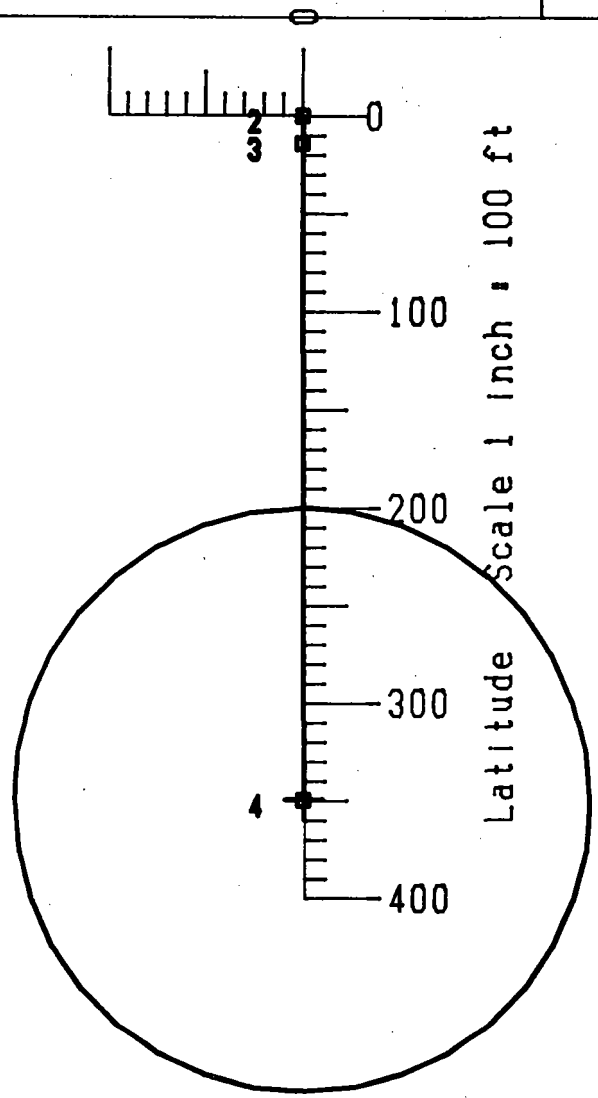


PLANE OF VERT SECTn S00.00E

SCIENTIFIC DRILLING
FOR
PARKER AND PARSLEY
ARCO FEDERAL #2

IN
EDDY COUNTY, NEW MEXICO

DATE: 08-02-94



PLANE OF VERT SECTn 900.00E

PLOT DATE 08-02-1994

TARGET DETAILS

No	TVD	Lat	Dep
1	6350.0	-350.0	0.0

WELL PROPOSAL

Sec	MD	TVD	VS	INC	DIR	LAT	DEP	TGT
1	0.0	0.0	0.0	0.0	900.00E	0.0	0.0	
2	1200.0	1200.0	0.0	0.0	900.00E	0.0	0.0	
3	1604.8	1604.3	14.3	4.0	900.00E	-14.3	0.0	
4	6362.2	6350.0	350.0	4.0	900.00E	-350.0	0.0	1

ARCOFED2 ARCO FEDERAL #2 8-01-94
Plane of Vertical Section 180.00

Section 1 (Hold Section)

							Values to be applied			
MD	Inc	Dir	Tvd	Vsec	Lat	Dep	Build	Turn	Dleg	T Face
1200.0	0.00	180.00	1200.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0
1300.0	1.00	180.00	1300.0	0.9	-0.9	-0.0	1.0	0.0	1.0	0.0
1400.0	2.00	180.00	1400.0	3.5	-3.5	-0.0	1.0	0.0	1.0	0.0
1500.0	3.00	180.00	1499.9	7.9	-7.9	-0.0	1.0	0.0	1.0	0.0
1600.0	4.00	180.00	1599.7	14.0	-14.0	-0.0	1.0	0.0	1.0	0.0

Section 3 (Hold Section)

							Values to be applied			
MD	Inc	Dir	Tvd	Vsec	Lat	Dep	Build	Turn	Dleg	T Face
1604.6	4.05	180.00	1604.3	14.3	-14.3	0.0	0.0	0.0	0.0	0.0
1700.0	4.05	180.00	1699.4	21.0	-21.0	-0.0	0.0	0.0	0.0	0.0
1800.0	4.05	180.00	1799.2	28.1	-28.1	-0.0	0.0	0.0	0.0	0.0
1900.0	4.05	180.00	1898.9	35.1	-35.1	-0.0	0.0	0.0	0.0	0.0
2000.0	4.05	180.00	1998.7	42.2	-42.2	-0.0	0.0	0.0	0.0	0.0
2100.0	4.05	180.00	2098.4	49.2	-49.2	-0.0	0.0	0.0	0.0	0.0
2200.0	4.05	180.00	2198.2	56.3	-56.3	-0.0	0.0	0.0	0.0	0.0
2300.0	4.05	180.00	2297.9	63.4	-63.4	-0.0	0.0	0.0	0.0	0.0
2400.0	4.05	180.00	2397.7	70.4	-70.4	-0.0	0.0	0.0	0.0	0.0
2500.0	4.05	180.00	2497.4	77.5	-77.5	-0.0	0.0	0.0	0.0	0.0
2600.0	4.05	180.00	2597.2	84.5	-84.5	-0.0	0.0	0.0	0.0	0.0
2700.0	4.05	180.00	2696.9	91.6	-91.6	-0.0	0.0	0.0	0.0	0.0
2800.0	4.05	180.00	2796.7	98.6	-98.6	-0.0	0.0	0.0	0.0	0.0
2900.0	4.05	180.00	2896.4	105.7	-105.7	-0.0	0.0	0.0	0.0	0.0
3000.0	4.05	180.00	2996.2	112.7	-112.7	-0.0	0.0	0.0	0.0	0.0
3100.0	4.05	180.00	3095.9	119.8	-119.8	-0.0	0.0	0.0	0.0	0.0
3200.0	4.05	180.00	3195.7	126.9	-126.9	-0.0	0.0	0.0	0.0	0.0
3300.0	4.05	180.00	3295.4	133.9	-133.9	-0.0	0.0	0.0	0.0	0.0
3400.0	4.05	180.00	3395.2	141.0	-141.0	-0.0	0.0	0.0	0.0	0.0
3500.0	4.05	180.00	3494.9	148.0	-148.0	-0.0	0.0	0.0	0.0	0.0

ARCOFED2 ARCO FEDERAL #2

MD	Inc	Dir	Tvd	Vsec	Lat	Dep	Values to be applied Build	Turn	Dleg	T Face
3600.0	4.05	180.00	3594.7	155.1	-155.1	-0.0	0.0	0.0	0.0	0.0
3700.0	4.05	180.00	3694.4	162.1	-162.1	-0.0	0.0	0.0	0.0	0.0
3800.0	4.05	180.00	3794.2	169.2	-169.2	-0.0	0.0	0.0	0.0	0.0
3900.0	4.05	180.00	3893.9	176.3	-176.3	-0.0	0.0	0.0	0.0	0.0
4000.0	4.05	180.00	3993.7	183.3	-183.3	-0.0	0.0	0.0	0.0	0.0
4100.0	4.05	180.00	4093.4	190.4	-190.4	-0.0	0.0	0.0	0.0	0.0
4200.0	4.05	180.00	4193.2	197.4	-197.4	-0.0	0.0	0.0	0.0	0.0
4300.0	4.05	180.00	4292.9	204.5	-204.5	-0.0	0.0	0.0	0.0	0.0
4400.0	4.05	180.00	4392.7	211.5	-211.5	-0.0	0.0	0.0	0.0	0.0
4500.0	4.05	180.00	4492.4	218.6	-218.6	-0.0	0.0	0.0	0.0	0.0
4600.0	4.05	180.00	4592.2	225.7	-225.7	-0.0	0.0	0.0	0.0	0.0
4700.0	4.05	180.00	4691.9	232.7	-232.7	-0.0	0.0	0.0	0.0	0.0
4800.0	4.05	180.00	4791.7	239.8	-239.8	-0.0	0.0	0.0	0.0	0.0
4900.0	4.05	180.00	4891.4	246.8	-246.8	-0.0	0.0	0.0	0.0	0.0
5000.0	4.05	180.00	4991.2	253.9	-253.9	-0.0	0.0	0.0	0.0	0.0
5100.0	4.05	180.00	5091.0	260.9	-260.9	-0.0	0.0	0.0	0.0	0.0
5200.0	4.05	180.00	5190.7	268.0	-268.0	-0.0	0.0	0.0	0.0	0.0
5300.0	4.05	180.00	5290.5	275.1	-275.1	-0.0	0.0	0.0	0.0	0.0
5400.0	4.05	180.00	5390.2	282.1	-282.1	-0.0	0.0	0.0	0.0	0.0
5500.0	4.05	180.00	5490.0	289.2	-289.2	-0.0	0.0	0.0	0.0	0.0
5600.0	4.05	180.00	5589.7	296.2	-296.2	-0.0	0.0	0.0	0.0	0.0
5700.0	4.05	180.00	5689.5	303.3	-303.3	-0.0	0.0	0.0	0.0	0.0
5800.0	4.05	180.00	5789.2	310.3	-310.3	-0.0	0.0	0.0	0.0	0.0
5900.0	4.05	180.00	5889.0	317.4	-317.4	-0.0	0.0	0.0	0.0	0.0
6000.0	4.05	180.00	5988.7	324.5	-324.5	-0.0	0.0	0.0	0.0	0.0
6100.0	4.05	180.00	6088.5	331.5	-331.5	-0.0	0.0	0.0	0.0	0.0
6200.0	4.05	180.00	6188.2	338.6	-338.6	-0.0	0.0	0.0	0.0	0.0
6300.0	4.05	180.00	6288.0	345.6	-345.6	-0.0	0.0	0.0	0.0	0.0
6362.2	4.05	180.00	6350.0	350.0	-350.0	0.0	0.0	0.0	0.0	0.0

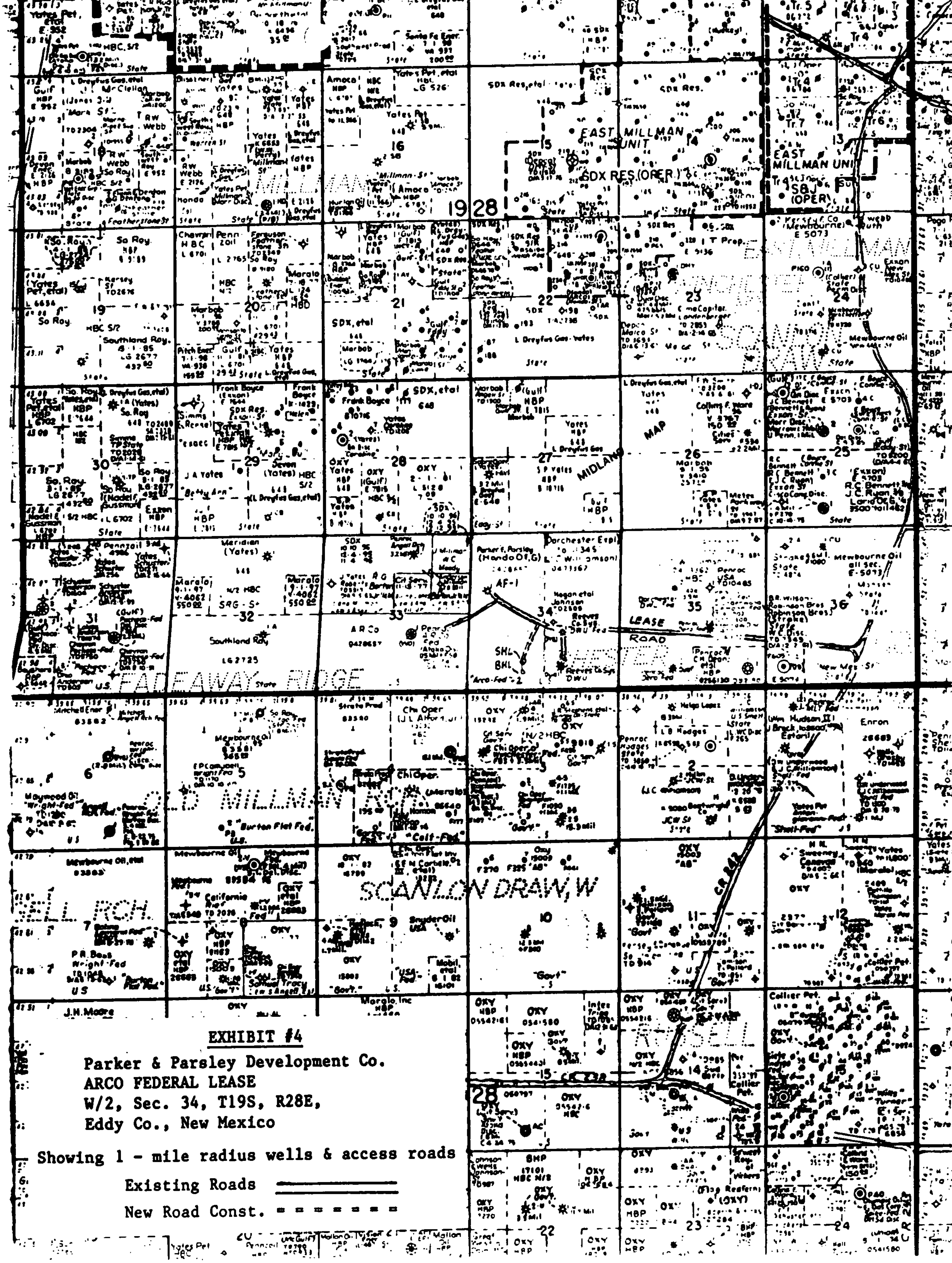


EXHIBIT #4

Parker & Parsley Development Co.
ARCO FEDERAL LEASE
W/2, Sec. 34, T19S, R28E,
Eddy Co., New Mexico

Showing 1 - mile radius wells & access roads

Existing Roads
New Road Const.

PARKER & PARSLEY
DEVELOPMENT COMPANY

P O Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

Reeves County Systems, Inc.
Attn: Mr. Robert Hillin
P.O. Box 152
Odessa, TX 79760

Re: Arco Federal No. 2
Eddy County, New Mexico

Dear Mr. Hillin:

This is to inform you of Parker & Parsley's intent to directionally drill the aforementioned well from a site 1010 FS & 1980 FWL of Sec. 34 to an orthodox bottomhole location under the preferred location being 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E, offsetting your acreage. The surface hole location was necessarily moved to an acceptable area appropriately out of an identified archaeological site. A base map with designated access roads and our drilling plans are enclosed.

Please waive your rights to any objections to our above mentioned plans by signifying in the space provided notarizing and returning one copy of this letter. I would be pleased to provide any additional information should the need arise. Thank you for your attention to this matter.

Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Bob Yeates
Consulting Engineer

Please mail me a copy of surveys @ T.D.

Waiver: R. D. Hillin
Mr. Robert Hillin
Reeves County Systems, Inc.

cc: Michael Stogner, NMOCD, Santa Fe, NM
L. Anderson/Well File
W. Gibson - S. Owen

BY/mm

M. Reeves
Well File (1379)

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

CHI Operating
Attn: David Harrison
P.O. Box 1799
Midland, TX 79702

Re: Arco Federal No. 2
Eddy County, New Mexico

Dear Mr. ~~Hillin~~ Harrison:

This is to inform you of Parker & Parsley's intent to directionally drill the aforementioned well from a site 1010 FS & 1980 FWL of Sec. 34 to an orthodox bottomhole location under the preferred location being 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E, offsetting your acreage. The surface hole location was necessarily moved to an acceptable area appropriately out of an identified archaeological site. A base map with designated access roads and our drilling plans are enclosed.

Please waive your rights to any objections to our above mentioned plans by signifying in the space provided notarizing and returning one copy of this letter. I would be pleased to provide any additional information should the need arise. Thank you for your attention to this matter.

Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Bob Yeates
Consulting Engineer

Waiver:
David Harrison
CHI Operating

cc: Michael Stogner, NMOCO, Santa Fe, NM
L. Anderson/Well File
W. Gibson - S. Owen
BY/mm

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

Penroc Oil Corp.
Attn: M.Y. Merchant
P.O. Box 5970
Hobbs, NM 88241

Re: Arco Federal No. 2
Eddy County, New Mexico

(typist error)
Dear Mr. ~~Hillin:~~ Merchant

This is to inform you of Parker & Parsley's intent to directionally drill the aforementioned well from a site 1010 FS & 1980 FWL of Sec. 34 to an orthodox bottomhole location under the preferred location being 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E, offsetting your acreage. The surface hole location was necessarily moved to an acceptable area appropriately out of an identified archaeological site. A base map with designated access roads and our drilling plans are enclosed.

Please waive your rights to any objections to our above mentioned plans by signifying in the space provided notarizing and returning one copy of this letter. I would be pleased to provide any additional information should the need arise. Thank you for your attention to this matter.

Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Bob Yeates
Consulting Engineer

Waiver:* M.Y. Merchant
M.Y. Merchant
Penroc Oil Corp.

cc: Michael Stogner, NMOCD, Santa Fe, NM
L. Anderson/Well File
W. Gibson - S. Owen

BY/mm

* Subject to Penroc receiving copies of open hole logs - Thanks -
8/19/94

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 25, 1994

State of New Mexico
Oil Conservation Division
Attn: Michael Stogner
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

Re: Arco Federal No. 2

This company requests administrative approval to drill a controlled directional hole in the Old Millman Ranch (Bone Spring) Associated Gas Pool in Eddy County. It has been our intention to complete a well at an orthodox location being 660 FS & 1980 FWL, Section 34, T-19-S, R-28-E. Archeological investigations revealed the above surface location to be within a Category 2 Ceramic Period occupation site. To preserve the integrity of this historic site, an alternate location has been staked 1010 FS & 1980 FWL of Section 34, or 350 feet north of the original stake. This latter surface area falls within a work area clear of any archaeological consequences, and has been accepted by Mr. Barry Hunt of the BLM.

It is respectfully requested that the 1010 X 1980 unorthodox surface hole location (SHL) be approved for drilling to an orthodox bottom hole location (BHL) by controlled directional drilling into a plane target area defined by a 150 foot radial about a TVD vertically drawn down to approximately 6350' below the SHL. Administrative approval is being sought under the authority granted by OCD Case No. 5813, Order No. R-5353, for oil wells in S.E. New Mexico, and by temporary special rules for the aforementioned pool designating an 80 acre oil spacing, and by Rule 111 C,D (1) & (2) and E, enabling your authorization of the foregoing requests.

Enclosed for your consideration are:

1) Form C-102 including certified SHL with proposed BHL locations
2) Form C-103 & Archaeology Study
3) Base map indicating proposed well and offsets
4) The proposed directional drilling procedures
5) The complete Drilling Program format
6) Copy of notification/waiver letter to Reeves County Systems, Inc., et al

If additional information is needed, please call the undersigned. Your prompt attention to this matter will be sincerely appreciated.

Sincerely,

Bob Yeates
Consulting Engineer
Permian Basin West Area

Attachments

cc: Bureau of Land Management
L. Anderson

BY/mm

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised February 10, 1994
Instruction on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
		OLD MILLMAN RANCH (BONE SPRING) ASSOCIATED

Property Code	Property Name	Well Number
NM-0428657	ARCO FEDERAL	2

OGRID No.	Operator Name	Elevation
	PARKER & PARSLEY DEVELOPMENT CO.	3295'

Surface Location

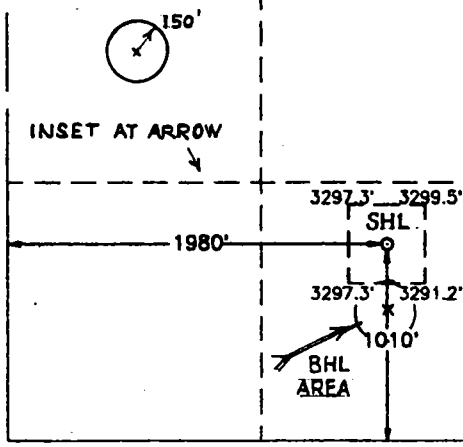
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	34	19 S	28 E		1010	SOUTH	1980	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	34	19-S	28-E		660 ±	SOUTH	1980 ±	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
80			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.

Bob Yeates
Signature

BOB YEATES
Printed Name

CONSULTING ENGINEER
Title

8-4-94
Date

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

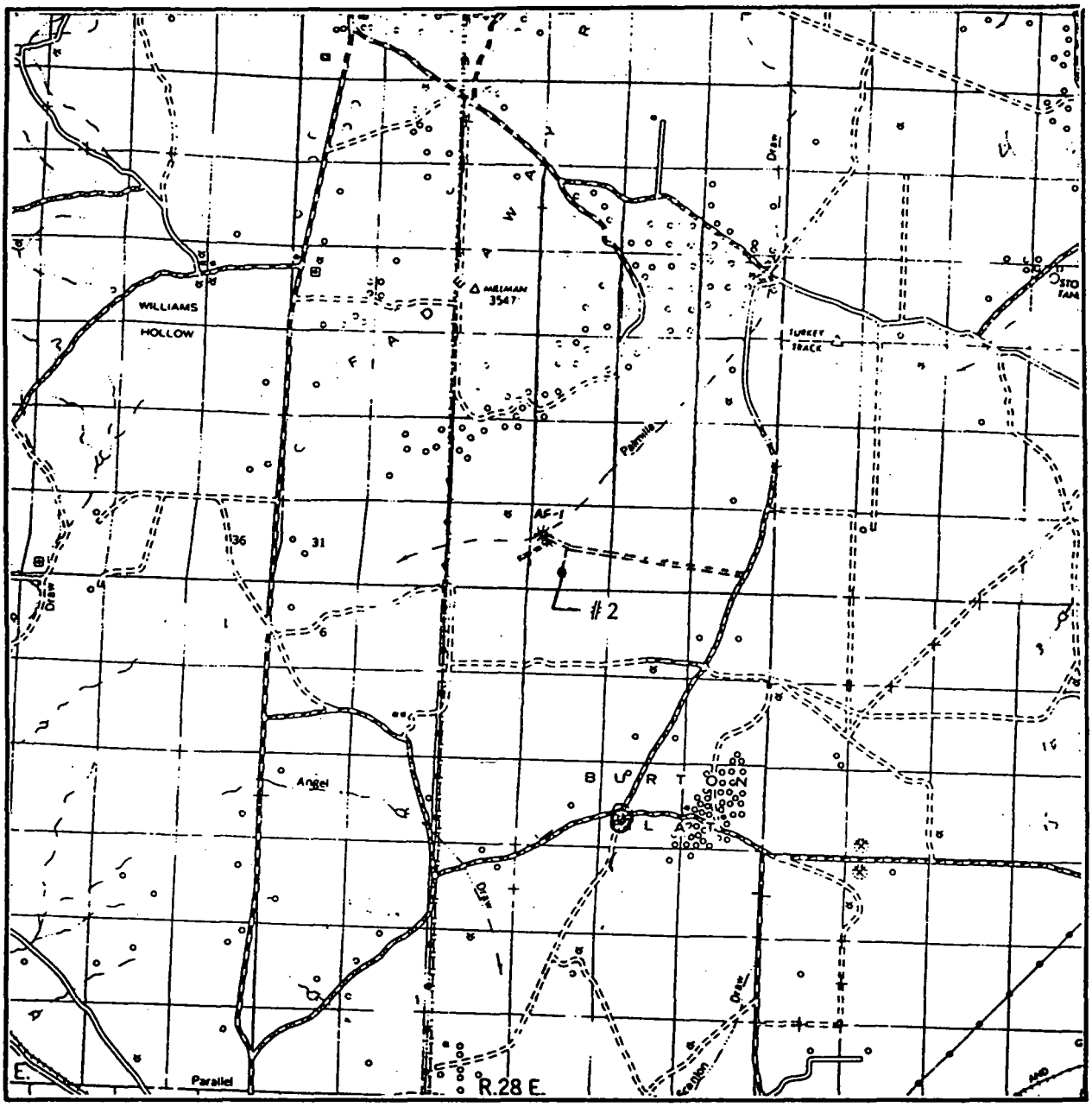
JULY 21, 1994
Date Surveyed

Signature & Seal of Professional Surveyor

W.O. Num. 94-11-1349

Certificate No. JOHN W. WEST, 676
RONALD J. EIDSON, 3239
GARY L. JONES, 7977

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 34 TWP. 19 S RGE. 28 E

SURVEY N.M.P.M.

COUNTY EDDY STATE N.M.

DESCRIPTION 1010' FSL & 1980' FWL

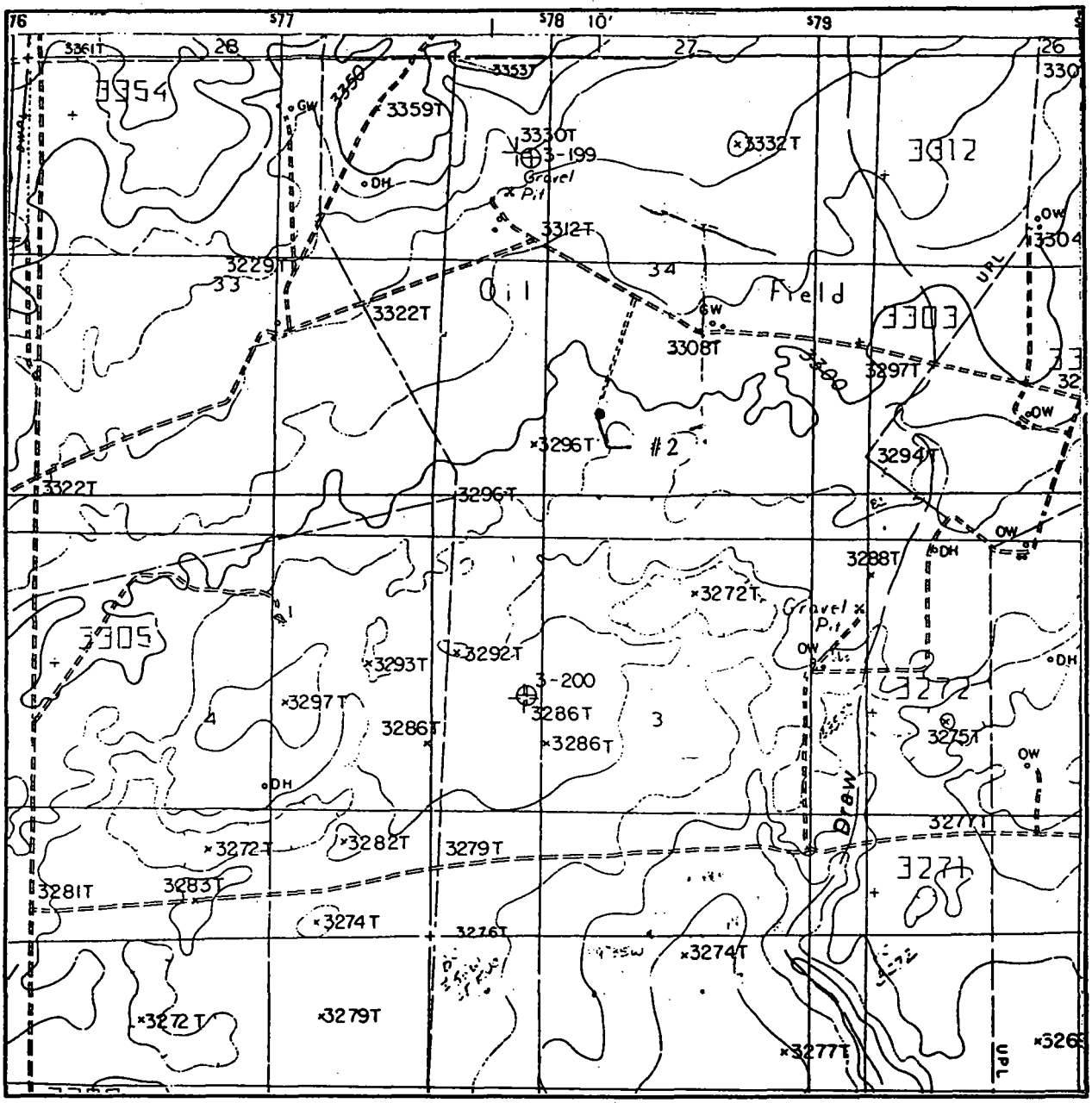
ELEVATION 3295'

OPERATOR PARKER & PARSLEY DEVELOPMENT CO.

LEASE ARCO FED.

JOHN WEST ENGINEERING
HOBBS, NEW MEXICO
(505) 393-3117

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL 5'

SEC. 34 TWP. 19 S RGE. 28 E

SURVEY N.M.P.M.

COUNTY EDDY STATE N.M.

DESCRIPTION 1010' FSL & 1980' FWL

ELEVATION 3295'

JOHN WEST ENGINEERING
HOBBS, NEW MEXICO
(505) 393-3117

OPERATOR PARKER & PARSLEY DEVELOPMENT CO.

LEASE ARCO FED.

U.S.G.S. TOPOGRAPHIC MAP

ANGEL DRAW, N.M.

Submit 3 Copies to Appropriate District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL API NO.

5. Indicate Type of Lease (BLM) STATE ☐ FEE ☐

6. State Oil & Gas Lease No. NM-0428657

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: Arco Federal

1. Type of Well: OIL WELL [X] GAS WELL ☐ OTHER

2. Name of Operator: Parker & Parsley Development Co.

8. Well No. 2

3. Address of Operator: P. O. Box 3178 Midland, Texas 79702

9. Pool name or Wildcat: Old Millman Ranch (Bone Spr) Assoc.

4. Well Location
Unit Letter N : 1010 Feet From The South Line and 1980 Feet From The West Line

Section 34 Township 19S Range 28E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.) GR (stake)

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐			CASING TEST AND CEMENT JOB	☐		
OTHER: Drill deviated, directional hole	[X]			OTHER:			☐

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

The Proposed Operations: To drill a directional hole from an unorthodox (SHL) surface hole location (item 4 above), to an orthodox bottom hole location (BHL) to fall within a 150 foot radius from the TVD below the center of the quarter-quarter section as staked 660 FS & 1980 FWL, Sec. 34, T19S, R28E Eddy Co, NM.

Administrative approval is requested, under Rule No. 111-C, D & E and Case No. 5813, Order No. R-5353 pertaining to the 80 acre spacing rule for an oil and associated gas pool.

Attached are the modified drilling program, incl an engineered directional procedure.

Attachments: Drilling Program with sidetrack plans, staking plats.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bob Yeates TITLE Consulting Engineer DATE 8-25-94

TYPE OR PRINT NAME Bob Yeates TELEPHONE NO. 915/ 683-4768

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

CULTURAL RESOURCE SURVEY OF THE PROPOSED ARCO FEDERAL NO. 2 WELL PAD ALTERNATES AND ACCESS ROADS EDDY COUNTY, NEW MEXICO

Prepared for

PARKER AND PARSLEY DEVELOPMENT COMPANY
Midland, Texas

By

Christopher A. Turnbow

Submitted by

John C. Acklen
Christopher A. Turnbow
Co-Principal Investigators

Under

Bureau of Land Management
Antiquities Permit Number 45-2920-94P

Mariah Associates, Inc.
Albuquerque, New Mexico
MAI Project 1215

August 1994

ABSTRACT

The results of Class I (site records check) and Class III (intensive, 100% coverage, pedestrian survey) cultural resource inventories for four well pad locations and two access roads in Eddy County, New Mexico are summarized in the following report. The proposed undertaking is on Bureau of Land Management property. The total area represented by this survey project is approximately 20.7 acres (8.4 ha).

The survey was conducted by Mariah Associates, Inc. on July 21, 1994. Two cultural resource sites and four isolated cultural occurrences were located during the investigation. The original ARCO Federal No. 2 well pad location contains site LA 105624, a Category 2 Ceramic Period occupation with intact features and dark stained soil. This site is recommended as eligible to the National Register of Historic Places and should be avoided by the undertaking. If avoidance is not feasible, site LA 105624 is recommended for further archaeological testing. Alternate 1 well pad location to ARCO Federal No. 2 contains a small Category 1 prehistoric site (LA 105625) that is not recommended as eligible to the National Register of Historic Places. Alternates 2 and 3 contained no archaeological sites. Provided that LA 105624 can be avoided, archaeological clearance for the proposed undertaking is recommended.

1.0 PROJECT BACKGROUND

On July 21, 1994, Mariah Associates, Inc. (Mariah) conducted Class I (site records check) and Class III (intensive, 100% coverage, pedestrian survey) cultural resource inventories of approximately 20.7 acres (8.4 ha) for four alternate locations of a well pad and two proposed access roads in Eddy County, New Mexico. The survey was conducted by Mariah Project Archaeologist Christopher A. Turnbow. John C. Acklen and Christopher A. Turnbow served as Co-Principal Investigators. The survey was requested by Robert Yeates, Operations Engineer of Parker and Parsley Development Company, Midland, Texas.

The proposed project, situated on land administered by the Carlsbad Resource Area of the Roswell District, Bureau of Land Management (BLM), involves construction of a 400 x 400 ft (122 x 122 m) ARCO Federal No. 2 well pad and associated access road. Because an archaeological site exists on the originally proposed ARCO Federal No. 2 location, the cultural resource survey was expanded to include three alternate well pad locations, also measuring 400 x 400 ft (122 x 122 m), designated Alternates 1, 2, and 3. Proposed access road routes surveyed to these locations include a 1,350 x 100 ft (412 x 30 m) corridor which extends northeast from the proposed Alternate 1 to Alternate 2 will pad locations then eastward to an existing access road and a 1,280 x 100 ft (390 x 30 m) corridor that goes southeast from the proposed Alternate 3 well pad to an existing access road. Surveyors from John West Engineering, Hobbs, New Mexico, staked the various pads and roads during the cultural resource investigation.

Because the proposed project will involve ground disturbing activities on federally owned land, the survey was required by federal legislation designed to identify and record nonrenewable cultural resources. The survey was conducted under BLM Antiquities Permit Number 45-2920-94P.

The project area is located in Eddy County, New Mexico, in Township 19 South, Range 28 East, Section 34. The original ARCO Federal No. 2 well pad center point is 660 ft (201 m)

from the south line and 1,980 ft (604 m) from the west line. Alternate 1 is 660 ft (201 m) from the south line and 1,560 ft (476 m) from the west line. Alternate 2 is 1,010 ft (308 m) from the south line and 1,980 ft (604 m) from the west line. Alternate 3 is 1,980 ft (604 m) from the south line and 1,980 ft (604 m) from the west line. The center and four corners of each well pad were staked during or prior to initiation of the survey. The centerlines of the proposed access roads were also staked during the cultural resource survey. These flagged stakes were used for field identification of the inventory area. The corresponding U.S. Geological Survey (USGS) 7.5′ quadrangle map for the project areas is Angel Draw, New Mexico (Provisional 1985) (Figure 1.1).

2.0 ENVIRONMENTAL SETTING

The project area is located northeast of the town of Carlsbad, New Mexico. Prominent physiographic features include Burton Flat, located approximately 2.5 mi (4.0 km) southeast, and Angel Draw, located approximately 3.5 mi (5.6 km) southwest of the project area. Elevation of the project area is approximately 3,290 ft (1,003 m) above mean sea level (amsl). The project area is characterized as nearly flat with very little, if any, topographic relief. Low dune fields cover the southern portion of the project area.

Soils generally consist of the Reeves-Gypsum land-Cottonwood association (Chugg et al. 1971). These loamy soils are characterized as being shallow to moderately deep over gypsum beds and gypsum land. The nearest potential water source is Angel Draw located approximately 3.5 mi (5.6 km) to the southwest. The flora of the survey area is characterized by desert scrubland. Principal species include various grasses., prickly pear, creosote, black bush, and mesquite.

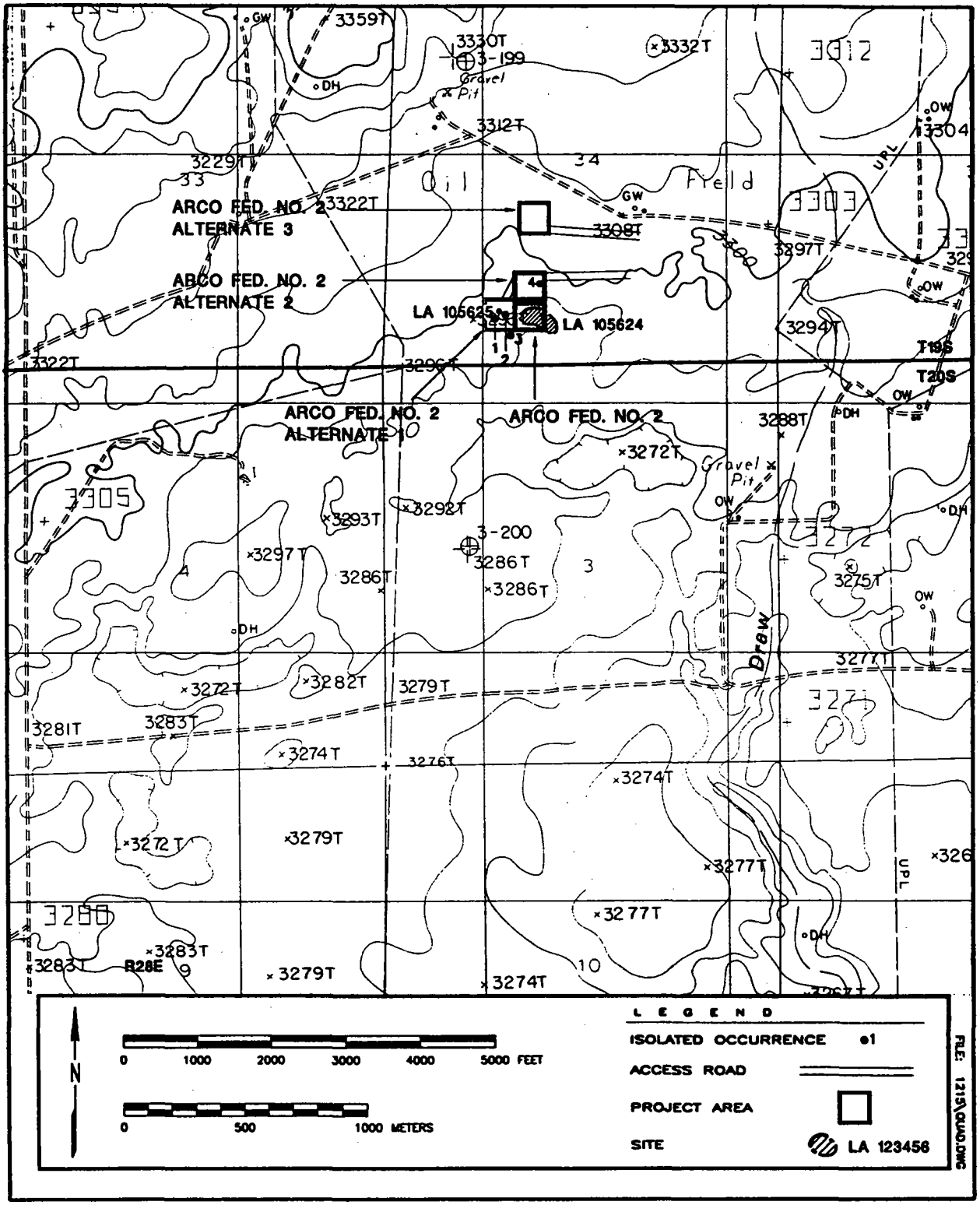


Figure 1.1 Project Location. Based on Angel Draw, New Mexico Quadrangle, (Provisional Edition 1985), USGS 7.5′ Series (1:24,000 Scale).

3.0 SURVEY METHODS

Prior to fieldwork, a Class I site records check of the Archaeological Records Management System (ARMS) was conducted via remote terminal to determine if any cultural resources were previously recorded within 1.0 mi (1.6 km) of the project area. The ARMS check revealed that four sites have been previously located within 1.0 mi (1.6 km) of the project area including two lithic scatters (LA 35455 and LA 38128) and two ceramic and lithic scatters (LA 16537 and LA 43380). The ARMS check was followed with a review of the BLM site files in the Carlsbad Resource Area office on July 21, 1994, which revealed four additional recorded sites (LA 102327, LA 102329, LA 104430, and BLM 5641). Site LA 104430 is a large campsite containing numerous burned caliche features and a probable Archaic period dart point. Finally, the State Register of Cultural Properties and the National Register of Historic Places (NRHP) show no listed sites located within the project areas.

The project area was surveyed by a single archaeologist walking nonoverlapping parallel transects spaced at 15 m intervals. Transect lines were marked with pin flags. Once the perimeter was reached, the surveyor reversed course and followed new transects adjacent to the previous line back to the opposite end. If cultural remains were encountered, survey was suspended and an intensive examination conducted to determine if the artifacts were isolated or part of a site.

Operational definitions of site and isolated occurrences (IOs) guided cultural resource detection and documentation. In compliance with federal standards, all cultural manifestations older than 50 years were recorded. Archaeological sites are defined as features or scatters generally consisting of 10 or more artifacts. Fewer artifacts may be documented as a site if they are associated with features or if, in the opinion of the supervisory archaeologist, subsurface cultural deposits are likely. IOs consist of archaeological manifestations displaying limited informational potential beyond that

recorded during survey. These generally include fewer than 10 artifacts; artifacts redeposited and lacking locational context; and single, undatable features. No artifacts were collected.

Light and weather conditions were excellent during the field session. Surface visibility in most of the survey area was excellent at 85%.

4.0 CULTURAL RESOURCE OVERVIEW AND RESEARCH DESIGN

4.1 CULTURAL RESOURCE OVERVIEW

Although specific terminologies may differ, most archaeologists would agree on four fundamental cultural periods in southeastern New Mexico: Paleoindian, Archaic, Ceramic, and Historic.

The Paleoindian period (ca. 10,500-5,500 B.C.) represents the earliest uncontested human occupation in the Southwest. Paleoenvironmental data suggest that the climate was cooler than at present with considerably less variation in temperature between seasons. Paleoindian subsistence is commonly understood to be a focal economy which emphasized big game hunting (Judge 1982). Tool assemblages include relatively large, often fluted, lanceolate unstemmed points frequently found in association with large extinct Pleistocene animals, including mammoth, bison, camel, horse, and modern species of elk, deer, and bear.

The Archaic period (ca. 5,500 B.C.-A.D. 900) coincides with the beginning of the Sand Canyon Postpluvial, when essentially modern climatic conditions commenced. Archaic subsistence is characterized by a diffuse economy (Judge 1982) reflecting a greater reliance on small bodied game and especially, wild plant foods. Mobility was more restricted in extent and cyclical. Advantageous site locations were frequently re-used on a seasonal basis. The archaeological record reflects considerable diversity in tool forms with a greater

emphasis on grinding tools. Archaic points tend to be somewhat shorter and to show extensive morphological variability and less precision in the quality of manufacture. The Archaic period has been divided into at least two periods. Early Archaic sites are fairly uncommon in the area; whereas, Late Archaic sites are better represented (Sebastian and Larralde 1989).

The Ceramic period (ca. A.D. 600/900-1540) is marked by the appearance of brown ware pottery, small points, and, later, sedentism and some horticulture in certain areas. Beginning dates are variously placed between A.D. 100 and 900. The initial appearance of Ceramic period traits occurred primarily along major river valleys and probably reflects the addition of new traits to the Late Archaic assemblage base. Throughout the duration of the Ceramic period, the western edge of the Llano Estacado seems to have been a boundary between the Anasazi/Mogollon and the Plains culture areas. Two primary chronological sequences have been used to characterize Ceramic period developments in southeastern New Mexico (Sebastian and Larralde 1989). These include classifications developed by Lehmer (1948) and Leslie (1979) based on Corley (1965).

The Historic period (after A.D. 1540) commences with the earliest Anglo-American use of southeastern New Mexico. Occupation during the early 1860s was largely related to the subsistence requirements of early forts built and staffed to deal with the Indian "problem." Once the Indians were contained and the Homestead Act of 1862 was passed, cattle ranchers and settlers began to move into the area. With the construction of the railroad in the late 1890s, homesteaders began to arrive in large numbers. The railroad facilitated the area's integration into the national economy. Increasingly, the huge cattle ranches characteristic of the late 1800s were broken up into smaller ranches and farms. Homesteaders practiced a mixture of agriculture and herding on small parcels of land. Droughts between 1909 and 1912 discouraged a number of "nesters." Droughts and the Great Depression of the 1930s effectively ended the feasibility of subsistence farming and

ranching on small plots of land. Since that time, the size of farms and ranches in the area has substantially increased.

4.2 RESEARCH DESIGN FOR THE PROJECT

The primary goal of archaeological surveys on federal property is to provide an inventory of cultural resources. This information is necessary to properly protect and manage those resources. Additionally, information obtained about archaeological resources can serve to address general and regional research domains about past occupations, which include the chronology of occupation, site subsistence, and settlement.

5.0 SURVEY RESULTS

Two archaeological sites and four IOS were located during the course of the survey.

5.1 SITES

5.1.1 LA 105624 (MA 1215-1)

This large site is characterized as an artifact scatter with features located in a prominent dune field (Figure 5.1). The site measures 120 m northwest-southeast by 100 m northeast-southwest and is situated at an elevation of 3,290 ft (1,003 m) amsl. The dunes are covered in a fine-grained sand with areas of sandy loam in the blowouts. Vegetation is sparse and limited to mesquite and grasses. Ground visibility was around 85%.

The artifact assemblage of the site was sparse and consists of chipped- and ground-stone artifacts as well as a single ceramic. Most artifacts were found in the northern portion of the site. Ground-stone and chipped-stone artifacts roughly occur in equal numbers. A

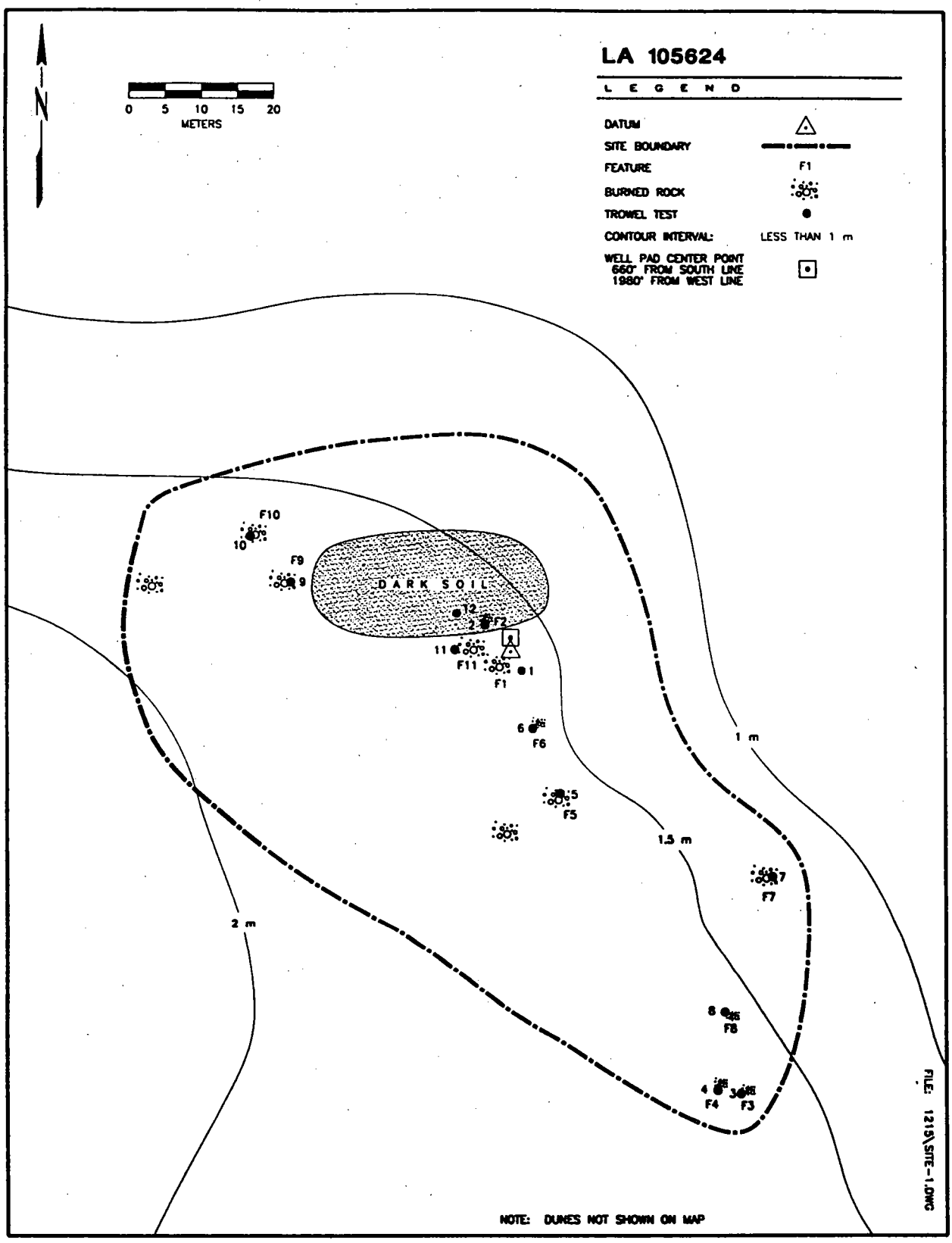


Figure 5.1 Site LA 105624, Site Plan.

sample of 21 specimens was analyzed in the field and represents approximately 25% of the assemblage.

Chipped-stone artifacts observed on the site included only debitage. The inventoried chipped stone includes three cores, three cortical flakes, and three noncortical flakes. Two hammer stones were also documented. Most of the raw material used in the chipped-stone production were purple, red, and gray quartzites although red cherts and a cherty limestone or dolomite were also exploited.

Ground-stone artifacts include eight metate fragments, a mano fragment, and an unidentified ground stone fragment. The metate fragments include a nearly complete, slightly ground slab metate and a possible trough metate. They exhibit plano, concave, or biconcave ground surfaces and were manufactured from well cemented, fine- and coarse-grained sandstones.

A single coarse tempered El Paso Brown body sherd was found near the center of the site. This specimen indicates a site occupation during the Ceramic Period which dates between A.D. 400 and 1500s.

Eleven thermal features were documented on the site. They are characterized as deflated or semi-deflated scatters of thermally-altered rock. Table 5.1 provides information on the features. In general, they contain 20 or more pieces of burned caliche in a reasonably tight cluster. Feature measurements range from 0.75 x 0.90 m to 2.0 x 4.0 m. Although burned caliche represents the bulk of the thermally-altered rock, sandstone and broken ground-stone fragments, also of sandstone, were observed in the features. Three of the features (Features 2, 9, and 10) contained dark, discolored soil or ashy fill, but no charcoal was identified in any of the tests.

Table 5.1 Site LA 105624 Features.

Feature No.	Dimensions	Contents	Test Results
1	0.5 x 1.0 m	20+ burned caliche	Trowel Test 1, negative
2	4.0 x 2.0 m	50+ burned caliche (small), 1 sandstone metate fragment, 1 flake	Trowel Test 2, soil darker but no artifacts or charcoal
3	1.25 x 1.25 m	40+ burned caliche, 2 sandstone	Trowel Test 3, negative
4	2.5 x 1.0 m	20+ burned caliche	Trowel Test 4, negative
5	2.5 x 1.0 m	20+ burned caliche	Trowel Test 5, 1 burned caliche in upper few cm
6	3.0 x 2.0 m	40+ burned caliche (small)	Trowel Test 6, negative
7	0.75 x 0.65 m	25+ burned caliche	Trowel Test 7, negative
8	1.0 x 1.0 m	18+ burned caliche, 1 core	Trowel Test 8, negative
9	0.9 x 0.75 m	30+ burned caliche, ground stone, 2 sandstone	Trowel Test 9, 1 burned caliche, darker soil, no charcoal
10	2.0 x 1.5 m	25+ burned caliche, 4 sandstone metate fragments, Plano-Convex basin metate (sandstone)	Trowel Test 10, very dark stain with burned caliche at 5 cm bgs
11	3.0 x 2.0 m	30+ burned caliche	Trowel Test 11, dark soil to 5 cm

A large area of light brown soil staining is located in the northern portion of the site. Large dunes are found in the area and may cover some of these deposits. The discolored soil is interpreted as a possible midden deposit. This area also produced the highest density of artifacts on the site. A trowel test into this deposit revealed only 5 cm of loose brown sand resting on a compact, tan sand stratum.

Trowel tests were placed along the edge of each feature and in the dark soil area on the north side of the site. In all, twelve were excavated to a maximum depth of from 5 to 20 cm below ground surface (bgs). Four contained discolored or dark soil. Test 2 in Feature 2 and Test 9 in Feature 9 yielded dark fill soil to 5 cm bgs. Test 10 in Feature 10 produced a very dark, ashy fill with buried, buried caliche at 5 to 8 cm bgs. This feature may be the best preserved and suggests an intact basin-shaped pit filled with ashy soil and burned caliche. Test 12, located in the possible midden area on the north side of the site, was excavated to 20 cm bgs. The discolored soil extended only from the surface to 5 cm bgs. Below that depth, a compact, light brown sand was encountered.

From the data collected, site LA 105624 is interpreted as a camp or series of camps with at least one component dating to the Ceramic Period. The features are clustered in four areas, suggesting the possibility of discreet social groups or periods of occupation. The presence of numerous ground-stone artifacts could argue that plant food processing was a major activity on the site.

The site is classified as a Category 2 resource and contains well preserved features and a large area of dark discolored soil that may represent a midden deposit. It also has an artifact assemblage not sufficiently analyzed during the survey. Given the site's potential to contribute further meaningful data on its prehistoric occupations, the site is recommended as eligible to the NRHP. The site area should be avoided by the proposed undertaking. If avoidance is not feasible, a program of archaeological test excavations and/or mitigation should be initiated.

5.1.2 LA 105625 (MA 1215-2)

This small site consists of a sparse artifact scatter located in a large blowout surrounded by low dunes of less than 1.0 m in height (Figure 5.2). The site measures 6 m northwest-southeast by 4 m northeast-southwest and lies at an elevation of 3,295 ft (1,004 m) amsl. The soils are fine sands and sandy loams. Vegetation in the area is limited to mesquites and a few low grasses. Surface visibility in the area was approximately 95%.

The artifact assemblage was completely analyzed in the field. A total of 12 artifacts were present on the surface. They included five fragments of a single coarse sandstone metate, five cortical core flakes, one noncortical core flake, and one noncortical angular shatter. The metate was manufactured from a coarse sandstone and exhibits one slightly concave ground surface. Five of the core flakes and the angular shatter fragment were produced from a single chalcedony pebble. The other flake was a tan quartzite. In addition, a single piece of burned caliche was found on the site.

Two trowel tests were excavated in the scatter. Test 1 was located 25 cm east of datum and Test 2 was adjacent to the burned caliche and a metate fragment at 1.9 m northwest of datum. The stratigraphy of both showed loose, tan fine-grained sand from the surface to 9-11 cm bgs followed by a well cemented, compact, whitish-tan sand to 25 cm bgs. No artifacts or cultural deposits were found in either test.

The site is interpreted as a very short-term camp. A single chalcedony pebble was initially reduced at the site. The broken metate and the burned caliche may reflect the scattered remains of a deflated hearth. Since no diagnostic artifacts were observed, the temporal affiliation of the site is unknown.

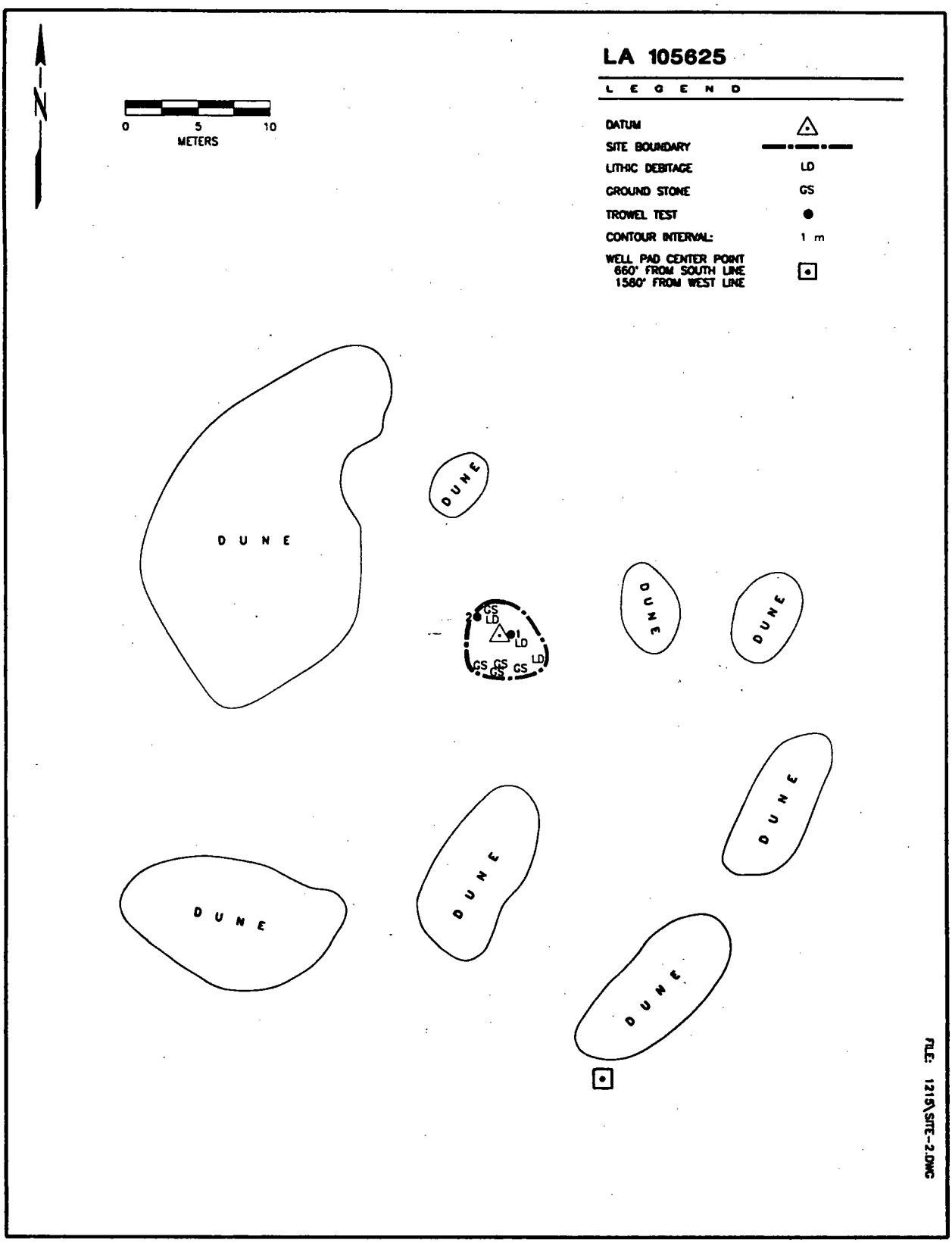


Figure 5.2 Site LA 105625, Site Plan.

Given the absence of subsurface cultural deposits and the complete documentation of the surface assemblage, the data potential of the resource has been exhausted. This Category 1 site is not eligible to the NRHP, and no further archaeological work is deemed warranted.

5.2 ISOLATED OCCURRENCES

Four IOs were located during the field investigations. Two IOs (IO 1-2) were noted in ARCO Federal No. 2 Alternate 1. One (IO 3) was located 20 m south of the southeast corner of that same proposed well pad location. It consisted of a pile of four artifacts that may suggest recent collecting. The last one (IO 4) was found in ARCO Federal No. 2 Alternate 2. Table 5.2 contains the specific information on these finds.

Table 5.2 Isolated Occurrences.

IO No.	Description	Legal
1	Two pieces of burned caliche, 3.0-4.0 cm in diameter	T19S, R28E, Sec. 34 SW¼, SE¼, SW¼
2	One piece of burned caliche, 4.0 cm diameter	T19S, R28E, Sec. 34 SW¼, SE¼, SW¼
3	One red quartzite core, 50% cortex, 4 flakes removed, 6.0 x 4.8 x 3.1 cm; 1 red chert primary core flake, 100% cortex, 3.4 x 2.6 x 0.6 cm; 1 gray chert primary core flake, 10% cortex, 1.8 x 1.2 x 0.6 cm; 1 gray chert angular shatter, 30% cortex, 1.6 x 1.5 x 1.4 cm.	T19S, R28E, Sec. 34 SW¼, SE¼, SW¼
4	One piece of burned caliche, 8.0 m diameter	T19S, R28E, Sec. 34 NE¼, SE¼, SW¼

6.0 SUMMARY AND RECOMMENDATIONS

The cultural resource survey of the four well pads and related access roads for ARCO Federal No. 2 identified two archaeological sites (LA 105624 and LA 105625) and four IOs. The data potential of the IOs was exhausted during their recordation, and they are not recommended for further investigation.

The original ARCO Federal No. 2 well pad contains a Category 2 archaeological site dating to the Ceramic Period. This site is considered to be a significant cultural resource with data potential beyond that recorded during the survey and, therefore, is recommended as eligible to the NRHP. It is further recommended that LA 105624 be completely avoided during the proposed undertaking. This includes restricting vehicular traffic across the area. If avoidance is not practical, an archaeological program of test excavations and/or mitigation should be initiated.

The survey of Alternate 1 well pad identified LA 105625 (a Category 1 site) and two IOs. None of the cultural resources found in Alternate 1 are recommended as eligible to the NRHP. The Alternate 2 and 3 well pads and the ROWs for the two access roads contained no archaeological sites. For these reasons, archaeological clearance of all three alternate well pad locations and the proposed access roads is recommended.

Provided that site LA 105624 is avoided by the undertaking, cultural resource clearance is recommended for the construction of ARCO Federal No. 2 using Alternate 1, 2, or 3 well pad and access road. If cultural remains are unearthed during ground moving activities, the BLM should be notified immediately, and an assessment of the find should be conducted by a qualified archaeologist.

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PARKER & PARSLEY DEVELOPMENT CO.
ARCO FEDERAL NO. 2
EDDY COUNTY, N.M.

RECOMMENDED BASIC DRILLING PROGRAM

Directional Control

1. Plan: To guide the wellbore from a 1010 FS & 1980 FWL SHL to a target area at 6350' TVD, at an orthodox (standard) location under the (originally) preferred well location 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E in Old Millman Ranch (Bone Spring) Associated field.

2. Method:
   a) Surface, 0-450', no control
   b) Intermediate, 450-1000', maintain conventional straight hole.
   c) Longstring, 1000 - 6500 (to drill a 4° deviated hole, 1230'- T.D.)
      1) Run gyro - directional survey at 100' intervals inside 8 5/8 csg before drilling out, determining BHL (950'md).
      2) Plan deviation and directional control measures.
      3) Drill out in 7 7/8 hole w/ slick dc's, make 230' new hole. run S. S. survey & POH for appropriate BHA (1230')
         a) Run DHM to: 1] build angle, &/or
            2] turn hole south
         b) Or, if angle & direction acceptable, RIH NMDC on bit, proper stabilization to achieve short term objectives and drill ahead.
         c) Run single shot surveys at 4 to 8 connections, permitting acceptable deviation & directional control down to 4300'
         d) Run (2nd) gyro survey inside dp (4300 - 750'md)
            1] make motor (DHM) run, if direction off,
            2] Make any necessary changes in stabilization and drill ahead.
      4) Drill to T.D. Run (3rd) gyro inside drill string, f/ T.D. - 4100' for correct BHL & NMOCD. The desired BHL is to fall within a 150' radial area encircling the (verticle) TVD under a 660 X 1980' surface location.

Bob Yeates

PARKER & PARSLEY DEVELOPMENT CO.
P. O. BOX 3178
MIDLAND, TEXAS 79702

DRILLING PROGRAM
DATE: 8/4/94
FOR: Contractor & Files

CONTRACTOR: McGee Drlg. Corp.-Rig #2 FIELD: Old Millman Rch(Bone Spring)
LEASE: Arco Federal WELL NO: 2
LOCATION: * 1010' FS & 1980 FWL, Sec. 34, T-19-S, R-28-E, Eddy Co., NM
DIRECTIONS: Go 8 mi. E. from carlsbad on 62/180. Turn L. (N) on CR 242 at mile marker 44. Go 6 mi. N & W to Oxy plant, turn Right (N) on wide caliche road, CR 242. Proceed 3 mi. North, turn Left (W) at P&P sign. Go West 2 1/2 mi. turn L. (S) 1/4 mi.

*SHL: A DEVIATED HOLE WILL BE DIRECTED TO 150' TARGET AT TVD, 660 FS & 1980 FWL
ELEVATIONS: (Surveyor's GL 3295) ACTUAL GL _____ DF _____ KB _____

CASING PROGRAM

CONDUCTOR =	" Hole		Csg @		Depth
SURFACE =	17 1/2" Hole	13 3/8, 48# H-40 STC	Csg @	450	Depth
PROTECTIVE =	11 " Hole	8 5/8", 24# K-55 STC	Csg @	1000	Depth
PRODUCTION =	7 7/8 " Hole	5 1/2, 15.50# K-55 L&STC	Csg @	6500	Depth

MUD PROGRAM

INTERVALS	TYPE	PROPERTIES	REMARKS
0 - 450	Spud Mud	8.4 - 9.5, 32 - 62 vis	Steel pits
* 450 - 1000	Brine	N/C, paper sweeps *	Reserve pits,lime-pH
1000 - 6000	Fresh Water	N/C, PHB-LCM sweeps *	Outer reserve,caust-pH
6000 0 T.D.	FW Gel - PAC	8.5-8.8,34-36 vis,10c.c. W.L.*	Stell pits,caustic-pH

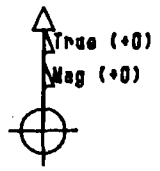
* FW GEL-LCM SWEEPS FOR SEEPAGE & CUTTINGS REMOVAL, AS REQUIRED.

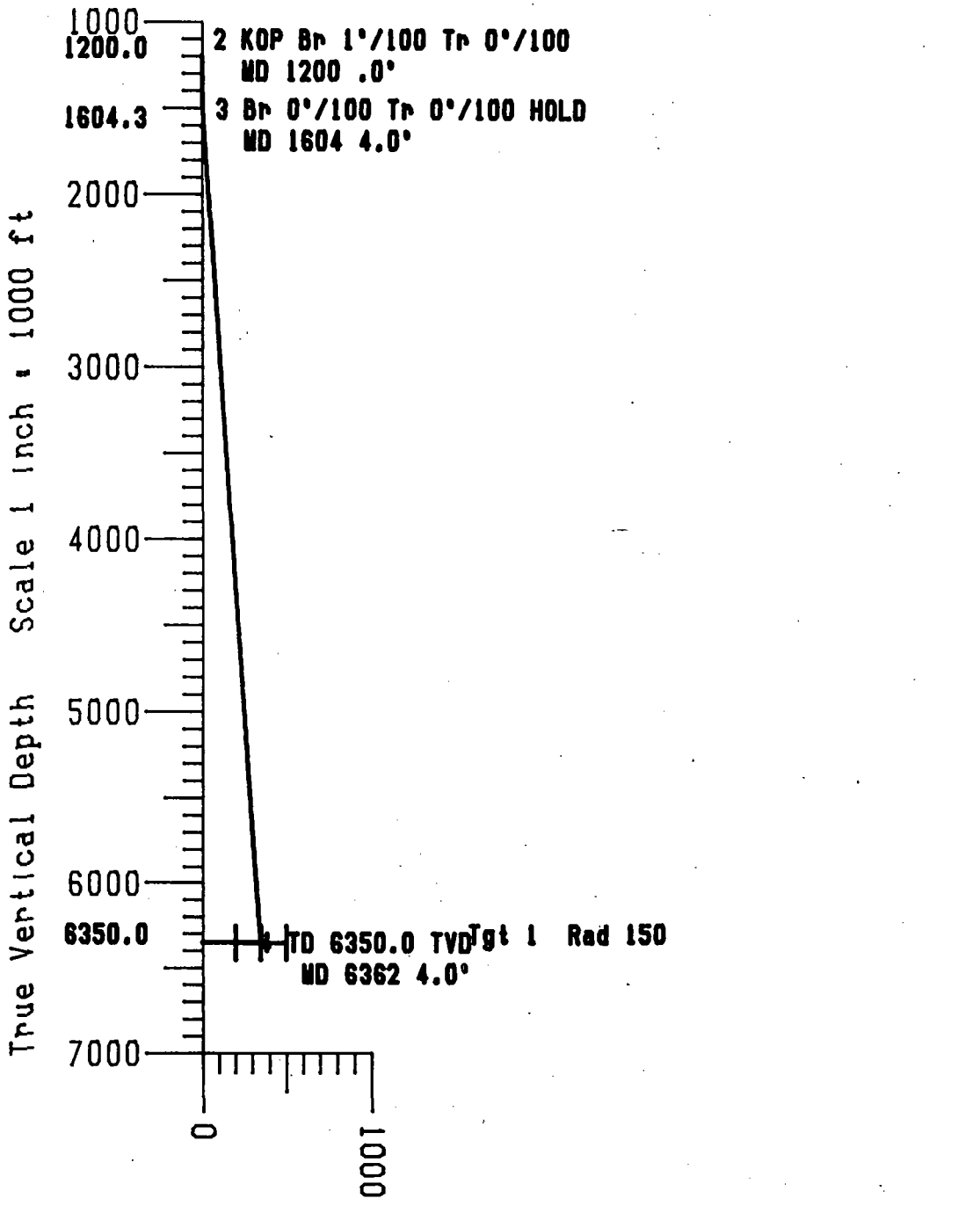
GEOLOGICAL FORMATION	TOPS, INTERVAL DEPTHS	REMARKS
T/Salt	750 - 800	Wash-outs,boulders
B/Salt	900 - 950	
Delaware	3030	Possible wt.increase

SCIENTIFIC DRILLING
FOR
PARKER AND PARSLEY
ARCO FEDERAL #2

IN
EDDY COUNTY, NEW MEXICO

DATE: 08-02-94





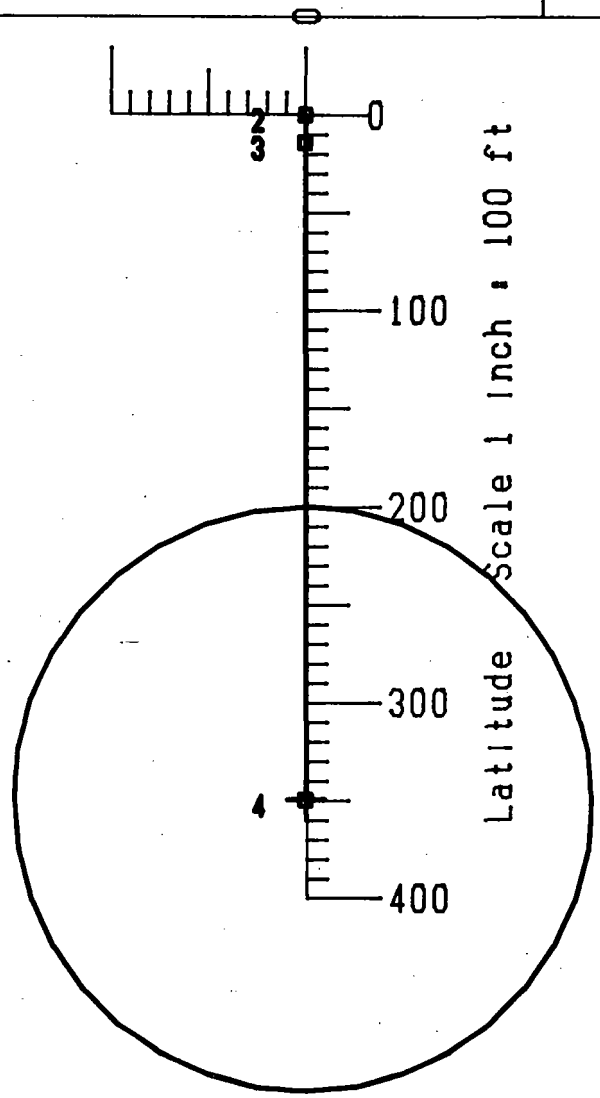
PLANE OF VERT SECTn S00.00E

SCIENTIFIC DRILLING
FOR
PARKER AND PARSLEY
ARCO FEDERAL #2

IN
EDDY COUNTY, NEW MEXICO

DATE: 08-02-94

True (+0)
Mag (+0)



PLANE OF VERT SECTn 900.00E

PLOT DATE 08-02-1994

TARGET DETAILS

No	TVD	Lat	Dep
1	6350.0	-350.0	0.0

WELL PROPOSAL

Sec	MD	TVD	VS	INC	DIR	LAT	DEP	TGT
1	0.0	0.0	0.0	0.0	900.00E	0.0	0.0	
2	1200.0	1200.0	0.0	0.0	900.00E	0.0	0.0	
3	1604.8	1604.2	14.3	4.0	900.00E	-14.3	0.0	
4	6362.2	6350.0	350.0	4.0	900.00E	-350.0	0.0	1

ARCOFED2 ARCO FEDERAL #2 8-01-94
Plane of Vertical Section 180.00

Section 1 (Hold Section)

							Values to be applied			
MD	Inc	Dir	Tvd	Vsec	Lat	Dep	Build	Turn	Dleg	T Face
1200.0	0.00	180.00	1200.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0
1300.0	1.00	180.00	1300.0	0.9	-0.9	-0.0	1.0	0.0	1.0	0.0
1400.0	2.00	180.00	1400.0	3.5	-3.5	-0.0	1.0	0.0	1.0	0.0
1500.0	3.00	180.00	1499.9	7.9	-7.9	-0.0	1.0	0.0	1.0	0.0
1600.0	4.00	180.00	1599.7	14.0	-14.0	-0.0	1.0	0.0	1.0	0.0

Section 3 (Hold Section)

							Values to be applied			
MD	Inc	Dir	Tvd	Vsec	Lat	Dep	Build	Turn	Dleg	T Face
1604.6	4.05	180.00	1604.3	14.3	-14.3	0.0	0.0	0.0	0.0	0.0
1700.0	4.05	180.00	1699.4	21.0	-21.0	-0.0	0.0	0.0	0.0	0.0
1800.0	4.05	180.00	1799.2	28.1	-28.1	-0.0	0.0	0.0	0.0	0.0
1900.0	4.05	180.00	1898.9	35.1	-35.1	-0.0	0.0	0.0	0.0	0.0
2000.0	4.05	180.00	1998.7	42.2	-42.2	-0.0	0.0	0.0	0.0	0.0
2100.0	4.05	180.00	2098.4	49.2	-49.2	-0.0	0.0	0.0	0.0	0.0
2200.0	4.05	180.00	2198.2	56.3	-56.3	-0.0	0.0	0.0	0.0	0.0
2300.0	4.05	180.00	2297.9	63.4	-63.4	-0.0	0.0	0.0	0.0	0.0
2400.0	4.05	180.00	2397.7	70.4	-70.4	-0.0	0.0	0.0	0.0	0.0
2500.0	4.05	180.00	2497.4	77.5	-77.5	-0.0	0.0	0.0	0.0	0.0
2600.0	4.05	180.00	2597.2	84.5	-84.5	-0.0	0.0	0.0	0.0	0.0
2700.0	4.05	180.00	2696.9	91.6	-91.6	-0.0	0.0	0.0	0.0	0.0
2800.0	4.05	180.00	2796.7	98.6	-98.6	-0.0	0.0	0.0	0.0	0.0
2900.0	4.05	180.00	2896.4	105.7	-105.7	-0.0	0.0	0.0	0.0	0.0
3000.0	4.05	180.00	2996.2	112.7	-112.7	-0.0	0.0	0.0	0.0	0.0
3100.0	4.05	180.00	3095.9	119.8	-119.8	-0.0	0.0	0.0	0.0	0.0
3200.0	4.05	180.00	3195.7	126.9	-126.9	-0.0	0.0	0.0	0.0	0.0
3300.0	4.05	180.00	3295.4	133.9	-133.9	-0.0	0.0	0.0	0.0	0.0
3400.0	4.05	180.00	3395.2	141.0	-141.0	-0.0	0.0	0.0	0.0	0.0
3500.0	4.05	180.00	3494.9	148.0	-148.0	-0.0	0.0	0.0	0.0	0.0

ARCOFED2 ARCO FEDERAL #2

							Values to be applied			
MD	Inc	Dir	Tvd	Vsec	Lat	Dep	Build	Turn	Dleg	T Face
3600.0	4.05	180.00	3594.7	155.1	-155.1	-0.0	0.0	0.0	0.0	0.0
3700.0	4.05	180.00	3694.4	162.1	-162.1	-0.0	0.0	0.0	0.0	0.0
3800.0	4.05	180.00	3794.2	169.2	-169.2	-0.0	0.0	0.0	0.0	0.0
3900.0	4.05	180.00	3893.9	176.3	-176.3	-0.0	0.0	0.0	0.0	0.0
4000.0	4.05	180.00	3993.7	183.3	-183.3	-0.0	0.0	0.0	0.0	0.0
4100.0	4.05	180.00	4093.4	190.4	-190.4	-0.0	0.0	0.0	0.0	0.0
4200.0	4.05	180.00	4193.2	197.4	-197.4	-0.0	0.0	0.0	0.0	0.0
4300.0	4.05	180.00	4292.9	204.5	-204.5	-0.0	0.0	0.0	0.0	0.0
4400.0	4.05	180.00	4392.7	211.5	-211.5	-0.0	0.0	0.0	0.0	0.0
4500.0	4.05	180.00	4492.4	218.6	-218.6	-0.0	0.0	0.0	0.0	0.0
4600.0	4.05	180.00	4592.2	225.7	-225.7	-0.0	0.0	0.0	0.0	0.0
4700.0	4.05	180.00	4691.9	232.7	-232.7	-0.0	0.0	0.0	0.0	0.0
4800.0	4.05	180.00	4791.7	239.8	-239.8	-0.0	0.0	0.0	0.0	0.0
4900.0	4.05	180.00	4891.4	246.8	-246.8	-0.0	0.0	0.0	0.0	0.0
5000.0	4.05	180.00	4991.2	253.9	-253.9	-0.0	0.0	0.0	0.0	0.0
5100.0	4.05	180.00	5091.0	260.9	-260.9	-0.0	0.0	0.0	0.0	0.0
5200.0	4.05	180.00	5190.7	268.0	-268.0	-0.0	0.0	0.0	0.0	0.0
5300.0	4.05	180.00	5290.5	275.1	-275.1	-0.0	0.0	0.0	0.0	0.0
5400.0	4.05	180.00	5390.2	282.1	-282.1	-0.0	0.0	0.0	0.0	0.0
5500.0	4.05	180.00	5490.0	289.2	-289.2	-0.0	0.0	0.0	0.0	0.0
5600.0	4.05	180.00	5589.7	296.2	-296.2	-0.0	0.0	0.0	0.0	0.0
5700.0	4.05	180.00	5689.5	303.3	-303.3	-0.0	0.0	0.0	0.0	0.0
5800.0	4.05	180.00	5789.2	310.3	-310.3	-0.0	0.0	0.0	0.0	0.0
5900.0	4.05	180.00	5889.0	317.4	-317.4	-0.0	0.0	0.0	0.0	0.0
6000.0	4.05	180.00	5988.7	324.5	-324.5	-0.0	0.0	0.0	0.0	0.0
6100.0	4.05	180.00	6088.5	331.5	-331.5	-0.0	0.0	0.0	0.0	0.0
6200.0	4.05	180.00	6188.2	338.6	-338.6	-0.0	0.0	0.0	0.0	0.0
6300.0	4.05	180.00	6288.0	345.6	-345.6	-0.0	0.0	0.0	0.0	0.0
6362.2	4.05	180.00	6350.0	350.0	-350.0	0.0	0.0	0.0	0.0	0.0

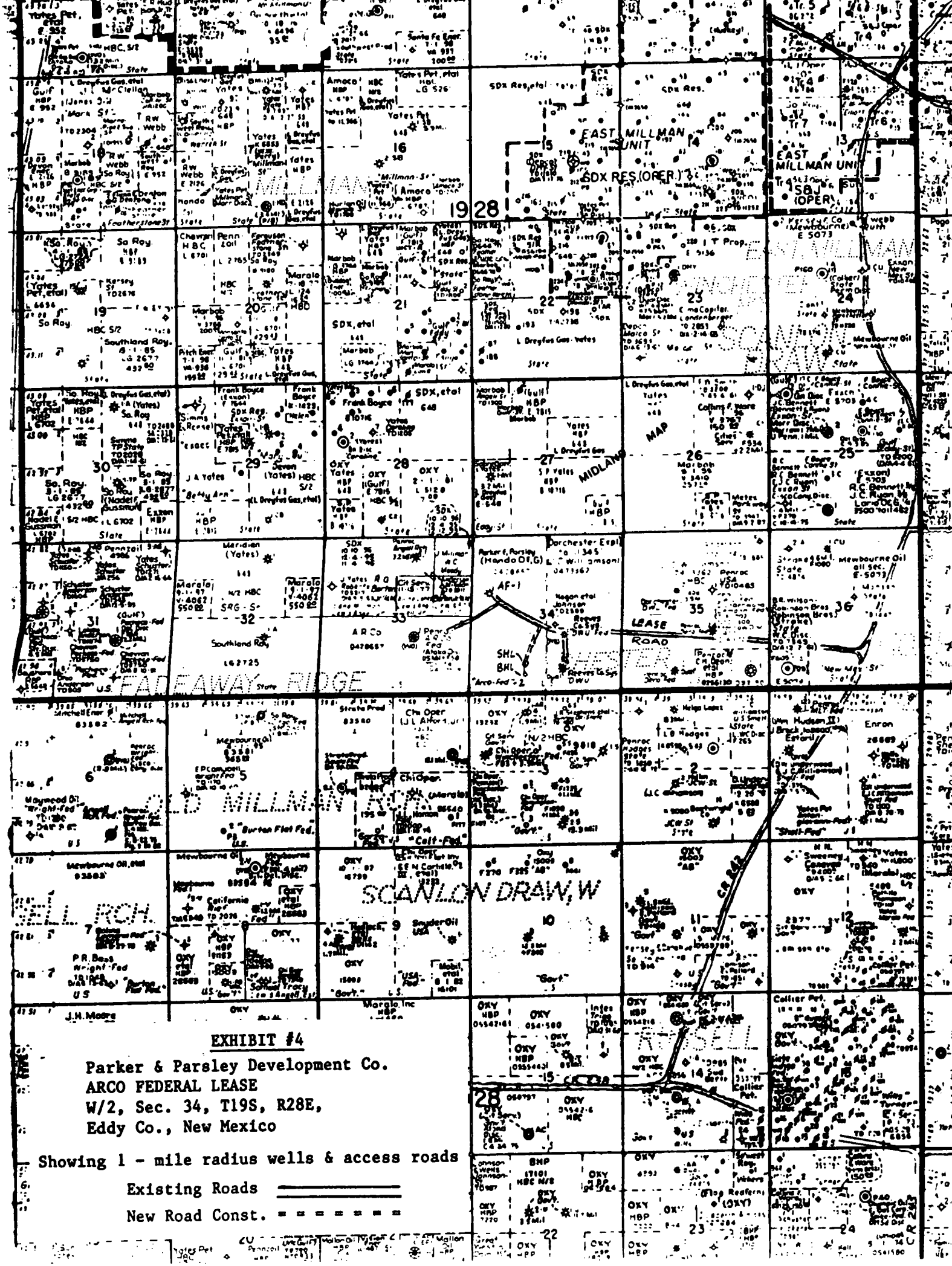


EXHIBIT #4

Parker & Parsley Development Co.
ARCO FEDERAL LEASE
W/2, Sec. 34, T19S, R28E,
Eddy Co., New Mexico

Showing 1 - mile radius wells & access roads

Existing Roads ═══

New Road Const. - - - - -

PARKER & PARSLEY
DEVELOPMENT COMPANY

P O Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

Reeves County Systems, Inc.
Attn: Mr. Robert Hillin
P.O. Box 152
Odessa, TX 79760

Re: Arco Federal No. 2
Eddy County, New Mexico

Dear Mr. Hillin:

This is to inform you of Parker & Parsley's intent to directionally drill the aforementioned well from a site 1010 FS & 1980 FWL of Sec. 34 to an orthodox bottomhole location under the preferred location being 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E, offsetting your acreage. The surface hole location was necessarily moved to an acceptable area appropriately out of an identified archaeological site. A base map with designated access roads and our drilling plans are enclosed.

Please waive your rights to any objections to our above mentioned plans by signifying in the space provided notarizing and returning one copy of this letter. I would be pleased to provide any additional information should the need arise. Thank you for your attention to this matter.

Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Bob Yeates
Consulting Engineer

Please mail me a copy of surveys @ T.D.

Waiver: R. D. Hillin
Mr. Robert Hillin
Reeves County Systems, Inc.

cc: Michael Stogner, NMOCD, Santa Fe, NM
L. Anderson/Well File
W. Gibson - S. Owen

BY/mm

M. Reeves
Well File (1379)

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

CHI Operating
Attn: David Harrison
P.O. Box 1799
Midland, TX 79702

Re: Arco Federal No. 2
Eddy County, New Mexico

Dear Mr. ~~Hillin~~ Harrison

This is to inform you of Parker & Parsley's intent to directionally drill the aforementioned well from a site 1010 FS & 1980 FWL of Sec. 34 to an orthodox bottomhole location under the preferred location being 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E, offsetting your acreage. The surface hole location was necessarily moved to an acceptable area appropriately out of an identified archaeological site. A base map with designated access roads and our drilling plans are enclosed.

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Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Bob Yeates
Consulting Engineer

Waiver:
David Harrison
CHI Operating

cc: Michael Stogner, NMOCO, Santa Fe, NM
L. Anderson/Well File
W. Gibson S. Owen

BY/mm

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

Penroc Oil Corp.
Attn: M.Y. Merchant
P.O. Box 5970
Hobbs, NM 88241

Re: Arco Federal No. 2
Eddy County, New Mexico

(typist error)
Dear Mr. ~~Hillin:~~ Merchant

This is to inform you of Parker & Parsley's intent to directionally drill the aforementioned well from a site 1010 FS & 1980 FWL of Sec. 34 to an orthodox bottomhole location under the preferred location being 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E, offsetting your acreage. The surface hole location was necessarily moved to an acceptable area appropriately out of an identified archaeological site. A base map with designated access roads and our drilling plans are enclosed.

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Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Bob Yeates
Consulting Engineer

Waiver: [signature] *
M.Y. Merchant
Penroc Oil Corp.

cc: Michael Stogner, NMOCO, Santa Fe, NM
L. Anderson/Well File
W. Gibson - S. Owen

BY/mm

* Subject to Penroc receiving copies of open hole logs - Thanks -
8/19/94

DD-100

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 25, 1994

State of New Mexico
Oil Conservation Division
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

Attn: Michael Stogner

Re: Application to Drill Directional Well
Arco Federal No. 2
Eddy County, N.M.

Gentlemen:

Please include the attached waiver letter with our previous application submittal. This letter had been unfortunately omitted.

Sincerely,

Bob Yeates
Consulting Engineer

Attch.

cc: BLM
L. Anderson

BY/mm

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

Oxy USA Inc.
Attn: Robert P. Elliott
P.O. Box 50250
Midland, TX 79710

Re: Arco Federal No. 2
Eddy County, New Mexico

Dear Robert P. Elliott:

This is to inform you of Parker & Parsley's intent to directionally drill the aforementioned well from a site 1010 FS & 1980 FWL of Sec. 34 to an orthodox bottomhole location under the preferred location being 660 FS & 1980 FWL of Sec. 34, T-19-S, R-28-E, offsetting your acreage. The surface hole location was necessarily moved to an acceptable area appropriately out of an identified archaeological site. A base map with designated access roads and our drilling plans are enclosed.

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Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Consulting Engineer

Waiver:
Robert P. Elliott
Oxy USA Inc.

cc: Michael Stogner, NMOCD, Santa Fe, NM
L. Anderson/Well File
W. Gibson - S. Owen

BY/mm

JK Received thanks 8/24/94

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

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Attn: Robert P. Elliott
P.O. Box 50250
Midland, TX 79710

Re: Arco Federal No. 2
Eddy County, New Mexico

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Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Bob Yeates
Consulting Engineer

Waiver: Robert P. Elliott
Robert P. Elliott
Oxy USA Inc.

OK Received thanks 8/24/94

cc: Michael Stogner, NMOCD, Santa Fe, NM
L. Anderson/Well File
W. Gibson - S. Owen

BY/mm

PARKER & PARSLEY
DEVELOPMENT COMPANY

P.O. Box 3178 • Midland, Texas 79702-3178
303 West Wall • Suite 101 • Midland, Texas 79701
915/683-4768

August 12, 1994

Oxy USA Inc.
Attn: Robert P. Elliott
P.O. Box 50250
Midland, TX 79710

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Eddy County, New Mexico

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Sincerely,

Parker & Parsley Development Co.

Bob Yeates
Consulting Engineer

Waiver:
Robert P. Elliott
Oxy USA Inc.

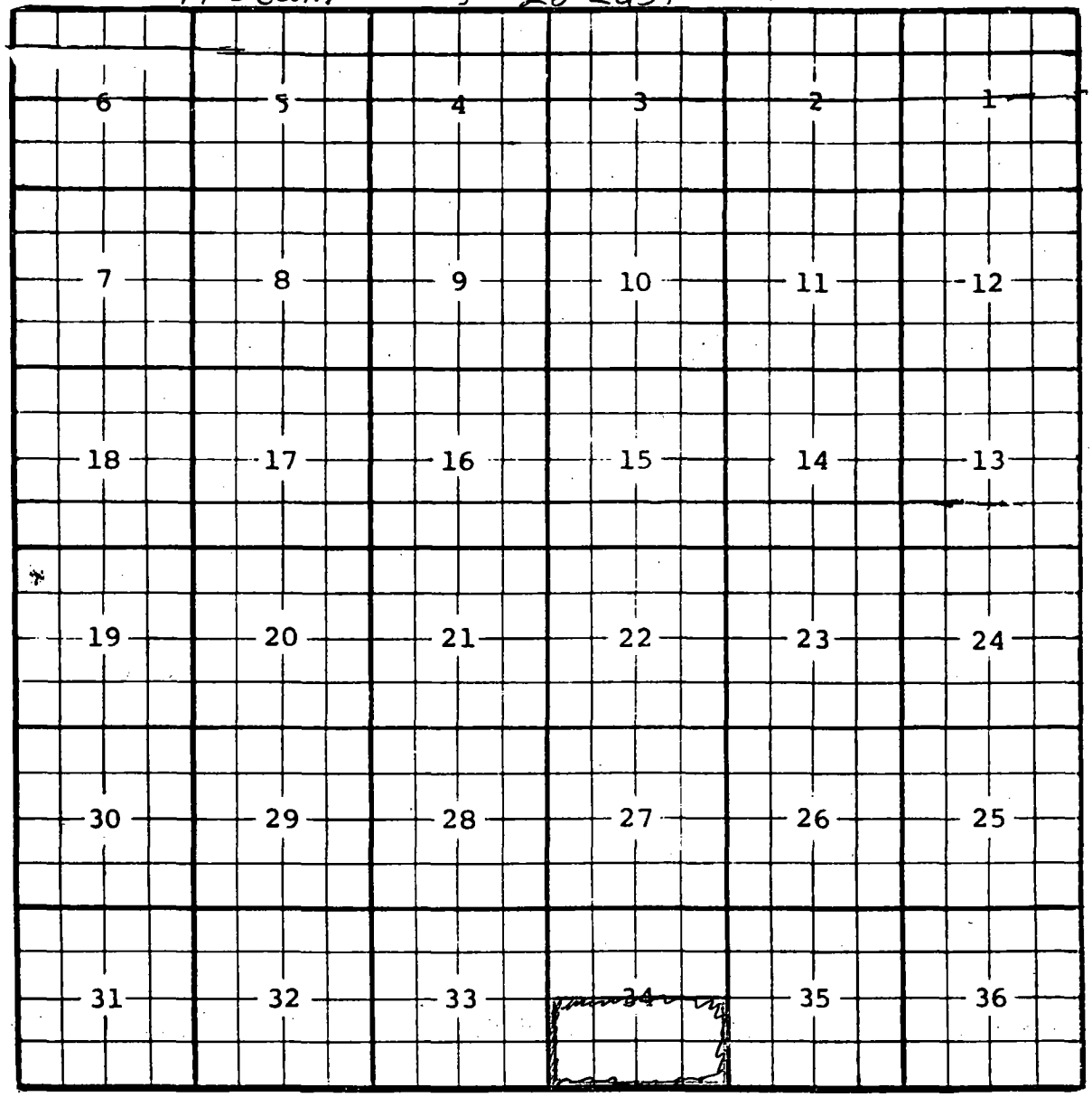
8/24/94

cc: Michael Stogner, NMOCD, Santa Fe, NM
L. Anderson/Well File
W. Gibson - S. Owen

BY/mm

County Eddy Pool Old Millman Ranch-Bone Spring Associated

TOWNSHIP 19 South Range 28 East NMPM



Ext: S/2 Sec. 34 (R-10124, 5-31-94)