

OIL CONSERVATION DIVISION
RECEIVED

'90 FEB 28 AM 8 53

BLACKWOOD & NICHOLS CO., LTD.

P.O. BOX 1237
DURANGO, COLORADO 81302-1237

(303) 247-0728

February 7, 1990

Mr. William LeMay
New Mexico Oil Conservation Division
P.O.Box 2088
Santa Fe, New Mexico 87501

Re: Unorthodox Gas Well Location
Northeast Blanco Unit No. 500
475'FNL - 425'FWL, Sec.20, T31N, R6W
San Juan Co., New Mexico

Dear Mr. LeMay;

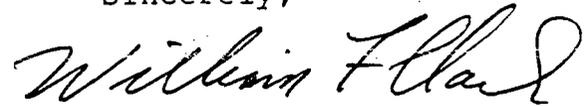
Blackwood & Nichols Co., Ltd. requests administrative approval of an exception to the footage and location requirements of Rule 7, R-8768 for the subject well, located in the Basin Fruitland Coal Pool.

This request is for exception due to topography. A Vicinity Map and C-102 are attached for your reference. As evidenced by the Vicinity Map, a southwest quarter location is not feasible because of Navajo Reservoir coverage. A directionally drilled wellbore is not considered operationally feasible for the open hole completion method that has proven most successful in Fruitland coal wells. This well is proposed as an open hole completion. Blackwood & Nichols investigated the possibility of a location southeast of the proposed location but this area contained two known archeology sites and the possibility of other sites. It is probable that the the southeast trending ridgeline contains archeology sites down to the edge of Navajo Reservoir since this area has a high density of sites. This location is 2900' from the nearest Fruitland coal well proposed by Blackwood & Nichols Co., Ltd. and would be 1300'- 1400' from a standard footage location that may be proposed by the offset operator.

The west half of Section 20, T31N, R6W, will be dedicated to this well. All operators of the offset proration units have been notified of this request by certified mail.

Your prompt consideration of this request is appreciated.

Sincerely,



William F. Clark
Operations Manager
Blackwood & Nichols
Co., Ltd.

Waiver of Objection

Northwest Pipeline Corp. hereby waives objection to the proposed unorthodox location of the Northeast Blanco Unit No. 500.

By: Paul C. Thompson Date: 2/26/90



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

GARREY CARRUTHERS
GOVERNOR

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

March 1, 1990

US Bureau of Reclamation
Durango Projects Office
P.O. Box 640
Durango, CO 81302-0640

Attention: Steve Sacks
Projects Manager

*RE: Unorthodox coal gas well location, Blackwood
& Nichols Co., Ltd., Northeast Blanco Unit
Well No. 500, 475' FNL - 425' FWL, D-20-
T31N-R6W, San Juan County, New Mexico.*

Dear Mr. Sacks:

Enclosed please find a copy of an unorthodox coal gas well location request that the NMOCD received on February 26, 1990. This information is being provided for your records since the well is within your jurisdiction. Should you have any comments or suggestions, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael E. Stogner".

Michael E. Stogner
Chief Hearing Officer/Engineer

MES/ag

cc: US Bureau of Land Management - Farmington
Oil Conservation Division - Aztec
William J. LeMay - OCD Director
Blackwood & Nichols Co., Ltd. - Durango

NEW MEXICO OIL CONSERVATION DIVISION
BLACKWOOD & NICHOLS CO., LTD. 10 16

P.O. BOX 1237
DURANGO, COLORADO 81302-1237

(303) 247-0728

February 7, 1990

Mr. William LeMay
New Mexico Oil Conservation Division
P.O.Box 2088
Santa Fe, New Mexico 87501

Re: Unorthodox Gas Well Location
Northeast Blanco Unit No. 500
475'FNL - 425'FWL, Sec.20, T31N, R6W
San Juan Co., New Mexico

Dear Mr. LeMay;

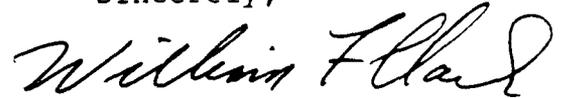
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This request is for exception due to topography. A Vicinity Map and C-102 are attached for your reference. As evidenced by the Vicinity Map, a southwest quarter location is not feasible because of Navajo Reservoir coverage. A directionally drilled wellbore is not considered operationally feasible for the open hole completion method that has proven most successful in Fruitland coal wells. This well is proposed as an open hole completion. Blackwood & Nichols investigated the possibility of a location southeast of the proposed location but this area contained two known archeology sites and the possibility of other sites. It is probable that the southeast trending ridgeline contains archeology sites down to the edge of Navajo Reservoir since this area has a high density of sites. This location is 2900' from the nearest Fruitland coal well proposed by Blackwood & Nichols Co., Ltd. and would be 1300'- 1400' from a standard footage location that may be proposed by the offset operator.

The west half of Section 20, T31N, R6W, will be dedicated to this well. All operators of the offset proration units have been notified of this request by certified mail.

Your prompt consideration of this request is appreciated.

Sincerely,



William F. Clark
Operations Manager
Blackwood & Nichols
Co., Ltd.

Waiver of Objection

Northwest Pipeline Corp. hereby waives objection to the proposed unorthodox location of the Northeast Blanco Unit No. 500.

By: _____ Date: _____

BLACKWOOD & NICHOLS CO., LTD.

P.O. BOX 1237

DURANGO, COLORADO 81302-1237

(303) 247-0728

February 7, 1990

Northwest Pipeline Corp.
3539 E. 30th St.
Farmington, New Mexico 87401

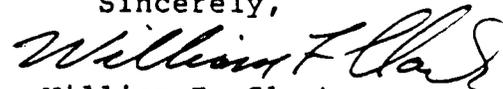
Re: Unorthodox Gas Well Location
Northeast Blanco Unit No. 500
475' FNL - 425' FWL, Sec. 20, T31N, R6W
San Juan Co., New Mexico

Gentlemen:

Blackwood & Nichols Co., Ltd. requests that you waive objection to the subject unorthodox location. This well offsets your properties to the west and south. The location is non standard due to existing topography and archeology. The proposed location would be 1300' - 1400' from a standard location that could be staked in the southwest quarter of Section 17, T31N, R6W.

Your prompt consideration of this request is appreciated.

Sincerely,



William F. Clark
Operations Manager
Blackwood & Nichols
Co., Ltd.

WELL LOCATION AND ACREAGE DEDICATION PLAT

Effective 1-1-83

All distances must be from the outer boundaries of the Section.

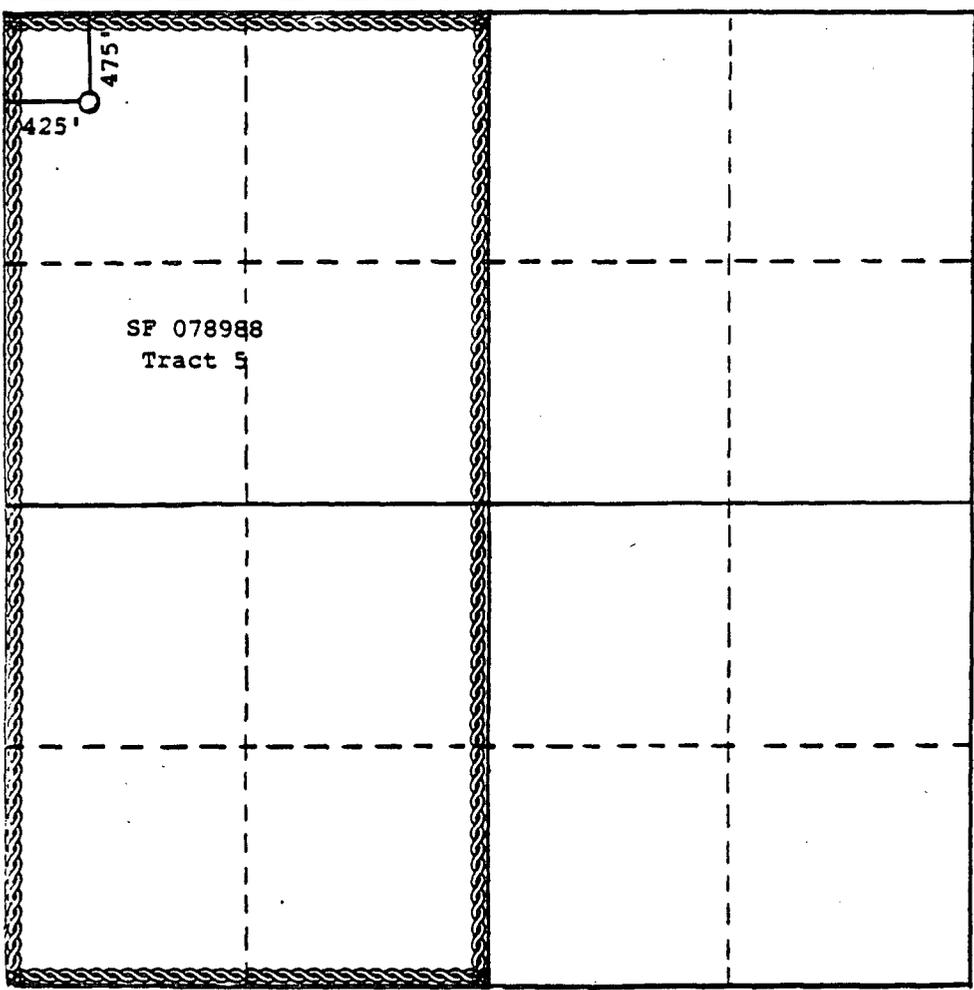
Operator BLACKWOOD & NICHOLS CO., LTD.		Lease NORTHEAST BLANCO UNIT		Well No. 500
Unit Letter D	Section 20	Township 31 North	Range 6 West	County San Juan County
Actual Footage Location of Wells 475 feet from the north line and 425 feet from the west line				
Ground Level Elev: 6364 (U.G.)	Producing Formation Fruitland Coal	Pool Basin Fruitland Coal	Dedicated Acreage: 320 Acres	

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

Yes No If answer is "yes," type of consolidation unitization

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

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

William F. Clark

Name
William F. Clark

Position
Operations Manager

Company
Blackwood & Nichols

Date
December 7, 1989

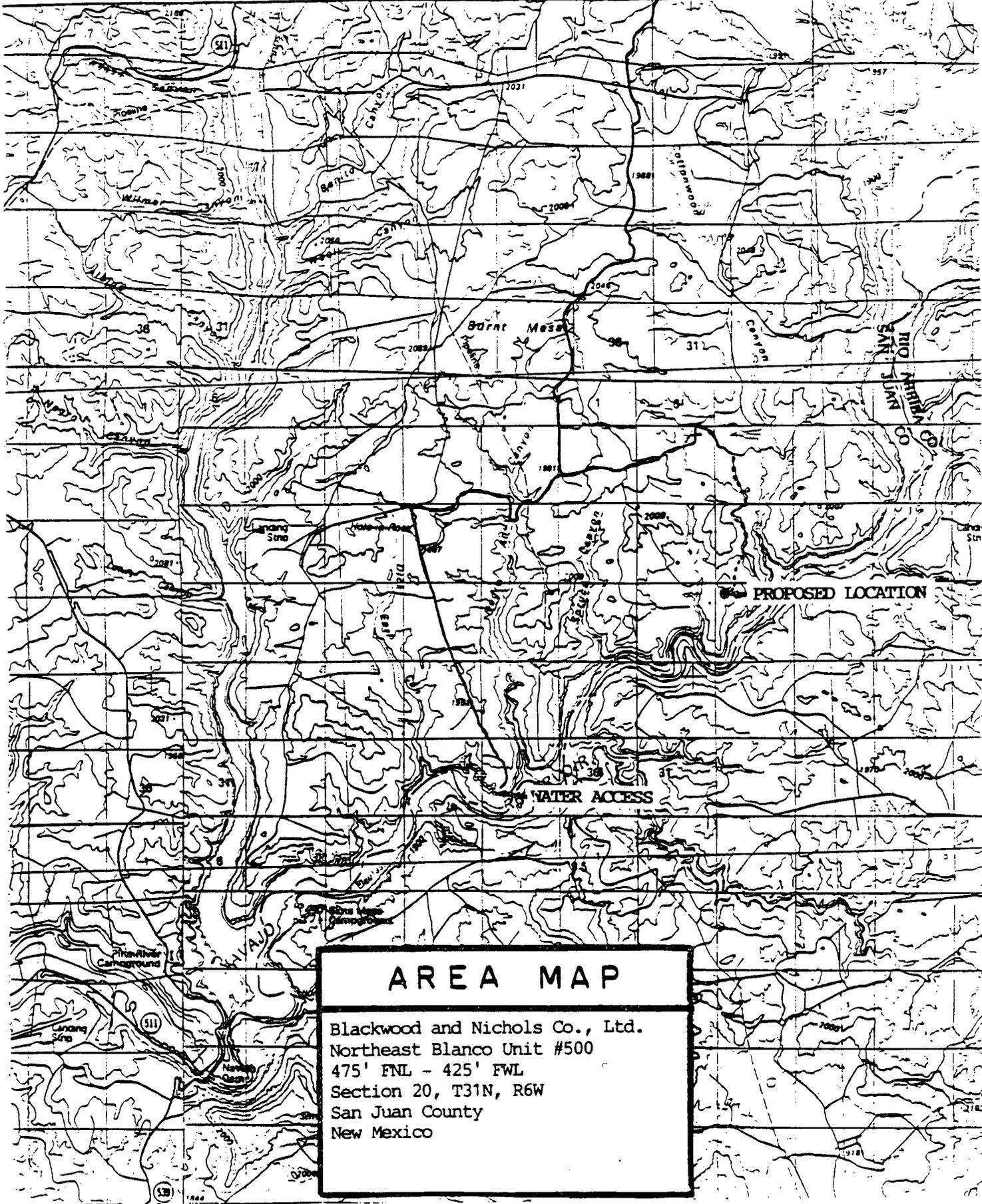
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed
November 17, 1989

Registered Professional Engineer and/or Land Surveyor
Allison L. Kroeger
Allison L. Kroeger, PLS

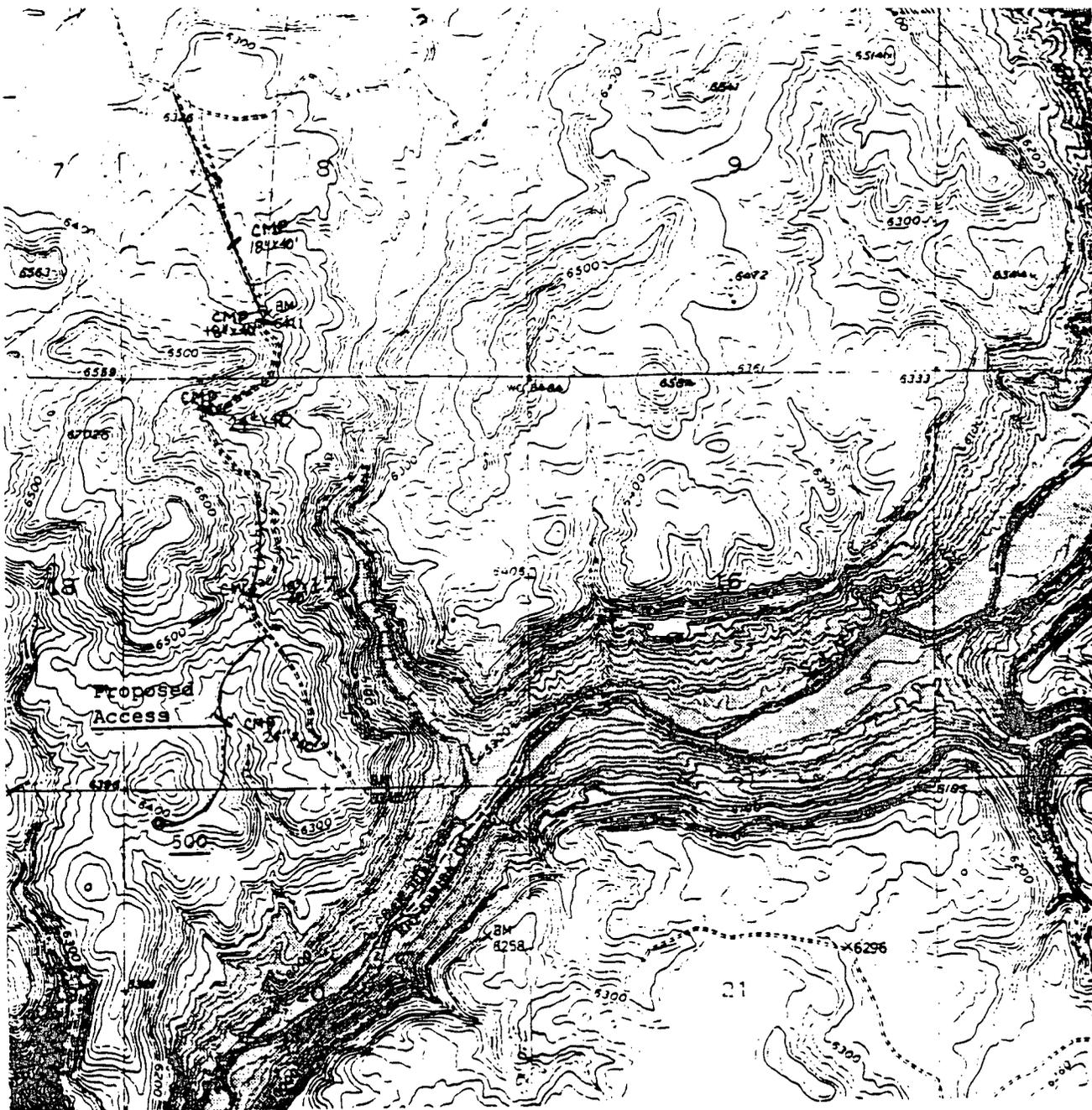
Certificate No.
7922





AREA MAP

Blackwood and Nichols Co., Ltd.
 Northeast Blanco Unit #500
 475' FNL - 425' FWL
 Section 20, T31N, R6W
 San Juan County
 New Mexico

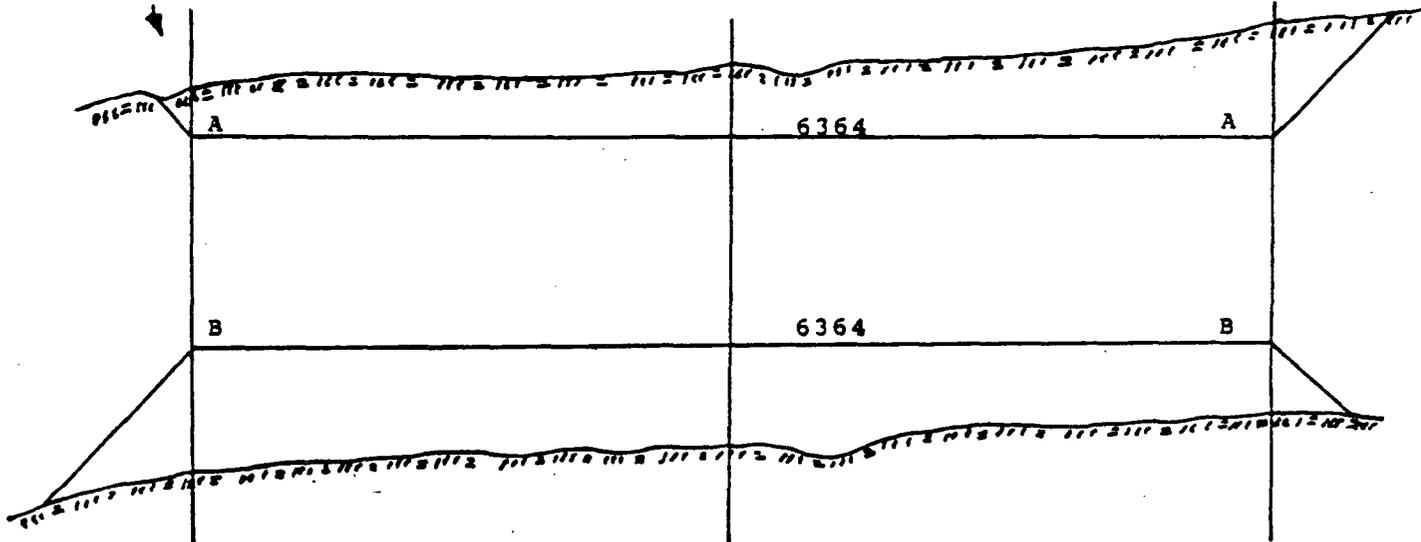
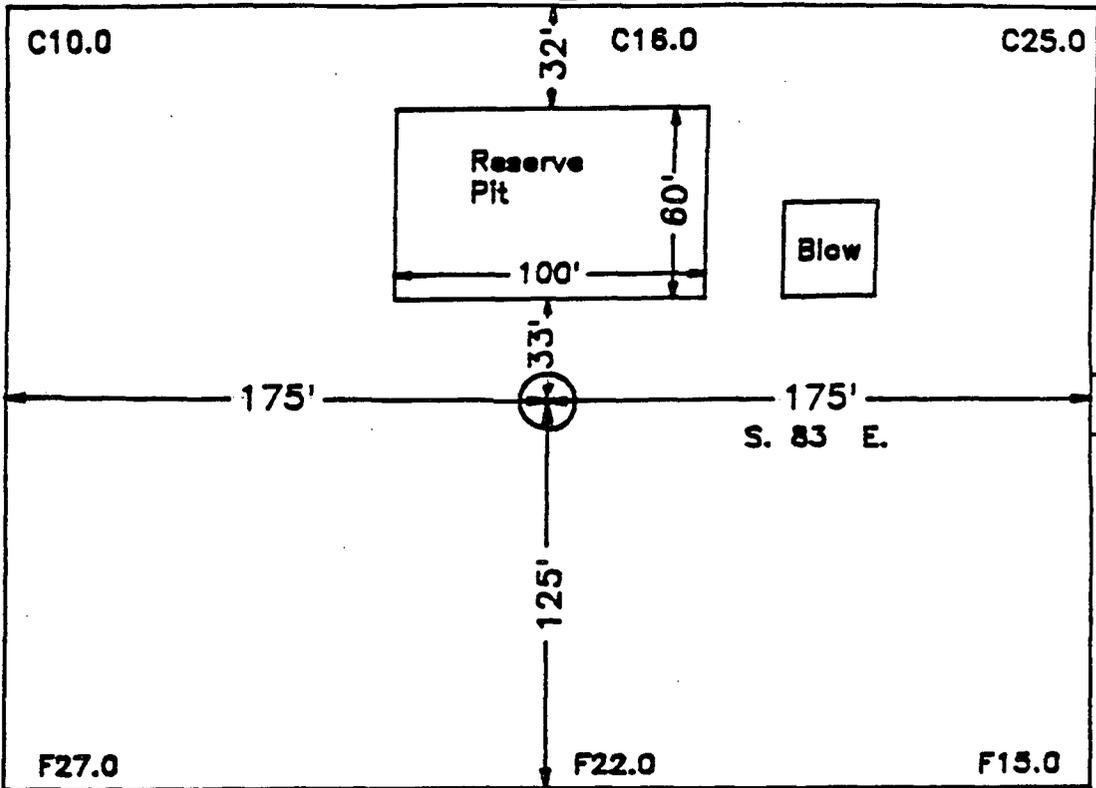


2.2 miles± of road to existing all-weather road.

BLACKWOOD & NICHOLS CO., LTD.	
PROPOSED ACCESS ROAD To NEBU 500 - Located in Sec. 20, T.31N, R6W N.M.P.M. - San Juan County, N.M.	
Date: November, 1989	Scale: 1"=2000'
KROEGER & ASSOC. DURANGO, COLO.	

Diversion
req'd

Drainage
Diversion



Horizontal Scale: 1"=60'
Vertical Scale: 1"=40'

BLACKWOOD & NICHOLS CO., LTD.

Site Plan For
NORTHEAST BLANCO UNIT No. 500

Date: November, 1989

Scale: 1" = 60'

Kroeger & Associates
Durango, Colorado



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

GARREY CARRUTHERS
GOVERNOR

March 5, 1990

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

Blackwood & Nichols Co.
P.O. Box 1237
Durango, CO 81302

Attention: William F. Clark

RE: Unorthodox gas well location, NEBU Well No.
500, 475' FNL - 425' FWL, D-20-T31N-R6W,
Basin-Fruitland Coal Gas Pool, San Juan County,
New Mexico.

Dear Mr. Clark:

Upon review of the archeological survey attached to the subject application, it is my understanding that two drill sites were surveyed, 1) being 945' FNL - and 690' FWL and 2) 475' FNL - 425' FWL. The recommendation by Rodge A. Moore, Jr., principal archeological investigator, as I understand, is to move the 1st site to the east 375 feet or to the north 350 feet. The second, more unorthodox, well site was cleared.

Inasmuch as it appears that an alternate less unorthodox well site is available (being 595' FNL - 690' FWL), your request for administrative approval for the 475' FNL - 425' FWL cannot be granted at this time. Should you wish to pursue this particular well location further, please contact me and I will set this matter for hearing before an examiner on the next available docket.

Should you have any questions or comments concerning this matter, please contact me at (505) 827-5811.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael E. Stogner", with a long horizontal flourish extending to the right.

Michael E. Stogner
Petroleum Engineer

MES/ag

cc: Oil Conservation Division - Aztec
US Bureau of Land Management - Farmington
US Bureau of Reclamation - Durango
William J. LeMay - OCD
Robert G. Stovall - OCD

OIL CONSERVATION DIVISION
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BLACKWOOD & NICHOLS CO. LTD. 10 16
P.O. BOX 1237
DURANGO, COLORADO 81302-1237

2/26/90

(303) 247-0728

February 7, 1990

Mr. William LeMay
New Mexico Oil Conservation Division
P.O.Box 2088
Santa Fe, New Mexico 87501

Re: Unorthodox Gas Well Location
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475' FNL - 425' FWL, Sec. 20, T31N, R6W
San Juan Co., New Mexico

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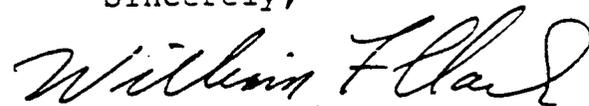
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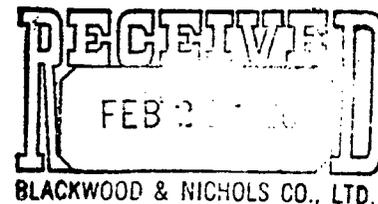
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Your prompt consideration of this request is appreciated.

Sincerely,



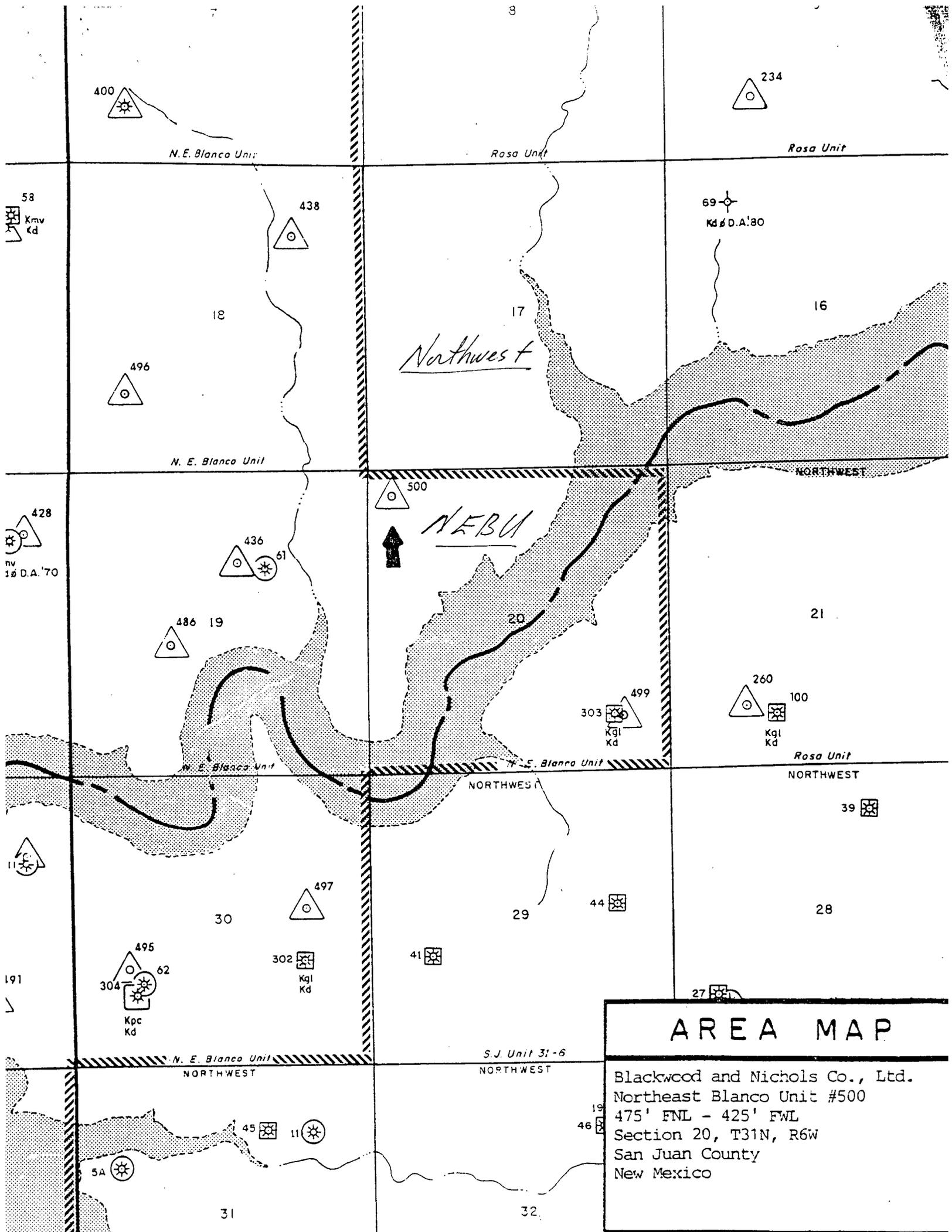
William F. Clark
Operations Manager
Blackwood & Nichols
Co., Ltd.



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By: Paul C. Thompson Date: 2/26/70



AREA MAP

Blackwood and Nichols Co., Ltd.
 Northeast Blanco Unit #500
 475' FNL - 425' FWL
 Section 20, T31N, R6W
 San Juan County
 New Mexico

BLACKWOOD & NICHOLS CO., LTD.

P.O. BOX 1237

DURANGO, COLORADO 81302-1237

(303) 247-0728

February 7, 1990

Northwest Pipeline Corp.
3539 E. 30th St.
Farmington, New Mexico 87401

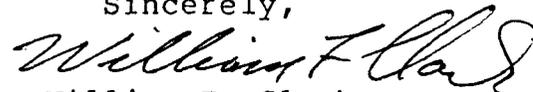
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Sincerely,



William F. Clark
Operations Manager
Blackwood & Nichols
Co., Ltd.

NEW MEXICO OIL CONSERVATION COMMISSION
WELL LOCATION AND ACREAGE DEDICATION PLAT

Form C-102
Supersedes C-128
Effective 1-1-65

All distances must be from the outer boundaries of the Section.

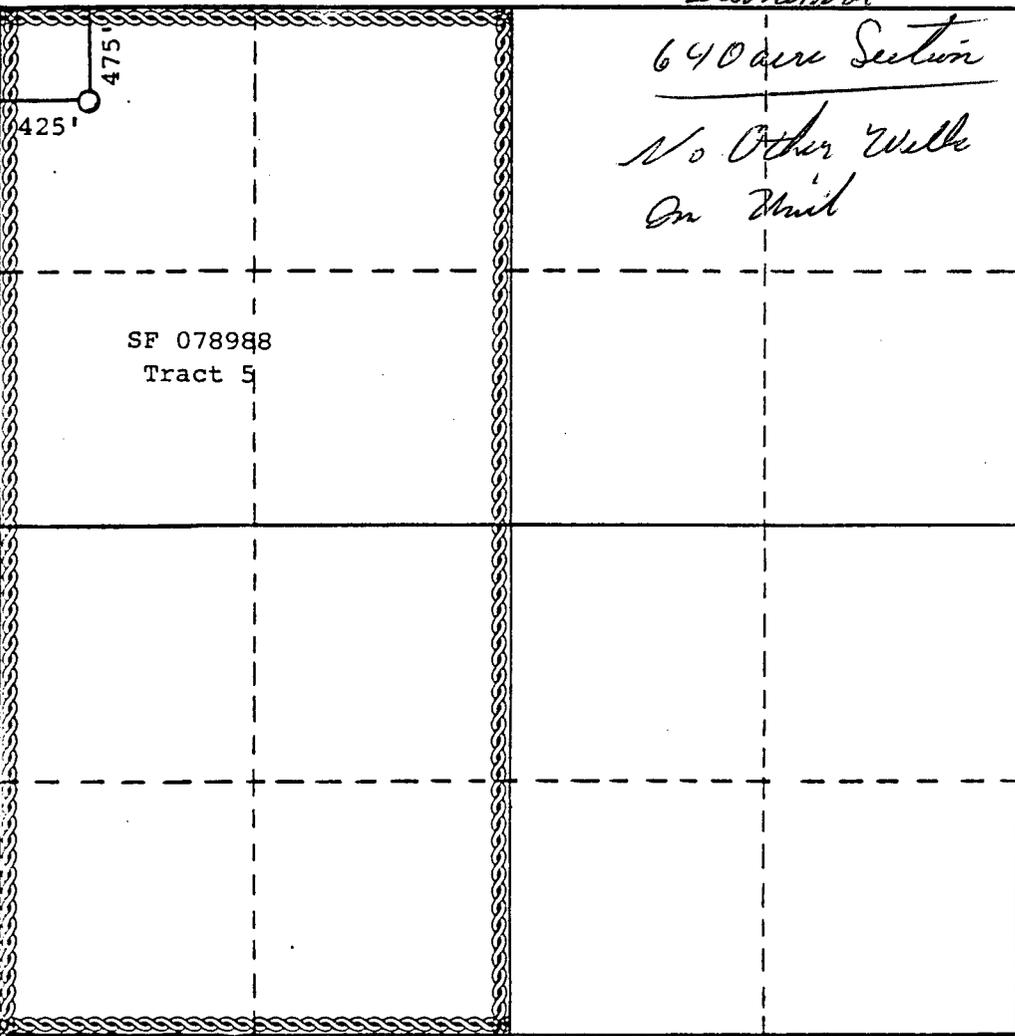
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CERTIFICATION

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

William F. Clark

Name
William F. Clark

Position
Operations Manager

Company
Blackwood & Nichols

Date
December 7, 1989

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 knowledge and belief.

Date Surveyed
November 17, 1989

Registered Professional Engineer and/or Land Surveyor
Allison L. Kroeger
Allison L. Kroeger, PLS

Certificate No.
7922



MOORE ANTHROPOLOGICAL RESEARCH

P.O. Box 1156, Aztec, New Mexico 87410

(505) 334-6675

March 22, 1990

Charles Neeley
Property Management & Consulting, Inc.
P.O. Box 2596
Farmington, New Mexico 87499-2596

Dear Mr. Neeley:

Enclosed you will find a copy of our report for the reconnaissance survey of NEBU 500 Alternate location area located on Burnt Mesa in San Juan Co., New Mexico. Three archaeological sites were discovered.

We have recommended that the NEBU 500 Alternate location be left where it is to avoid archaeological sites and topographic problems. The Bureau of Land Management and the New Mexico Oil and Gas Commission will make the final clearance determination after reviewing our report and will notify you of their decision.

An invoice for our services is enclosed. We have enjoyed working with you on this project and look forward to serving you in the future. If you have any questions concerning this report feel free to contact us.

Sincerely,

Roger A. Moore

cc: Bureau of Land Management, Farmington Resource Area (2)

Project No. 90-07c

Cultural Resource Use Permit
No. 77-2920-89-D

An Archaeological Reconnaissance Survey of
the area east and southeast of proposed
Alternate NEBU 500 well on
Burnt Mesa, San Juan County, New Mexico

for

Blackwood & Nichols Co., Ltd.

Submitted by

Roger A. Moore, Jr.
Principal Investigator

March 22, 1990

Moore Anthropological Research

Technical Report No. 90-07c

M.A.R., P.O. Box 1156, Aztec, New Mexico 87410

ABSTRACT

On March 16 & 19, 1990 Moore Anthropological Research conducted a Class II (reconnaissance) archaeological survey of the area east and south east of proposed gas well Alternate Northeast Blanco Unit 500 for Blackwood & Nichols Co., Ltd. of Durango, Colorado. The survey area is located on Burnt Mesa (T. 31N, R.6W, Sec. 20) in San Juan County, New Mexico and is under the jurisdiction of the Bureau of Land Management, Farmington Resource Area (minerals) and Bureau of Reclamation (surface). A total of approximately 11.90 acres (4.83 hectares) were inventoried.

Three archaeological sites were discovered during the survey. Two sites were recorded; the third site will require a Class III survey to properly define and record.

All three sites are along the same bench, which is the next lower bench below the original (now abandoned) NEBU 500 well location. While no archaeological sites were found within 150 ft. of the east side of the Alternate (preferred) NEBU 500 well location, a bluff makes the moving of the well to the east impractical.

The three sites are located in the standard spacing window defined by the New Mexico Oil Conservation Commission, and on the nearest bench area suitable for pad construction. The presence of these sites in this area, and the presence of a bluff east of the Alternate NEBU 500 location indicate it may be prudent to leave the well staked as it is.

INTRODUCTION

On March 19, 1990 Moore Anthropological Research (M.A.R.) conducted a Class II archaeological survey for Blackwood & Nichols Co., Ltd. of Durango, Colorado. Charles Neeley of Property Management & Consultants, Inc., agent for Blackwood & Nichols, requested the survey on March 2, 1990 and administered the project. Roger A. Moore administered the project for M.A.R.

Over the years the people of the United States have become more aware of the nonrenewable nature of their archaeological resources and their cultural heritage. As a result of this growing concern federal, state and local governments have passed laws and enacted ordinances designed to protect and conserve archaeological, historical, and anthropological resources. The principal legislation affecting federal lands, federally administered projects, or federally funded projects includes the Federal Antiquities Act of 1906 (P.L.52-209), the Reservoir Salvage Act of 1960 as amended (16 U.S.C. 469), the National Historic Preservation Act of 1966 (P.L.89-665) as amended in 1980 (P.L.96-515), the National Environmental Policy Act of 1969 (P.L.91-852), Executive Order No. 11593 of 1971 (36 F.R.8921, 16 U.S.C. 470), the Archaeological Resource Protection Act of 1979 (P.L.96-95; P.L.100-555), and the American Indian Religious Freedom Act of 1979 (P.L.95-341). The principal legislation affecting non-federal lands in New Mexico is the Cultural Properties Act. Work conducted in the course of this project is intended to comply with the above-mentioned laws and is governed by the stipulations of Cultural Resource Use Permit No. 77-2920-89-D.

Roger A. Moore and Randy Nathan, M.A.R. archaeologists, surveyed the project area for cultural remains. The Bureau of Land Management (B.L.M.) Farmington Resource Area was notified of the proposed survey prior to beginning fieldwork. Charles Neeley of Property Management, Al Kroeger and Jim Fuge of Kroeger & Associates (surveyor) accompanied the archaeologist during the fieldwork.

METHODS

The project area was surveyed by walking parallel to wavy transects and contour transects approximately 20 to 30m apart across the areas requested by the client. The project area was not marked beyond the existing markers already in place for the Alternate NEBU 500 well location and its road. All cultural remains were recorded relative to known points within the project area. Isolated Loci and archaeological sites were recorded according to the permitting agency guidelines. One small piece of blue flagging was left on each site to mark the mapping datum. Pertinent environmental data were also recorded. Locational information presented in this report is derived from plats or vicinity maps provided by the client. Sites and isolates are defined according to BLM Manual Handbook H-8100-1: I-14 and BLM Special Conditions for Survey Permits (2920).

RECORDS SEARCH

A records search was conducted prior to field inspection at the B.L.M., Farmington Area office on March 7, 1990 to determine if any sites had been recorded within a one mile radius of the project area. Projects in this area for which previous cultural resource inspections have been conducted include oil and gas related development projects. The records search showed ten previously recorded sites within one mile of the project (BLM Supplement Map [for BLM archaeologist only]). None of these sites are within 1000 ft. of the project area. The nearest previously recorded site (MAR-89-78) is located over 80 meters from the reconnaissance area.

PROJECT AREA

Northeast Blanco Unit No. 500 Alternate Well Location Reconnaissance

Legal Description: T.31 N, R.6 W, Section 20. CT 1/4 NW 1/4

New Mexico Prime Meridian, San Juan County, New Mexico, 6200-6250' Elevation

Map Source: U.S.G.S. 7.5' Bancos Mesa NW, New Mexico 1954 (Photorevised 1982)

Land Jurisdiction: Bureau of Land Management, Farmington Resource Area

Surveyed Area: 1400' x 400' (bench area)

Acres: 12.90

Environment: The area is a series of broad to very narrow benches on the south side of Burnt Mesa, overlooking the San Juan River and Navajo Reservoir (Figure 1). Sandstone outcrops in numerous places on the benches and along the edges of benches. The soil is mostly sand or sandy clay derived from decomposing sandstone or shale; the soils are normally 0 to 35cm deep and usually contain sandstone clasts or pebble to cobble sized gravels. The gravels are made up of siltstones, basalt, quartzites, some cherts and occasional nodules of white chalcedony, all of which have fair to very good conchoidal fracture properties; dicrite and sandstone cobbles suitable for use as manos are also present. Over 80% of the lithic artifacts seen on sites found within 1000 ft. of the project area are derived from cores from these gravels. A woodland provides a 5 to 15% cover over most of the area composed of juniper, pinyon, gambel oak, sagebrush, club cholla, grama grass, antelope brush, composites, forbs, and narrow leaf yucca. A small area on the west side of the bench surveyed has a 10-20% scrubland cover dominated by sagebrush. Animals noted included deer, rabbits, and crows. Current use of the area is for cattle grazing. The weather was cool and clear during the survey.

Project Background: The Original NEBU 500 well location (945'F/NL, 690'F/WL, Sec. 20) and the Alternate NEBU 500 well location (475'F/NL, 425'F/WL, Sec. 20) were surveyed by Moore (1990). The Original NEBU 500 had a site on its west-central edge and in its southeast quadrant and was not recommended for clearance. The well was moved to the Alternate NEBU 500 location and no archaeological sites were found to prevent its construction. While the Alternate NEBU 500 was moved a little farther north than the archaeologist suggested in the report and also a little farther west, this was deemed prudent for three reasons: 1) erosion in the area of site LA64838 between the time it was originally recorded in 1987 (Moore 1987) and this survey showed the site to be over twice as large as originally thought, therefore it is possible the site could potentially still have buried areas beyond these currently visible boundaries; 2) the greater distance between the Alternate NEBU 500 and LA64838 was seen as added protection to the archaeological site from adverse effects from changes in erosional patterns which will occur as a result of having a large unvegetated area (well pad) and significant change in slope along the south edge of the pad after it is built; 3) a 20 ft. bluff which begins about 50 ft. east of the Alternate NEBU 500 and extends to the east necessitated the moving of the pad west to its staked location.

FIGURE 1

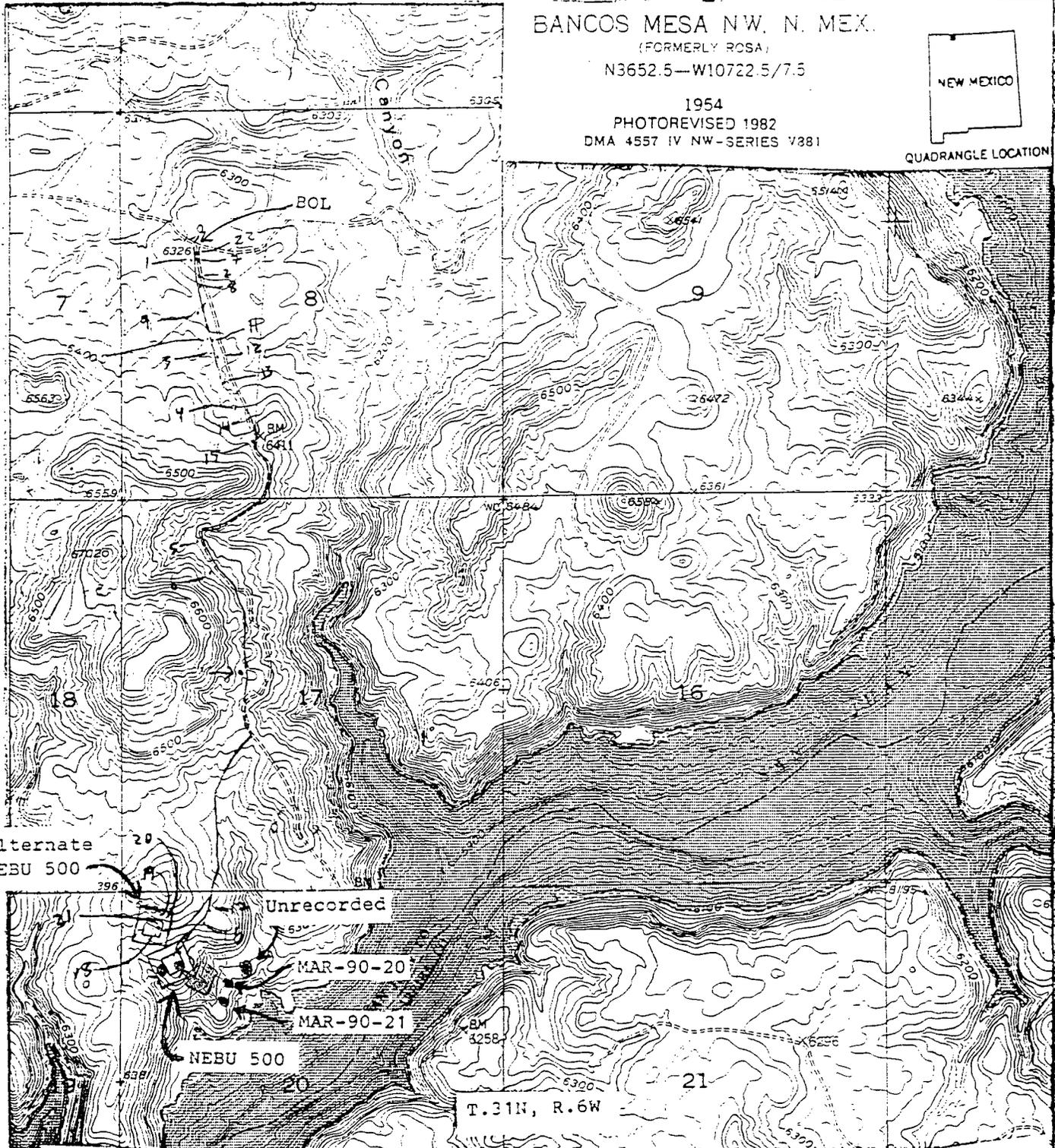
BANCOS MESA NW. N. MEX.

(FORMERLY ROSA)
N3652.5-W10722.5/7.5

1954
PHOTOREVISED 1982
DMA 4557 IV NW-SERIES V881



QUADRANGLE LOCATION



Alternate
NEBU 500

Unrecorded

MAR-90-20

MAR-90-21

NEBU 500

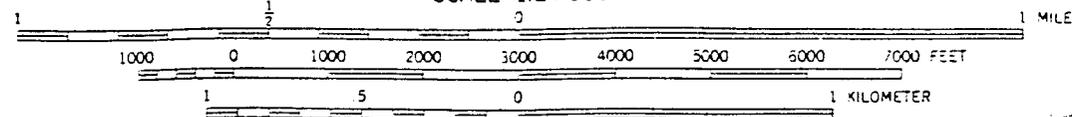
T.31N, R.6W

KEY:

- Well pad
- Buffer Zone
- Access Road
- Archaeological Site = or
- Beginning of Road = BOL

FOR OFFICIAL USE ONLY
DISCLOSURE OF SITE
LOCATIONS IS PROHIBITED
(36 CFR 296.13)

SCALE 1:24 000



CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

The New Mexico Oil Conservation Commission took the statements in Moore (1990) about minimum distance the well had to be moved to avoid the two sites on the Original NEBU 500 to mean that there was suitable terrain to the north or east. Moore's suggestion of distances and directions to move the well were based not on suitability of terrain in those directions, but on the directions which would require the minimum amount of distance to move to avoid the archaeological sites; the minimum distances to move the pad to avoid the sites was to the north and east, and the maximum distances were to the west and south. The client moved the well to the Alternate NEBU 500 location based on both topographic constraints and archaeological constraints.

Because the Alternate NEBU 500 well location was rejected the client requested we do a reconnaissance survey of areas to the east and southeast of the Original NEBU 500 location to determine archaeological feasibility of moving the well in that direction. The reconnaissance survey is the subject of this report.

Project Description: This is a Class II (reconnaissance) survey of a potential well pad area. An area east and southeast of the proposed NEBU 500 well was examined to see if any cultural resources were present which would have an effect on placement of a possible well location on the bench southeast and below the Original NEBU 500 well location.

Cultural Resources: Three archaeological sites were found. Sites MAR-90-20 and MAR-90-21 were recorded and a third site was found but requires a Class III type survey of the bench to determine its actual extent (it is a very dispersed wide spread artifact scatter). In order to avoid sites MAR-90-20 and MAR-90-21 a well location would have to lay parallel to the length of the bench and be no more than 180 ft. wide. There would have to be a more detailed recording of the sites and probably a testing program because there would be less than 80 ft. between the edge of the pad and edge of at least one of the sites. Because the pad would make significant changes in the drainage patterns and intensity of runoff and because of the short distance between a pad boundary-site boundary it is not likely the B.L.M. will allow a pad to be built on this bench. The unrecorded third site looks like it will cover up to a third of the bench area it is on, leaving an area to the east and to the west, each less than 200 ft. long. This will not be sufficient space to build a pad and have any kind of protective buffer between the edge of the pad and edge of the site.

Site MAR-90-20 is located on a lower bench off a scutherly ridge extension of Burnt Mesa. The waters of Navajo Dam are visible to the southeast. The site is on a slightly easterly slope with outcrops of sandstone bedrock common throughout the location. (Figure 2)

The site is a lithic and groundstone artifact and fire cracked rock concentration. Artifacts include at least 10 flakes, 5 tools, and about 50 fire cracked cobbles. One feature is characterized by a low density scatter of fire cracked rock and lithic debris. Feature 1 measures 20 x 7 meters and contains 80-90% of the fire cracked rock on the site, and 4 flakes which are in the east and lower portion. Cultural material is exposed in eroded shallow channels, deflated areas, and on top of sandstone outcrops.

Inside edge of bench

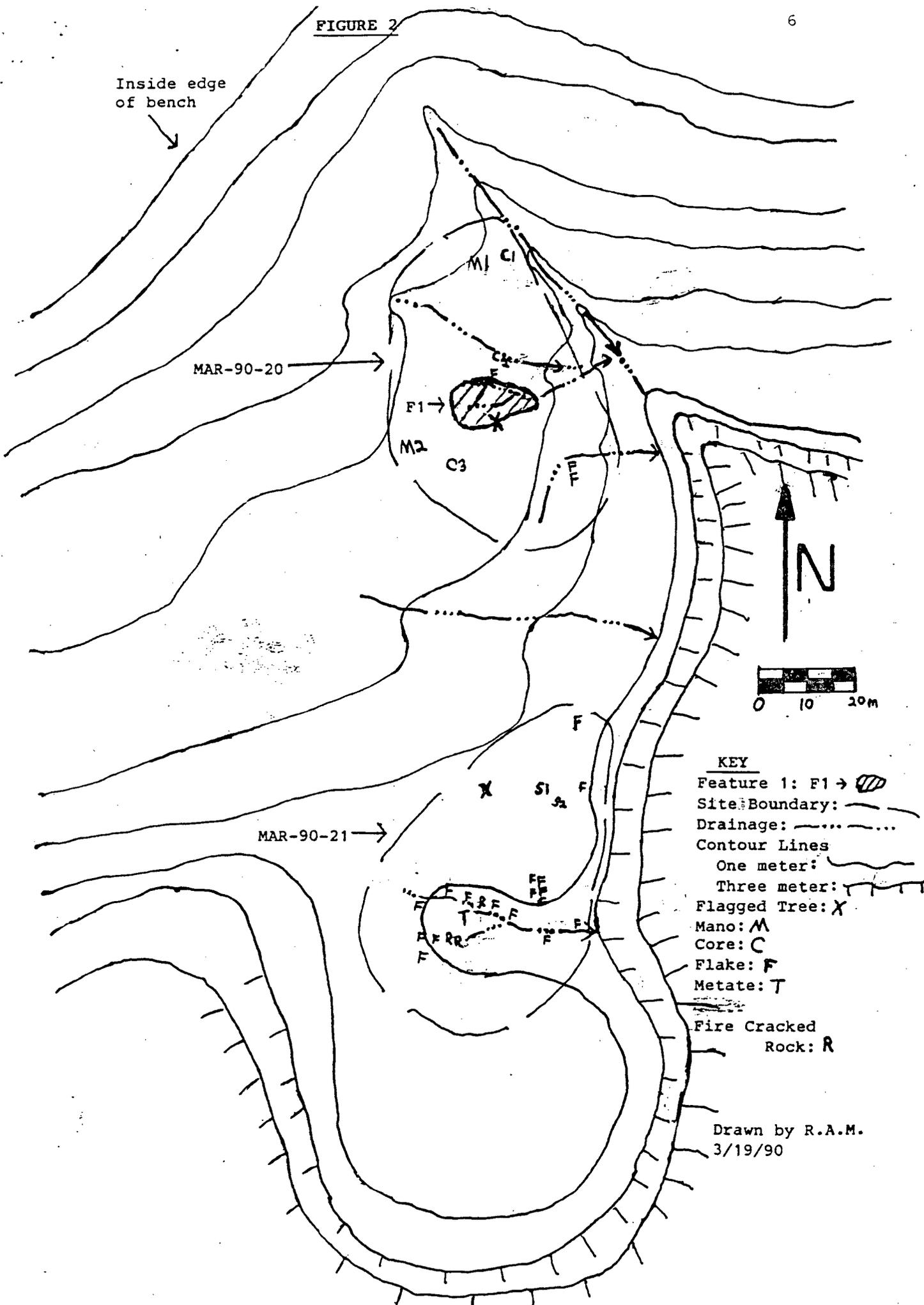
MAR-90-20

MAR-90-21



- KEY**
- Feature 1: F1 →
 - Site Boundary:
 - Drainage:
 - Contour Lines
 - One meter:
 - Three meter:
 - Flagged Tree: X
 - Mano: M
 - Core: C
 - Flake: F
 - Metate: T
 - Fire Cracked Rock: R

Drawn by R.A.M.
3/19/90



Tools include the following: one possible unshaped gray quartzite cobble one hand mano with one minimally used grinding surface; one medium grained gray quartzite cobble shaped one hand mano with two grinding surfaces (1 smooth polished grinding surface and one pecked grinding surface with linear stria); one reddish brown fine grained quartzite bidirectional core with prepared platforms; one light green siltstone cobble unidirectional core with a cortical platform; one dark green siltstone cobble unidirectional core with a cortical platform. Flakes are made from yellow-brown fine grained quartzite (20%), basalt (40%), dark green siltstone, black siltstone, light gray fine grained quartzite, and clear/pinkish chalcedony (10% each). Flakes are 50% primary core reduction flakes, 20% secondary core reduction flakes, and 30% tertiary core reduction flakes. The assemblage indicates this was a lithic quarry and a food processing site. The shaped mano is of Anasazi origin but of unknown phase.

Intact cultural deposits may exist in areas not yet deflated or eroded (northwest and west side of the site). Soil depths in these areas range from 15 to 25 cm thick, above the sandstone bedrock. The presence of fire cracked rock suggests that buried feature/hearth may be present. Temporal dates may be obtained from this site through thermoluminescence analysis of the fire cracked rock and through examination of possible buried deposits which may contain diagnostic material. It also holds research potential for studies of Anasazi quarry exploration; lithic technology, and land use. It may therefore be potentially eligible for nomination to the National Register under Criterion D of 35 of CFR 604

Site MAR-89-21 is found near the edge of a southeastern and lower bench of Burnt Mesa (Figure 2). The bench slopes off in all directions but west. A clear and narrow open view of the waters of the Navajo Reservoir and the San Juan Valley are possible from this location. Juniper and sagebrush are the prevalent plant species in this woodland. The soil is sandy with numerous gravels mixed in, the gravel content increases on the lower edges of the bench before the bench drops off completely on the east side where bedrock is exposed at the drop off.

The site is a lithic and groundstone artifact and fire cracked rock scatter. Cultural material is primarily exposed on the eastern and southern sides of the bench. Erosion is the main reason for exposure on the south side. This erosion indicates the possibility of buried cultural deposits in slightly higher and more stable area of the bench. Further examination of these deposits could lead to the discovery of temporally diagnostic artifacts.

Artifacts include at least 20 flakes, two scrappers, a core, and a metate, and at least 30 fire cracked cobbles. The flakes are made from gray-red orthoquartzite (30%), basalt (30%), red/green chert (15%), gray-green siltstone (10%), reddish-brown fine grained quartzite, red siltstone, and white chalcedony (5% each). Flakes are 20% primary core reduction flakes, 40% secondary core reduction flakes, 35% tertiary core reduction flakes, and 5% angular shatter.

The metate is an unshaped quartzite cobble basin metate with general grinding attrition and some possible pecking; this tool is 36 cm long, 26 cm wide, and 12 cm thick, and the basin is 4 cm deep. The core is a gray-green siltstone bidirectional core with cortical platforms. One end scraper is a uniface on a tertiary flake of clear white/pink chalcedony. The blade end is broken, but looks like it may have been tapered for hafting in a manner similar

to Paleo or early Archaic scrapers. The other scraper is made on a dome backed primary core reduction flake of black chert with red cortex; the vertical face of the flake has weathered to a brown/dark gray, indicating the flake was made into a tool long (decades or centuries) after it was removed from a core. While this is little more than retouched it shows similar workmanship to the chalcedony scraper. (Figure 3 Illustrations of Scrapers.)

The site may have buried deposits in the western area. It may also have research potential for studies of possible Archaic lithic procurement strategies, lithic technology, and land use. The site may therefore be potentially eligible for nomination to the National Register under Criterion D of 36 CFR604.

The third site is located northeast of the drainage from MAR-90-20, about 70m from the drainage. The site appears to be on two benches, one about 1.5m above the other. A woodland provides a 5% cover. The sandy soil is less than about 40cm deep in most areas and frequently interrupted by sandstone outcrops, especially near the edge of benches. This is a dispersed lithic and fire cracked rock scatter. Because of the very dispersed nature of the general site area and the nature of the reconnaissance survey it was not possible to determine the actual site area or to determine if more than one site was represented. At least a dozen flakes, two unshaped cobble monos, a core, and a biface were noted over an area about 90m by 50m. It would be necessary to conduct a Class III survey of the entire bench to properly record this cultural manifestation.

Recommendations: We do not recommend that Blackwood and Nichols stake a potential well location on the bench below the Original NEBU 500 well location to the east or southeast. The terrain is too steep within 1500 ft. east of the east buffer zone of the Original well location to build a pad. The bluff which begins about 50 ft. east of the Alternate well location will make it impractical to move the Alternate well location east. Federal restrictions concerning distance construction must stay from cultural resources will likely make it either impossible or very costly to place a well on the bench below and southeast of the Original NEBU 500 well location. Access to such a well will likely come very close to the east side of site MAR-89-78 as well, and may therefor require special resurvey or testing measures.

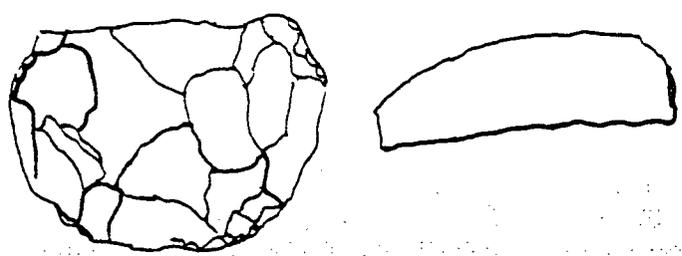
While we realize the Alternate NEBU 500 is an unorthodox location, it is not likely that an orthodox location can be found which will not have some adverse affect on one or more of the known archaeological sites in this quarter of section 20. Moving the well to the lower bench may also cause problems with the Bureau of Reclamation in relation to their tree screen regulations.

*No regulations
by 8/2/11*

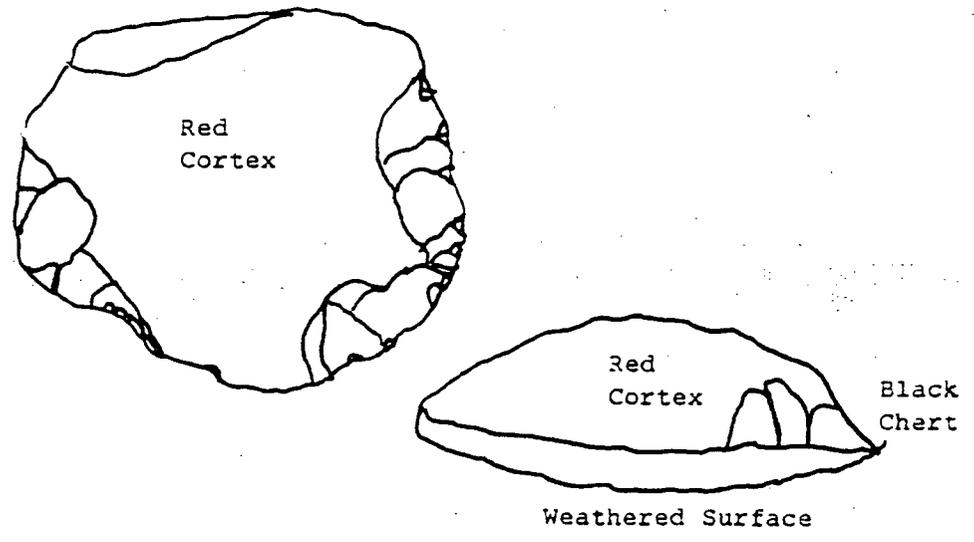
FIGURE 3

S1: End scraper is a uniface on a tertiary flake of clear white/pink chalcedony.

Broken



S2: Scraper is made on a dome backed primary core reduction flake of black chert with red cortex. The vertical face of the flake has weathered to a brown/dark gray.



Both scrapers were found at MAR-90-21.

REFERENCES

Moore, Roger A.

- 1987 An Archaeological Survey of Seven Well Locations and Combined Access Road/Pipeline Right-of-ways around Navajo Reservoir in San Juan and Rio Arriba Counties, New Mexico. Division of Conservation Archaeology. Technical Report No. 1211.
- 1990 An Archaeological Survey of Well NEBU 500 and access Road on Burnt Mesa in San Juan County, New Mexico. Moore Anthropological Research, Technical Report No. 89-107.

BLACKWOOD & NICHOLS CO., LTD.

P.O. BOX 1237

DURANGO, COLORADO 81302-1237

(303) 247-0728

Mr. Michael E. Stogner
New Mexico Oil Conservation Division
Energy, Minerals and Natural Resources Department
P. O. Box 2088
Santa Fe, New Mexico 87501

March 26, 1990

Re: Unorthodox gas well location, NEBU Well No. 500
475' FNL - 425' FWL, Sec.20, T31N, R6W, Basin Fruitland
Coal Gas Pool, San Juan County, New Mexico.

Dear Mr. Stogner:

Upon reviewing your letter of March 5, 1990 concerning the location of the the subject well, Blackwood & Nichols enlisted the assistance of Property Management and Consulting, Inc.; Roger A. Moore, Jr., principal archeological investigator; and Al K. Kroeger, registered land surveyor to investigate the northeast quarter of section 20 to locate and stake a "less" unorthodox location than the one staked at 475' FNL - 425' FWL.

The field team first investigated the rectangular window bounded on the west by 790'FWL, the north by 790'FNL, the east by 1850'FWL and the south by 2510'FNL. Due to the steep topographical relief of this area, only two (2) potential well sites were located. The first location centered 1370'FNL - 1370'FWL and the second centered 967'FNL - 1693'FWL.

As stated in Moore's Archaeological Survey, attached, both potential well sites were not recommended by the archaeologist due to the presence of three (3) Arch. sites. These archaeological sites precluded staking a location to the east or southeast of the original NEBU 500 location (945'FNL - 690'FWL).

Second, the field team investigated the area 350 feet north of the original NEBU 500 location and found it to be unsuitable, as outlined in Moore's report, due to: (1) the potential of having adverse erosional effects on site LA64838, (2) the potential of site LA64838 being burried in areas beyond those currently visible, and (3) the presence of a 20' bluff which begins 50' northeast of 595'FNL - 690'FWL.

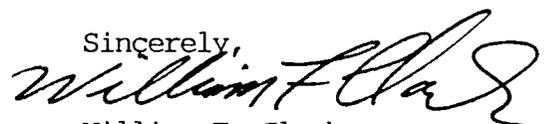
All efforts to the contrary being exhausted, I believe that the alternate 500 location as staked (475'FNL - 425'FWL) is the "less" unorthodox well site available for the NEBU 500 well.

The offset operator, Northwest Pipeline Corp., has waived objection to the subject unorthodox location.

I solicit your administrative approval of an exception to the footage and and location requirements of Rule 7, R-8768 for the subject well, located in the Basin Fruitland Coal Pool.

Your prompt reconsideration of this request is appreciated.

Sincerely,



William F. Clark
Operations Manager
Blackwood & Nichols Co.,Ltd.



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
 OIL CONSERVATION DIVISION
 AZTEC DISTRICT OFFICE

ARREY CARRUTHERS
 GOVERNOR

1100 THE WAZOES ROAD
 AZTEC, NEW MEXICO 87410
 (505) 334-6170

Date: 2-26-90

Oil Conservation Division
 P.O. Box 2088
 Santa Fe, NM 87504-2088

Re: Proposed HC _____
 Proposed DHC _____
 Proposed NSL A _____
 Proposed SWD _____
 Proposed WFX _____
 Proposed PMX _____

Gentlemen:

I have examined the application dated 2-23-90

for the Blackwood & Nichols Co., LTD N.E. B.U. # 500
 Operator Lease & Well No.

D-20-3W-6W and my recommendations are as follows:
 Unit, S-T-R

Approve

Yours truly,

Ernie Busch

BLACKWOOD & NICHOLS CO., LTD.
P.O. BOX 1237
DURANGO, COLORADO 81302-1237
(303) 247-0728

FAX TRANSMITTAL
COVER SHEET

To: Company: Oil Conservation Department
Contact: Michael Stogner
Fax Number: (505) 827-5741

From: Bill Clark

Comments: In response to conversation
with Bob Liddle.

Total Pages Sent Including Cover Sheet: 1





United States Department of the Interior

BUREAU OF RECLAMATION

UPPER COLORADO REGION

DURANGO PROJECTS OFFICE

P.O. BOX 640

DURANGO, COLORADO 81302-0640

IN REPLY
REFER TO:

FARMINGTON, NEW MEXICO

DUR-452
LND-6.00

MAR 06 1990

Memorandum

To: Area Manager, Bureau of Land Management, Farmington Resource Area,
1235 La Plata Highway, Farmington NM 87401

From: ~~State~~ Projects Manager
Bureau of Reclamation

Jessie A. Miller

Subject: Report on Application For Permit To Drill (APD) for Blackwood &
Nichols, NEBU Well No. 500, Navajo Unit, Colorado River Storage
Project, Colorado and New Mexico (Oil & Gas)

My staff has reviewed the APD for the NEBU Well No. 500, located 475' FNL and
425' FWL, Section 20, T.31N., R.6W., N.M.P.M., and offers no objections
provided the following stipulations are made a part of the permit:

1. The reserve pit shall be lined with a geotextile woven fiber or a 6 inch sand base and a 10 mill nylon reinforced plastic liner. Also, the pit shall be pulled after completion of the well.
2. All flagged trees shall not be disturbed during either construction or rehabilitation of the well pad.
3. Reclamation shall be notified 72 hours prior to the placement of surface facilities for an on-site inspection to determine placement of surface facilities.
4. The access road shall not be graveled.
5. All surface facilities shall be painted a federal green.
6. BLM seed mix #1 shall be used for vegetation.
7. Water hauled for the drilling of this well location shall be from a legal diversion point at Navajo Reservoir, designated by the New Mexico State Engineer's Office.
8. The pumping unit (pump jack or compressor) shall be muffled for noise control.

9. Reclamation shall be notified 72 hours after rehabilitation for an on-site compliance inspection.

If you have any questions concerning this memorandum, please contact Steve Sacks of my staff at FTS 323-6574.

Will

FORM 1041-10
MAY 1989

DUPLICATE
(Other instructions on reverse side)

Form approved
Budget Bureau No. 42-R1425

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LEASE REGISTRATION NO. **SF079003**
 U. IF INDIAN, ALLOTTEE OR TRIBE NAME
 7. UNIT AGREEMENT NAME
Northest Blanco
 8. NAME OF LEASE NAME
Northest Blanco Unit
 9. WELL NO.
468
 10. FIELD AND POOL, OR WILDCAT
Basin Fruitland Coal
 11. SEC., T., R., M., OR BLM. AND SURVEY OR AREA
Sec. 35, T31N, R7W
 12. COUNTY OR PARISH
San Juan
 13. STATE
NM

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK
 DRILL DEEPEN PLUG BACK
 b. TYPE OF WELL
 OIL WELL GAS WELL OTHER
 MINERAL ZONE MINERALS ZONE
 2. NAME OF OPERATOR
Blackwood and Nichols Co., Ltd.
 3. ADDRESS OF OPERATOR
P.O. Box 1237, Durango, CO 81302-1237
 4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)
 AT SURFACE
415' FNL - 1215' FFL
 At proposed prod. zone
Same
 14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
18.5 miles NE of Blanco, New Mexico
 16. NO. OF ACRES IN LEASE
2560.00
 17. NO. OF ACRES ASSIGNED TO THIS WELL
320
 18. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest Grig. unit line, if any)
415'
 19. DISTANCE FROM PROPOSED* LOCATION TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.
400'
 20. PROPOSED DEPTH
3280'
 20. ROTARY OR CABLE TOOLS
Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)
6323 (U.G.) This action is subject to technical and precedent review pursuant to 43 CFR 3100.4, and appeal pursuant to 43 CFR 3100.4.
 22. APPROX. DATE WORK WILL START*
April 1, 1990

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT ATTACHED
12 1/4"	9 5/8"	36#	300'	295 cuft/circulate to surface
8 3/4"	7"	23#	2940'	940 cuft/circulate to surface
6 1/4"	5 1/2"	17#	2840'=3280	39 cuft/circulate to liner top

Propose to spud in the San Jose formation. Will drill a 12 1/4" hole to a TD of 300'. Run surface casing and cement with cement returns to surface. WOC 12 hours. Test to 600psi/30 mins. Drill a 8 3/4" hole to a TD of 2940' using fresh water mud. No poisonous gases or abnormal pressures are anticipated. Run intermediate casing and cement with cement returns to surface. WOC 12 hours. Test to a 1500 psi/30 mins. Drill a 6 1/4" hole to a TD of 3280' using water and air. Run a mud logging unit while drilling this interval. Run the production liner. The liner will be cemented if the wells natural flow capacity indicates the need for fracture stimulation.

Surface ownership is Bureau of Reclamation

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. SIGNED *William F. Clark* TITLE Operations Manager DATE 23 Feb 90

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____
 APPROVED BY _____ TITLE _____ DATE _____
 CONDITIONS OF APPROVAL, IF ANY:

APPROVED
AS AMENDED

MAR 29 1990

OPERATIONS *[Signature]*
FOR AREA MANAGER

*See Instructions On Reverse Side



United States Department of the Interior

BUREAU OF RECLAMATION

UPPER COLORADO REGION

DURANGO PROJECTS OFFICE

P.O. BOX 640

DURANGO, COLORADO 81302-0640

FARMINGTON RESOURCE AREA

SEARCHED	INDEXED
SERIALIZED	FILED
MAR 10 1990	
FBI - DURANGO	

IN REPLY REFER TO:

DUR-452
LND-6.00

MAR 10 1990

Memorandum

To: Area Manager, Bureau of Land Management, Farmington Resource Area, 1235 La Plata Highway, Farmington NM 87401

From: Projects Manager
Bureau of Reclamation

Subject: Report on Application For Permit To Drill (APD) for Blackwood & Nichols, NEBU Well No. 468, Navajo Unit, Colorado River Storage Project, Colorado and New Mexico (Oil & Gas)

My staff has reviewed the APD for the NEBU Well No. 468, located 415' FNL and 1215' FEL, Section 35, T.31N., R.7W., N.M.P.M., and offers no objections provided the following stipulations are made a part of the permit:

1. The reserve pit shall be lined with a geotextile woven fiber or a 6-inch sand base and a 10 mill nylon reinforced plastic liner. Also, the pit shall be pulled after completion of the well.
2. All flagged trees shall not be disturbed during either construction or rehabilitation of the well pad.
3. All downed trees shall be walked into the fill section of the well location by crawler type tractor during rehabilitation.
4. Reclamation shall be notified 72 hours prior to placement of production facilities for an on-site inspection to determine their placement.
5. All surface facilities shall be painted a federal green.
6. BLM seed mix #1 shall be used for vegetation.
7. Water hauled for the drilling of this well location shall be from a legal diversion point at Navajo Reservoir, designated by the New Mexico State Engineer's Office.
8. The compressor or pump jack shall be muffled for noise control.
9. Reclamation shall be notified 72 hours after rehabilitation for an on-site compliance inspection.

If you have any questions concerning this memorandum, please contact Steve Sacks at FTS 323-6574.

Project No. 34-87-C

Cultural Resource Use Permit
7-2920-87-A (NM BLM)

An Archaeological Survey of
Seven Well Locations and Combined Access Road/
Pipeline Right-of-ways Around Navajo Reservoir
in San Juan and Rio Arriba Counties, New Mexico

for

Blackwood & Nichols Co., Ltd.

Mesa Verde 25A	NE Blanco Unit 209
Mesa Verde 29A	NE Blanco Unit 219
Mesa Verde 38A	NE Blanco Unit 304
	NE Blanco Unit 305 ✓

by

Roger A. Moore
Supervisory Archaeologist

Submitted by

Margaret A. Powers
Principal Investigator

DIVISION OF CONSERVATION ARCHAEOLOGY

Technical Report No. 1211
San Juan County Archaeological Research Center and Library

August 26, 1987

ABSTRACT

Between August 14 and 19, 1987, the Division of Conservation Archaeology of the San Juan County Museum Association completed an archaeological survey of seven well locations, six combined access routes, and pipeline right-of-ways for Blackwood & Nichols Co., Ltd. of Durango, Colorado. The survey area is located around the perimeter of Navajo Reservoir in San Juan and Rio Arriba Counties, New Mexico and is under the jurisdiction of the Bureau of Reclamation and the Bureau of Land Management (BLM). The area surveyed included 25.83 acres of BLM land, 57.06 acres of Bureau of Reclamation land, for a total of 82.89 acres surveyed.

A total of seven archaeological sites and 37 isolated loci were found. The documentation of the isolates in the field has exhausted their research potential. Archaeological clearance is recommended with stipulations presented in the report.

INTRODUCTION

Between August 14 and 19, 1987, the Division of Conservation Archaeology (DCA) of the San Juan County Museum Association conducted an archaeological survey for Blackwood & Nichols Co., Ltd. of Durango, Colorado. William F. Clark requested the survey on August 12, 1987 and administered the project for Blackwood & Nichols Co., Ltd. Margaret A. Powers administered the project for DCA.

In recognition of the limited, nonrenewable nature of archaeological remains, the federal government has enacted legislation that is designed to conserve and protect these resources. The principal legislation includes the Antiquities Act of 1906 (PL 52-209), the Historic Preservation Act of 1966 (PL 89-665) and, as amended (PL 96-515), the National Environmental Policy Act of 1969 (PL 91-852), the 1971 Executive Order No. 11593, the Archaeological and Historical Conservation Act of 1974 (PL 93-291), and the Archaeological Resources Protection Act of 1979 (PL 96-95). In addition, the Navajo Nation and the states of Arizona, New Mexico, Utah, and Colorado have enacted laws to ensure compliance with federal legislation and to protect archaeological resources within their jurisdiction. Work undertaken in the course of this project is intended to comply with these statutes and is governed by the stipulations of Federal Cultural Resource Use Permit No. 7-2920-87-A.

Roger A. Moore, DCA archaeologist, surveyed the project area for cultural remains. The Bureau of Land Management, Farmington Resource Area was notified of the survey schedule prior to beginning fieldwork. The following persons were present during the field inspection on August 14-18, 1987: William F. Clark (Blackwood & Nichols) and Jack Mackey (dirt contractor).

METHODS

The area was surveyed by walking parallel transects 10-15m apart (depending on terrain) on the proposed well locations, and a single zigzag transect along the combined access road/pipeline right-of-ways. A buffer zone 100 ft wide around the well locations and 30 ft wide along both sides of the 40 ft wide access/pipeline right-of-ways were included in the survey. The archaeologist recorded all cultural remains. Those whose information potential exceeded what could be extracted during the survey phase were assigned site status. Other cultural remains were documented as isolated loci (IL). Pertinent environmental data were also recorded.

In addition to field inspection, the archaeologist conducted a search of the records at DCA, the BLM Farmington Resource area office, and the Navajo Reservoir excavation report by Eddy (1966) to determine if any sites had been recorded in the project area. Site and project records required by the BLM and the NMHPD were completed.

The records search revealed the presence of 56 previously recorded sites within one mile of the seven project areas (Table 1, BLM Supplement Maps). Most of these sites were recorded during the Navajo Reservoir Survey conducted by the Museum of New Mexico and the School of American Research (Dittert 1958; Dittert, Hester, Eddy 1962). The rest were recorded in the course of

investigations of energy development projects related primarily to the oil and gas industry.

The 56 sites represent 67 cultural components. these components consist of 11 unknown, 5 Anasazi, 5 Basketmaker II, 1 Basketmaker III-Pueblo I, 21 Pueblo I, 19 Navajo/Gobernador Phase, and 5 historic Anglo or Spanish sites. Most of the unknown sites are lithic scatters. Most of the Basketmaker II through Pueblo I sites are habitation sites with one or more pithouses, jacal structures, or masonry surface rooms, and several are artifact scatters sometimes with a hearth. The Navajo Gobernador Phase sites are artifact scatters or hogan-home sites. The historic sites include two homesteads, a lambing pen, and two corrals with dugouts.

Table 1. Sites Within One Mile of Project Area

LA #	Site #	Culture & Description
4398	---	Unknown
49500	DCA-84-411	Unknown lithic scatter
----	SJC 1038	Unknown hearth
4400	---	PI pithouse, lithic/ceramic scatter
4369	---	PI rockshelter, bin/cist, macrofloral remains
4370	---	PI jacal structure, lithic/ceramic scatter
4306	---	PI lithic/ceramic scatter, jacal structure Navajo/Gobernador ceramic, lithic scatter Historic lambing pen
4307	---	BMII pithouse, jacal structure, ceramic/lithic scatter
4308	---	BMII - 2 pithouses, hearth, lithic/ceramic scatter
4305	---	Navajo/Gobernador lithic/ceramic scatter
4303	---	PI - 3 pithouses, jacal structures, lithic/ceramic scatter
4304	---	Unknown lithic scatter
3498	---	Navajo/Gobernador ceramic scatter
3497	---	1880-1920 - house, room (jacal), dugout
3496	---	Anasazi petroglyph
3495	---	Navajo/Gobernador lithic/ceramic scatter, rock alignment
3480	---	PI jacal structure and ceramics Navajo/Gobernador ceramics Unknown lithic scatter
3479	---	1880-1920 - house, wood chopping area, historic trash
3498	---	PI jacal structure, lithic/ceramic/groundstone scatter
3477	---	PI lithic/ceramic scatter Navajo/Gobernador hogan, ramada, hearth
3475	---	Navajo/Gobernador hogan, hearth, lithic/ceramic scatter
3476	---	Navajo/Gobernador hogan, lithic/ceramic scatter
22126	DCA-80-18	Anasazi/Rosa Phase - 2 hearths, lithic/ceramic scatter
3344	---	PI - 7 hearths, lithic/ceramic scatter
3345	---	PI lithic/ceramic scatter
3346	---	PI lithic/ceramic scatter and fire-cracked rock
3347	---	Unknown
3348	---	Unknown
3421	---	Navajo/Gobernador isolated masonry room, hogan, lithic/ceramic scatter

Table 1. Continued

LA #	Site #	Culture & Description
3422	---	PI jacal structure, possible subterranean structure Navajo/Gobernador ceramics
3427	---	PI - 2 pithouses, cist, midden Navajo/historic ceramics
3433	---	PI pithouse, jacal, lithic/ceramic scatter Navajo/Gobernador hogan, ceramics
3434	---	PI - 2 pithouses, lithic/ceramic scatter, groundstone Navajo/Gobernador hogan, ramada, 2 hearths
3490	---	1880-1920 - dugout, corral, house foundation
3491	---	Navajo/Gobernador rockshelter, ceramics, macrofloral remains
4061	---	PI jacal structure, isolated masonry room, lithic/ ceramic scatter
4072	---	Anasazi petroglyph Navajo/historic rockshelter, burial, petroglyph
3420	---	PI rockshelter alignment, fire-cracked rock, lithic/ ceramic scatter
3500	---	Navajo/Gobernador lithic/ceramic scatter
16419	DCA-78-39	Anasazi lithic/ceramic/groundstone scatter
50558	DCA-85-24	BMIII-PI jacal rubble mound, lithic/ceramic scatter
50559	DCA-85-25	Unknown lithic scatter
----	SJC 146	Anasazi masonry rubble mound, ceramic/lithic scatter
4276	---	Navajo/Gobernador lithic/ceramic scatter PI jacal room, lithic/ceramic scatter
4275	---	Navajo/Gobernador ceramic
4274	---	A.D. 1880-1920 - dugout, water control device
4277	---	Unknown - 2 jacal structures, lithic/ceramic scatter
4268	---	Navajo/Gobernador masonry structure, lithic/ceramic scatter
4271	---	BMII jacal room, lithic scatter
4272	---	Unknown rockshelter
4376	---	PI pithouse, lithic/ceramic scatter
4790	---	PI midden, groundstone, rock alignment, ceramic
4791	---	BMII lithic scatter, rock alignment
4792	---	BMII masonry roomblock, midden, possible pithouse
4793	---	Unknown lithic scatter, ceramic, 2 possible hearths
15920	---	Anasazi ceramic, groundstone, possible masonry structure

PROJECT DESCRIPTION

Mesa Verde 25A

Legal Description: T30N, R7W, Section 17, NW 1/4 NE 1/4 (well & access)
Section 8, W 1/2 SW 1/4 SE 1/4 (access)
Section 17, 1190' F/NL, 1735' F/EL
N.M.P.M., Rio Arriba County, New Mexico

Map Source: U.S.G.S. 7.5' Pine River, New Mexico (1954, photorevised 1971)

Land Jurisdiction: Bureau of Reclamation

Project Area: 300' x 250' (well location)
40' x 2000' (access/pipeline right-of-way)
Surveyed Area: 500' x 450' (well location with buffer)
100' x 2000' (access/pipeline right-of-way with buffer)
9.76 Acres

Description: The proposed project is on a broad mesa bench just north of the confluence of Frances Canyon with the San Juan River (Figure 1). This bench now sits about 40 ft above the Navajo Reservoir pool line. The bench has a low north-south sandy ridge on it. The thin soil contains numerous sandstone clasts. There are many sandstone boulders, especially on the talus slope along the inside edge of the bench. A sparse pinyon-juniper provides about a 5% cover. Species noted include juniper (Juniperus sp.), pinyon (Pinus edulis), mountain mahogany (Cercocarpus montanus), narrowleaf yucca (Yucca angustissima), Indian ricegrass (Oryzopsis hymenoides), sand sage (Artemisia tridentata), bitterbrush (Purshia tridentata), galleta grass (Hilaria jamesii), broom snakeweed (Gutierrezia sarothrae), buckwheat (Eriogonum sp.), and prickly pear cactus (Opuntia sp.).

The well pad has been oriented to avoid two archaeological sites and still maintain a tree screen between the pad and the edge of the bench overlooking the reservoir. From the northwest corner of the pad the access road and pipeline right-of-way follow an existing two-track northwest along a narrow bench for 2000 ft to a bladed road. The two-track has been blocked with a backhoe trench and a large boulder; however, there is still evidence of use by three-wheelers.

Cultural Resources: Three archaeological sites, four isolated loci, and at least five historic hearths were found. The hearths are all less than 10 years old and were found along the old two-track which will be used as the access road. The four prehistoric isolated loci are described in Table 2. Two ILs are Anasazi sherds and two are flakes.

DCA-87-70

Site DCA-87-70 is on a narrow west-facing mesa bench among the boulders at the base of a talus slope. The bench is above a 40 ft cliff above the San Juan River (pre-Navajo Reservoir). The sandy soil is 0 to 50cm deep in this area and contains many sandstone clasts. A juniper-pinyon woodland provides about a 10% ground cover. An old road runs roughly north-south past the west

Feature 2 is 6m east-west by 5m north-south. It is a concentration of dark ashy soil, over 25 fire-reddened pieces of sandstone, 20 sherds, 25 lithic artifacts, and 10 pieces of fire-cracked cobbles.

Feature 3 is 20m north-south by 12m east-west. It is a dark ashy soil stain with over 40 fire-reddened pieces of sandstone, 30 pieces of fire-cracked cobbles, 100 lithic artifacts (including at least 18 cobble tools), and 90 ceramic sherds. The western upslope edge of the concentration disappears under the light reddish-brown sandy soil covering the ridge top, indicating that the feature extends an unknown distance to the west. It may represent a large midden.

Feature 4 is a small concentration of ash and fire-reddened sandstone on the upper east edge of Feature 1. This concentration is about 3m by 4m and may represent a structure or hearth.

Feature 5, a Navajo forked-stick hogan, consists of two upright juniper posts leaning against a large juniper tree and two other posts on the ground. The tree appears to be well over 100 years old and is still alive. The soil has an ashy cast. There are at least five Dinetah sherds in the western third of the feature. In the eastern third of the feature area is a dark ashy soil and about 14 pieces of fire-reddened sandstone. This ashy soil may be the result of either the Anasazi or Navajo occupation.

Feature 6 is an ashy stain 15m north-south by 9m east-west. There are also at least 12 flakes, three sherds, and ten fire-reddened sandstone clasts. Most of the feature is exposed by sheetwash erosion.

Feature 7 is a concentration of artifacts about 10m in diameter. The central area has an ashy soil. There are at least 15 lithic artifacts, seven gray ware sherds, and four pieces of burned sandstone.

The ceramic artifacts in Feature 5 are Dinetah utility ware. The ceramics on the rest of the site are Rosa gray ware. One jar rim sherd with wide neck fillet was found. There are probably over 300 Rosa gray ware sherds on the site surface.

Lithic artifacts are made from locally available siltstone, fine-grained quartzites, and cherts. Most of the flakes are secondary and tertiary core-reduction flakes. Approximately 10% of the flakes are cobble tool resharpening flakes. Tools were primarily cobble choppers or pounders with some flake scraper also present. One one-hand unshaped cobble mano was found.

Site DCA-87-71 is a Rosa Phase pithouse village with at least two pithouses, a midden, and several activity areas. It has research potential for studies of Pueblo I land use, architecture, and lithic and ceramic technology. The site is also an early Navajo site with a forked-stick hogan and trash area. This component has research potential for Navajo (Gobernador Phase) land use and ceramic analysis. Both components still have buried deposits. The site is therefore eligible for nomination to the National Register.

edge of the site. This road appears to have been bladed at least once over 10 years ago. It has since been blocked but is still used by people driving three-wheelers. The three artifacts in the road appear to have washed downslope from the main site area.

The site consists of a lithic and ceramic artifact scatter. There are at least 15 ceramic sherds and 20 lithic artifacts. About 90% of the artifacts are in the two concentrations which coincide with shallow drainage areas and just upslope of drainage areas. All of the tools are in the northern concentration and most of the B/W sherds are in the southern concentration. Flakes and gray ware sherds are more evenly distributed between the two concentrations. The ceramics are represented by at least two Piedra B/W bowl sherds, five Piedra B/W jar sherds, eight finger-imprinted gray ware sherds, and one plain gray ware sherd. The B/W sherds have diorite temper while the gray wares have sand temper.

The lithic tools include a gray chert cobble chopper, a black chert core fragment, two gray quartzite unidirectional cores, a red jasper pounder/chopper, and a gray quartzite pounder/chopper. The flakes are made from gray, brown, and dark gray siltstone, black chert, red jasper, and white chalcedony. The flakes are 25% secondary core-reduction, 33% tertiary core-reduction, 8% biface thinning, 25% cobble tool resharpener flakes, and 8% angular shatter.

The assemblage indicates that this was a short term wild resource procurement camp. No hearth was found. The absence of a hearth possibly indicates warm season use or that the hearths have eroded away or are buried on the upslope side of the site. There is some potential for buried deposits along the east side of the site. The soil here is at least 25cm deep. Site DCA-87-70 has research potential for studies of late Pueblo I Piedra Phase lithic technology, ceramic technology, and land use. It is therefore eligible for nomination to the National Register.

DCA-87-71

Site DCA-87-71 is on a low ridge on a broad mesa bench north of the confluence of Frances Canyon with the San Juan River. The relatively level bench is cut by numerous shallow drainages. The sandy, clayey soil is 0 to 1m thick with numerous sandstone or shale clasts. Sandstone outcrops in numerous places especially along the bench rim and on the talus slope above the bench. An old road, now used by three-wheeler riders, cuts through the north edge of the site.

The site consists of at least six dark soil stains rich in charcoal, fire burned sandstone, and artifacts. These features appear to represent two pithouses, two large pithouses or midden, and two artifact concentrations. There is also a light density artifact scatter, especially downslope of the features to the east and west of the low ridge. All features are near the sides of the top of the ridge and have been exposed by erosion. There may therefore be buried, undetected features under the soil along the ridge top.

Feature 1 is an artifact concentration 20m east-west by 15m north-south. There are at least 40 ceramic and 25 lithic artifacts and 20 fire-reddened sandstone clasts. The upper east end of this feature has a light gray color, indicating that this may be the edge of a midden area.

MAP CODE:

PR - U.S.G.S. 7.5' Pine River, NM (1954, photorevised 1971)
BM - U.S.G.S. 7.5' Burnt Mesa, NM (1954, photorevised 1971)
NW - U.S.G.S. 7.5' Bancos Mesa NW, NM (1954, photorevised 1982)

VEGETATION ZONE:

Wd - woodland
Sc - scrubland

LANDFORM:

B - bench
M - mesa
G - glade
R - ridge

Table 2. Descriptions of Isolated Loci (Cont.)

LEGAL DESCRIPTIONS

IL #	T	R	Sec.	1/4	1/4	1/4	UTM Coordinates (Zone 13)	Map	Veg. Zone	Land-Form	Description
<u>NE Blanco Unit 305</u>											
23	31N	6W	20	SE	NW	NW	4085240N, 277920E	NW	Wd	B	1 gray chert flake fragment.
24	31N	6W	20	SW	NW	NW	4085290N, 277860E	NW	Wd	B	1 primary and 1 secondary core-reduction flake of siltstone; one San Jose projectile point of obsidian. Blade broken and possibly reworked. Dimensions: 14mm neck width, 17mm stem width, 11mm stem length, 4mm stem thickness and 1.4 grams. These artifacts were in a wash area 2m x 8m on the edge of the well pad.
25	31N	6W	20	SW	NW	NW	4085325N, 277825E	NW	Wd	B	1 large basalt bidirectional core.
26	31N	6W	17	SE	SW	SW	4085680N, 278080E	NW	Wd	M	1 large black siltstone secondary core-reduction flake.
27	31N	6W	17	SW	SE	SW	4085710N, 278110E	NW	Wd	M	2 purple quartzite tertiary core-reduction flakes.
28	31N	6W	17	SW	NE	SW	4086060N, 278120E	NW	Wd	M	1 gray chert secondary core-reduction flake.
29	31N	6W	17	SW	NE	SW	4086065N, 278140E	NW	Wd	M	1 gray siltstone tertiary core-reduction flake.
30	31N	6W	17	NW	NE	SW	4086290N, 278210E	NW	Wd	B	1 basalt secondary core-reduction flake.
31	31N	6W	17	SE	NE	NW	4086950N, 278120E	NW	Wd	M	1 large green siltstone secondary core-reduction flake.
32	31N	6W	8	NW	SE	SW	4087570N, 278240E	NW	Sc	M	2 Anasazi gray ware sherds.
33	31N	6W	8	SW	NE	SW	4087780N, 278160E	NW	Sc	M	On ridge top and north side. 9 Anasazi gray ware sherds from at least 2 vessels; 1 chert secondary core-reduction flake.
34	31N	6W	8	SE	NW	SW	4087795N, 278120E	NW	Sc	M	1 white chalcedonic chert tertiary core-reduction flake.
35	31N	6W	8	NE	NW	SW	4087840N, 278120E	NW	Sc	M	2 Anasazi gray ware sherds.
36	31N	6W	8	SE	SW	NW	4088100N, 278100E	NW	Sc	M	1 Anasazi gray ware sherd.
37	31N	6W	8	SE	SW	NW	4088190N, 278070E	NW	Sc	M	1 Anasazi gray ware sherd.

Table 2. Descriptions of Isolated Loci (Cont.)

LEGAL DESCRIPTIONS				UTM Coordinates (Zone 13)	Map	Veg. Zone	Land- Form	Description	
IL #	T	R	Sec. 1/4 1/4 1/4						
<u>NE Blanco Unit 202</u>									
12	31N	7W	1	NW SE NE	4089350N, 275920E	BM	Wd	R	1 small gray chert secondary core-reduction flake.
13	31N	7W	1	NW SE NE	4089320N, 275860E	BM	Wd	R	1 black chert tertiary core-reduction flake.
14	31N	7W	1	NW SE NE	4089320N, 275780E	BM	Wd	R	1 white fine-grained quartzite primary core-reduction flake.
<u>NE Blanco Unit 212</u>									
15	31N	7W	12	SE NW NE	4088660N, 275680E	BM	Wd	R	1 flake and 1 uniface scraper/chopper, both of dark gray siltstone.
16	31N	7W	12	SE NW NE	4088635N, 275660E	BM	Wd	R	1 gray chert tertiary core-reduction flake.
17	31N	7W	12	NE NW NE	4088725N, 275660E	BM	Wd	R	1 gray chert tertiary core-reduction flake.
18	31N	7W	12	NW NW NE	4088800N, 275500E	BM	Wd	R	1 one-hand quartzite cobble mano unshaped, no pecking on grinding surface. Dimensions: 12.6cm long, 10cm wide, 6.5cm thick.
19	31N	7W	12	NW NW NE	4088840N, 275440E	BM	Wd	R	1 large green silty chert tertiary core-reduction flake.
20	31N	7W	1	NE NE SW	4088950N, 275320E	BM	Wd	R	Historic dump 2m x 2m. Approximately 40 items including food jar lids, 303 food cans, and evaporated milk cans. Appears to be 15 to 20 years old.
<u>NE Blanco Unit 304</u>									
21	31N	6W	30	NE SW SW	4082810N, 276390E	PR	Wd	M	1 unshaped quartzite cobble mano with two grinding surfaces and no pecking on the grinding surfaces. Dimensions: 11.2cm long, 9cm wide, and 4.5cm thick.
22	31N	6W	30	NE SW SW	4082790N, 276260E	PR	Wd	M	1 siltstone split cobble chopper on talus slope.

Table 2. Descriptions of Isolated Loci

LEGAL DESCRIPTIONS

IL #	T	R	Sec.	1/4	1/4	1/4	UTM Coordinates (Zone 13)	Map	Veg. Zone	Land-Form	Description
<u>Mesa Verde 25A</u>											
1	30N	7W	17	NW	NW	NE	4077680N, 268720E	PR	Wd	B	Anasazi indented corrugated sherd with sand temper.
2	30N	7W	17	SE	NW	NE	4077520N, 268860E	PR	Wd	B	3 siltstone flakes from same core, one primary core-reduction and two secondary core-reduction.
3	30N	7W	17	SE	NW	NE	4077480N, 268900E	PR	Wd	B	1 Anasazi gray ware sherd.
4	30N	7W	17	SE	NW	NE	4077480N, 268860E	PR	Wd	B	1 fine-grained quartzite gray tertiary core-reduction flake.
<u>Mesa Verde 38A</u>											
5	31N	7W	31	SE	NW	SE	4081570N, 267420E	PR	Wd	M	1 possible unidirectional core on a siltstone cobble in a drainage.
6	31N	7W	31	SE	NW	SE	4081640N, 267345E	PR	Sc	M	In south buffer of road. 1 BMIII-PI white chalcedony corner-notched projectile point with broken stem. Blake tip and part of one tang are also missing. Dimensions are 12mm total length, 14mm tang width, 5mm neck width, 3mm thickness, and 0.4 grams weight.
7	31N	7W	31	SW	SE	NW	4081980N, 266920E	PR	Wd	M	In north buffer of road. 1 Gobernador polychrome rim sherd. Inside was cream colored with red rim. Outside was cream slip with red design framed by black line border.
<u>NE Blanco Unit 209</u>											
8	31N	6W	6	SE	NW	NW	4089490N, 276440E	BM	Sc	G	1 gray siltstone secondary core-reduction flake.
9	31N	6W	6	SE	NW	NW	4089480N, 276415E	BM	Sc	G	2 Anasazi gray ware sherds.
10	31N	6W	6	SW	NW	NW	4089480N, 276380E	BM	Sc	G	2 Anasazi gray ware sherds.
11	31N	7W	1	NW	SE	NE	4089390N, 275960E	BM	Wd	R	1 white chalcedonic chert flake fragment, heat shattered.

Site DCA-87-72 is in a sandy area near the rim rock of a broad mesa north of the confluence of Frances Creek with the San Juan River. The pinyon-juniper woodland provides about a 5% cover.

The site consists of a scatter of at least 22 lithic artifacts. Four flakes are primary core-reduction, nine are secondary core-reduction, and five are tertiary core-reduction. Tools include a gray siltstone split cobble unidirectional core, a gray siltstone cobble chopper, a thick, gray chert biface fragment, and a possible unshaped one-hand quartzite cobble mano with no pecking on the grinding surface. The lithic materials used are 68% gray siltstone, 14% brown siltstone, 9% mottled green or gray chert, and 9% quartzite. This assemblage implies a flake production and tool use area. No culturally or temporally diagnostic tools were found.

There is good potential for possible buried deposits in the north half of the site. These deposits may contain a datable artifact or potential hearth. If a large flake assemblage is discovered it may be datable by detailed attribute analysis. Once dated the site would have research potential for studies of lithic technology, lithic material procurement systems, and land use. It would then be eligible for nomination to the National Register.

All three sites are immediately adjacent to the proposed well pad or access road. The boundary of the well pad has been adjusted in order to avoid direct impact to sites DCA-87-71 and DCA-87-72. DCA-87-70 is just east of the access road. The well pad cannot be moved to the east side of site DCA-87-71 because of the nature of the drilling plans.

Recommendations: Recording the isolated loci has largely exhausted their research potential. Because of the proximity of all three sites to this development project the following minimal stipulations are recommended: Sites DCA-87-71 and DCA-87-72 (Figure 2) should be at least partly fenced to help keep drilling crews and others out of the sites. BLM or Bureau of Reclamation warning signs should also be placed on the fence at least for the duration of the drilling of the well. The fence should be erected prior to well pad construction. Construction of the well pad and access road should be monitored to ensure that these sites are not disturbed and to check for possible buried deposits near the three sites. Based on my assessment of the soils and drainages, I believe that no buried parts of the sites are now within the proposed well boundary. I do not therefore recommend any test excavation prior to construction. The BLM archaeologist will evaluate the information provided and make the official stipulation requirements.

NE Blanco Unit 305

Legal Description: T31N, R6W, Section 20, NW 1/4 NW 1/4 (well & access/
pipeline)
Section 17, CT 1/2 S 1/2 SW 1/4
W 1/2 NE 1/4 SW 1/4
W 1/2 SE 1/4 NW 1/4
E 1/2 NW 1/4 NW 1/4
W 1/2 NE 1/4 NW 1/4 (access/
pipeline)
Section 8, SE 1/4 SW 1/4
W 1/2 NE 1/4 SW 1/4
E 1/2 NW 1/4 SW 1/4
E 1/2 SW 1/4 NW 1/4 (access/
pipeline)
Section 20, 945' F/NL, 690' F/WL pipeline)
N.M.P.M., San Juan County, New Mexico

Map Source: U.S.G.S. 7.5' Bancos Mesa NW, New Mexico (1954,
photorevised 1982)

Land Jurisdiction: Bureau of Reclamation

Project Area: 300' x 250' (well location)
40' x 11,000' (access and pipeline right-of-way)
Surveyed Area: 500' x 450' (well location with buffer)
100' x 11,000' (access and pipeline right-of-way with buffer)
30.42 Acres

Description: The proposed well is on a broad, sloping mesa bench. The mesa is west of the San Juan River and west of Cottonwood Canyon (Figure 7). The soil is thin with abundant sandstone clasts and river cobbles. A woodland provides about a 15% cover here which includes juniper, pinyon pine, foxtail barley (Hordeum jubatum), gambel oak, bitterbrush, forbs, flowering annuals, galleta grass, and mountain mahogany.

From the northeast side of the well location the access/pipeline right-of-way goes northwest along the mesa bench then across a broad and shallow drainage head area and upslope to an old two-track road. The route follows the two-track for about 300 ft and then leaves the road to go north upslope about 30 ft in elevation. The route continues north along the narrow mesa benches for about 1600 ft, when it encounters the two-track road again. The route follows the road as it winds along the narrow mesa benches northwest then northeast into Section 8 to about BM 6411 (on quadrangle map:Figure 7). At this point the road is on a narrow ridge top. From here on north the two-track road has been completely obliterated by two chainings and grass seeding of the west half of Section 8. From the ridge top the flagged route goes north-northwest along the base of a low hill, then northward over two low ridges to the bladed dirt road just south of well N.W. Pipeline Rosa No. 88 PM (1610' F/NL, 1100' F/WL, Section 8, T31N, R6W, Elev. 6335' GL).

Cultural Resources: One archaeological site and 15 isolated loci (Table 2, ILs 23-37). ILs 23-25 were on or adjacent to the well location. The rest were along the combined access road/pipeline right-of-way. IL 24 is a Jemez obsidian San Jose projectile point (Figure 4) and two flakes. These were

found in an area 2m by 8m which is in a wash area and is badly eroded down to clayey loam. It may be all that is left of an eroded site. The point was collected (curated at Salmon Ruins Museum).

IL 33 is a cluster of at least nine Anasazi gray ware sherds representing at least two vessels and a flake. This is in the west half of Section 8 in the late 1970s. This part of Section 8 was chained by the BLM. The trees were piled in various places and burned, and then the area was re-chained presumably to spread out the unburned residue. The area was then seeded with western wheatgrass (Jack Mackey, informant). IL 33 (and possibly 34 and 35) may be what is left of a churned up site. This area of the ridge is ashy with small pieces of burned and partly burned wood. This may indicate that these artifacts were caught in the branches or roots of trees dragged here, piled up, and burned.

DCA-87-76

Site DCA-87-76 is on the gently sloping broad mesa which slopes toward the southeast and south to the San Juan River. The terrain is cut by numerous shallow drainages and is covered by a juniper/pinyon/oak woodland.

The site consists of a mano fragment and at least 12 flakes. The mano is on the east side of a clump of five small trees, and the flakes are on the west side of the trees. There may therefore be buried deposits under the trees. The mano is part of an unshaped one-hand cobble with one unpecked grinding surface. All of the flakes are in a small cluster in a runoff area. The other three are scattered. No temporally diagnostic artifact were found. Once dated the site would have research potential for studies of land use and lithic technology for the culture period it represents.

Recommendations: Field recording of the isolated loci has sufficiently exhausted their research potential. Site DCA-87-76 is 55 ft from the well location and should therefore receive no direct impact. Archaeological clearance is recommended.

REFERENCES

- Dittert, A. E., Jr.
1958 Preliminary Archaeological Investigations in the Navajo Project Area of Northwestern New Mexico. Museum of New Mexico Papers in Anthropology No. 1. The Museum of New Mexico and The School of American Research.
- Dittert, A. E., Jr., J. J. Hester, and F. W. Eddy
1961 An Archaeological Survey of the Navajo Reservoir District of Northwestern New Mexico. Monograph of The School of American Research and The Museum of New Mexico No. 23.
- Eddy, Frank W.
1966 Prehistory in the Navajo Reservoir District Northwestern New Mexico. Museum of New Mexico Papers in Anthropology No. 15.

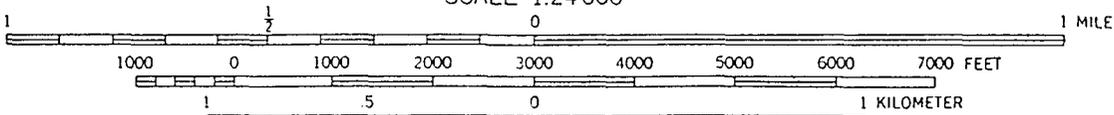
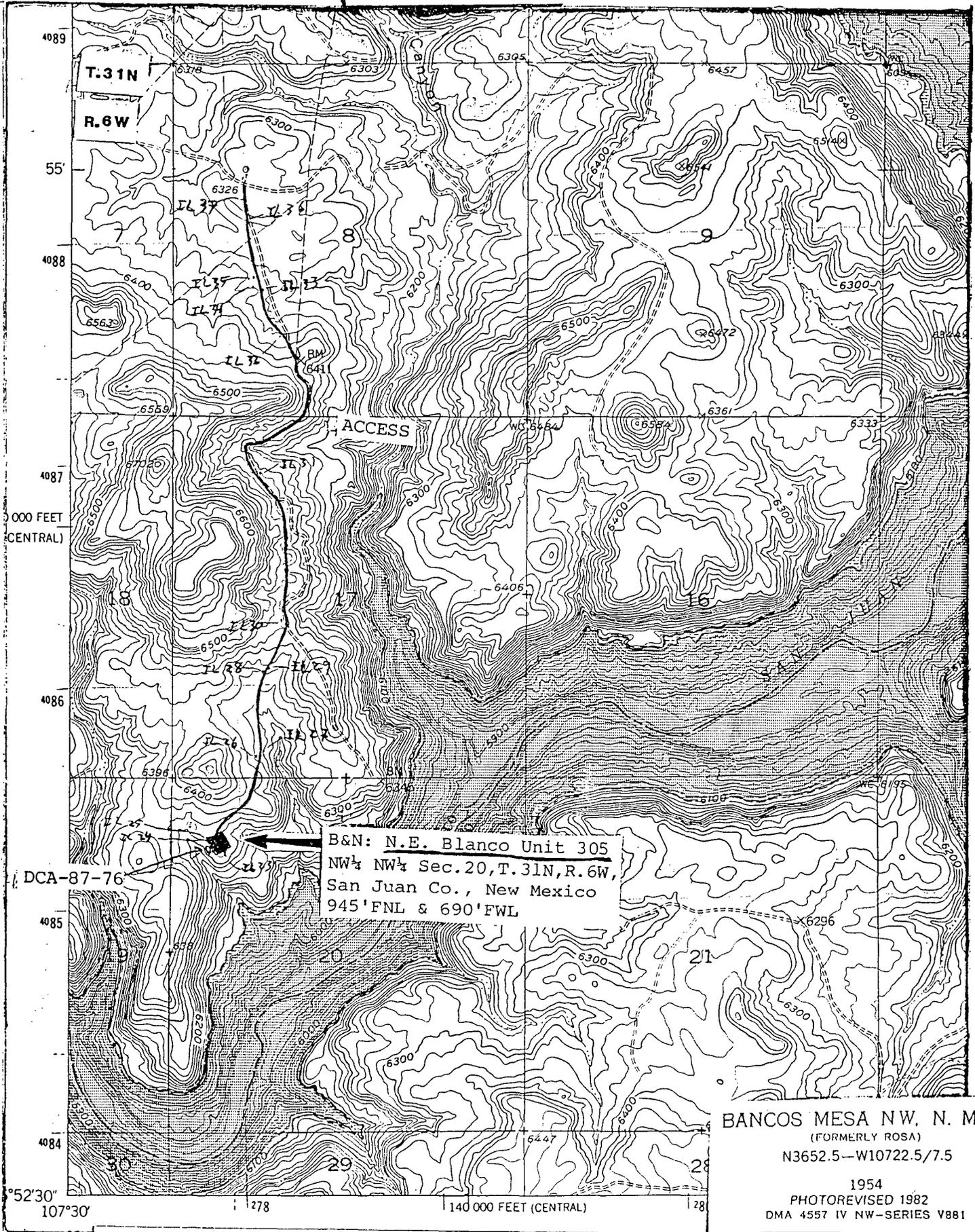
Moore, Roger A.

1985 An Archaeological Survey of Eight Well Pads and Access Routes in the Northeast Blanco Unit, Burnt Mesa Area of San Juan County, New Mexico. San Juan County Archaeological Research Center and Library, Division of Conservation Archaeology, Contributions to Anthropology Series No. 967. DCA Project No. 21-85-C.

Whitten, Penelope and Alan C. Reed

1980 An Archaeological Survey of 14 Proposed Well Locations and Associated Access Roads in San Juan County, New Mexico. San Juan County Archaeological Research Center and Library, Division of Conservation Archaeology, Contributions to Anthropology Series No. 313. DCA Project No. 79-80-C.

FIGURE 7



CONTOUR INTERVAL 20 FEET

Project No. 89-107

Cultural Resource Use Permit
No. 77-2920-89-D

An Archaeological Survey of
Well NEBU 500 and access Road on
Burnt Mesa in San Juan County, New Mexico

for

Blackwood & Nichols Co., Ltd.

Wells:

NEBU 500 & road

Alternate NEBU 500 & road

Written and
Submitted by

Roger A. Moore, Jr.
Principal Investigator

February 14, 1990

Moore Anthropological Research

Technical Report No. 89-107

M.A.R., P.O. Box 1156, Aztec, New Mexico 87410

ABSTRACT

Between November 7 & 9, 1989 Moore Anthropological Research conducted a Class III archaeological survey of the original and alternate location of well Northeast Blanco Unit well 500 and access road for Blackwood & Nichols Co., Ltd. of Durango, Colorado. The survey area is located on Burnt Mesa west of Cottonwood Canyon (T.31N, R.6W, Sec.8,17,20) in San Juan County, New Mexico and is under the jurisdiction of the Bureau of Land Management, Farmington Resource Area. A total of 45.69 acres (18.49 hectares) were inventoried.

Three archaeological sites and twenty two isolated loci were discovered during the survey. Sites LA 64838 and MAR-89-78 are on the original well location and MAR-89-77 is along the access road.

The documentation of the isolates in the field has sufficiently exhausted their research potential for the purpose of this project.

Archaeological clearance is not recommended for well NEBU 500.

Archaeological clearance is recommended for Alternate NEBU 500 with the stipulation that road construction near site MAR-89-77 be monitored by an archaeologist.

INTRODUCTION

On November 7, 8 & 9, 1989 Moore Anthropological Research (M.A.R.) conducted a Class III archaeological survey for Blackwood & Nichols Co., Ltd. of Durango, Colorado. Ron Thompson of Blackwood & Nichols Co., Ltd. requested the survey on October 18, 1989 and administered the project. Roger A. Moore administered the project for M.A.R.

Over the years the people of the United States have become more aware of the nonrenewable nature of their archaeological resources and their cultural heritage. As a result of this growing concern federal, state and local governments have passed laws and enacted ordinances designed to protect and conserve archaeological, historical, and anthropological resources. The principal legislation affecting federal lands, federally administered projects, or federally funded projects includes the Federal Antiquities Act of 1906 (P.L.52-209), the Reservoir Salvage Act of 1960 as amended (16 U.S.C. 469), the National Historic Preservation Act of 1966 (P.L.89-665) as amended in 1980 (P.L.96-515), the National Environmental Policy Act of 1969 (P.L.91-852), Executive Order No. 11593 of 1971 (36 F.R.8921, 16 U.S.C. 470), the Archaeological Resource Protection Act of 1979 (P.L.96-95; P.L.100-555), and the American Indian Religious Freedom Act of 1979 (P.L.95-341). The principal legislation affecting non-federal lands in New Mexico is the Cultural Properties Act. Work conducted in the course of this project is intended to comply with the above-mentioned laws and is governed by the stipulations of Cultural Resource Use Permit No. 77-2920-89-D.

Roger A. Moore, M.A.R. archaeologist, surveyed the project area for cultural remains. The Bureau of Land Management (B.L.M.) Farmington Resource Area was notified of the proposed survey prior to beginning fieldwork. Ron Thompson of Blackwood & Nichols; Jack Mackey, contractor; Al Kroeger and Jim Fuge of Kroeger & Associates accompanied the archaeologist during the fieldwork.

METHODS

The project area was surveyed by walking parallel transects 8 to 12m apart on the well and perpendicular to the 30 ft. wide access road. A construction zone 25 to 45 ft. wide and a buffer zone 100 ft. wide on the well, and a buffer zone 50 ft. wide on both sides of the access road was included in the survey. The project area was marked with yellow and orange flagged lath on the wells and red flagged vegetation on the access roads prior to conducting the survey. Some of the blue flagging which marked the road from the survey of the NEBU 305 was still present. Archaeological site boundaries were marked with blue flagging tape. All cultural remains were recorded relative to known points within the project area. Archaeological sites were recorded on the appropriate state site forms, photographed, and a sketch map prepared. Isolated Loci were recorded according to the permitting agency guidelines. Pertinent environmental data were also recorded. Locational information presented in this report is derived from plats or vicinity maps provided by the client. Sites and isolates are defined according to BLM Manual Handbook H-8100-1: I-14 and BLM Special Conditions for Survey Permits (2920).

RECORDS SEARCH

A records search was conducted prior to field inspection at the B.L.M. Farmington Area office on October 18, 1989 to determine if any sites had been recorded within a one mile radius of the project area. Projects in this area for which previous cultural resource inspections have been conducted include oil and gas related development projects. The records search showed seven previously recorded sites within one mile of the project (BLM Supplement Map [for BLM archaeologist only]). Sites within 1000 ft of the project are listed in Table 1. The nearest previously recorded site, LA 64838 (DCA-87-76) is located immediately west of the proposed well NEBU 500. This site was recorded during the survey of the proposed well NEBU 305 (T.31N, R.6W, Sec. 20, 945'F/NL, 690'F/WL) (Moore 1987). This is the same place Blackwood & Nichols planned to place the NEBU 500. The Alternate NEBU 500 is over 200 ft. from LA 64838 and will not impact this site.

Table 1: List of previously recorded sites within 1000ft of the project area.

<u>LA No.</u>	<u>Other No.</u>	<u>Culture</u>	<u>Description</u>
30764	SJC-725	PI Rosa Phase	Pithouse and artifact scatter.
34756	DCA-87-76	Unknown	Lithic & ground stone scatter.

PROJECT AREA

Well NEEU 500 and Access Road

Legal Description: T.31 N, R. 6 W, Section 20. E 1/2 NW 1/4 NW 1/4
 SW 1/4 NW 1/4 NW 1/4
 Section 17, CT 1/4 S 1/2 SW 1/4
 NE 1/4 SW 1/4 SW 1/4
 W 1/2 NE 1/4 SW 1/4
 W 1/2 SE 1/4 NW 1/4
 SW 1/4 NE 1/4 NW 1/4
 E 1/2 NW 1/4 NW 1/4
 NW 1/4 NE 1/4 NW 1/4
 Section 8. SE 1/4 SE 1/4 SW 1/4
 W 1/2 SE 1/4 SW 1/4
 SW 1/4 NE 1/4 SW 1/4
 NE 1/4 NW 1/4 SW 1/4
 E 1/2 SW 1/4 NW 1/4
 Section 20. 945' F/NL. 690' F/WL

New Mexico Prime Meridian. San Juan County, New Mexico, 6300'- 6440' Elevation

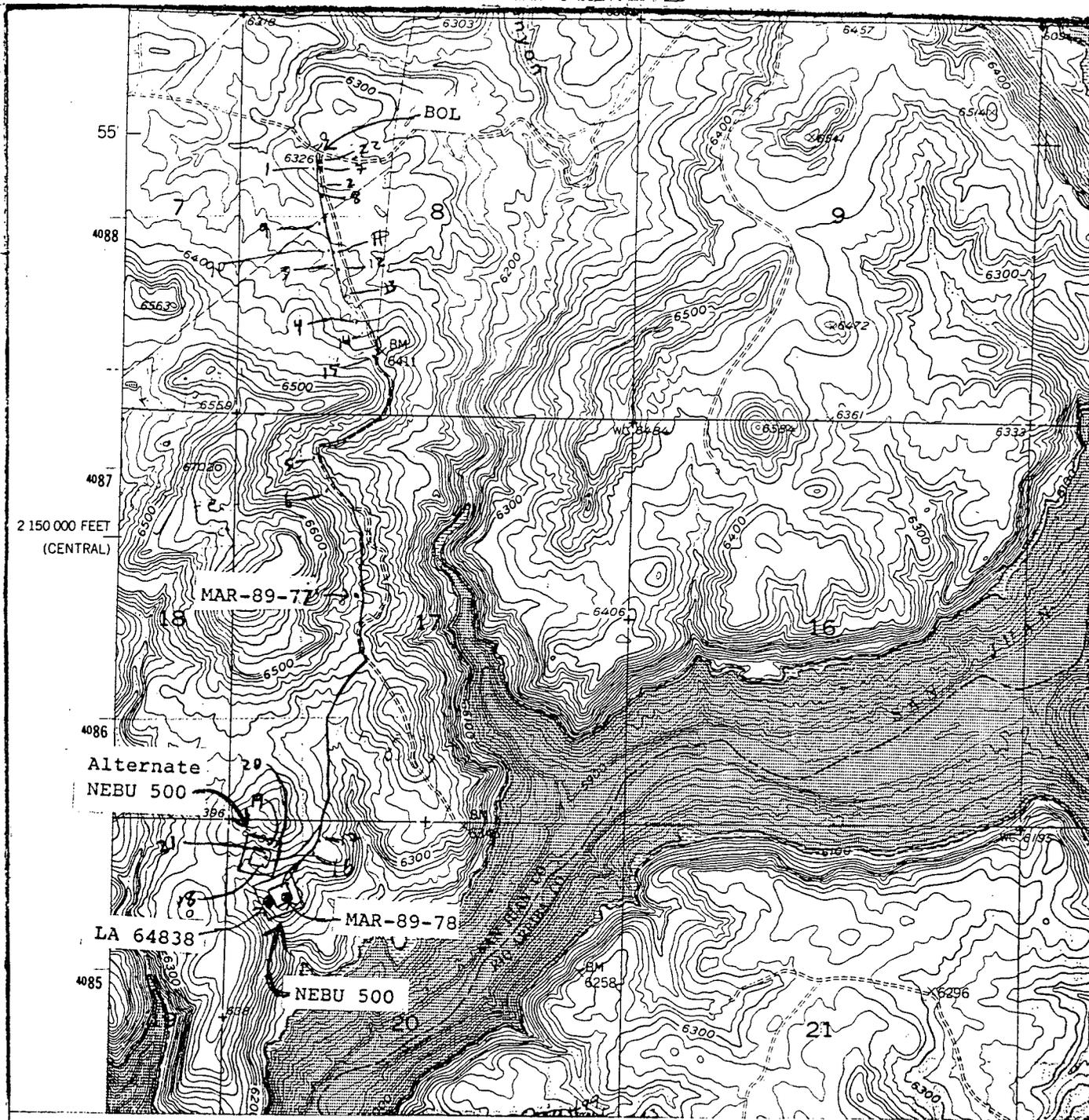
Map Source: U.S.G.S. 7.5' Bancos Mesa, New Mexico 1954 (Photorevised 1982)

Land Jurisdiction: Bureau of Land Management, Farmington Resource Area

Project Area: 350' x 250' (well)
 400' x 300' (well & construction zone)
 30' x 13000' (access)
 Surveyed Area: 600' x 500' (well, construction zone & buffer)
 130' x 13000' (access & buffer)
 Acres: 45.68

Environment: The project is located on the south side of Burnt Mesa just west of Cottonwood Canyon and north of the San Juan River (Figure 1). The mesa is formed by outcrops and benches of sandstone, conglomerate, and shale which make up the San Jose Formation (Manley et al. 1978). High surface gravels may have eroded from the conglomerate which occurs in two places in the project area. The outcrops are: 1) along the road in the S 1/2 of the N 1/2 of the NW 1/4 of section 17; 2) in the N 1/2 of the NW 1/4 of section 20. The outcrop consists of pebble to cobble sized, rounded to subrounded gravels composed of (in order of dominance): gray, tan, green and reddish-brown siltstone; basalt; very fine grained to medium grained gray quartzite; diorite; sandstone. There are also a very few pieces of cherts, nodules of clear to white and dark gray chalcedony, and red jasperoid silicified wood. The chalcedony ranges in size from medium pebble to small cobble sized irregularly shaped, subrounded nodules and is a potential flaked lithic raw material. The siltstones, basalt, and quartzites are also potential flaked lithic raw materials; the diorite and sandstone are potential groundstone raw materials.

FIGURE 1



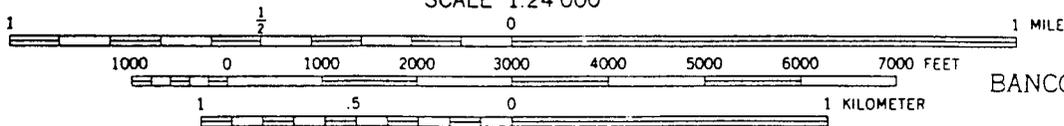
KEY:

- Well pad →
- Buffer Zone →
- Access Road →
- Archaeological Site = • or
- Beginning of Road = BOL
- Isolated Loci =

T. 31N, R. 6W

FOR OFFICIAL USE ONLY
 DISCLOSURE OF SITE
 LOCATIONS IS PROHIBITED
 (36 CFR 296.18)

SCALE 1:24 000



CONTOUR INTERVAL 20 FEET
 DOTTED LINES REPRESENT 10-FOOT CONTOURS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929

BANCOS MESA NW, N. ME
 (FORMERLY ROSA)
 N3652.5-W10722.5/7.5

1954
 PHOTOREVISED 1982

The northern 2000 ft. of access road is on a gently rolling area with Penistaja-Buckle association soil; the rest of the project is in rocky areas with Rock Outcrop-Travassilla-Weska complex soils (Keetch 1980). Vegetation on the north 2000 ft. of access has a 15-40% scrubland cover of snakeweed, grama and galleta grass, sagebrush, and prickly pear cactus. The rest of the project is in a 5 to 15% cover woodland consisting of juniper, pinyon pine, grama grass, antelopebrush, mountain mahogany, sagebrush, gamble oak, buckwheat, club cholla, two-scale Mormon tea, and prickly pear cactus. Animals noted include deer and rabbit. Current use is for cattle grazing, energy development, and hunting. The weather was cool and clear during the survey.

Project Description: This is a proposed gas well and access road. The well is on a low north-south ridge-like area of a broad bench. There are some sandstone outcrops on and near the pad. From the northeast side of the well location the access road goes northwest along the mesa bench, then across abroad and shallow drainage head area and upslope to an old two-track road. The route follows the two track for about for about 300 ft. and then leaves the road to go north upslope about 30 ft. in elevation. The route continues north along the narrow mesa benches and over three narrow east-west sandstone ridges for about 1600 ft. to where it encounters the two-track road again. The route follows the road as it winds along the narrow mesa bench northwest then northeast into Section 8 to about BM 6411 (on quadrangle map: Figure 1). At this point the road is on a narrow ridge top. From here on north the two track road has been completely obliterated by two chainings and grass seeding of the west half of Section 8. From the ridge top the flagged route goes north-northwest along the eastern base of a low hill, then northward over two low ridges to the bladed dirt road just south of well N.W. Pipeline Rosa No. 88 PM, (1610' F/NL, 110' F/WL, Section 8, T31N, R6W, Elev. 6335' GL). This proposed well (NEBU 500) and access was originally surveyed as Northeast Blanco Unit No. 305 by Moore (1987: 20-21).

Cultural Resources: One previously recorded site was re-recorded and two new sites and 22 isolated loci (Table 2) were discovered. Two of the isolates were also recorded during the previous survey. IL 2 is the same as the old IL 36, and IL 4 is the same as the old IL 32. IL's 9 and 10 to 12 form a sparse scatter on and just north of a ridge top. This area has been chained twice and burned by the B.L.M. The origin of the IL's is unknown, but no sites were found within 100ft. of the IL's. An unrecorded Pueblo I habitation is located about 600 ft. east of the road from about IL 9 and may be the source of at least some of these isolates. Recording and discussion of the isolates has sufficiently exhausted their research potential for the purpose of this project.

Site MAR-89-77 was found on the road, MAR-89-78 and LA 64838 (DCA-87-76) were found on the well pad. LA 64838 was re-recorded because of its expanded size: erosion since 1987 has exposed new areas of the site increasing its size by about 200%. Erosion has also exposed the previously buried sites MAR-89-77 and MAR-89-78.

LA 64838 is on a gently sloping broad mesa which slopes toward the southeast and south to the San Juan River. The terrain is cut by numerous shallow drainages and is covered by a juniper, pinyon and oak woodland. The site consists of a mano fragment, a core, a projectile point, a piece of fire cracked rock and at least 60 flakes. The mano is on the east side of a clump of five small trees, and Feature 1 is on the west side of the trees (Figure 3). There may therefore be buried deposits under the trees.

Table 2: Isolated Loci Descriptions.

IL#	Legal Description			UTM Coordinates		Veg. Land-		Description	
	Sec.	1/4	1/4	1/4	(Zone: 13)	Zone	form		
1	8	SE	SW	NW	278300E	4088290N	SC	M	One light gray chert TCRF.
2	8	SE	SW	NW	278100E	4088120N	SC	M	One Pueblo I gray ware sherd.
3	8	SE	NW	SW	278140E	4087800N	SC	RD	One light gray quartzite one hand unshaped cobble mano with pecked grinding surface; 2 gray ware sherds (Anasazi).
4	8	NW	SE	SW	278240E	4087570N	SC	RD	Two Pueblo I gray ware sherds.
5	17	NE	NW	NW	278060E	4087040N	WD	TS	One green siltstone TCRF.
6	17	SE	NW	NW	278100E	4086900N	WD	BN	One basalt TCRF.
7	8	NE	SW	NW	278100E	4088195N	SC	M	One light gray/brown chalcedonic fossiliferous chert Pueblo I side notched projectile point with serrated blade (Figure 2). 23mm long, 14mm blade width, 4mm blade thickness, 9mm neck width, 3mm notch width, 2mm notch depth, 5mm stem length, 12mm stem width, 3mm stem thickness, 4.8 serrations/cm, 1.2 grams weight.
8	8	SE	SW	NW	278100E	4088090N	SC	RD	One Anasazi gray ware sherd.
9	8	NE	SW	SW	278080E	4087970N	SC	M	One white chert SCRF.
10	8	NE	NW	SW	278120E	4087885N	WD	M	One Navajo Dinetah gray ware sherd.
11	8	NE	NW	SW	278145E	4087880N	SC	RD	One Pueblo I gray ware jar rim sherd.
12	8	SW	NE	SW	278160E	4087795N	SC	RD	One gray/green siltstone TCRF.
13	8	SW	NE	SW	278180E	4087680N	SC	M	One dark gray siltstone TCRF.
14	8	NW	SE	SW	278260E	4087540N	SC	RD	One gray siltstone large TCRF.
15	8	NW	SE	SW	278300E	4087440N	WD	RD	Four green siltstone TCRF's.
16	20	NE	NW	NW	278045E	4085460N	WD	RD	One basalt SCRF.
17	20	NE	NW	NW	278060E	4085520N	WD	RD	One mottled gray chert TCRF.
18	20	NW	NW	NW	277840E	4085420N	WD	BN	One tin with wire hinged lid with latch on a wire hinge, and a place for wire handle on lid. Tin is 6in long, 3 7/8in wide, and 3 1/4in wide. It has 38 or 30-30 cal. bullet holes in it. Appears to be about 25 to 40 years old.
19	20	NW	NW	NW	277860E	4085500N	WD	TS	One white fine grained quartzite large TCRF.
20	20	NW	NW	NW	277880E	4085480N	WD	TS	One green siltstone SCRF.
21	20	NW	NW	NW	277850E	4085440N	WD	BN	11 pieces of a purple glass bottle with lid; cup part of a metal water dipper. 1890-1918.
22	8	NE	SW	NW	278100	4088220N	SC	M	One Anasazi gray ware sherd.

Vegetation Zone Codes:

SC = scrubland WD = woodland

Landform Codes:

BN = bench M = mesa top RD = ridge TS = talus

Description Codes:

SCRF = secondary core reduction flake TCRF = tertiary core reduction flake

All IL's are on USGS 7.5' Bancos Mesa, NM 1954 (photorevised 1982); in NMPM, T.31N, R.6W; San Juan County, New Mexico.

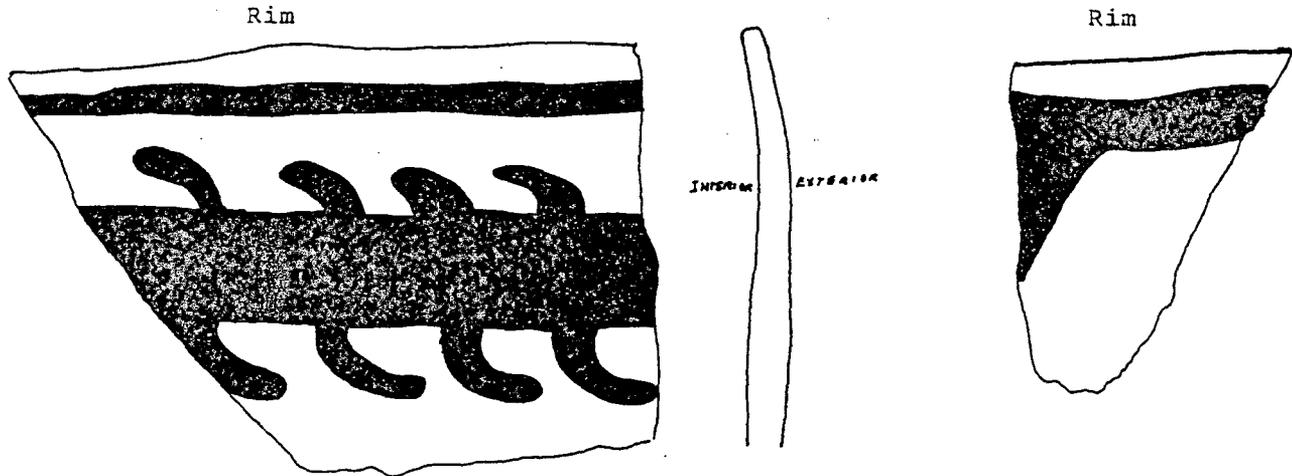
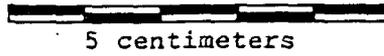
A
NW

FIGURE 2



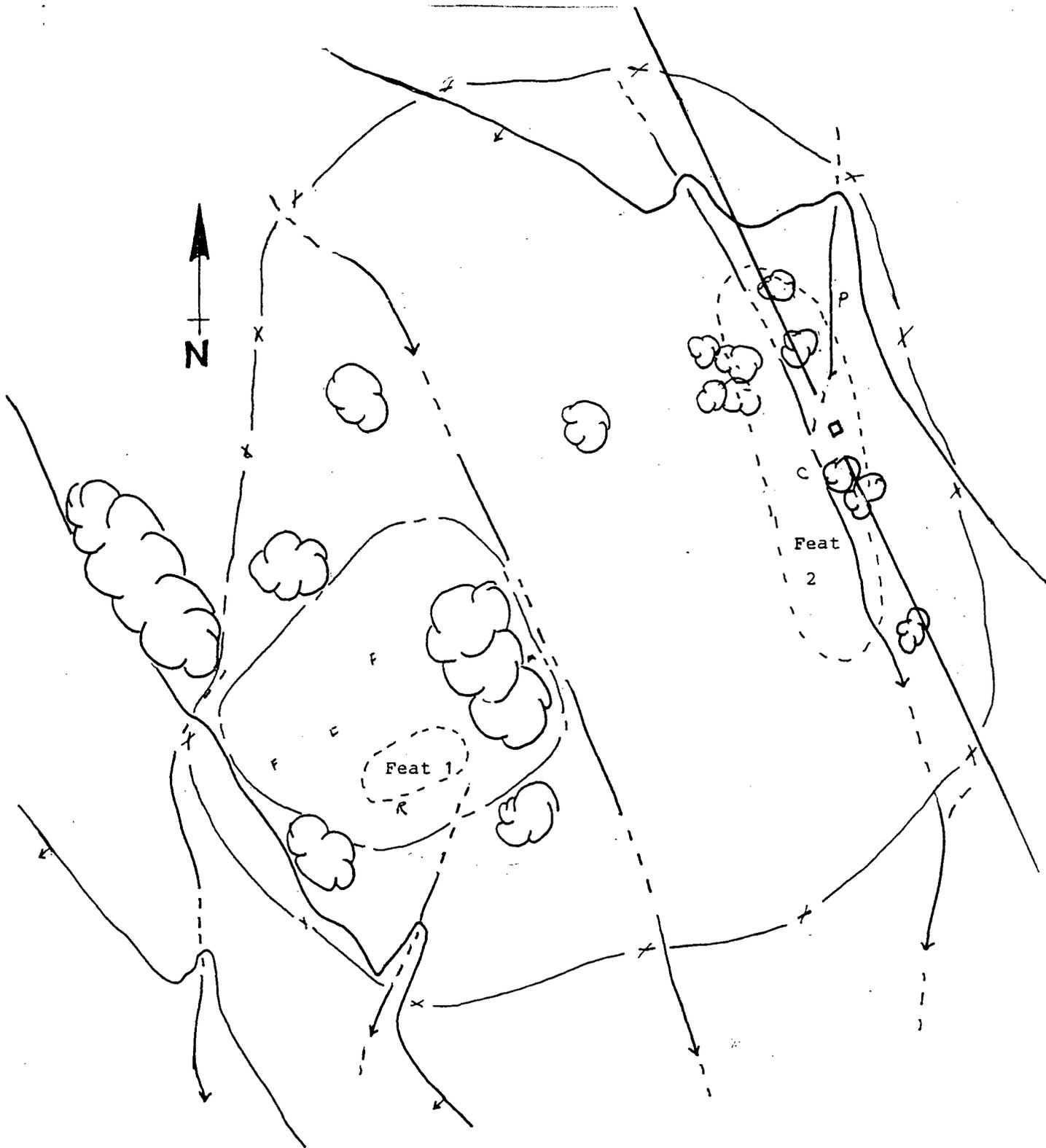
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IL 7: Pueblo I
Projectile Point

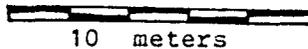


MAR-89-77: Two Rosa Black-on-white bowl rim sherds. Sherd on left has mineral paint miss-fired red, little or no slip, smoothed interior, roughly smoothed exterior. Sherd on right has greenish gray glazed paint.

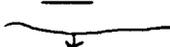
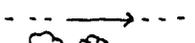
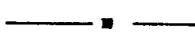
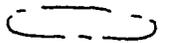
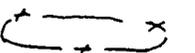
FIGURE 3



LA 64838



KEY:

-  2m contour
-  dry drainage
-  trees
-  well proposed boundary
-  old site boundary
-  revised site boundary

-  feature
- F flake
- C core
- P projectile point
- R fire cracked roac

R.A. Moore
8/15/1987
11/ 9/1989 (revised)

The mano is part of an unshaped one-hand cobble mano with one unpecked grinding surface. The core is a basalt bidirectional core 18 x 10 x 8 cm. located in Feature 2. The piece of fire cracked rock is on the south edge of Feature 1. The projectile point is a San Jose point made from Jemez obsidian. It has a broken- and possibly reworked blade. Dimensions are: 14mm neck width, 17mm stem width, 11mm stem length, 4mm stem thickness and weighs 1.4 grams. The point was IL 24 from the original survey (Moore 1987, Figure 4) and was collected and curated at Salmon Ruins Museum: it was located just east of Feature 2.

Feature 1 is a 5 x 3m concentration of at least 15 flakes. There is minimal erosion here and possible intact deposits to the east. Feature 2 is an 18 x 5 m concentration of at least 30 flakes and the core; these are being exposed in a shallow drainage area. There may be shallow buried deposits, (less than 15 cm deep), immediately east of the Feature 2 concentration.

The lithic artifacts are made from basalt (83%), tan very fine-grained quartzite (5%), dark brown siltstone (5%), green siltstone (5%), and Jemez obsidian (2%). Flakes are 10% primary core reduction, 32% secondary core reduction, 53% tertiary core reduction, and 5% angular shatter.

There may be shallow but intact deposits in and adjacent to the two features. This Archaic San Jose Phase camp may also have research potential for studies of lithic technology, lithic material procurement strategies, and land use. The age of the projectile point may be checked by obsidian hydration measurement. LA 64833 may therefore be eligible for nomination to the National Register under criterion of 35 CFR 604, and should be treated as eligible for purposes of Section 106 consultation.

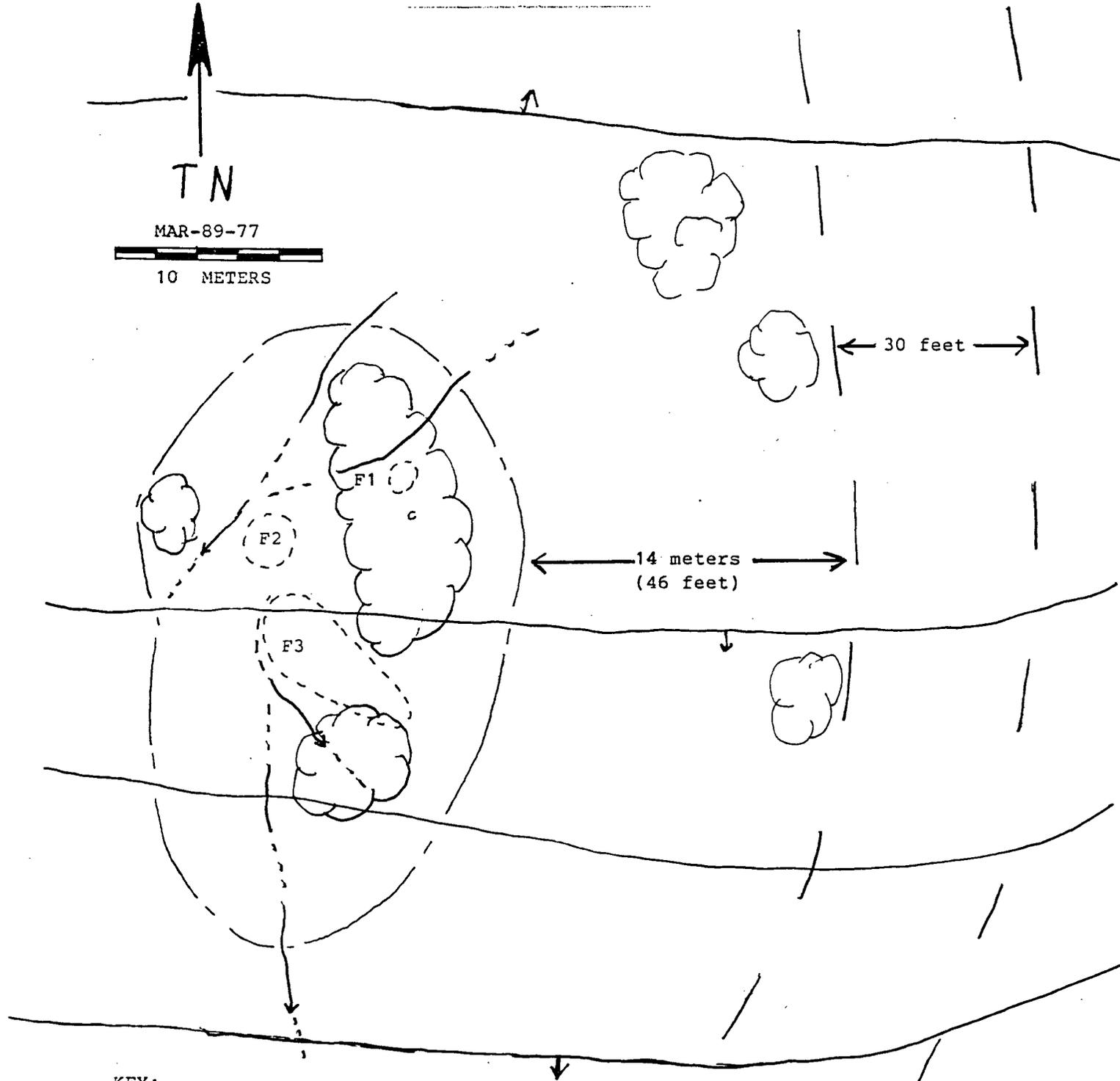
MAR-89-77 is on the west side of an east-west sandstone ridge on an east facing bench of Burnt Mesa west of Cottonwood Canyon. The soil is sandy and there are numerous outcrops of San Jose Formation sandstone. A sparse juniper-pinyon woodland provides a 3 to 20% cover. The site consists of three concentration of ceramic and lithic artifacts on the ridge top and south facing slope (Figure 4).

Feature 1 is a 2m diameter concentration of about 20 Rosa Black-on-white sherds representing at least two bowls. One vessel was misfired with the paint turning red, indicating a mineral paint. The other vessel has a greenish gray glaze type paint. Feature 2 is a 2m diameter concentration of about 35 gray ware sherds and some charcoal. Feature 3 is a 9 x 2.5m concentration of about 60 gray ware sherds and a flake in an erosional area. There may be buried intact deposits in the area of Feature 1, and in the area within 2m of Feature 2. Lithic artifacts include a basalt core, and a white chalcedonic silicified wood primary core reduction flake (in Feature 3).

This site was evidently completely buried at the time of the original road survey in 1987 and has been exposed by changes in the erosional patterns since that survey.

Site MAR-89-77 has shallow intact buried deposits. It also has research potential for studies of Pueblo I Rosa Phase ceramic technology, lithic technology, and land use. It may therefore be eligible for nomination to the National Register under criterion d of 35 CFR 60.4, and should be treated as eligible for purposes of Section 106 consultation.

FIGURE 4



KEY:

- proposed road
- 2m contours
- - -> dry drainage tree
- ☁ site boundary
- feature core

R.A. Moore/S.K. Moore
11/9/1989

MAR-89-78 is on the east side of a low north-south ridge on a south facing bench of Burnt Mesa. San Jose Formation sandstone outcrops on the ridge top and in some places along the ridge sides. There are several relatively flat areas along the ridge side where sand has accumulated. The site is in one of these areas, part of which has recently begun to loose sand due to water erosion (Figure 5).

The site consists of a least 45 lithic artifacts and one broken mano. The one hand shaped cobble mano has been burned red and has one grinding surface. The grinding surface has no pecking, but it does have use damage consisting of linear stria and general grinding attrition. This style of mano is usually associated with the Anasazi culture. Other tools include a light gray fine-grained quartzite unidirectional core with cortical platform, and a light gray fossiliferous chert trimmed unidirectional core with a non-cortical platform. There are at least nine flakes in the assemblage which came from this core.

Lithic materials include light gray siltstone (61%), light gray fossiliferous chert (24%), green/gray siltstone (5%), dark gray siltstone (5%), and white chalcedony (5%). All of these materials are available in the local conglomerate gravels. Flakes are about 8% primary core reduction, 21% secondary core reduction, 63% tertiary core reduction, and 8% angular shatter.

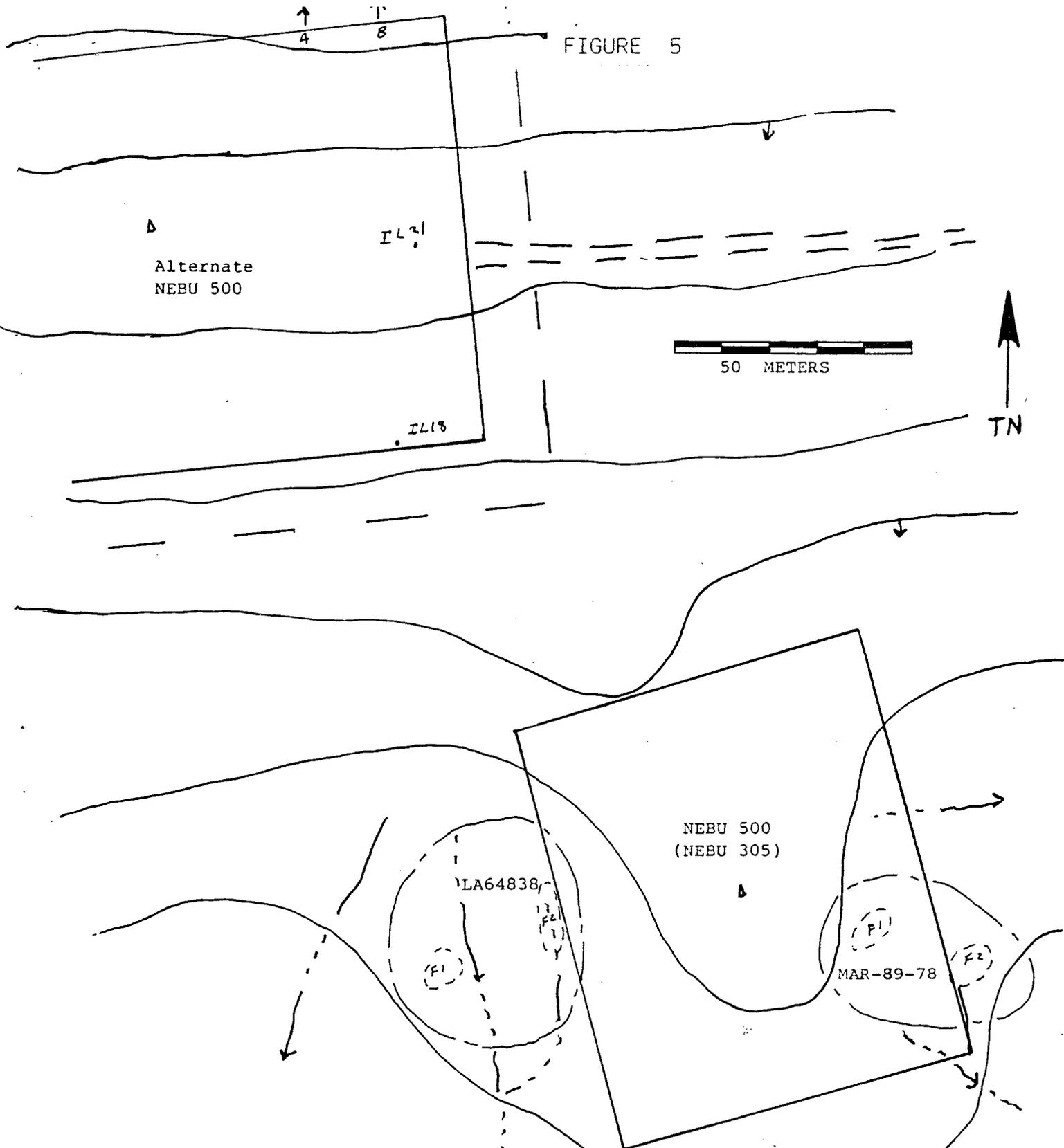
Site MAR-89-78 has intact shallow deposits in sand which has begun to erode. It also has research potential for studies of Anasazi lithic technology, lithic material procurement strategies, and land use. The site may therefore be eligible for nomination to the National Register under criterion d of 35 CFR 60.4, and should be treated as eligible for purposes of Section 106 consultation.

Recommendations: Archaeological clearance is recommended for the access road with the stipulation that construction within 100 ft. of site MAR-89-77 be monitored by an archaeologist. If a pipeline is to be constructed along this road it is further recommended that the pipeline be placed on the east side of the road within 100 ft. of the site.

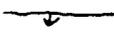
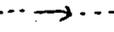
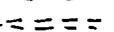
Archaeological clearance is not recommended for the well NEBU 500 because site LA 64838 extends about 15 ft. into the west side of the pad, and site MAR-89-78 is in the southeast quarter of the pad.

We recommended the pad be moved at least 375 ft. east or 350 ft. north in order to avoid the sites.

FIGURE 5



KEY:

-  proposed well
-  2m contour
-  dry drainage
-  site boundary
-  feature
-  proposed road
- A 20m to IL 19
- B 25m to IL 20

PROJECT AREA

Alternate Well Northeast Blanco Unit No. 500 and access

Legal Description: T.31 N. R.5 W. Section 20, SW 1/4 NW 1/4 NW 1/4
 N 1/2 NW 1/4 NW 1/4
 Section 20. 475' F/NL. 425' F/WL

New Mexico Prime Meridian. San Juan County. New Mexico. 6360'- 6370' Elevation

Map Source: U.S.G.S. 7.5' Bancos Mesa NW, New Mexico 1954 (Photorevised 1982)

Land Jurisdiction: Bureau of Land Management. Farmington Resource Area

Project Area: 350' x 250' (well)
 440' x 340' (well & construction zone)
 30' x 700' (access)
 Surveyed Area: 640' x 540' (well, construction. zone & buffer)
 130' x 700' (access & buffer)
 Acres: 10.02

Environment: The proposed well is on a 10-12 degree south facing slope on Burnt Mesa. just north of the Jan Juan River and west of Cottonwood Canyon (Figure 1). The south side of the pad is just above a narrow bench. The slope has a sandy/clayey soil which is nearly paved with pebble to cobble-sized gravels, as described in the previous section. A woodland provides a 3 to 10% cover of juniper, pinyon pine, grama grass, antelopebrush, sagebrush, and buckwheat. Animals noted were deer and rabbit. Current use is for cattle grazing and hunting. The weather was cool and clear during the survey.

Project Description: This is a proposed alternate location for the NEBU 500 gas well (Figure 6). From the center of the east side of the pad the access goes east along a narrow bench for about 700 ft., where it ties into the access road already described for the original NEBU 500 location.

Cultural Resources: No archaeological sites were found, but four isolated loci (IL's 18 to 21) were discovered. The isolates are described in Table 2. IL's 18 and 21 represent use of the area between 1890 and 1919 by ranchers or hunters and may be the remnant of a temporary camp. Due to the steepness of the slope and associated erosion, it is unlikely any of the camp is left. Recording of the isolates has sufficiently exhausted their research potential for the purpose of this project.

Recommendations: Archaeological clearance is recommended. Construction of the road within 100 ft. of site MAR-89-77 will still have to be monitored by an archaeologist.

SITE DISCOVERY AND CLIMATIC CHANGE

This project documents a phenomena which we have been noticing in the Navajo Reservoir District throughout 1989: the discovery of newly exposed archaeological sites in areas surveyed as recently as one year ago.

We have had unusually wet winters for the past three years. The summer of 1988 was a little drier than normal and the spring and summer of 1989 was very dry. When the rains did come in 1989 they were very short lived but heavy (per storm). As a result of the dryer warm months the soil has dried out nearly completely (based on observations of construction of wells and pipelines) to depths of up to 1 meter. When the rains finally came in July 1989 this unusually dry condition allowed more soil than usual to be moved by the runoff. Some of the very dry soil may have been moved by wind action.

We have noted not only new sites being exposed as a result of these processes, but also the disappearance of some sites. This experience has made us causes about doing re-surveys and re-inspection of project areas when conducting monitor of construction projects. If this warm months drying trend continues the B.L.M. and other government agencies may need to keep this information in mind when deciding if previously surveyed areas need re-survey.

REFERENCES

Keetch, C. Wesley

1980 Soil Survey of San Juan County New Mexico Eastern Part. U.S. Department of Agriculture Soil Conservation Service.

Manley, Kim, Glen R. Scott, and Reinhard R. Wobus

1978 Preliminary Geologic Map of the Aztec 1 x 2 Quadrangle, Northwestern New Mexico and Southern Colorado. Department of the Interior, U.S. Geological Survey, Open-file Report 78-466.

Moore, Roger A.

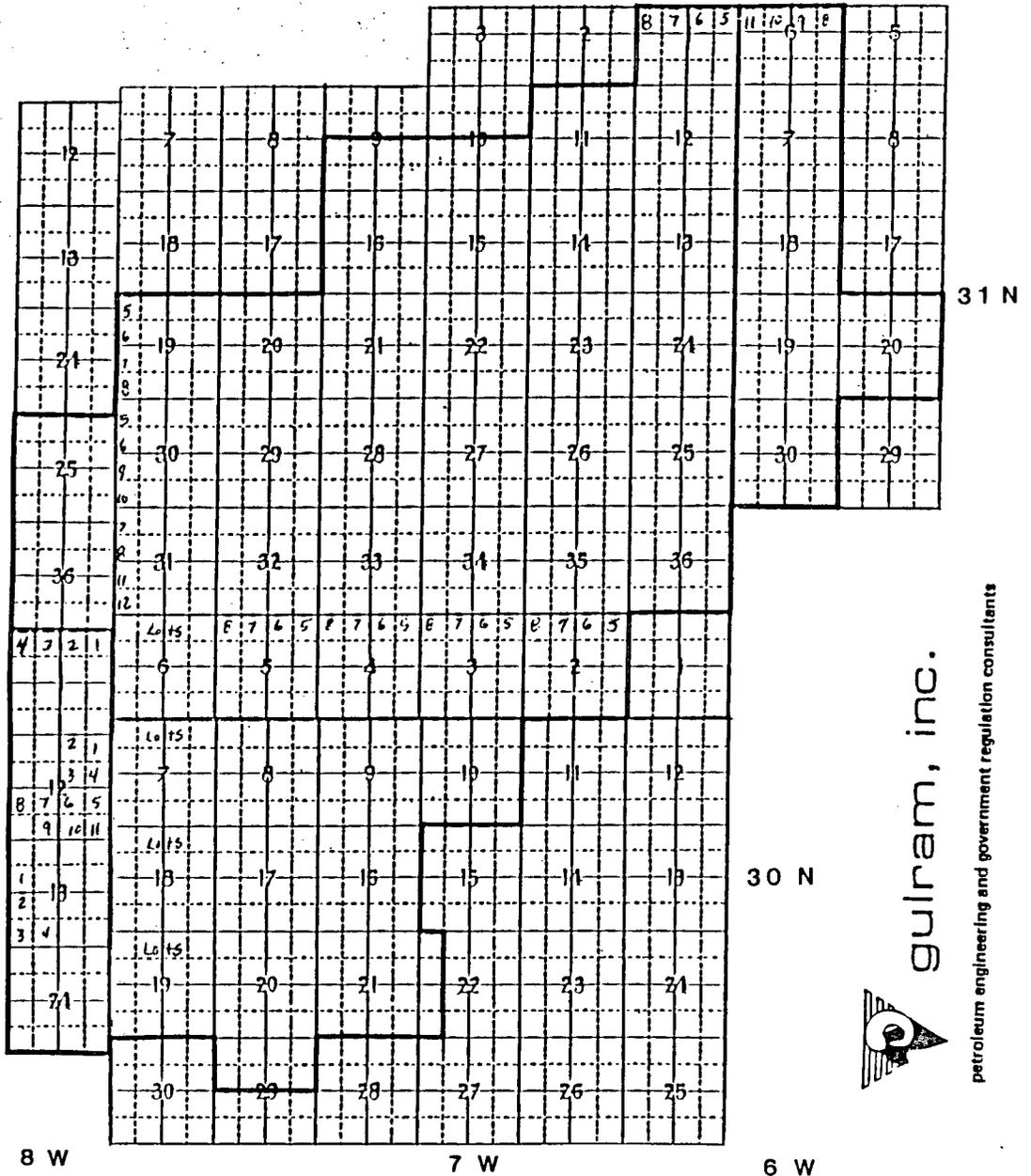
1987 An Archaeological Survey of Seven Well Locations and Combined Access Road/Pipeline Right-of-ways around Navajo Reservoir in San Juan and Rio Arriba Counties, New Mexico. Division of Conservation Archaeology. Technical Report No. 1211.

NORTHEAST BLANCO

RIO ARRIBA & SAN JUAN COUNTIES
NEW MEXICO

No. I-Sec. No. 929

EFFECTIVE 4-16-52




gulram, inc.
petroleum engineering and government regulation consultants



STATE OF NEW MEXICO
 ENERGY AND MINERALS DEPARTMENT
 OIL CONSERVATION DIVISION
 AZTEC DISTRICT OFFICE

1000 RIO BRAZOS ROAD
 AZTEC, NEW MEXICO 87410
 (505) 334-6178

'90 APR 13 AM 9 04

ARREY CARRUTHERS
 GOVERNOR

Date: 4-12-90

ATTN: Mike Stagner

Oil Conservation Division
 P.O. Box 2088
 Santa Fe, NM 87504-2088

Re: Proposed MC _____
 Proposed DHC _____
 Proposed NSL X _____
 Proposed SWD _____
 Proposed WFX _____
 Proposed PMX _____

Gentlemen:

I have examined the application dated 3-27-90

for the Blackwood Mobile Co., LTD N.E.B.U. # 500
 Operator Lease & Well No.

D-20-31N-6W and my recommendations are as follows:
 Unit, S-T-R

Approve

Yours truly,

Eric Busch