

**ecs/ Energy Consulting Services**

815 Metrobank Bldg.  
475 17th Street  
Denver, Colo. 80202

Phone (303) 893-1705

694-7366

April 26, 1982

Mr. Peter Perry, Superintendent  
Canyonlands National Park  
446 S. Main Street  
Moab, Utah 84532

RE: Filing Plan of Operations  
Sun Exploration & Production Co.  
Woodenshoe #2 (Woodenshoe Federal Unit)  
SW SE Sec. 32 T36S R18E  
San Juan County, Utah

Dear Mr. Perry:

Enclosed are two (2) copies of the Plan of Operations to obtain a Special Use Permit for the above-captioned well location. To the best of my knowledge the planned operations are in accordance with all applicable Federal, State, and local laws and regulations.

In order to supply you with sufficient information the following exhibits are enclosed:

"A"	Location and Elevation Plat
"B"	Geologic and Engineering Plan
"C"	Blowout Preventer Diagram
"D"	Land Use Plan
"E" & "E <sub>1</sub> "	Access Road and Lease Maps
"F"	Drill Pad & Production Facilities Layout
"G"	Drill Rig Layout

Please notify me when you have arranged a time with the Minerals Management Service to inspect the site so that I may be present during the onsite inspection.

I would appreciate any efforts made to expedite approval of this location since Sun Exploration & Exploration Co. has a commitment to drill the proposed well location by June 8, 1982 in order to keep the Woodenshoe Federal Unit.

If additional information is required, please contact me at (303)893-1705.

Thank you.

Sincerely,

ENERGY CONSULTING SERVICES, INC.

A handwritten signature in black ink that reads "Darryl Cooper". The signature is written in a cursive, flowing style.

Darryl Cooper  
Manager  
Environmental Services

Enclosures

cc: Minerals Management Service, Salt Lake City, Utah  
Keith Miller, National Park Service, Denver, Colorado  
Ben Ellis, Sun Exploration & Production Co., Dallas, Texas

Energy Consulting Services, Inc.  
475 17th Street, Ste. 815  
Denver, Colorado 80202

RE: Filing Plan of Operations  
Sun Exploration & Production Company  
Woodenshoe #2  
SW SE Sec. 32 T36S R18E  
San Juan County, Utah

Gentlemen:

This is to confirm our understanding with you that Energy Consulting Services, Inc. is authorized to act as our agent in the following capacities:

- A. In preparing and filing necessary applications, permits and compliance programs, including a Plan of Operations to the National Park Service for the above-referenced project.
- B. In accepting on our behalf any changes to location, proposed facilities and/or surface use plan and compliance program requested at onsite inspections, when we are unable to have a Company representative present. Such changes will then be binding upon us or designated Operator.

Energy Consulting Services, Inc. responsibilities do not include construction of the location or supervision of drilling, completion or rehabilitation operations.

SUN EXPLORATION AND PRODUCTION COMPANY

By:   
Ron Harris

Title: Regional Exploration Engineer

Date: April 23, 1982

EXHIBIT "B"  
GEOLOGIC & ENGINEERING PLAN

Sun Exploration & Production Company  
Woodenshoe #2  
Sec. 32 T36S, R18E  
San Juan County, Utah

1. The Geologic Surface Formation

The surface formation is the Cutler Formation.

2. Estimated Tops of Important Geologic Markers

Honaker Trail	1500	Molas 3700'
Paradox Ismay	2400'	
Desert Creek	2600	Total Depth 3700'
Akab	2750'	
Salt	2800'	
Pinkerton Trail	3400'	

3. Estimated Depths of Anticipated Water, Oil, Gas or Minerals

Paradox	2400'	Water/Oil
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4. The Proposed Casing Program

<u>HOLE SIZE</u>	<u>INTERVAL</u>	<u>SECTION LENGTH</u>	<u>SIZE (OD)</u>	<u>WEIGHT, GRADE &amp; JOINT</u>	<u>NEW OR USED</u>
12 1/4"	0-700'	700'	9 5/8"	36# K-55, ST&C	New
8 3/4"	0-3700'	3700'	5 1/2"	15.5#, K-55, LT&C	New
Tubing	0-3700'	3700'	2 3/3	4.7#, J-55, EUE	

Cement Program

Surface - 520 sxs Class "B" + 2%  $CaCl_2$

Production - 300 sxs Class "H" + 50/50 Lite poz  
200 sxs Class "H" + 10% D-44

5. The Operator's Minimum Specifications for Pressure Control

EXHIBIT "C" is a schematic diagram of the blowout preventer equipment. The BOP's will be hydraulically tested to the full working pressure after nipping up and after any use under pressure. Pipe rams will be operationally checked each 24-hour period, as will blind rams and annular preventer each time pipe is pulled out of the hole. Such checks of BOP will be noted on daily drilling reports.

Accessories to BOP will include an upper kelly cock, floor safety valve, and choke manifold with pressure rating equivalent to the BOP stack.

6. The Type and Characteristics of the Proposed Circulating Muds

Mud system will be gel-chemical with adequate stocks of sorptive agents on site to handle possible spills of fuel and oil on the surface. Heavier muds will be on location to be added if pressure requires.

<u>DEPTH</u>	<u>TYPE</u>	<u>WEIGHT #/gal.</u>	<u>VISCOSITY-sec./qt.</u>	<u>FLUID LOSS cc</u>
0 - 700'	Water	8.4 - 8.6	As Required	N/C
700 - 2200'	Water	8.4 - 8.6	As Required	N/C
2200' - T.D.	Sat. Salt Gel	10.2 - 10.6	35 - 45	less than 15

7. The Auxiliary Equipment to be Used

- (a) A kelly cock will be kept in the string.
- (b) A float will be used at the bit.
- (c) A mud logging unit will be monitoring the system.
- (d) A stabbing valve will be on the floor to be stabbed into the drill pipe when kelly is not in the string.

8. The Testing, Logging and Coring Programs to be Followed

- (a) A DST is anticipated in the Paradox Formation. Other zones will be tested as required.
- (b) Logs will consist of BHC-Sonic/GR, CNL/FDC/GR, DIL/SP, HDT Velocity survey and will be run from surface casing to T.D.
- (c) Three cores are anticipated in the Paradox Formation.
- (d) No fracturing is anticipated.

9. Any Anticipated Abnormal Pressures or Temperatures

No abnormal pressures or temperatures have been noted or reported in wells drilled in the area nor at the depths anticipated in this well.

No hydrogen sulfide or other hazardous fluids or gases have been found, reported or known to exist at these depths in the area.

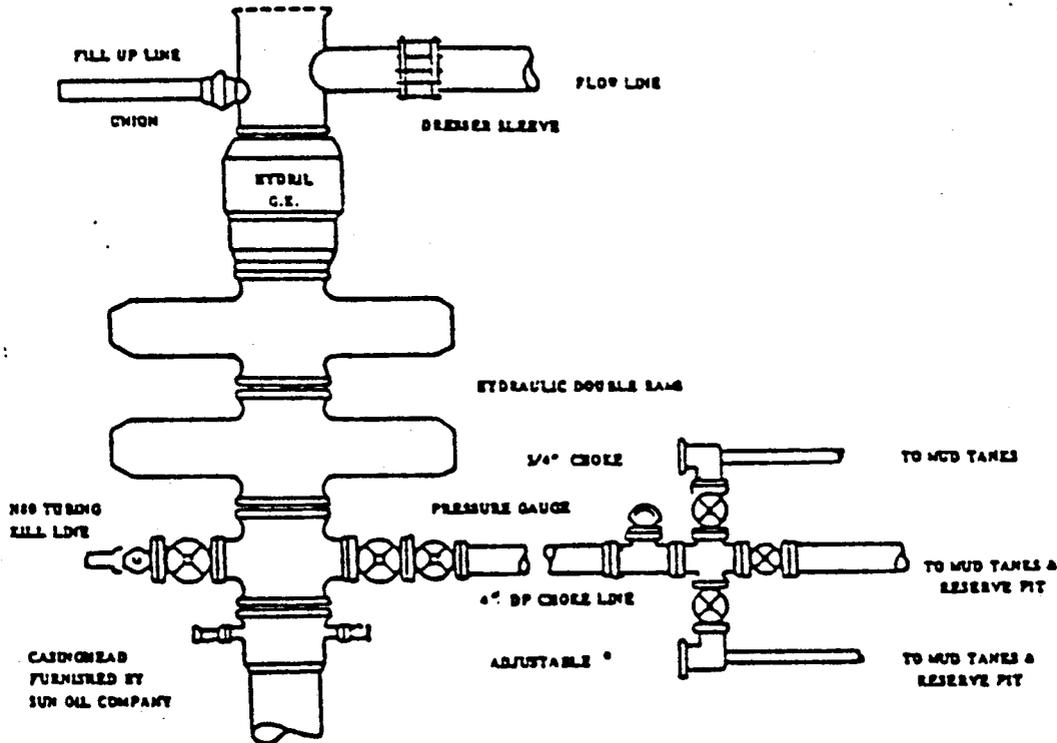
10. Anticipated Starting Date and Duration of the Operations

The anticipated starting date is set for June 8, 1982, or as soon as possible after examination and approval of drilling requirements. Operations should be completed within 60 days after spudding the well.

FIGURE 5  
 Woodenshoe Federal #2-32  
 Section 32- T36S- R18E  
 San Juan County, Utah  
 SUN EXPLORATION COMPANY

HYDRAULIC BLOWOUT EQUIPMENT HOOKUP "B"

SIZE 10"      SERIES \_\_\_\_\_  
 W.P. 3000      T.P. \_\_\_\_\_



NOTE: Choke manifold shall be out from under derrick floor & raised above ground level. Extra chokes (Sizes 1/4" 1/2"-3/4"-1") shall be maintained on location at all times.

1. Blowout equipment shall be properly installed immediately after surface casing is cemented & immediately after intermediate casing is cemented, & entire assembly shall be ready for any emergency at this time.
2. All flanges, steel valves, gauges, fittings, & lines shall have a minimum working pressure of the Series or pressure rating noted.
3. All hydraulic lines used for operating blowout equipment shall be equipped with Swing joints & have a minimum working pressure of 3000 psi. Hydraulic pressure shall be supplied by a "Payne" or "Hydril" 80-gallon accumulator with hydraulic type oil as a medium.
4. Extension rods & manual operating wheels shall be installed on gates immediately & shall be plainly marked "Pipe Rams" & "Blind Rams".
5. All manifold control valves shall be clearly marked as to designation "Hydril", "Blind Rams" & "Pipe Rams". "Blind Ram" operating valve shall be pinned so that valve cannot be operated until pin or lock is removed.
6. At least two vapor-proof safety lanterns shall be maintained on rig floor at all times.
7. An inside blowout preventer of proper size & pressure rating shall be maintained on rig floor at all times.
8. Blowout equipment shall be closed & inspected each 24 hours & noted on the daily drilling report.
9. Wherever possible, mouse hole to be off-center of hole to allow choke line to run from drilling spool to manifold in a straight line.

EXHIBIT "D"  
LAND USE PLAN FOR PLAN OF OPERATIONS

Sun Exploration & Production Co.  
Woodenshoe #2  
SW SE Sec. 32 T36S R18E  
San Juan County, Utah

1. Existing Roads

- A. The proposed well site and elevation plat is shown as EXHIBIT "A".
- B. This distance from Blanding, Utah is approximately 42 miles. From Blanding, go South on Hwy. 163 for 4 miles, turn West on Hwy. 95 and go about 34 miles to Park Service road Hwy. 275; turn right and go 4 miles to flagging; turn right and follow flagging for 700 feet to location, as shown on EXHIBITS "E" and "E<sub>1</sub>".
- C. All roads to location are color-coded on EXHIBITS "E" and "E<sub>1</sub>". An access road, 700 feet beginning from the existing Park Service road will be required as shown on EXHIBITS "E" and "E<sub>1</sub>".
- D. This is an exploratory well. All existing roads within a three-mile radius are shown on EXHIBIT "E".
- E. The existing Park Service road needs no improvements, but maintenance will be performed as required by the National Park Service.

2. Planned Access Roads

Map showing all necessary access roads to be constructed or reconstructed is shown as EXHIBIT "E<sub>1</sub>" for the following:

## A. Drilling

- (1) The maximum width of the 700 feet of new access required for drilling will be 16 feet running surface.
- (2) The grade will be 4% maximum.
- (3) No turn outs are planned.
- (4) Drainage ditches are planned during drilling operations. Brush will be cleared and a temporary road will be prepared by grader.
- (5) One culvert is needed at the beginning of the road.
- (6) The newly constructed road will be surfaced with gravel where needed.
- (7) No gates are needed.
- (8) The new access road to be newly constructed is shown on EXHIBITS "E" and "E<sub>1</sub>". This road does cross Park Service lands, as shown on EXHIBIT "E".

## B. Production

- (1) If production is obtained, the new road will be graded and surfaced and drainage will be constructed. If accumulated material is not sufficient, additional materials will be provided by the dirt contractor. Width of total disturbed area will be approximately 24 feet.

If it is decided that a new road will be needed away from the existing Park Service Road, then Sun Expl. & Prod. Co. will submit plans to the Minerals Management Service and the Bureau of Land Management for approval since they would be the controlling land agency.

3. Location of Existing Wells

For all existing wells within a one-mile radius of the Exploratory well, see EXHIBIT "E".

- (1) There are no water wells within a two-mile radius of this location.
- (2) There are no abandoned wells within a two-mile radius.
- (3) There are no temporarily abandoned wells.
- (4) There are no disposal wells.
- (5) There are no wells presently being drilled.
- (6) There are no producing wells within a two-mile radius.
- (7) There are no shut-in wells.
- (8) There are no injection wells.
- (9) There are no monitoring or observation wells for other uses.

4. Location of Existing and/or Proposed Facilities

A. Within a one-mile radius of location, the following existing facilities are owned or controlled by Sun Exploration & Production Company.

- (1) Tank Batteries: None
- (2) Production Facilities: None
- (3) Oil and/or Gas Gathering Lines: None
- (4) Injection Lines: None
- (5) Disposal Lines: None

B. If production is obtained, new facilities will be as follows:

- (1) Production facilities will be located on solid ground of cut area of the drill pad, as shown on EXHIBIT "F".
- (2) All well flow lines will be buried and will be on the well site and battery site.
- (3) Production facilities will be 250 feet long and 200 feet wide. Areas of drill pad not required for production facilities will be rehabilitated.
- (4) All construction materials for battery site and pad will be obtained from site. No additional material from outside sources is anticipated.
- (5) Any necessary pits will be fenced and flagged to protect livestock and wildlife.

C. Rehabilitation, whether well is productive or dry, will be made on all unused areas in accordance with National Park Service stipulations. Total costs for reclamation should not exceed \$10,000.

5. Location and Type of Water Source

A. The source of water will be spring in Section 36 T36S R18E shown on EXHIBIT "E". Proper water authorization will be obtained by Sun Exploration & Production Company.

B. Water will be transported by truck over existing roadways.

C. No water well is to be drilled on the lease.

**6. Construction Materials**

- A. No construction materials are needed for drilling a well or constructing access roads into the location during drilling. The surface soil materials will be sufficient.
- B. No construction materials will be taken off Federal land.
- C. All surface soil materials for construction of access roads for drilling are sufficient. If well is productive, and material from road and pad grading is not sufficient, surfacing materials will be provided by the Dirt Contractor.
- D. All major access roads presently exist as shown on EXHIBIT "E".

**7. Handling of Waste Materials and Disposal**

- (1) Drill cuttings will be buried in the reserve pit.
- (2) Drilling fluids will be handled in the reserve pit.
- (3) Any fluids produced during drilling test or while making production test will be collected in a test tank. If a test tank is not available during drilling, fluids will be handled in reserve pit. Any spills of oil, gas, salt waters or other noxious fluids will be cleaned up and removed. If well is productive, produced water will be disposed of on-site for 30 days only, or 90 days with permission of District Engineer. After that time application will be made for approval of permanent disposal method in compliance with NTL-2b.
- (4) Chemical facilities will be provided for human waste.
- (5) Garbage and non-flamable waste and salt and other chemicals produced during drilling or testing will be handled in trash pit. Flammable waste will be disposed of in trash pit. Drill fluids, water, drilling mud and tailings will be kept in reserve pit, as shown on EXHIBIT "F". The trash pit will be totally enclosed with small mesh wire to prevent wind scattering trash before being buried or removed. Reserve pit will be fenced on three sides during drilling and fourth side fenced upon removal of the rig.
- (6) After the rig moves out, all materials will be cleaned up and no adverse materials will be left on location. All dangerous open pits will be fenced during drilling and kept closed until such time as the pit is leveled.

**8. Ancillary Facilities**

No air strip, camp or other facilities will be built during drilling of this well.

9. Well Site Layout

- (1) EXHIBIT "F" is the Drill Pad Layout as staked with elevations. Cuts and fills have been drafted to visualize the planned cut across the location spot and to the deepest part of the pad. Topsoil will be stockpiled per Park Service specifications determined at time of pre-drill inspection.
- (2) EXHIBIT "G" is a plan diagram of the proposed rig and equipment, reserve pit, trash pit, pipe racks and mud tanks, access road, parking and turnaround. No permanent living facilities are planned. There will be a trailer on site.
- (3) EXHIBIT "F" is a diagram showing the proposed production facilities layout.
- (4) The reserve pit will be lined with bentonite, if needed.

10. Plans for Restoration

- (1) If well is abandoned, site will be restored to original condition as nearly as possible. Backfilling, leveling and contouring are planned as soon as all pits have dried. Waste disposal and spoils materials will be buried or hauled away to an approved sanitary landfill immediately after drilling is completed. If production is obtained, the unused area will be restored as soon as possible.
- (2) The soil banked material will be spread over the area. Revegetation will be accomplished by planting mixed grasses as per formula provided by the Park Service. Revegetation is recommended for road area, as well as around drill pad.
- (3) Three sides of the reserve pit will be fenced during drilling operations. Prior to rig release, the reserve pit will be fenced on the fourth side to prevent livestock or wildlife from entering; and, the fencing will be maintained until leveling and cleanup are accomplished.
- (4) If any oil is on the pits and is not immediately removed or burned after operations cease, the pit containing the oil or other adverse substances will be flagged overhead or covered with wire mesh.
- (5) The rehabilitation operations will begin immediately after the drilling rig is removed. Removal of oil or other adverse substances will begin immediately or area will be flagged and fenced. Other cleanup will be done as needed. Planting and revegetation is considered best in the Spring of 1983 unless requested otherwise.

11. Other Information

- (1) The location is situated on a northfacing slope dipping toward White Canyon. Vegetation consists of pines, pinon pines, junipers, rabbitbrush, shadscale and various grasses. Wildlife includes deer, rabbits, and other animals indigenous to the area.
- (2) The primary surface use is for grazing.
- (3) The closest occupied dwelling is a Visitor's Center in the Natural Bridges National Monument.

There were no archaeological, historical, or other cultural artifacts apparent during the staking of this location. A complete, standard cultural resource (including archaeological) survey was conducted by a qualified archaeologist, and a report is enclosed with this Plan of Operations.

- (4) The effects of the drilling operation on the natural cultural social and economic will be very minimal due to the remoteness of the area. The major effect will be on interference of traffic flow to and from the Park, but that too will be minimal. The vehicles will include the service vehicles and individual automobiles. The maximum amount of vehicles using the road at one time might be four or five.
- (5) Drilling is planned for on or about June 8, 1982. It is anticipated that operations will be completed within 60 days after commencement of drilling.

12. Lessee's or Operator's Representative

Darryl Cooper  
Agent Consultant for  
Sun Exploration & Production Co.  
475 17th Street, Suite 815  
Denver, Colorado 80202  
(303) 893-1705

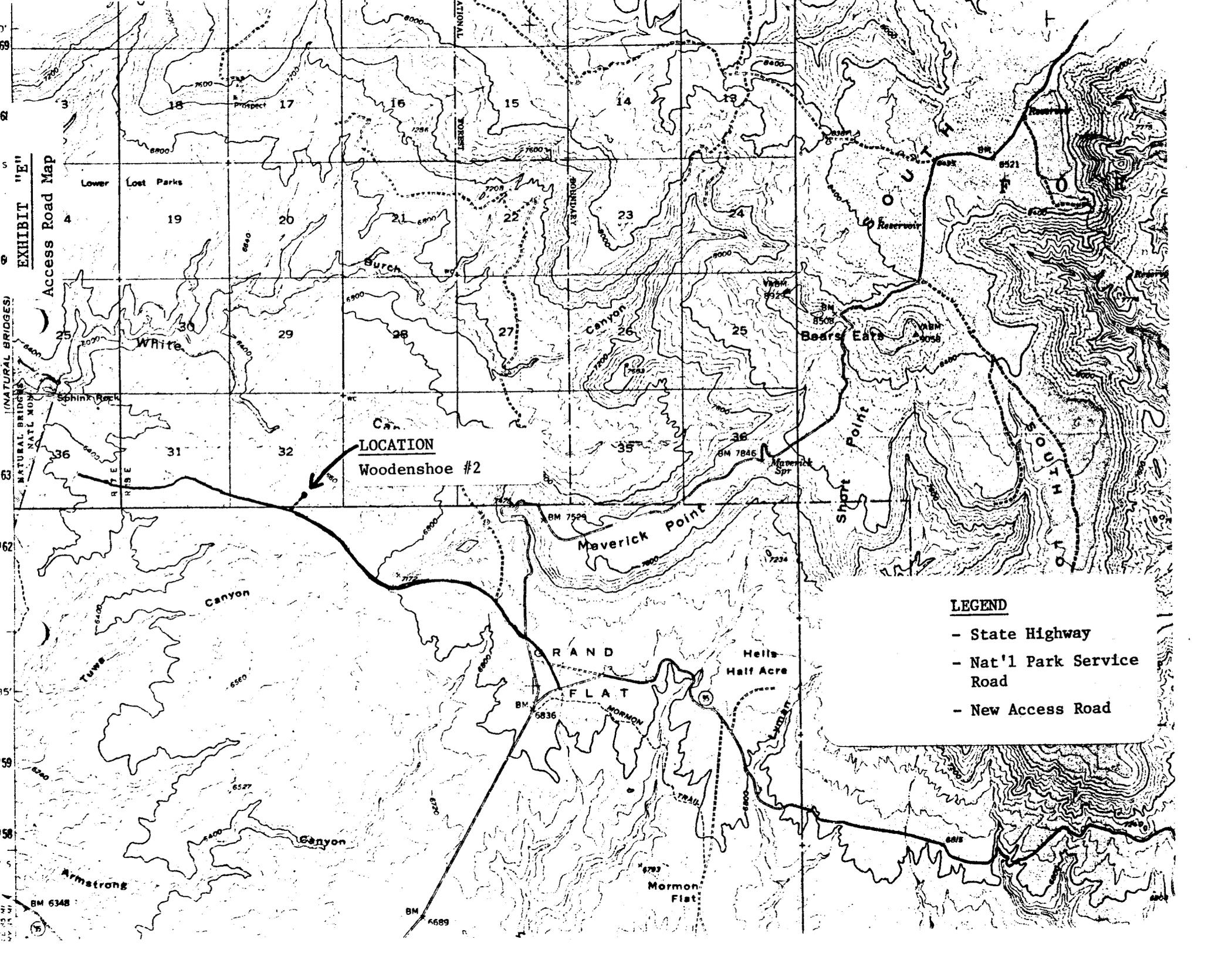
Mr. Ben Ellis  
Sun Exploration & Production Co.  
P.O. Box 340180  
Dallas, TX 75234  
(214) 258-4025

13. Certification

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions which presently exist; that the statements made in the plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Sun Exploration & Production Company and its contractors and sub-contractors in conformity with this plan and the terms and conditions under which it is approved.

April 26, 1982  
Date

Darryl Cooper  
Darryl Cooper  
Agent Consultant for  
Sun Exploration & Production Co.



**EXHIBIT "E"**  
**Access Road Map**

**LOCATION**  
**Woodenshoe #2**

- LEGEND**
- State Highway
  - Nat'l Park Service Road
  - New Access Road

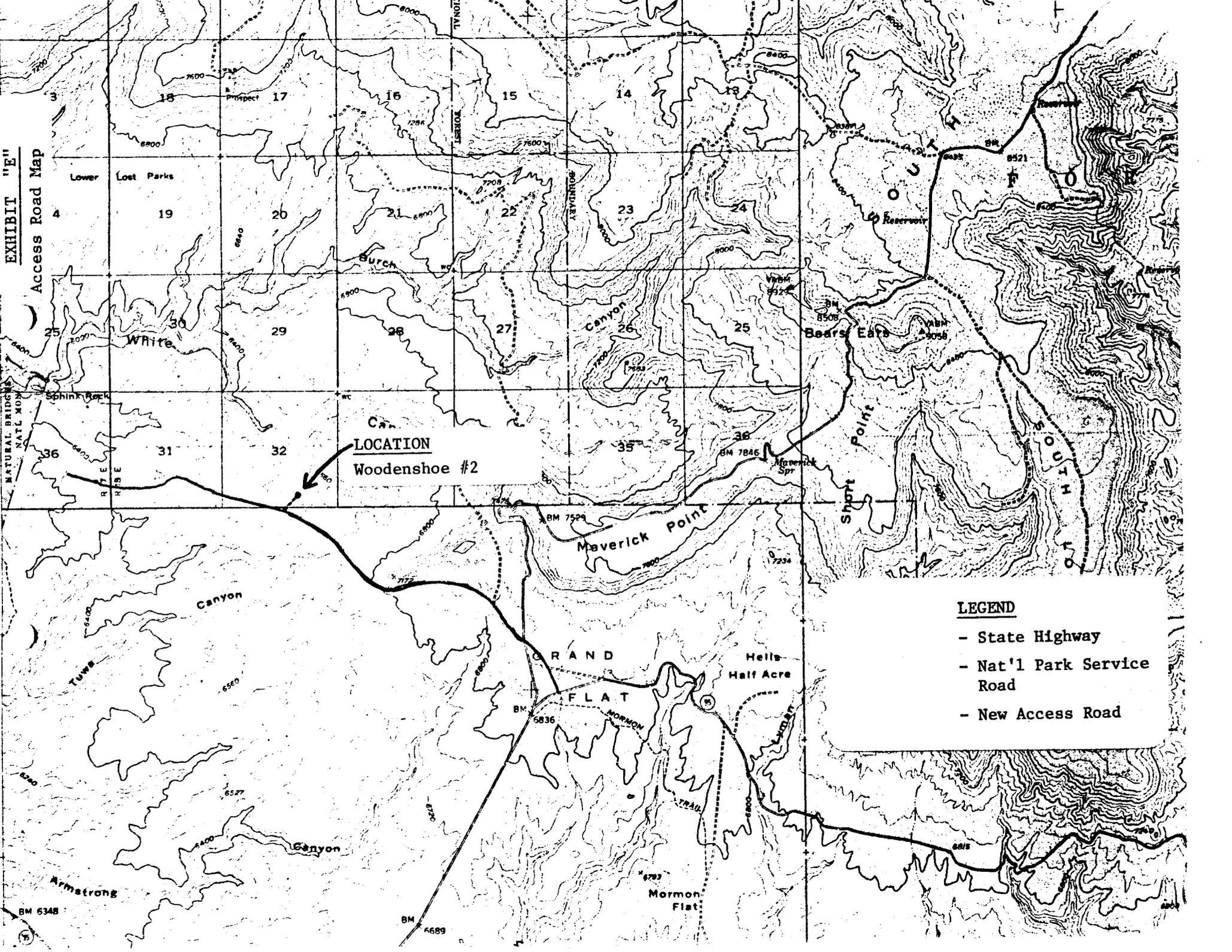


EXHIBIT "E"  
Right-of-Way Map

01-102

LOCATION  
Woodenshoe #2

01-101  
D-5  
(WIT)

National Park Service  
Right-of-Way

CANYON

CANYON

R 18 E

T  
36  
S

T  
37  
S

TRAIL

32

33

6

5

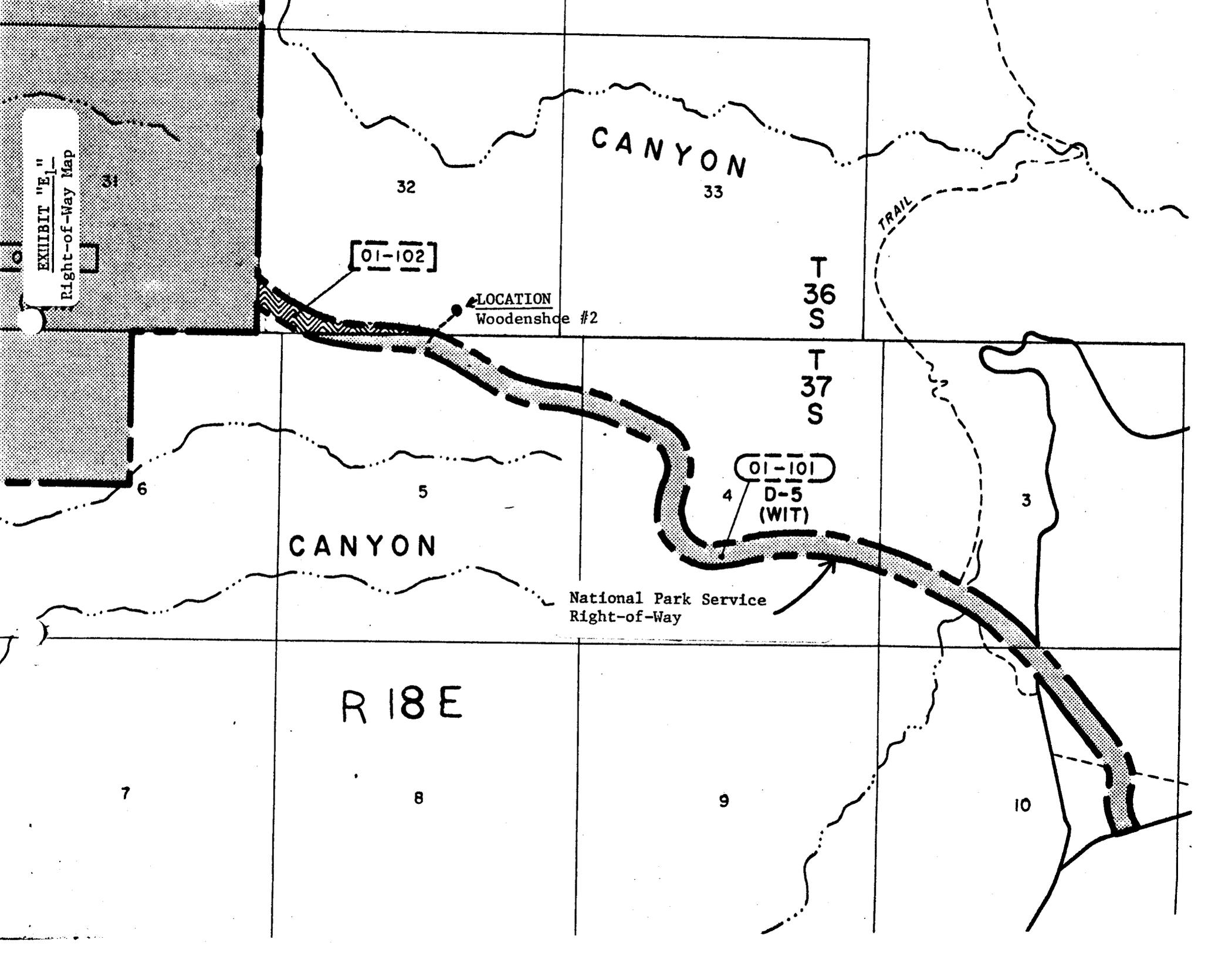
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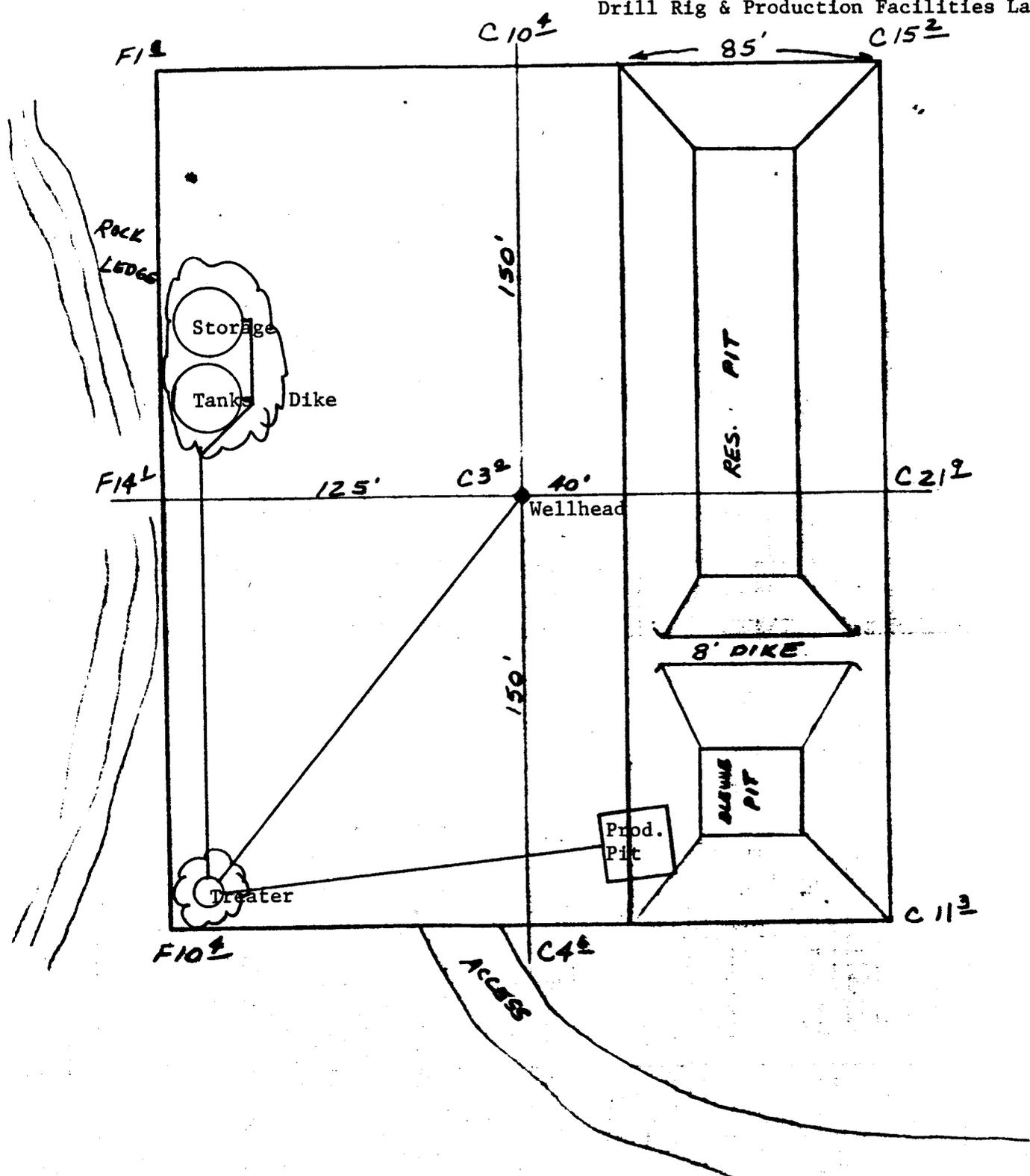




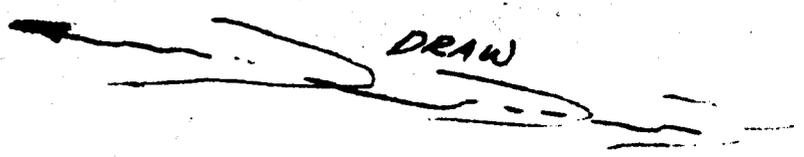
Scale: 1" = 50'

EXHIBIT "F"

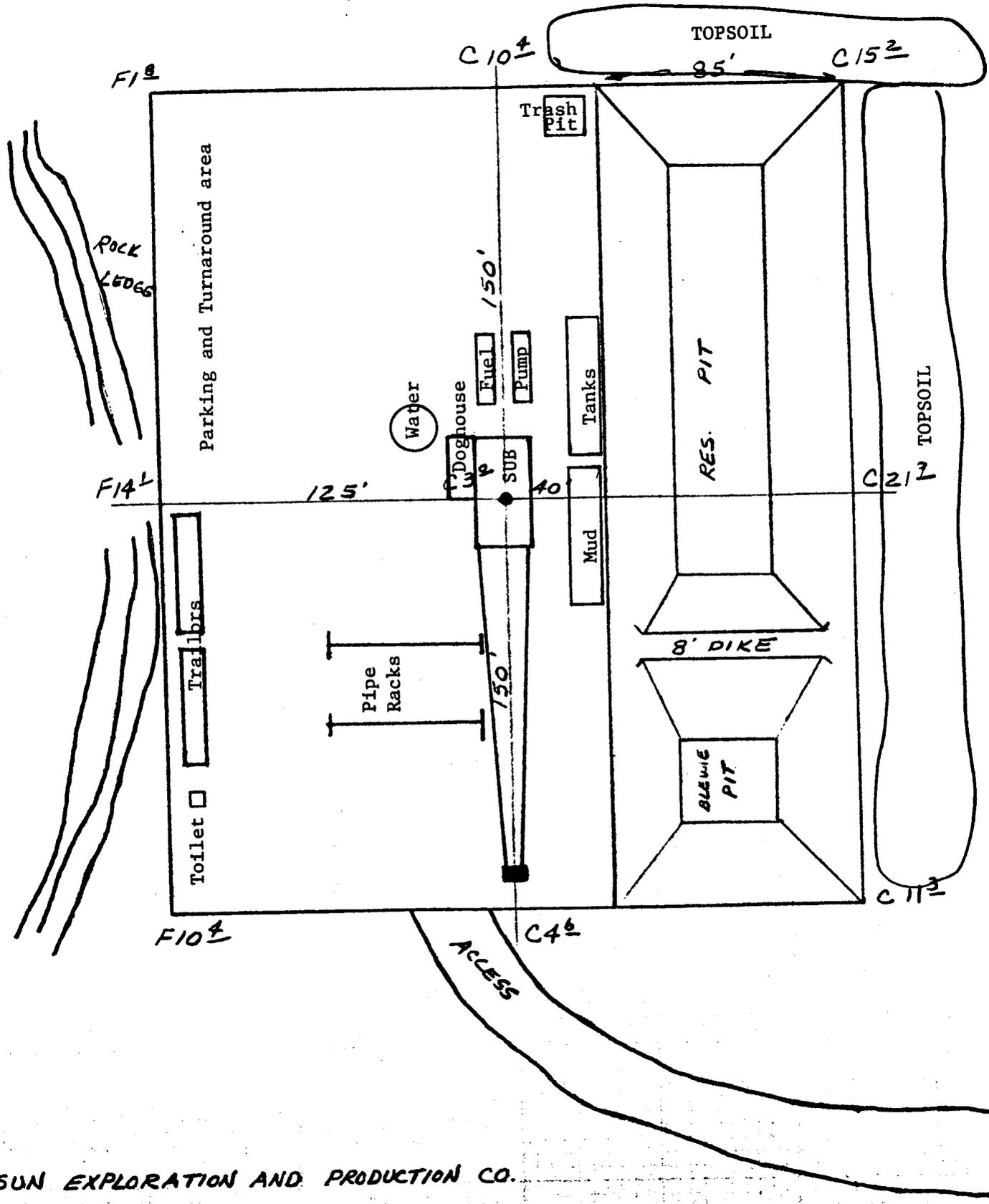
Drill Rig & Production Facilities Layout



SUN EXPLORATION AND PRODUCTION CO.  
WOODENSHOE NO. 2



NORTH



SUN EXPLORATION AND PRODUCTION CO.  
WOODSHOE NO. 2

DRAW

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS, AND MINING

5. Lease Designation and Serial No.

ML-31332

6. If Indian, Allottee or Tribe Name

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work

DRILL

DEEPEN

PLUG BACK

7. Unit Agreement Name

Woodenshoe Federal Unit

b. Type of Well

Oil Well

Gas Well

Other

Single Zone

Multiple Zone

8. Farm or Lease Name

Woodenshoe

2. Name of Operator

Sun Exploration & Production Company

9. Well No.

#2

3. Address of Operator

P.O. Box 340180, Dallas, Texas 75234

10. Field and Pool, or Wildcat

Wildcat

4. Location of Well (Report location clearly and in accordance with any State requirements.)\*  
At surface

500' FSL & 1830' FEL (SW SE)

11. Sec., T., R., M., or Bk. and Survey or Area

Sec. 32 T36S R18E

At proposed prod. zone

same

14. Distance in miles and direction from nearest town or post office\*

Approximately 42 miles West of Blanding, Utah

12. County or Parrish 13. State

San Juan

Utah

15. Distance from proposed\* location to nearest property or lease line, ft. (Also to nearest drig. line, if any)

500'

16. No. of acres in lease

1280

17. No. of acres assigned to this well

40

18. Distance from proposed location\* to nearest well, drilling, completed, or applied for, on this lease, ft.

19. Proposed depth

3700'

20. Rotary or cable tools

Rotary

21. Elevations (Show whether DF, RT, GR, etc.)

6585' GR

22. Approx. date work will start\*

June 8, 1982

23.

PROPOSED CASING AND CEMENTING PROGRAM

Size of Hole	Size of Casing	Weight per Foot	Setting Depth	Quantity of Cement
12 1/4"	9 5/8"	36#, K-55	700'	520 sxs
8 3/4"	5 1/2"	15.5#, K-55	3700'	500sxs.

See attached Geologic, Engineering, & Land Use Plan

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 Darryl Cooper

Title Agent Consultant

Date April 27, 1982

(This space for Federal or State office use)

Permit No. \_\_\_\_\_

Approval Date \_\_\_\_\_

Approved by \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

Conditions of approval, if any:

**NICKENS and ASSOCIATES**  
P.O. Box 727  
Montrose, Colorado 81402  
Phone: (303) 249-3411

File:  
Sun Expl. & Prod. Co.  
2-32  
Woodenshoe

April 14, 1982

Mr. Scott McGlochlin  
Energy Consulting Services  
815 Metrobank Building  
475 17th Street  
Denver, Colorado 80202

Dear Mr. McGlochlin;

Attached is a copy of our Summary Report of Inspection for Cultural Resources at the Sun Exploration location in San Juan County, Utah. Inspection of the proposed pad and associated access road yielded one isolated artifact. Our recommendation for clearance of this location has been forwarded to the appropriate state and BLM offices.

As you are aware, the pad location and most of the associated access is located on state land, but a short segment of the access road (approx. 100 feet) crosses BLM land. Determination of this land status was not confirmed until the area was staked, at which time the archaeological survey was also performed.

An invoice to cover the work is also attached.

If we can be of further service or if you have any questions on the report, please do not hesitate to contact me. We enjoy working with you and your company.

Sincerely,

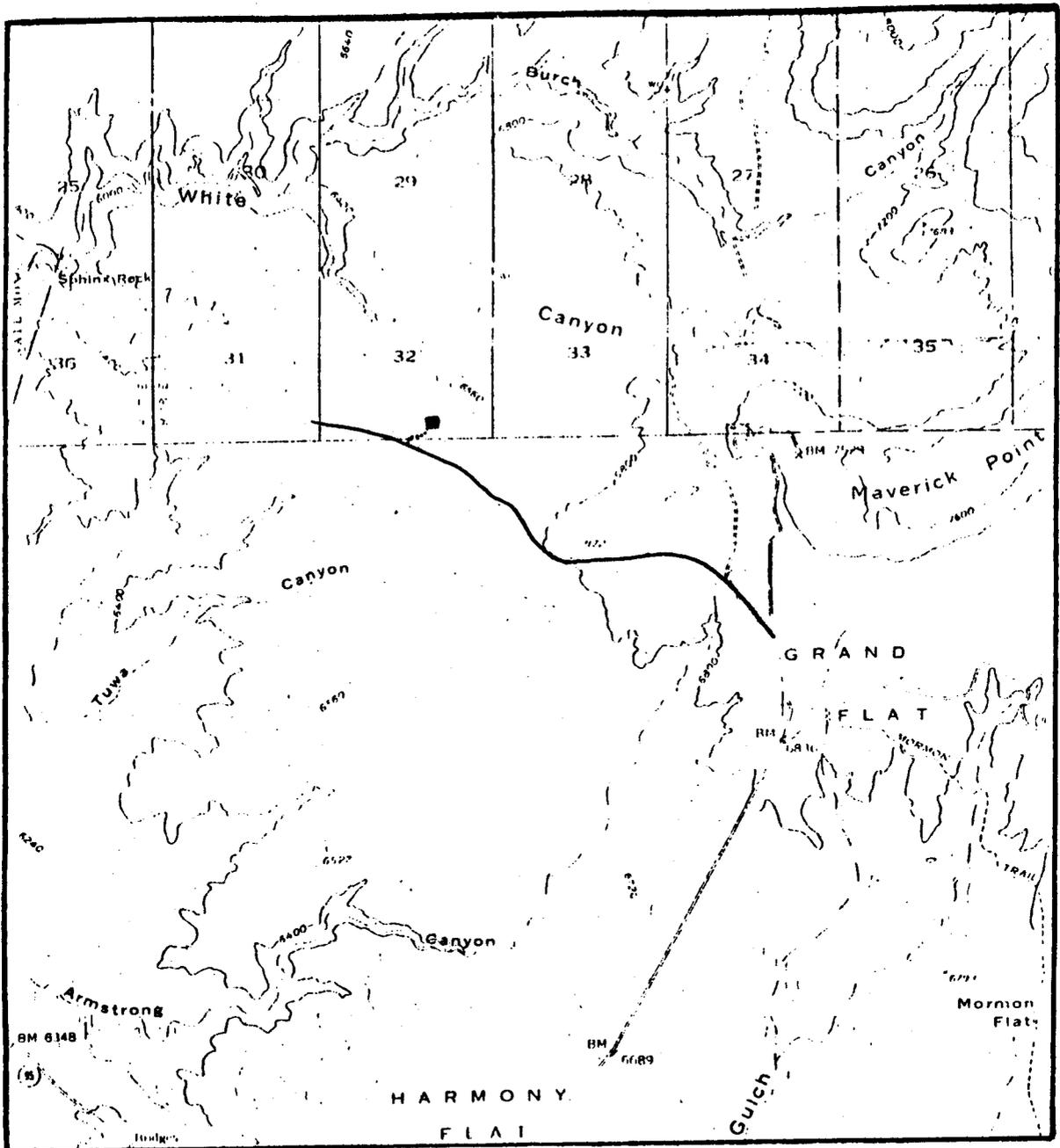


Paul R. Nickens, Ph.D.  
Principal Investigator

PRN/d

cc: BLM-Moab District  
BLM-San Juan Resource Area  
Utah State Antiquities Section





Bears Ears 15 Minute U.S.G.S. Quadrangle  
 Township 36 and 37 South, Range 18 East

Proposed well pad ■  
 Proposed access road .....  
 Utah State Highway 550 (to Natural Bridges) ———

**ecs/ Energy Consulting Services**

815 Metrobank Bldg.  
475 17th Street  
Denver, Colo. 80202

Phone (303) 893-1705

April 27, 1982

Mr. Cleon Feight, Director  
State of Utah, Division of Oil, Gas, & Mining  
1588 West, North Temple  
Salt Lake City, Utah 84116

**RECEIVED**  
APR 30 1982  
DIVISION OF  
OIL, GAS & MINING

RE: Filing A.P.D. Form OGC-1a and Plan of Operations  
Sun Exploration & Production Co.  
Woodenshoe #2 (Woodenshoe Federal Unit)  
SW SE Sec. 32 T36S R18E  
San Juan County, Utah  
Lease #ML-31332

Dear Mr. Feight:

Enclosed are three copies of the State A.P.D. and the Plan of Operations for the above-captioned well location. The Plan of Operations was prepared for the National Park Service because Sun Exploration & Production Co. will have to cross Park Service land in order to gain access to the State lease. The proposed well location is also within the Woodenshoe Federal Unit and must be drilled by June 8, 1982 in order to keep the unit. We would appreciate your efforts to expedite this application.

If further information is required, please contact me at the above number.

Thank you.

Sincerely,

ENERGY CONSULTING SERVICES, INC.



Darryl Cooper  
Manager, Environmental Services

Enclosures

cc: Ben Ellis, Sun Exploration & Production Co., Dallas, TX

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS, AND MINING

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#2

3. Address of Operator

P.O. Box 340180, Dallas, Texas 75234

10. Field and Pool, or Wildcat

Wildcat

4. Location of Well (Report location clearly and in accordance with any State requirements.)\*  
At surface

500' FSL & 1830' FEL (SW SE)

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Sec. 32 T36S R18E

At proposed prod. zone

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San Juan Utah

14. Distance in miles and direction from nearest town or post office\*

Approximately 42 miles West of Blanding, Utah

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500'

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1280

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3700' *molas*

20. Rotary or cable tools

Rotary

21. Elevations (Show whether DF, RT, GR, etc.)

6585' GR

22. Approx. date work will start\*

June 8, 1982

23. PROPOSED CASING AND CEMENTING PROGRAM

Size of Hole	Size of Casing	Weight per Foot	Setting Depth	Quantity of Cement
12 1/4"	9 5/8"	36#, K-55	700'	520 sxs
8 3/4"	5 1/2"	15.5#, K-55	3700'	500sxs.

See attached Geologic, Engineering, & Land Use Plan

APPROVED BY THE STATE  
OF UTAH DIVISION OF  
OIL, GAS, AND MINING  
DATE: 5/20/82  
BY: [Signature]

RECEIVED  
APR 30 1982  
DIVISION OF  
OIL, GAS & MINING

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 [Signature] Title Agent Consultant Date April 27, 1982  
Darryl Cooper  
(This space for Federal or State office use)

Permit No. 43-037-30789 Approval Date \_\_\_\_\_

Approved by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_  
Conditions of approval, if any:

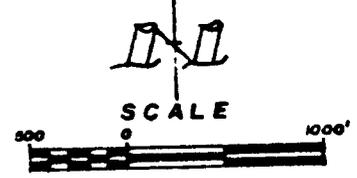
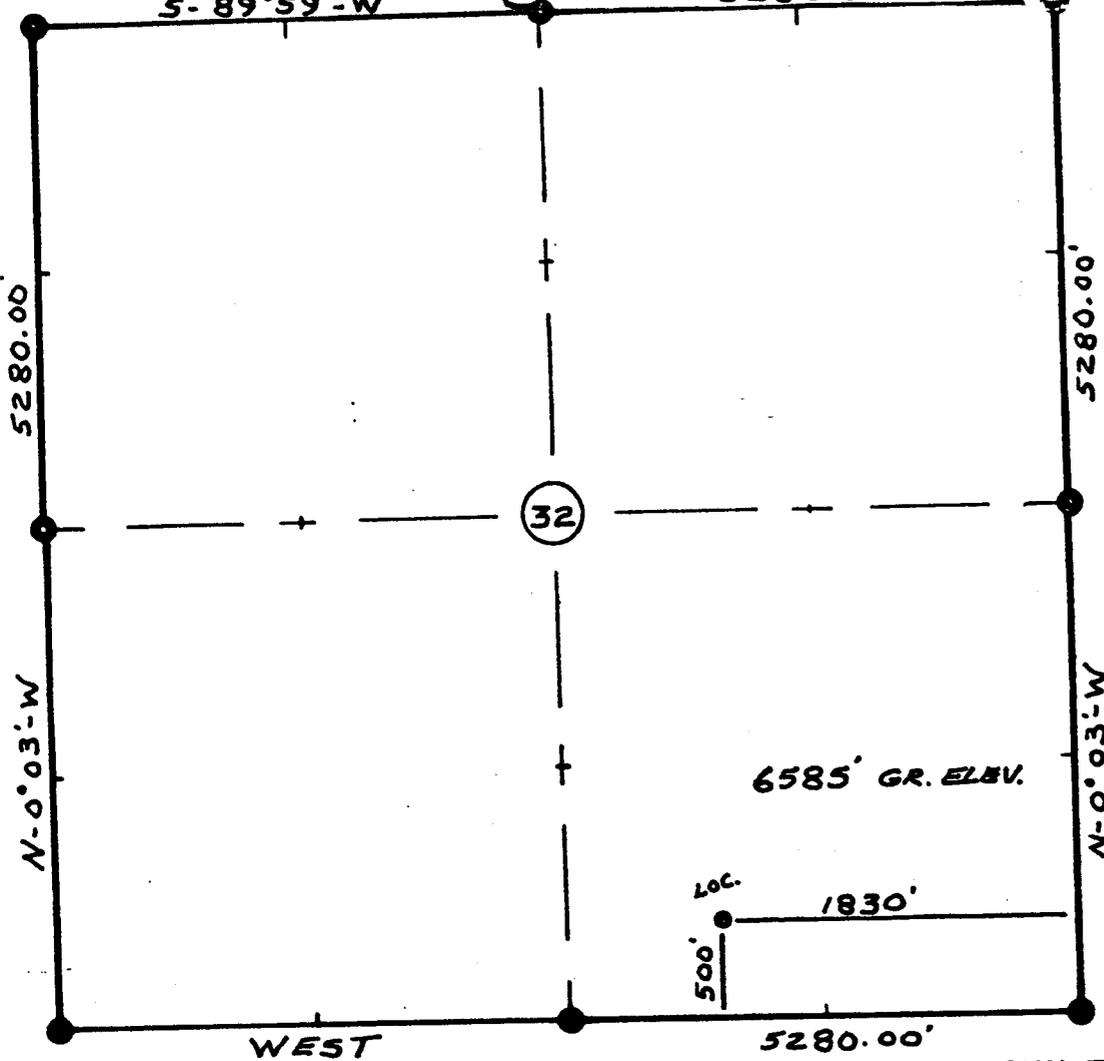
SEC. 32, T. 36S., R. 18E. OF THE S.L.B. P.M.

EXHIBIT A

S-89°59'-W

5282.64'

Location & Elevation Plat



- LEGEND**
- STANDARD LOCATION OF G.L.O. CORNERS.
  - G.L.O. CORNERS FOUND.
  - WELL LOCATION STATED.
- REFERENCE DOCUMENTS**
- 1937 G.L.O. PLAT
  - BEARS EARS
  - QUADRANGLE, USGS

**SUN EXPLORATION AND PRODUCTION CO.**

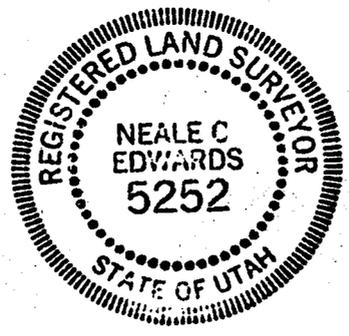
THIS WELL LOCATION PLAT WAS PREPARED FOR PRODUCTION CO.  
 AS REQUESTED BY SCOTT MCGLOCHLIN, TO LOCATE THE  
WOODSHOE NO. 2, 500' F.S.L. & 1830' F.E.L.,  
 IN THE SW 1/4 SE 1/4, OF SECTION 32, T. 36S., R. 18E OF THE S.L.B. P.M.  
SAN JUAN COUNTY, UTAH.

**SURVEYOR'S CERTIFICATE**

I, NEALE C. EDWARDS A REGISTERED LAND SURVEYOR  
 IN THE STATE OF UTAH DO HEREBY CERTIFY THAT THIS  
 SURVEY WAS MADE UNDER MY DIRECT SUPERVISION AND  
 THAT THIS PLAT REPRESENTS SAID SURVEY.

**NCE SURVEYS**

2605 C.R. # 203  
 DURANGO, COLO. 81301  
 (303) 247-2342



*Neale C. Edwards*  
 L.S. NO. 5252

DATE: 4-14-82

EXHIBIT "E"  
Right-of-Way Map

CANYON

01-102

LOCATION  
Woodenshoe #2

T  
36  
S

T  
37  
S

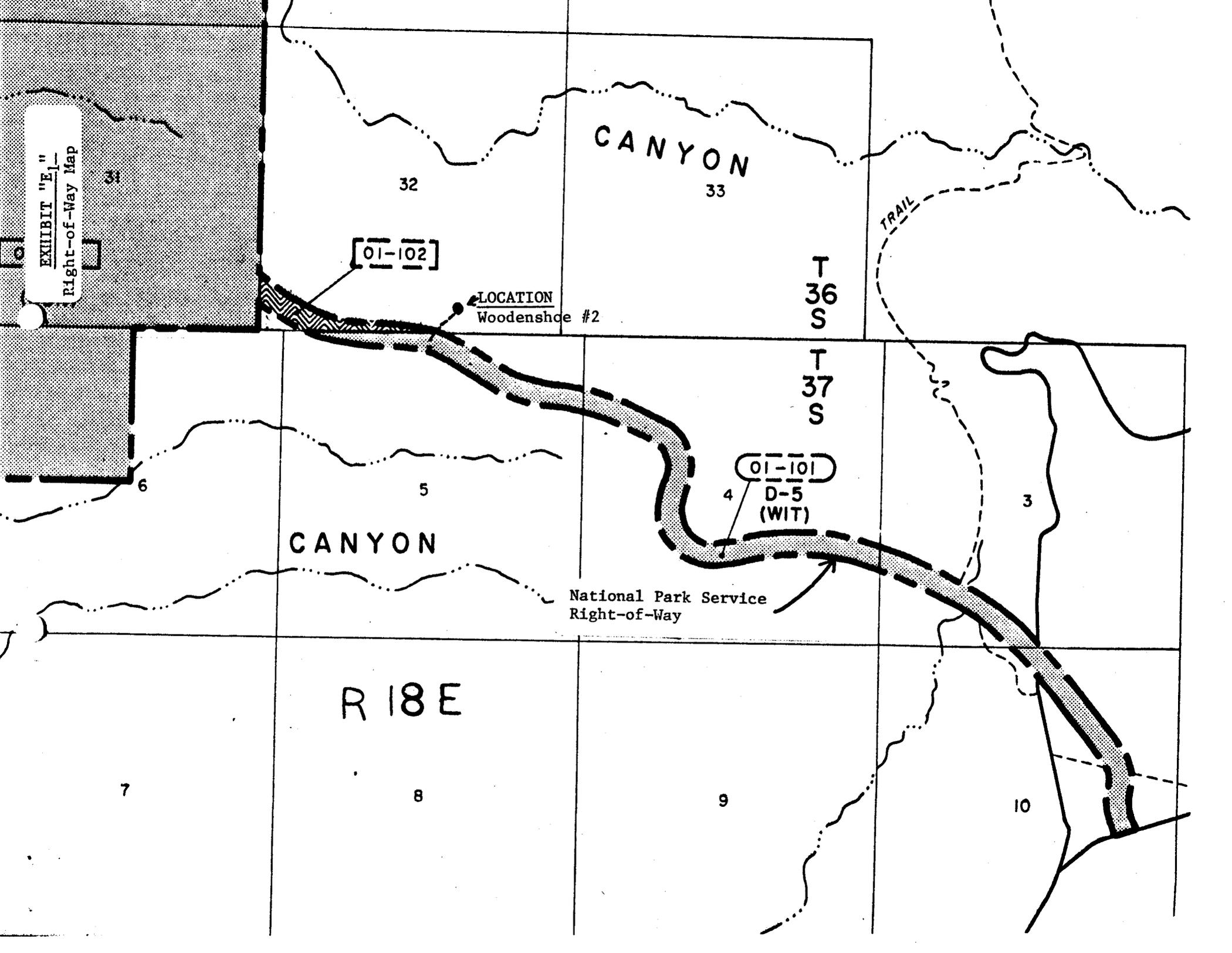
01-101  
D-5  
(WIT)

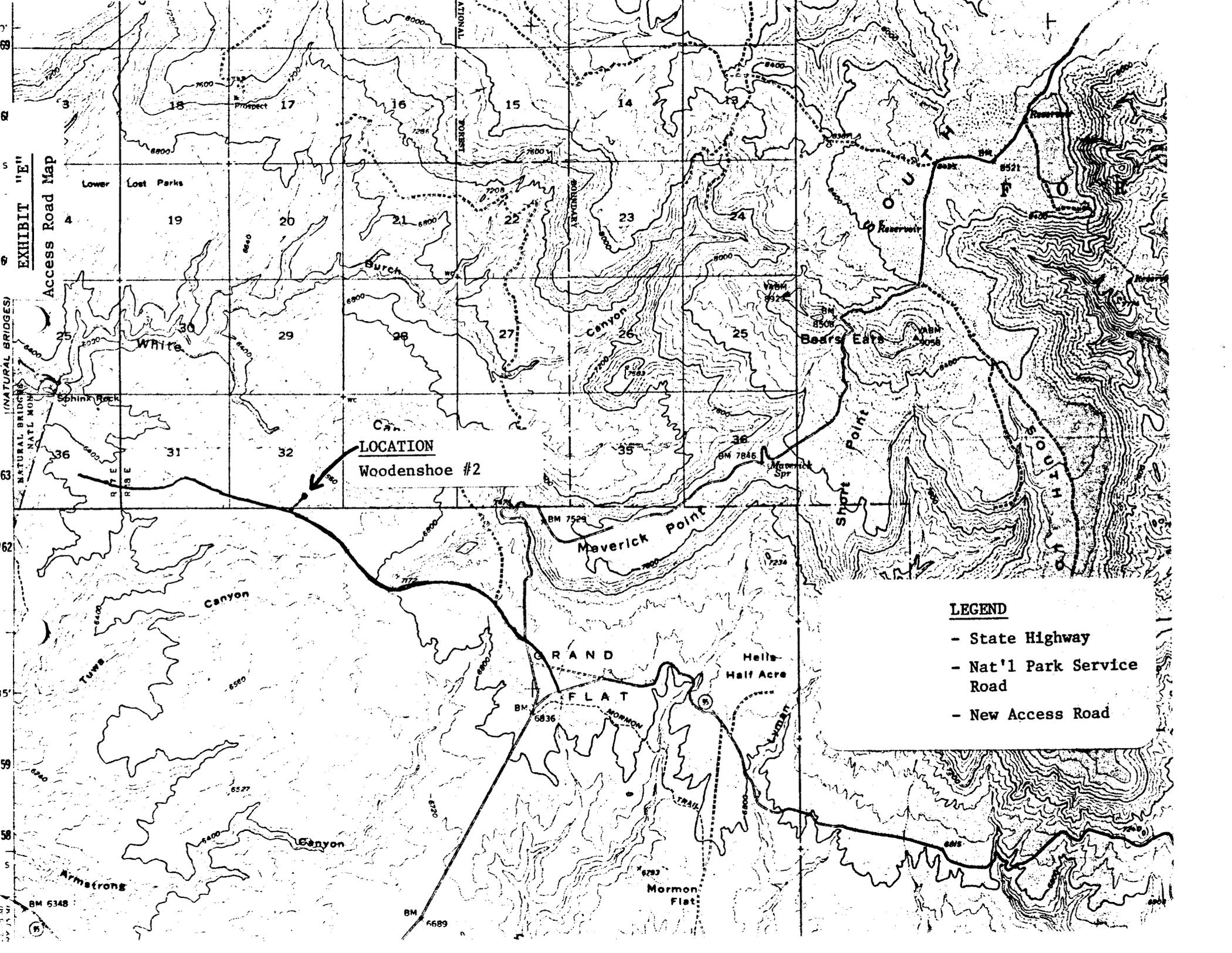
CANYON

National Park Service  
Right-of-Way

R 18 E

TRAIL





**EXHIBIT "E"**  
**Access Road Map**

**LOCATION**  
**Woodenshoe #2**

**LEGEND**

- State Highway
- Nat'l Park Service Road
- New Access Road

\*\* FILE NOTATIONS \*\*

DATE: May 17, 1982

OPERATOR: Sun Exploration + Prod. Co.

WELL NO: Woodenshoe unit #2

Location: Sec. <sup>SW 56</sup> 32 T. 36S R. 18E County: San Juan

File Prepared:

Entered on N.I.D.:

Card Indexed:

Completion Sheet:

API Number 43-037-30789

CHECKED BY:

*Approval dependant upon*

*Submittal of bond.*

*Acceptance & compliance of <sup>all</sup> National Park Service stipulations & agreements.*

Petroleum Engineer: M. C-3

Director: \_\_\_\_\_

Administrative Aide: Unit well

APPROVAL LETTER:

Bond Required:

Survey Plat Required:

Order No. \_\_\_\_\_

O.K. Rule C-3

Rule C-3(c), Topographic Exception - company owns or controls acreage within a 660' radius of proposed site

Lease Designation

Plotted on Map

Approval Letter Written

Hot Line

P.I.

# SOUTHEASTERN UTAH ASSOCIATION OF LOCAL GOVERNMENTS

HAROLD JACOBS  
Chairman

WILLIAM D. HOWELL  
Executive Director

P. O. Drawer AI • Price, Utah 84501 - 0881 • Telephone (801) 637-5444

May 18, 1982

Mary Boucek or  
Ron Firth  
Utah Division of Oil, Gas and Mining  
4241 State Office Building  
Salt Lake City, Utah 84114

Dear Ms. Boucek:

In regard to State Action from Sun Exploration and Production Company, regarding Permit for Exploratory Oil Well Drilling in San Juan County, the action meets with ALG approval.

Sincerely,



William D. Howell  
Executive Director

WDH:mvw

**RECEIVED**  
MAY 20 1982

DIVISION OF  
OIL, GAS & MINING

determine May 25, 1982

Sun Exploration & Production Company  
P. O. Box 340180  
Dallas, Texas 75234  
ATTN: Ben Ellis

RE: Well No. Wooden Shoe #2,  
Sec. 32, T. 36S, R. 18E,  
San Juan County, Utah

Insofar as this office is concerned, approval to drill the above referred to oil well is hereby granted in accordance with Section 40-6-11, Utah Code Annotated 1953 and predicated on Rule A-3, General Rules and Regulations and Rules of Practice and Procedure. However, this is conditional upon the submittal of a bond to the State Land Board and that you comply with all of the National Park Service stipulations and agreements.

Should you determine that it will be necessary to plug and abandon this well, you are hereby requested to immediately notify the following:

CLEON B. FEIGHT  
Office: 533-5771  
Home: 466-4455

Enclosed please find Form OGC-8-X, which is to be completed whether or not water sands (aquifers) are encountered during drilling. Your cooperation in completing this form will be appreciated.

Further, it is requested that this Division be notified within 24 hours after drilling operations commence and that the drilling contractor and rig number be identified.

The API number assigned to this well is 43-037-30739.

Sincerely,

DIVISION OF OIL, GAS AND MINING

  
Ronald J. Firth  
Chief Petroleum Engineer

RJF/db  
CC: State Lands  
Minerals Management Service  
Charles Wood - National Park Service  
Enclosure



United States Department of the Interior

NATIONAL PARK SERVICE  
ROCKY MOUNTAIN REGIONAL OFFICE

655 Parfet Street  
P.O. Box 25287  
Denver, Colorado 80225

IN REPLY REFER TO:  
L3023 (RMR-MO)

May 25, 1982

Division of Oil, Gas, and Mining  
4241 State Office Building  
Salt Lake City, Utah 84114

Atten: Ron Firth

Dear Mr. Firth:

Enclosed is a copy of the special use permit issued by the National  
Park Service for access to the proposed Woodenshoe #2 exploratory well  
in San Juan County, Utah.

Sincerely,

Charles Wood

Enclosure

**RECEIVED**  
MAY 27 1982

DIVISION OF  
OIL, GAS & MINING

**Year of  
the  
Visitor**

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

This permit consists  
of 4 pages  
including attachments.

**SPECIAL USE PERMIT**

PERMIT NO. SP 1340-2-0004	EXPIRES 11/26/82
PREVIOUS PERMIT NO.	

Natural Bridges NM  
(Area)

Sun Exploration & Production Co. of Dallas, TX is hereby authorized during the period from May 24, 1982, through November 26, 1982, to use the following-described land in the above-named area:

Approximately 200 feet of NPS road right-of-way as part of a designated access route to one exploratory drilling site (oil and gas) as shown on Exhibit E of the accompanying Plan of Operations.

Said land is located in the SW $\frac{1}{4}$ SE $\frac{1}{4}$  of Section 32, T. 36 S., R. 18 E. and the NW $\frac{1}{4}$ NE $\frac{1}{4}$  of Section 5, T. 37 S., R. 18 E., San Juan County, Utah, and is part of State Highway 275, the NPS-administered public access road to the Monument.

and

approximately 3.3 miles of State Highway 275.

for the purpose of

Access to a drilling site on a state of Utah oil and gas lease.

Use of state Highway 275 is limited to transportation and road maintenance or repair.

subject to the conditions on the reverse hereof and attached pages and to the payment to the Government of the United States of the sum of fifty Dollars (\$50.00), in advance (Monthly, semiannually, etc.), or as follows:

payment to be made to the Superintendent by Express or Postal Money Order, Certified Check, or Draft payable to the National Park Service, or Cash.

Issued at Lakewood, Colorado, this 24 day of May, 1982.  
(City)

~~XXXXXXXXXX~~

The undersigned hereby accepts this permit subject to the terms, covenants, obligations, and reservations, expressed or implied, therein.

TWO WITNESSES TO SIGNATURES		* PERMITTEE (Signature)	
NAME <i>Charles W. Wood</i>	NAME <i>Darryl Cooper</i>	ADDRESS <i>655 Puffer St, Lakewood, CO</i>	ADDRESS <i>475 17th St, Ste. 815, Denver, CO</i>
NAME <i>Lucille N. Sullivan</i>	NAME	ADDRESS <i>13043 W. 20th, Golden, CO 80401</i>	ADDRESS

APPROVED: (If approval is required by higher authority)

NAME <i>Lorraine Mintzinger</i>	TITLE Regional Director, Rocky Mountain Region	DATE MAY 24 1982
------------------------------------	--	---------------------

\*Sign name or names as written in body of permit; for copartnership, permittees should sign as "members of firm"; for corporation, the officer authorized to execute contracts, etc., should sign, with title, the sufficiency of such signature being attested by the Secretary, with corporate seal, in lieu of witnesses.

SPECIAL USE PERMIT CONTINUATION SHEET

AREA	PERMIT NO.	PAGE NO.
Natural Bridges National Monument	SP 1340-2-0004	2

16. The permit hereby issued is for the sole purpose of construction, use, and reclamation of an access road to the permittees proposed exploratory oil and gas well as described in his approved Plan of Operations dated April 26, 1982. Use of the right-of-way shall be limited to activities necessarily connected with drilling, completion and, if applicable, abandonment of the well. This permit shall not extend to production use should oil or gas be discovered; except upon approval of a separate plan of operations for production activity.

17. This permit shall expire upon satisfactory completion of surface reclamation and road repair; or 6 months following completion of the exploratory well, whichever is earliest.

18. The permittee shall comply with all applicable Federal, state, and local laws and with regulations of the National Park Service, contained in Title 36, Code of Federal Regulations.

19. Permittee shall conduct operations on the NPS right-of-way only in conformance with his approved Plan of Operations as modified by terms and conditions.

20. As a result of the on-site inspection, the proposed alignment of the well access road was moved. The archeological clearance received with the proposed plan of operations is no longer applicable and a new clearance for the revised alignment is required. No operations may begin until a survey of the new alignment has been received and approved, and until any acquired pre-operational mitigation has been accomplished.

21. The permittee shall halt construction activities and notify the Superintendent immediately upon discovery of any archeological, paleontological, or historical findings. The Superintendent shall determine within 10 working days the action to be taken.

22. The operator will be required to repair all damages to the park access road that result from the operations. A surety or cash bond, posted with the Utah Department of Transportation (DOT), will be required in an amount sufficient to cover the cost of repairing possible worst-case damage to the paved park access road and the cost of reclaiming surface disturbance on the NPS right-of-way. The bond amount will be determined by Utah DOT and posted in connection with issuance of a state right-of-way encroachment permit. Following satisfactory road repair and reclamation, the NPS will immediately notify the Utah DOT that NPS requirements for release of the bond have been met.

23. Highway 275 shall be maintained in a safe and serviceable condition at all times. If road repairs are needed during the period of operation to maintain safety and service, they shall be immediately effected by the operator.

24. Sight distance and traffic control signing at the junction of the park road and the proposed well access road will be in accordance with standards of the Utah Department of Transportation. During operations, a sign at the junction will be posted to prevent unauthorized entry by park visitors. Signs to reduce the speed limit to 25 mph shall be posted 500 feet in advance of the junction.

SPECIAL USE PERMIT CONTINUATION SHEET

AREA	PERMIT NO.	PAGE NO.
Natural Bridges National Monument	SP 1340-2-0004	3

25. This permit is expressly contingent upon the operator obtaining a right-of-way "encroachment permit" from the Utah Department of Transportation and approval of a "drilling permit" by the Utah Division of Oil, Gas, and Mining.
26. The Area Manager, Natural Bridges NM, or Superintendent, Canyonlands NP, shall be notified prior to the entry of construction and drilling crews on park-administered surface.
27. Clearing of vegetation and surface disturbance shall be held to the minimum required to achieve the 16-foot wide running surface specified in the plan of operations. On NPS surface, 16 feet shall be the maximum width of road surface.
28. The proposed well access road shall join the park road at a 90-degree angle. As soon as the trees are penetrated, the road should be curved slightly to avoid a straight "line-of-sight" view down the road by passers-by.
29. At least the top 6 inches of soil shall be removed and stockpiled for later reclamation of the disturbed portions of NPS right-of-way.
30. Construction operations on NPS right-of-way are not permitted during periods of wet and waterlogged soils to prevent unnecessary road damage.
31. Vegetative debris and slash shall be removed and disposed of elsewhere except for material used for reclamation.
32. All surface disturbance on NPS-administered lands shall be confined to the well access road permitted herein.
33. Upon completion of operations, the disturbed area on NPS right-of-way shall be reclaimed as follows:

Any gravel used on the road surface and the culvert shall be removed. The right-of-way shall be recontoured to its natural grade.

Compacted soil shall be ripped to the depth of compaction.

Topsoil is to be redistributed on the road surface and then scarified if necessary.

Following recontouring and topsoil work, the Superintendent shall be consulted concerning final surfacing. If the surface appears sufficiently stable, no further work may be necessary. However, additional measures to prevent erosion could include: providing drainage channels; vegetative debris from the original clearing process may have to be chipped to mulch size and distributed over the right-of-way surface; and larger size slash may be thinly scattered on the surface in an aesthetic manner if requested by the Superintendent. Following reclamation, a drift fence may be required at the end of the NPS right-of-way segment to prevent visitor access. If necessary, such a fence will be installed at the request of the Superintendent.

SPECIAL USE PERMIT CONTINUATION SHEET

AREA	PERMIT NO.	PAGE NO.
Natural Bridges National Monument	SP 1340-2-0004	4

34. To protect monument water resources, the well must be plugged with cement upon abandonment according to the operator's abandonment plan filed with the Utah Division of Oil, Gas, and Mining (DOG M). The operator's statewide "Drilling Bond" held by Utah DOGM could be applied to correct any surface or subsurface damages on the drill pad site that might affect monument resources.



WOODEN SHOE  
 LEASE NAME  
 2-32  
 WELL NO.  
 TEST NO. 1  
 2442.1 - 2526.1  
 TESTED INTERVAL  
 SUN EXPLORATION AND PRODUCTION COMPANY  
 LEASE OWNER/COMPANY NAME  
 LEGAL LOCATION  
 SEC. - TYP. - RNG. 32-365-18E  
 FIELD AREA  
 MILDCAI  
 COUNTY  
 SAN JUAN  
 STATE  
 UTAH  
 BH/1C



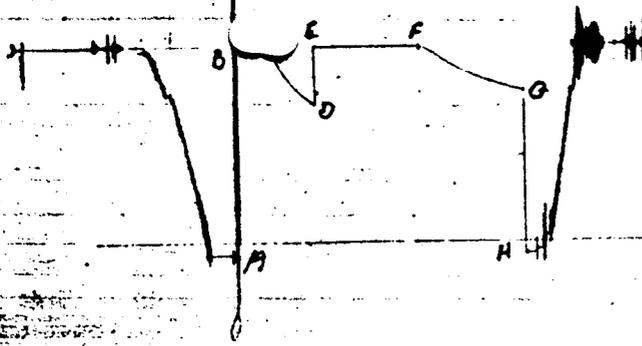
TICKET NO. 26940100  
 23-JUN-82  
 FARMINGTON

*07-16-82 man*  


---

*cc: Well File*  
*3cc: State of UT*

FORMATION TESTING SERVICE REPORT

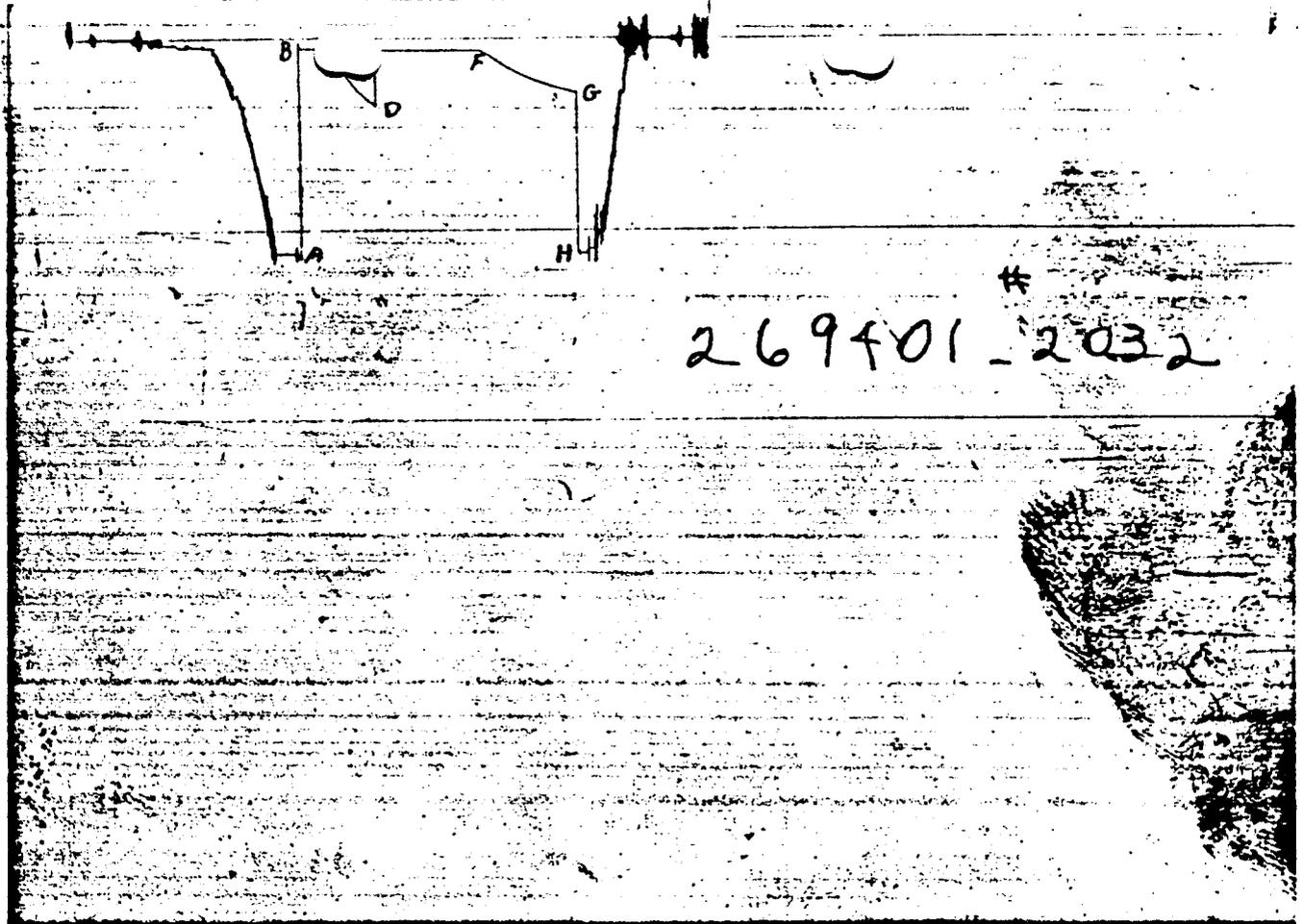


269401-2033

2033

GAUGE NO: 2033 DEPTH: 2421.0 BLANKED OFF: NO HOUR OF CLOCK: 2

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		1078.8			
B	INITIAL FIRST FLOW		1.6			
C	FINAL FIRST FLOW		3.6	30.0	30.4	F
C	INITIAL FIRST CLOSED-IN		3.6			
D	FINAL FIRST CLOSED-IN		298.3	60.0	60.3	C
E	INITIAL SECOND FLOW		7.0			
F	FINAL SECOND FLOW		6.0	120.0	118.6	F
F	INITIAL SECOND CLOSED-IN		6.0			
G	FINAL SECOND CLOSED-IN		228.0	120.0	120.8	C
H	FINAL HYDROSTATIC		1064.3			



269401-2032

GAUGE NO: 2032 DEPTH: 2523.0 BLANKED OFF: YES HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		1132.5			
B	INITIAL FIRST FLOW		53.3			
C	FINAL FIRST FLOW		53.3	30.0	30.4	F
C	INITIAL FIRST CLOSED-IN		53.3			
D	FINAL FIRST CLOSED-IN		344.4	60.0	60.3	C
E	INITIAL SECOND FLOW		71.1			
F	FINAL SECOND FLOW		59.9	120.0	118.6	F
F	INITIAL SECOND CLOSED-IN		59.9			
G	FINAL SECOND CLOSED-IN		279.4	120.0	120.8	C
H	FINAL HYDROSTATIC		1120.4			

# EQUIPMENT & HOLE DATA

FORMATION TESTED: UPPER ISMAY  
 NET PAY (ft): 40.0  
 GROSS TESTED FOOTAGE: 84.0  
 ALL DEPTHS MEASURED FROM: KELLY BUSHING  
 CASING PERFS. (ft): \_\_\_\_\_  
 HOLE OR CASING SIZE (in): 8.750  
 ELEVATION (ft): 6585  
 TOTAL DEPTH (ft): 2526.0  
 PACKER DEPTH(S) (ft): 2436, 2442  
 FINAL SURFACE CHOKE (in): 0.125  
 BOTTOM HOLE CHOKE (in): 0.750  
 MUD WEIGHT (lb/gal): 8.90  
 MUD VISCOSITY (sec): 32  
 ESTIMATED HOLE TEMP. (°F): \_\_\_\_\_  
 ACTUAL HOLE TEMP. (°F): 84 @ 2522.0 ft

TICKET NUMBER: 26940100  
 DATE: 6-16-82 TEST NO: 1  
 TYPE DST: OPEN HOLE  
 HALLIBURTON CAMP: FARMINGTON  
 TESTER: DAVID DAVIS  
B. PIESER  
 WITNESS: GARY WEAVER  
 DRILLING CONTRACTOR: ENERGY SEARCH #1

## FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY	CHLORIDES
<u>SAMPLER</u>	<u>4.100 @ 85 °F</u>	<u>1100 ppm</u>
<u>MUD PIT</u>	<u>3.500 @ 83 °F</u>	<u>1350 ppm</u>
_____	_____ °F	_____ ppm
_____	_____ °F	_____ ppm
_____	_____ °F	_____ ppm
_____	_____ °F	_____ ppm

## SAMPLER DATA

Pstg AT SURFACE: 5  
 cu.ft. OF GAS: 0.00  
 cc OF OIL: 0  
 cc OF WATER: 0  
 cc OF MUD: 2240  
 TOTAL LIQUID cc: 2240

## HYDROCARBON PROPERTIES

OIL GRAVITY (°API): \_\_\_\_\_ @ \_\_\_\_\_ °F  
 GAS/OIL RATIO (cu.ft. per bbl): \_\_\_\_\_  
 GAS GRAVITY: \_\_\_\_\_

## CUSHION DATA

TYPE	AMOUNT	WEIGHT
_____	_____	_____
_____	_____	_____

## RECOVERED:

5 FEET OF DRILLING MUD

MEASURED FROM  
TESTER VALVE

## REMARKS:



TICKET NO: 26940100

CLOCK NO: 12118 HOUR: 24



GAUGE NO: 2033

DEPTH: 2421.0

REF	MINUTES	PRESSURE	AP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	1.6			
C 2	30.4	3.6	2.0		
FIRST CLOSED-IN					
C 1	0.0	3.6			
2	6.0	12.2	8.6	5.0	0.782
3	12.0	42.5	38.9	8.6	0.548
4	18.0	89.9	86.3	11.3	0.430
5	24.0	137.1	133.5	13.4	0.355
6	30.0	174.0	170.4	15.1	0.304
7	36.0	208.7	205.1	16.5	0.265
8	42.0	235.7	232.0	17.6	0.236
9	48.0	260.1	256.4	18.6	0.213
10	54.0	279.6	276.0	19.4	0.194
D 11	60.3	298.3	294.6	20.2	0.177
SECOND FLOW					
E 1	0.0	7.0			
2	20.0	6.2	-0.8		
3	40.0	6.2	0.0		
4	60.0	6.2	0.0		
5	80.0	6.2	0.0		
6	100.0	6.2	0.0		
F 7	118.6	6.0	-0.1		
SECOND CLOSED-IN					
F 1	0.0	6.0			
2	12.0	24.5	18.5	11.1	1.127
3	24.0	59.9	53.9	20.6	0.858
4	36.0	93.6	87.5	29.0	0.711
5	48.0	121.7	115.7	36.3	0.613
6	60.0	144.9	138.9	42.8	0.542
7	72.0	165.0	159.0	48.5	0.487
8	84.0	183.8	177.7	53.7	0.443
9	96.0	200.3	194.2	58.4	0.407
10	108.0	215.3	209.2	62.6	0.376
G 11	120.8	228.0	222.0	66.7	0.349

REF	MINUTES	PRESSURE	AP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$
(Empty table area)					

REMARKS:

TICKET NO: 06940100

CLOCK NO: 7276 HOUR: 24



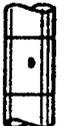
GAUGE NO: 2032

DEPTH: 2523.0

REF	MINUTES	PRESSURE	AP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	53.3			
C 2	30.4	53.3	0.0		
FIRST CLOSED-IN					
C 1	0.0	53.3			
2	6.0	63.8	10.5	5.0	0.781
3	12.0	87.8	34.5	8.6	0.548
4	18.0	135.5	82.2	11.3	0.429
5	24.0	180.9	127.6	13.4	0.356
6	30.0	221.0	167.6	15.1	0.304
7	36.0	254.0	200.7	16.5	0.265
8	42.0	282.6	229.3	17.6	0.236
9	48.0	307.3	254.0	18.6	0.213
10	54.0	329.2	275.9	19.4	0.194
D 11	60.3	344.4	291.1	20.2	0.177
SECOND FLOW					
E 1	0.0	71.1			
2	20.0	60.3	-10.7		
3	40.0	60.3	0.0		
4	60.0	60.3	0.0		
5	80.0	60.3	0.0		
6	100.0	60.3	0.0		
F 7	118.6	59.9	-0.4		
SECOND CLOSED-IN					
F 1	0.0	59.9			
2	12.0	73.5	13.5	11.1	1.128
3	24.0	107.4	47.5	20.7	0.858
4	36.0	141.2	81.3	29.0	0.711
5	48.0	171.2	111.3	36.3	0.613
6	60.0	195.9	135.9	42.8	0.542
7	72.0	217.8	157.8	48.5	0.487
8	84.0	235.5	175.6	53.7	0.443
9	96.0	252.0	192.0	58.4	0.407
10	108.0	266.6	206.6	62.6	0.376
G 11	120.8	279.4	219.5	66.7	0.349

REF	MINUTES	PRESSURE	AP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$
(Empty table area)					

REMARKS:

		O.D.	I.D.	LENGTH	DEPTH	
1		DRILL PIPE.....	4.500	3.826	1851.0	
3		DRILL COLLARS.....	6.250	2.250	493.0	
50		IMPACT REVERSING SUB.....	5.750	3.000	1.0	2344.0
3		DRILL COLLARS.....	6.250	2.250	63.0	
13		DUAL CIP SAMPLER.....	5.000	0.750	7.0	
60		HYDROSPRING TESTER.....	5.000	0.750	5.0	2419.0
80		AP RUNNING CASE.....	5.000	2.250	4.0	2421.0
15		JAR.....	5.000	1.750	5.0	
16		VR SAFETY JOINT.....	5.000	1.000	3.0	
70		OPEN HOLE PACKER.....	7.750	1.530	6.0	2436.0
70		OPEN HOLE PACKER.....	7.750	1.530	6.0	2442.0
3		DRILL COLLARS.....	6.250	2.250	31.0	
19		ANCHOR PIPE SAFETY JOINT.....	5.750	1.000	4.0	
20		FLUSH JOINT ANCHOR.....	5.750	3.000	43.0	
81		BLANKED-OFF RUNNING CASE.....	5.750	2.440	4.0	2523.0
TOTAL DEPTH					2526.0	

EQUIPMENT DATA

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS, AND MINING

SUBMIT IN TRIPLICATE\*  
(Other instructions on reverse side)

**SUNDRY NOTICES AND REPORTS ON WELLS**

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

		5. LEASE DESIGNATION AND SERIAL NO. ML-31332	
		6. IF INDIAN, ALLOTTED OR TRIBE NAME -----	
1. OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/> Exploratory		7. UNIT AGREEMENT NAME Woodenshoe Federal Unit	
2. NAME OF OPERATOR SUN EXPLORATION AND PRODUCTION COMPANY		8. FARM OR LEASE NAME Woodenshoe	
3. ADDRESS OF OPERATOR P. O. Box 340180; Dallas, TX 75234		9. WELL NO. 2	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface 500' FSL & 1830' FEL (SW SE)		10. FIELD AND POOL, OR WILDCAT Wildcat	
		11. SEC., T., R., M., OR BLM. AND SURVEY OR AREA Sec 32, T36S, R18E	
14. PERMIT NO. 43-037-30789	15. ELEVATIONS (Show whether SP, NT, GR, etc.) 6585' GR	12. COUNTY EXEMPTION San Juan	13. STATE Utah

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input checked="" type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(Other) _____	(Other) _____

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

PLUG NO.	DEPTH INTERVALS	NO. OF SX
1	3656-3506'	58
2	2400-2300'	40
3	1700-1600'	50
4	770- 670'	50
5	Surface	10

(Cut off 2' below ground)

**APPROVED BY THE STATE  
OF UTAH DIVISION OF  
OIL, GAS, AND MINING**  
DATE: 7/29/82  
BY: [Signature]

Verbal instructions given to Sun's Drilling Foreman, Gary Weaver,  
by Utah State Division of Oil, Gas, and Mining's Ron Firth on June 21, 1982.

18. I hereby certify that the foregoing is true and correct  
SIGNED M. A. Skrabanek TITLE Engineering Aide DATE June 14, 1982  
M. A. SKRABANEK

(This space for Federal or State office use)

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
CONDITIONS OF APPROVAL, IF ANY:



GEOLOGICAL WELL REPORT

Prepared for

SUN EXPLORATION AND  
PRODUCTION COMPANY  
1801 Broadway, Suite 1000  
Denver, Colorado 80202

WELL NO. 2-32 WOODENSHOE UNIT

SW SE Sec 32 T36S R18E  
San Juan County, Utah

by

Connie M. Krivanek  
609 Meseta  
Farmington, New Mexico 87401

June 25, 1982

SUN EXPLORATION AND  
PRODUCTION COMPANY  
Well No. 2-32 Woodshoe Unit  
SW SE Sec 32 T36S R18E  
San Juan County, Utah

07-16-82 mac

cc: Will Fill  
[REDACTED]



C O N T E N T S

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GENERAL WELL INFORMATION . . . . .	1
STATUS . . . . .	1
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BIT RECORD . . . . .	7
DISTRIBUTION LIST . . . . .	7
WELL SUMMARY . . . . .	8
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**CONNIE KRIVANEK**  
PETROLEUM GEOLOGIST

WELL: 2-32 Woodenshoe Unit

OPERATOR: Sun Exploration and Production Company

DRILLING CONTRACTOR: Energy Search Drilling Company, Rig No.1

LOCATION: 500' FSL, 1830' FEL. SW SE Section 32  
Township 36-South Range 18-East

COUNTY: San Juan

STATE: Utah

ELEVATIONS: GR 6585', DF 6597', KB 6598'

COMMENCED DRILLING: June 7, 1982 (11:30 p.m.)

CEASED DRILLING: June 19, 1982 (12:00 Midnight)

HOLE SIZE: 13-3/4", 0-718'; 8-3/4", 718' - 3660' TD

CASING RECORD: 9-5/8" @ 716' KB

TOTAL DEPTH: 3660' driller

HOLE STATUS: P & A 9:00 a.m., June 21, 1982

MUD COMPANY: Baroid. Farmington, New Mexico

MUD ENGINEER: Salo Garcia and Orval Penfield

DRILLING SUPERVISOR: Gary Weaver, Consulting Engineer, B & M Co.  
Powell, Wyoming  
Bill Wiley, Energy Search Drilling

WATER SOURCE: Pond at Blanding, Utah

DRILL STEM TEST DATA: Test Company, Halliburton  
Tester, David Davis  
Test 01, 2442'-2526'TD, Lower Ismay-Gothic-  
Upper Desert Creek Interval

LOGS: Mechanical Logs, Schlumberger; Engineer, Greg  
Jandro/Grand Junction, Colo.  
1. Dual Laterolog-MSFL, 3653'-716', 5" & 2"=100'  
2. FDC-CNL-SGR 3651'-716', 5" & 2"=100'

No. 2-32 Woodenshoe Unit

# CONNIE KRIVANEK

PETROLEUM GEOLOGIST

cont'd.

## LOGS:

Mechanical Logs, Schlumberger

3. Bore Hole Compensated - Sonic-GR  
3648'-716', 5" & 2"=100'

4. Velocity Survey @3660'

Mud Log, Smith Mud Logging, Inc. Delta, Colorado  
Loggers, Drew Bavin and Nick Larkin

1. 800'-3660', 5"=100'

Lithologic Log, C.M. Krivanek  
1200'-3660', 5"=100'

## QUALITY OF SAMPLES:

Good. Smith Mud loggers caught 10-foot samples  
from 800' to 3660' Total Depth

DISPOSITION OF SAMPLES: Ditch Samples sent to American Stratigraphic  
Company/Denver, Colorado 80207  
Dry Cut samples sent to Sun Exploration and  
Production Co./Denver, Colorado 80202  
Canned samples sent to Sun Explor./Richardson, Tx.

## HOLE DIFFICULTIES:

Lost 70 barrels of mud per day while drilling  
surface casing hole from 450 feet to 718 feet

## HOLE DEVIATION:

1/2°	@231'	2 1/2°	@1268'	1 1/2°	@1788'
3/4°	@416'	2 1/2°	@1393'	1 1/2°	@1848'
1°	@634'	1-3/4°	@1482'	1 1/2°	@2033'
1 1/2°	@665'	2°	@1635'	1-3/4°	@2526'
1 1/2°	@718'	1-3/4°	@1727'	1-3/4°	@3298'
1-3/4°	@969'				

P L U G S

<u>INTERVAL</u>	<u>FORMATION</u>	<u>NO. OF SACKS</u>
3505'-3655'	Molas	58
2300'-2400'	Lower Ismay	38
1500'-1600'	Upper Honaker Trail	48
670'-770'	Upper Cedar Mesa	48
Top Surface Casing		10

# CONNIE KRIVANEK

PETROLEUM GEOLOGIST

## DRILL STEM TEST DATA

TEST NO. 1

Date: June 16, 1982

Formation: Lower Ismay, B zone, Upper Desert Creek

Interval: 2442-2526 (84')

Drill pipe recovery: 5' mud

Sample chamber: 1450 cc mud

Pressure bomb located at 2427'

	Pressure in pounds Upper chart	Time (mins.)
Initial Hydrostatic	1069	
Initial Flow	27-27	( 30)
Initial Shut-in	295	( 60)
Final Flow	27-27	(120)
Final Shut-in	215	(120)
Final Hydrostatic	1069	

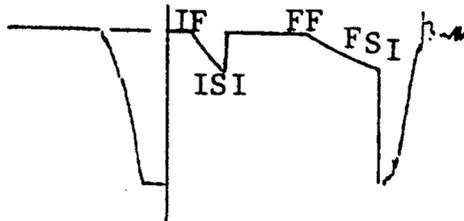
Initial Flow: Open dead

Final Flow: Open dead

Bottom hole temperature: 84°F; Resistivities: Pit  
Mud 3.5, ohms @83°F; Recovered mud 4.1 ohms @84°F.

Remarks: Operator selected flow and shut-in times

### UPPER CHART 2033



Miscellaneous: While drilling shot holes for velocity tests the hole stopped dusting at 190 feet. At the total depth of 255 feet the shot hole was making 1½ gallons of water per minute, mostly from the bottom of the hole. The shot hole location was west of unit drill hole about 30 to 40 yards.

## CHRONOLOGICAL WELL HISTORY

<u>OPERATION DAY</u>	<u>1982 DATE</u>	<u>0600 DEPTH (FT.)</u>	<u>FOOTAGE DRILLED</u>	<u>COMMENTS</u>
	June 08			Spud 11:30 p.m.
1	09	291	291	Drilling
2	10	718	427	Ran 9-5/8" casing, 716' KB
3	11	718	0	WOC
4	12	1206	488	Drilling
5	13	1567	361	Drilling
6	14	2012	438	Drilling
7	15	2450	438	Drilling and circulating
8	16	2526	76	DST 01
9	17	2847	397	Drilling
10	18	3298	451	Drilling, trip, hole in pipe
11	19	3442	144	Drilling, trip, hole in pipe
12	20	3660	218	Logging
				Completed drilling Midnight June 19, 1982

MUD COMPANY: Baroid/Farmington, New Mexico

MUD TYPE: 1. water, 700'-2526'; 2. gel and/or salt mud  
2526'-3660'

<u>DEPTH (IN FT.)</u>	<u>MUD WEIGHT</u>	<u>VISCOSITY</u>	<u>pH</u>	<u>W.L.</u>	<u>MUD CAKE in 1/32"</u>			<u>1982 DATE</u>
	<u>spud</u>				<u>ppmCl</u>	<u>Ca</u>	<u>OIL%</u>	
160	8.4	27	7.6		1300	160		June 08
442	8.4	27	7.6		1000	200		09
714	water							10
714	water							11
								12
1700	8.5	27	7.6		1200	120		13
2174	8.5	27	7.6		1400	160		14
								15
2526	8.6	36	11	9.6	1	500	8	16
3001	9.2	33	8.7	4	5	42,000	2624	-0-
3298	9.4	32	8.4	16.4	2	47,000	2772	-0-
3472	10.0	32	7.8		2	53,000	2900	-0-

Well Report

PENETRATION CHART

No. 2-32 Woodensho nit. 6:00 a.m. Depth

June 1982

Date	9	10	11	12	13	14	15	16	17	18	19	20	21	
Operation														
Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13

Depth Cedar Mesa  
291

718 (427)

1000'

Honaker Trail NB4  
1206 (488)  
1567 (361)

2000'

2012 (438)

Ismay -  
Desert Crk. NB5 2450 (438)  
Salt - 2526 (76) DST 01

3000'

2847 (397)

Pinkerton Trail NB6 3298 (451) hole in pipe  
3442 (144) hole in pipe

Molas - 3660 (218) Logging, WOO, P & A  
6-21-82 m.

4000'

EUGENE PUTZGIN CO. MADE IN U.S.A.

10 X 10 PIP INCH

No.2-32 Woodenshoe Unit

**CONNIE KRIVANEK**  
PETROLEUM GEOLOGIST

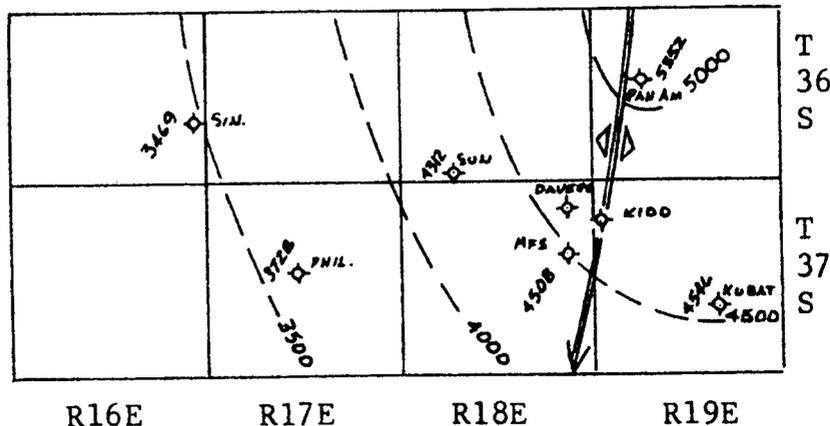
REFERENCE WELL  
Mountain Fuel Supply  
No.1 Gov't. Mormon Flat  
NE NW Sec 13 T37S  
R18E  
(4.5 miles southeast)

SYSTEM	FORMATION	SAMPLE DEPTH	LOG DEPTH	KB 6598 ELEV'N.	low to	KB6876 DEPTH	ELEV'NS.
PERMIAN	Cedar Mesa		surface				
PENNSYLVANIAN	Honaker Trail	1380	1370	5228	204	1444	5432
	Paradox						
	Ismay	2280	2286	4312	192	2372	4504
	Gothic	2470	2478	4120	208	2548	4328
	Desert Creek	2490	2510	4088	202	2586	4290
	Anhydrite	2520	2534	4064	212	2600	4276
	Chimney Rock	2600	2600	3998	196	2682	4194
	Akah	2636	2634	3964	194	2718	4158
	Salt	2672	2668	3930	198	2748	4128
	* Base Salt	2932	2930	3668		2980	3896
	**Pinkerton Trail	3340	3230	3368	167	3341	3535
	Molas	3639	3537	3061	161	3652	3224
	TOTAL DEPTH		3660	2938		4637	2239

\* different salt beds

\*\* differs from E-log pick

All well data depths in feet



STRUCTURE CONTOUR MAP  
ISMAY ZONE



## B I T R E C O R D

<u>No.</u>	<u>Make</u>	<u>Size</u>	<u>Type</u>	<u>Depth Out</u>	<u>Feet</u>	<u>Hrs.</u>	<u>1000s# WOB</u>	<u>RPM</u>	<u>SPM</u>	<u>Lbs.</u>	<u>PP</u>
1	Hughes	13-3/4	OWV	130	50	5					
2	Smith	13-3/4	BT	292	162						
3	Security	13-3/4	S-3-J	718	426	19					
4	Security	8-3/4	S-84- FRR	2461	1492	74½	15-20	75			1700
5	STC	8-3/4	F-3RR	3298	837	34½	35	65			1800
6	STC	8-3/4	F-3RR	3660	362	28½	40	65			1400

## D I S T R I B U T I O N L I S T

Sun Exploration and Production Co.  
 1801 Broadway, Suite 1000  
 Denver, Colorado 80202  
 Attn: Thomas F. Bresnahan

2 copies  
 (includes original)

**CONNIE M. KRIVANEK**  
PETROLEUM GEOLOGIST

## INTRODUCTION

The Sun Exploration and Production Company No. 2-32 Woodenshoe Unit well was drilled four miles northwest from the nearest well, the Mountain Fuel Supply Company No. 1 Government Mormon Flat Well, Section 13 T37S R18E. At the Mormon Flat well mud was recovered from the Ismay, Desert Creek and Akah zones.

The writer arrived at the location at a well depth of 1390 feet. All samples from 1200 feet to total depth were examined by a 10-power binocular microscope and checked for shows and fluorescence in the Smith Mud Logging fluorescope.

## STRUCTURE

Regional dip at the well is  $1\frac{1}{2}$  degrees southwest into the Henry Mountains Basin or away from the north-south axis of the Monument Uplift located about seven miles east of the well.

## STRATIGRAPHY

## Ismay Lime Mudstones

The Upper Ismay is represented by a zone that shows eight percent porosity on the CNL-Density log. No visible porosity was observed in the samples.

## Lower Ismay Lime Mudstones

The Lower Ismay is represented by a 10-foot thick zone that shows 11 to 12 percent porosity on the CNL-Density log. Samples from the zone are dolomitic with earthy porosity. A drill stem test of the zone yielded 5 feet of mud.

## Desert Creek Carbonates

The Upper and Lower Desert Creek zones are tight dolomitic mudstones as exhibited on the CNL-Density log and in the samples.

## Gas

## SHOWS

The best gas shows in the well came from the tight shaley Lime Mudstones in the B zone. The interval from 2482 to 2518 feet showed 2 units. The zone from 2508 to 2518 feet showed a gas increase to 8 units.

## Fluorescence

Fair fluorescence from samples were described from the four-foot Lime Mudstone Upper Ismay zone between 2323 feet to 2327 feet.

## Cuts

Oil cuts were observed from Lime Mudstone samples from the following intervals: 2323' to 2347', 2440' to 2460', 2470' to 2520'. A black Shale at 3110' to 3120' exhibited a fair cut.

## CONCLUSION

The best oil and gas shows in the well were within the Lower Ismay, B and Upper Desert Creek zones. The interval was drill stem tested, and 5 feet of drilling mud was recovered. No visible or logged porosity was observed in any of the samples that had gas shows. Examination of samples, drilling time, log calculation, mud log and drill stem test indicated no commercial reservoir is present in this well. It was recommended the well be plugged and abandoned.

Respectfully submitted,

*Connie M. Krivanek*  
(Mr.) Connie M. Krivanek

**CEMENTING SERVICE REPORT**

DWL-496-M PRINTED IN U.S.A.

**DOWELL**  
DOWELL DIVISION OF DOW CHEMICALS  
OPERATING UNIT OF THE DOW CHEMICAL COMPANY

TREATMENT NUMBER **15-69-0575** DATE **6-6-82**  
WELL DISTRICT **CORTEZ, COLORADO**

WELL NAME AND NO. **WOODEN SHAPE 16 2-32** LOCATION (LEGAL) **SEC 32 T365 R18E**  
 FIELD-POOL **WILDCAT** FORMATION **SURFACE**  
 COUNTY/PARISH **SAN JUAN** STATE **UTAH** API. NO. \_\_\_\_\_  
 NAME **SUN EXPLORATION**  
 NO. **P.O. BOX 340180**  
 ADDRESS **DALLAS TEXAS** ZIP CODE **75234**

RIG NAME: \_\_\_\_\_  
 WELL DATA:  
 BIT SIZE **2 1/2** CSG/LINER SIZE **16"**  
 TOTAL DEPTH **80** WEIGHT **52.5**  
 ROT  CABLE TOP **0**  
 MUD TYPE **DRY** BOTTOM **80**  
 BHST GRADE \_\_\_\_\_  
 BHCT  
 MUD DENSITY \_\_\_\_\_ THREAD \_\_\_\_\_ TOTAL \_\_\_\_\_  
 MUD VISC. \_\_\_\_\_ CAPACITY \_\_\_\_\_  
 HEAD & PLUGS  TBG  D.P. SQUEEZE JOB \_\_\_\_\_  
 DOUBLE SIZE **2" TREATING IRON** TOOL TYPE \_\_\_\_\_  
 SINGLE  WEIGHT DEPTH \_\_\_\_\_  
 SWAGE  GRADE TAIL PIPE: SIZE \_\_\_\_\_ DEPTH \_\_\_\_\_  
 KNOCKOFF  THREAD TUBING VOLUME \_\_\_\_\_ Bbls  
 TOP  R  W  NEW  USED CASING VOL. BELOW TOOL \_\_\_\_\_ Bbls  
 BOT  R  W DEPTH **80** TOTAL \_\_\_\_\_ Bbls  
 ANNUAL VOLUME \_\_\_\_\_ Bbls  
 SHOE FLOYD TYPE \_\_\_\_\_ DEPTH \_\_\_\_\_  
 STAGE TOOL TYPE \_\_\_\_\_ DEPTH \_\_\_\_\_  
 TYPE \_\_\_\_\_ DEPTH \_\_\_\_\_  
 TYPE \_\_\_\_\_ DEPTH \_\_\_\_\_

SPECIAL INSTRUCTIONS  
**CEMENT 16" CONDUCTOR PIPE DOWN  
 OUTSIDE TAP 2" TREATING IRON  
 WITH 145 SKS CLASS B CEMENT  
 2% 51 CA/CL<sub>2</sub>**

PRESSURE LIMIT **0** PSI BUMP PLUG TO \_\_\_\_\_ PSI  
 ROTATE \_\_\_\_\_ RPM RECIPROCATE \_\_\_\_\_ FT NO. OF CENTRALIZERS \_\_\_\_\_

TIME	PRESSURE		VOLUME PUMPED BBL		JOB SCHEDULED FOR TIME: <b>ASAP</b> DATE: <b>6-6-82</b>			ARRIVED ON LOCATION TIME: <b>1530</b> DATE: <b>6-6-82</b>			LEFT LOCATION TIME: <b>1730</b> DATE: <b>6-6-82</b>		
	TBG OR D.P.	CASING	INCREMENT	CUM	INJECT RATE	FLUID TYPE	FLUID DENSITY	SERVICE LOG DETAIL					
<b>530</b>								<b>PRE-JOB SAFETY MEETING</b>					
<b>624</b>								<b>RIG UP</b>					
<b>634</b>	<b>0</b>		<b>15</b>	<b>15</b>	<b>1.5</b>	<b>SLURRY</b>	<b>15.6</b>	<b>MIX AND PUMP (PART OF CEMENT)</b>					
<b>649</b>								<b>SHUT DOWN</b>					
<b>659</b>	<b>0</b>		<b>15</b>	<b>30</b>	<b>1.5</b>	<b>SLURRY</b>	<b>15.6</b>	<b>MIX AND PUMP REMAINING CEMENT</b>					
								<b>JOB COMPLETE</b>					
								<b>RIG DOWN</b>					

REMARKS \_\_\_\_\_

SYSTEM CODE	NO. OF SACKS	YIELD CU. FT/SK	COMPOSITION OF CEMENTING SYSTEMS				SLURRY MIXED	
							BBLs	DENSITY
<b>1.</b>	<b>145</b>	<b>1.18</b>	<b>CLASS B CEMENT WITH 2% 51 DOWFLAKE CA/CL<sub>2</sub></b>				<b>30.5</b>	<b>15.6</b>
<b>2.</b>								
<b>3.</b>								
<b>4.</b>								
<b>5.</b>								
<b>6.</b>								

REAKDOWN FLUID: TYPE \_\_\_\_\_ VOLUME \_\_\_\_\_ DENSITY \_\_\_\_\_ PRESSURE MAX: **0** MIN: \_\_\_\_\_  
 HESITATION SQ.  RUNNING SQ. CIRCULATION LOST  YES  NO CEMENT CIRCULATED TO SURF.  YES  NO  
 REAKDOWN PSI FINAL PSI DISPLACEMENT VOL. \_\_\_\_\_ Bbls TYPE OF WELL  OIL  STORAGE  BRINE WATER  
 GAS  INJECTION  WILDCAT  
 WASHED THRU PERFS  Yes  No TO \_\_\_\_\_ FT MEASURED DISPLACEMENT  \_\_\_\_\_  WIRELINE  
 PERFORATIONS: TO \_\_\_\_\_ TO \_\_\_\_\_ CUSTOMER REPRESENTATIVE **J. R. LEWIS** DOWELL SUPERVISOR **J. R. LEWIS**

# CEMENTING SERVICE REPORT



DOWELL DIVISION OF DOW CHEMICALS  
AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY

TREATMENT NUMBER: 15-69-0081  
DATE: 6-10-82  
DOWELL DISTRICT: CORTIZ COLO

DWL-486-M PRINTED IN U.S.A.

WELL NAME AND NO. <b>WOODEN SHOE No.</b>	LOCATION (LEGAL) <b>SEC 32 T365 R18E</b>	RIG. NAME: <b>ENERGY SEARCH No 1</b>
FIELD-POOL	FORMATION <b>SURFACE</b>	WELL DATA:
COUNTY/PARISH <b>SAN JUAN</b>	STATE <b>UTAH</b>	API. NO.
NAME <b>SUN EXPLORATION</b>	AND <b>P.O. Box 340180</b>	ADDRESS <b>DALLAS TEXAS</b>
ZIP CODE <b>75234</b>	SPECIAL INSTRUCTIONS	

**CEMENT 9 5/8" SURFACE CASING WITH 625 SKS CLASS B CEMENT 2% 52 CA/CL<sub>2</sub> + 1/4" D29 PELLO FLAKE/SK**

BIT SIZE <b>13 3/4</b>	CSG/LINER SIZE <b>9 5/8</b>	A	B	C	D
TOTAL DEPTH <b>722</b>	WEIGHT <b>36</b>				
<input checked="" type="checkbox"/> ROT <input type="checkbox"/> CABLE	TOP <b>KB</b>				
MUD TYPE <b>GEL+CHEM</b>	BOTTOM <b>722</b>				
<input type="checkbox"/> BHST <input type="checkbox"/> BHCT	GRADE <b>K55</b>				
MUD DENSITY <b>8.4</b>	THREAD <b>8RD</b>				
MUD VISC. <b>27</b>	CAPACITY <b>10773</b>				

HEAD & PLUGS	<input type="checkbox"/> TBG	<input type="checkbox"/> D.P.	SQUEEZE JOB	
<input type="checkbox"/> DOUBLE	SIZE	TOOL	TYPE	
<input checked="" type="checkbox"/> SINGLE	<input type="checkbox"/> WEIGHT	DEPTH		
<input type="checkbox"/> SWAGE	<input type="checkbox"/> GRADE	TAIL PIPE: SIZE	DEPTH	
<input type="checkbox"/> KNOCKOFF	<input type="checkbox"/> THREAD	TUBING VOLUME	BBL	
TOP <input type="checkbox"/> R <input type="checkbox"/> W	<input type="checkbox"/> NEW <input type="checkbox"/> USED	CASING VOL. BELOW TOOL	BBL	
BOT <input type="checkbox"/> R <input type="checkbox"/> W	DEPTH	TOTAL	BBL	
ANNUAL VOLUME				

PRESSURE LIMIT: **1000** PSI BUMP PLUG TO: **800** PSI

ROTATE: \_\_\_\_\_ RPM RECIPROCATATE: \_\_\_\_\_ FT NO. OF CENTRALIZERS: **5**

SHOE FLOAT	TYPE	<b>DOWELL OREGON FILL</b>	STAGE TOOL	TYPE
	DEPTH	<b>676</b>		DEPTH
	TYPE	<b>DOWELL CEMENT TYPE</b>		TYPE
	DEPTH	<b>722</b>		DEPTH

TIME	PRESSURE		VOLUME PUMPED BBL		JOB SCHEDULED FOR			ARRIVED ON LOCATION		LEFT LOCATION	
	TBG OR D.P.	CASING	INCREMENT	CUM	TIME: 0300	DATE: 6-10-82	TIME: 0006	DATE: 6-9-82	TIME: 0900	DATE: 6-10-82	
0001											
0430											
0610											
0612		0	10	10	5 BPM	H <sub>2</sub> O					
0640		250	131	141	4.3 "	SLURRY	15.6				
0641											
0720		500	52	193	1.3 "	H <sub>2</sub> O					
0725		800									

REMARKS: PRE-JOB SAFETY MEETING, WAIT, RIG UP, PUMP WATER AHEAD, MIX AND PUMP CEMENT, SHUT DOWN DROP PLUG, DISPLACE CEMENT, BUMP PLUG-BLEED BAGG. PSI CHECK FLOAT, FLOAT OK, RIG DOWN

SYSTEM CODE	NO. OF SACKS	YIELD CU. FT/SK	COMPOSITION OF CEMENTING SYSTEMS				SLURRY MIXED	
							BBLs	DENSITY
1.	625	1.18	CLASS B CEMENT W/ 2% 52 DOW FLAKE CA/CL <sub>2</sub> + 1/4" D29 PELLO FLAKE/SK				131	15.6
2.								
3.								
4.								
5.								
6.								

BREAKDOWN FLUID: TYPE	VOLUME	DENSITY	PRESSURE	MAX: 800	MIN: 0
<input type="checkbox"/> HESITATION SO.	<input type="checkbox"/> RUNNING SO.	CIRCULATION LOST	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	CEMENT CIRCULATED TO SURF 30 BBL <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
BREAKDOWN	PSI FINAL	PSI	DISPLACEMENT VOL. 52	Bbls	TYPE OF WELL
WASHED THRU PERCENT	TO	FT	MEASURED DISPLACEMENT	<input type="checkbox"/> WIRELINE	<input type="checkbox"/> OIL <input type="checkbox"/> STORAGE <input type="checkbox"/> BRINE WATER <input type="checkbox"/> GAS <input type="checkbox"/> INJECTION <input checked="" type="checkbox"/> WILDCAT
CUSTOMER REPRESENTATIVE	DOWELL SUPERVISOR		J. R. LEWIS		

**CEMENTING SERVICE REPORT**

DWL-496-M PRINTED IN U.S.A.

DOWELL DIVISION OF DOW CHEMICALS  
AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY

TREATMENT NUMBER 15-48-0052 DATE 6-21-82  
DOWELL DISTRICT CORTEZ GOLD

WELL NAME AND NO. WOODEN SHOE 2-32 LOCATION (LEGAL) SEC 32 T36S R18E  
 FIELD-POOL WILDCAT FORMATION \_\_\_\_\_  
 COUNTY/PARISH SAN JUAN STATE UTAH API. NO. \_\_\_\_\_

RIG NAME: ENERGY SEARCH NO 1  
 WELL DATA:  
 BIT SIZE \_\_\_\_\_ CSG/LINER SIZE 9 5/8  
 TOTAL DEPTH 3656 WEIGHT 36  
 ROT  CABLE TOP 0  
 MUD TYPE CEM BOTTOM 722  
 BHST GRADE K55  
 BHCT  
 MUD DENSITY 9.7 THREAD 8RD  
 MUD VISC. 38 CAPACITY 0.0773  
 HEAD & PLUGS  TBG  D.P. SQUEEZE JOB \_\_\_\_\_  
 DOUBLE SIZE 4 1/2 TYPE \_\_\_\_\_  
 SINGLE  WEIGHT 16.6 DEPTH \_\_\_\_\_  
 SWAGE  GRADE \_\_\_\_\_ TAIL PIPE: SIZE \_\_\_\_\_ DEPTH \_\_\_\_\_  
 KNOCKOFF  THREAD X # TUBING VOLUME \_\_\_\_\_ Bbls  
 TOP  R  W  NEW  USED CASING VOL. BELOW TOOL \_\_\_\_\_ Bbls  
 BOT  R  W DEPTH \_\_\_\_\_ TOTAL \_\_\_\_\_ Bbls  
 ANNUAL VOLUME \_\_\_\_\_ Bbls

OWNER NAME SUN EXPLORATION  
 ADDRESS P.O. Box 340180  
DALLAS TEXAS  
 ZIP CODE 75234

SPECIAL INSTRUCTIONS  
SET FOUR PLUGS TO PLUG TO ABANDON  
10 SKS FOR TOP OFF 1ST 3656-3506 (58 SKS)  
ND 2400'-2700' (40 SKS) 3RD 1700'-1600' (50 SKS)  
TH 770'-670' (50 SKS)

PRESSURE LIMIT \_\_\_\_\_ PSI BUMP PLUG TO \_\_\_\_\_ PSI  
 ROTATE \_\_\_\_\_ RPM RECIPROCATATE \_\_\_\_\_ FT NO. OF CENTRALIZERS \_\_\_\_\_

JOB SCHEDULED FOR TIME: ASAP DATE: 6-21-82 ARRIVED ON LOCATION TIME: 1530 DATE: 6-21-82 LEFT LOCATION TIME: 2230 DATE: 6-21-82

TIME	PRESSURE		VOLUME PUMPED BBL		INJECT RATE	FLUID TYPE	FLUID DENSITY	SERVICE LOG DETAIL
	TBG OR D.P.	CASING	INCREMENT	CUM				
1530								PRE-JOB SAFETY MEETING
1630								RIG UP
1635	0		12	12	3 BPM	SLURRY	15.6 <sup>p</sup>	MIX AND PUMP CEMENT } 1
1645	0		48	60	4.8"	MUD	9.7	DISPLACE W/MUD
1749								WAIT ON RIG
1753	0		8	68	2"	SLURRY	15.6 <sup>p</sup>	MIX & PUMP CEMENT } 2
1900	0		31	99	5"	MUD	9.7	DISPLACE W/MUD
1943								WAIT ON RIG
1948	0		10	109	2.5"	SLURRY	15.6 <sup>p</sup>	MIX & PUMP CEMENT } 3
1953	0		20	129	4"	MUD	9.7	DISPLACE W/MUD
2041								WAIT ON RIG
2045	0		10	139	3.5"	SLURRY	15.6 <sup>p</sup>	MIX & PUMP CEMENT } 4
2047	0		8	147	4"	MUD	9.7	DISPLACE W/MUD
								JOB COMPLETE SHUT DOWN RIG DOWN

REMARKS \_\_\_\_\_

SYSTEM CODE	NO. OF SACKS	YIELD CU. FT/SK	COMPOSITION OF CEMENTING SYSTEMS				SLURRY MIXED	
							BBLs	DENSITY
1	58	1.18	CLASS B	CEMENT			12	15.6 <sup>p</sup>
2	40	1.18	"	"	"		8	15.6 <sup>p</sup>
3	50	1.18	"	"	"		10	15.6 <sup>p</sup>
4	50	1.18	"	"	"		10	15.6 <sup>p</sup>
5	10		TOP OFF ON GROUND					
6								

REACTOR FLUID: TYPE \_\_\_\_\_ VOLUME \_\_\_\_\_ DENSITY \_\_\_\_\_ PRESSURE MAX: \_\_\_\_\_ MIN: \_\_\_\_\_  
 HESITATION SQ.  RUNNING SQ. CIRCULATION LOST  YES  NO CEMENT CIRCULATED TO SURF.  YES  NO  
 REACTOR PSI FINAL \_\_\_\_\_ PSI DISPLACEMENT VOL. 48-31-20-8 Bbls TYPE OF WELL  OIL  STORAGE  BRINE WATER  
 GAS  INJECTION  WILDCAT  
 WASHED THRU PERFORATIONS  Yes  No TO \_\_\_\_\_ FT MEASURED DISPLACEMENT  WIRELINE  
 PERFORATIONS: \_\_\_\_\_ TO \_\_\_\_\_ TO \_\_\_\_\_ CUSTOMER REPRESENTATIVE J. R. LEWIS DOWELL SUPERVISOR J. R. LEWIS

BLOW OUT PREVENTION TEST

NAME OF COMPANY: Sun Exploration & Production Company

WELL NAME: Woodshoe Unit #2

SECTION: SWSE 32 TOWNSHIP 36 S RANGE 18 E COUNTY: San Juan

DRILLING CONTRACTOR: \_\_\_\_\_

RIG # \_\_\_\_\_

BOP TEST: DATE: 6-8-82

TIME: \_\_\_\_\_

DRILLING: \_\_\_\_\_

CASING: \_\_\_\_\_

H<sub>2</sub>S: \_\_\_\_\_

Completed setting and cementing 9 5/8" surface casing. Had some problems due to  
junk in hole left by rat hole drilling operators.

REPORTED BY: Gary Weaver

TELEPHONE NO. \_\_\_\_\_

DATE: 6-8-82 SIGNED R. J. Firth

## SAMPLE DESCRIPTION

<u>LAGGED SAMPLES</u> <u>DEPTH (IN FEET)</u>	<u>DRILLING TIME</u> <u>(MIN./FT./5')</u>	
1200-1210	12, 15	SANDSTONE, pink, very fine grain, silty, good sorting, good porosity
1210-1220	11, 10	SANDSTONE, light pink, very fine grain, excellent sorting, unconsolidated, very good porosity; SILTSTONE, pink, 10%
1220-1230	9, 14	SANDSTONE, as above; SILTSTONE, 5%
1230-1240	13, 10	SANDSTONE, light pink-white; SILTSTONE, pink, trace
1240-1250	7, 6	SANDSTONE, pink, fine grain, excellent sorting and porosity
1250-1260	11, 11	SANDSTONE, pink, fine, good sorting, very calcareous
1260-1270	13, 22	SANDSTONE, pink, fine, excellent sorting and porosity
1270-1280	34, 19	SANDSTONE, orange
1280-1290	22, 10	SANDSTONE, pink, fine, good sorting and porosity, silty
1290-1300	29, 13	SANDSTONE, pink and white, as above
1300-1310	9, 6	SANDSTONE, pink, as above; SILTSTONE, 5%
1310-1320	6, 5	SANDSTONE, pink, as above; SILTSTONE, 5%, trace green grain
1320-1330	10, 19	SANDSTONE, orange, fine, sub-rounded--well rounded, good sorted
1330-1340	14, 12	SANDSTONE, red brown, very fine, silty
1340-1350	10, 9	SANDSTONE, pink, as above
1350-1360	25, 21	SANDSTONE, pink, as above
1360-1370	20, 18	SANDSTONE, red brown, fine, well sorted, good porosity
1370-1380	15, 16	SANDSTONE, as above
1380-1390	20, 17	SANDSTONE, grey, fine, very calcareous 1380 HONAKER TRAIL
1390-1400	19, 17	SANDSTONE, as above; LIME MUDSTONE, grey, dense fine crystalline
1400-1410	19, 22	SANDSTONE, orange-white, fine, unconsolidated; LIME MUDSTONE, as above, 20%
1410-1420	19, 19	SANDSTONE, white, light grey, pink, fine, unconsolidated, excellent porosity
1420-1430	13, 8	SANDSTONE, white, sub-angular--sub-rounded, as above
1430-1440	7, 9	SANDSTONE, as above; LIME MUDSTONE, white, trace
1440-1450	33, 35	SANDSTONE, as above, trace green grains; LIMESTONE, white, trace
1450-1460	35, 34	SANDSTONE, white-light pink, fine, subrounded, good sorting, unconsolidated
1460-1470	25, 24	LIME MUDSTONE, white, fine crystalline, dense, clean

SAMPLE DESCRIPTION

LAGGED SAMPLES DEPTH (IN FEET)	DRILLING TIME (MIN./FT./5')	
1470-1480	16, 22	LIME, white, as above; SANDSTONE, pink, fine, unconsolidated
1480-1490	24, 15	LIME MUDSTONE, grey, fine crystalline, dense; SANDSTONE, as above, 10%
1490-1500	7, 14	SANDSTONE, white, fine, unconsolidated
1500-1510	25, 16	SANDSTONE, as above; LIME MUDSTONE, white, fine crystalline, trace
1510-1520	19, 22	LIME MUDSTONE, white, fine crystalline, dense; SANDSTONE, clear-orange, fine, unconsolidated
1520-1530	20, 21	SILTSTONE, red brown; SANDSTONE, as above, 25%
1530-1540	17, 18	SILTSTONE, red brown; SANDSTONE, as above 20%
1540-1550	19, 25	SANDSTONE, grey, fine, unconsolidated; LIME MUDSTONE, white, fine crystalline, dense
1550-1560	24, 22	LIME MUDSTONE, as above, clean; SILTSTONE, red brown, 5%
1560-1570	15, 15	LIME MUDSTONE, white, as above
1570-1580	16, 23	LIME MUDSTONE, as above, fine-medium, subangular
1580-1590	21, 21	SANDSTONE, white, 5%, orange grain, fine sub-rounded--subangular, unconsolidated; LIME MUDSTONE, white, trace
1590-1600	26, 23	SANDSTONE, grey, fine, good sorting, orange grains, 10%, silty; LIME MUDSTONE, as above
1600-1610	24, 23	LIME MUDSTONE, grey, dense, clean
1610-1620	4, 5	SILTSTONE, red brown, sandy; LIME MUDSTONE, as above; ANHYDRITE, 5%
1620-1630	17, 21	SANDSTONE, orange, fine, unconsolidated, subangular, silty, trace ANHYDRITE; SILTSTONE, red brown
1630-1640	22, 14	SANDSTONE, orange, as above; SILTSTONE, red brown
1640-1650	18, 18	SANDSTONE and SILTSTONE, as above
1650-1660	10, 13	SANDSTONE, red brown, very fine, very silty
1660-1670	15, 16	SILTSTONE, red brown; LIME MUDSTONE, grey-white, dense
1670-1680	16, 15	LIME MUDSTONE, white, dense
1680-1690	11, 10	LIME MUDSTONE, as above; SILTSTONE, red brown, sandy
1690-1700	17, 14	SILTSTONE, red brown
1700-1710	13, 10	SILTSTONE, red brown
1710-1720	16, 16	SANDSTONE, red brown, very fine, silty
1720-1730	17, 12	LIME MUDSTONE, white-cream, fine crystalline, dense, clean
1730-1740	16, 17	SILTSTONE, red brown, sandy
1740-1750	19, 12	SILTSTONE, as above
1750-1760	18, 21	SILTSTONE, as above

## SAMPLE DESCRIPTION

<u>LAGGED SAMPLES</u> <u>DEPTH (IN FEET)</u>	<u>DRILLING TIME</u> <u>(MIN./FT./5')</u>	
1760-1770	15, 17	SILTSTONE, red brown, sandy
1770-1780	14, 13	SILTSTONE, as above; SANDSTONE, grey, very fine unconsolidated, orange mineral(?); LIME MUDSTONE, white-grey, dense, trace
1780-1790	19, 15	SANDSTONE, SILTSTONE, LIME MUDSTONE, as above, orange mineral trace
1790-1800	14, 15	LIME MUDSTONE, grey, fine crystalline, dense; SILTSTONE, red brown, sandy
1800-1810	17, 14	LIME MUDSTONE, white-cream, chalky, fine crystalline, dense, no fluorescence
1810-1820	11, 13	LIME MUDSTONE, white-cream, chalky, trace grey 5% orange grains, fine crystalline, dense
1820-1830	13, 10	LIME MUDSTONE, as above
1830-1840	14, 13	LIME MUDSTONE, light brown, fine crystalline, dense, sandy
1840-1850	12, 14	LIME MUDSTONE, as above
1850-1860	13, 16	LIME MUDSTONE, white, dense, clean
1860-1870	12, 14	LIME MUDSTONE, as above
1870-1880	12, 12	LIME MUDSTONE, as above
1880-1890	14, 14	LIME MUDSTONE, as above, silty
1890-1900	12, 14	SILTSTONE, red brown
1900-1910	11, 8	SILTSTONE, red brown, sandy, limey
1910-1920	10, 14	SILTSTONE, red brown, clean, sandstone grains, very fine
1920-1930	11, 12	SILTSTONE, red brown
1930-1940	12, 13	LIME MUDSTONE, cream, dense
1940-1950	12, 14	LIME MUDSTONE, as above
1950-1960	10, 11	LIME MUDSTONE, as above; MUDSTONE, black, limey, 5%
1960-1970	10, 15	LIME MUDSTONE, as above; Mudstone, as above; SILTSTONE, red brown
1970-1980	11, 7	SANDSTONE, white, fine, sub-rounded--subangular, very fine; ANHYDRITE, white, 10%
1980-1990	10, 16	SANDSTONE, as above; MUDSTONE, black, limey; ANHYDRITE, white, 15%
1990-2000	13, 13	LIME MUDSTONE, cream, dense
2000-2010	15, 15	LIME MUDSTONE, cream, granular, dense
2010-2020	14, 11	LIME MUDSTONE, cream-light brown, dense, granular, chert trace; ANHYDRITE, white, 3%
2020-2030	13, 10	LIME MUDSTONE, light brown, dense
2030-2040	12, 14	LIME MUDSTONE, as above; LIME MUDSTONE, cream, clean, dense
2040-2050	19, 18	LIME MUDSTONE, cream, clean, dense, sandy; SANDSTONE, white, fine-medium, tight
2050-2060	14, 11	LIME MUDSTONE, white-cream, fine crystalline, dense

## SAMPLE DESCRIPTION

<u>LAGGED SAMPLES</u> <u>DEPTH (IN FEET)</u>	<u>DRILLING TIME</u> <u>(MIN./FT./5')</u>	
2060-2070	13, 14	LIME MUDSTONE, white-cream, fine crystalline, dense
2070-2080	14, 20	LIME MUDSTONE, as above
2080-2090	17, 14	SANDSTONE, white, very fine, calcareous, silty
2090-2100	13, 14	SANDSTONE, as above
2100-2110	17, 14	LIME MUDSTONE, white, dense
2110-2120	13, 10	LIME MUDSTONE, light grey
2120-2130	12, 11	LIME MUDSTONE, light grey, dense, sandy
2130-2140	8, 10	SILTSTONE, red brown
2140-2150	9, 11	SILTSTONE, red brown, sandy
2150-2160	14, 12	SANDSTONE, light brown, fine, silty, limey
2160-2170	11, 9	LIME MUDSTONE, very light grey, fine crystalline, dense
2170-2180	12, 10	LIME MUDSTONE, as above, chalky
2180-2190	10, 11	LIME MUDSTONE, as above
2190-2200	14, 12	LIME MUDSTONE, very light brown, fine crystalline, dense, sandy, very fine
2200-2210	12, 16	LIME MUDSTONE, as above
2210-2220	15, 11	LIME MUDSTONE, as above
2220-2230	11, 13	SANDSTONE, light brown-white, very fine, calcareous
2230-2240	18, 13	LIME MUDSTONE, cream, fine crystalline, dense, sandy
2240-2250	13, 12	LIME MUDSTONE, as above, less sandy
2250-2260	11, 9	SANDSTONE, tan, fine, sub-angular, very calcareous; LIME MUDSTONE, light tan, dense
2260-2270	11, 9	SANDSTONE, tan, as above
2270-2280	8, 7	LIME MUDSTONE, light grey, dense; CHERT, tan, 20%
2280-2290	8, 12	LIME MUDSTONE, tan-light grey, fine crystalline, dense PARADOX ISMAY 2280
2290-2300	16, 20	LIME MUDSTONE, tan; MUDSTONE, dark grey, 10%
2300-2310	21, 16	LIME MUDSTONE, light tan, fine crystalline, dense
2310-2320	12, 13	LIME MUDSTONE, light tan, as above
2320-2330	10, 12	LIME MUDSTONE, light tan, slightly chalky, fine crystalline, dense, no stain, fair fluorescence, good cut, good odor, no porosity. Drill chips are fine to very fine grain size
2330-2340	14, 15	LIME MUDSTONE, light tan, fine crystalline, dense
2340-2350	15, 15	LIME MUDSTONE, tan, as above
2350-2360	15, 17	LIME MUDSTONE, tan, as above
2360-2370	16, 17	LIME MUDSTONE, dark brown, as above

# CONNIE KRIVANEK

PETROLEUM GEOLOGIST

## SAMPLE DESCRIPTION

LAGGED SAMPLES DEPTH (IN FEET)	DRILLING TIME (MIN./FT./5')	
2370-2380	15, 15	LIME MUDSTONE, dark brown, fine crystalline, dense
2380-2390	15, 16	LIME MUDSTONE, as above
2390-2400	15, 15	LIME MUDSTONE, as above
2400-2410	17, 19	LIME MUDSTONE, light tan trace, white chalky-dark brown, fine, dense
2410-2420	24, 26	LIME MUDSTONE, as above
2420-2430	25, 24	LIME MUDSTONE, cream, fine, dense
2430-2440	12, 15	LIME MUDSTONE, as above
2440-2450	8, 13	LIME MUDSTONE, tan, fine crystalline, earthy porosity, slightly dolomitic, slight fluorescence and odor, no cut, no gas show
2450-2460	22, 23	LIME MUDSTONE, tan, chalky, fine crystalline, earthy porosity, slightly dolomitic, trace of yellow fluorescence, fair to rapid cut; CHERT, clear, smokey orange
2460-2470	37, 22	CHERT, brown, smokey, grey, speckled
2470-2480	18, 16	LIME MUDSTONE, dark grey-brown, fine, dolomitic, organic, asphalt odor, good cut after acid GOTHIC 2470
2480-2490	12, 9	LIME MUDSTONE, black, fine crystalline, excellent cut, trashy residue after acid, organic, asphalt odor DESERT CREEK 2490
2490-2500	9, 9	LIME MUDSTONE, black, fine crystalline, organic, good cut, asphalt odor, no fluores.
2500-2510	8, 7	LIME MUDSTONE, as above, good cut, no fluores.
2510-2520	9, 12	LIME MUDSTONE, black, as above, 10% white; CHERT, amber, 10%, good cut
2520-2530	20, 20	LIME MUDSTONE, grey, dense; ANHYDRITE, white, 15%
2530-2540	13, 15	LIME MUDSTONE, as above; ANHYDRITE, white
2540-2550	18, 20	LIME MUDSTONE, grey, white speckled, fine, dense
2550-2560	14, 16	LIME MUDSTONE, grey, fine, dense
2560-2570	16, 18	LIME MUDSTONE, brown, fine, dense, dolomitic(?)
2570-2580	21, 19	LIME MUDSTONE, light grey, fine, dolomitic, dense
2580-2590	16, 25	LIME MUDSTONE, grey, light brown, as above
2590-2600	25, 24	LIME MUDSTONE, grey-light grey, fine crystalline, dense
2600-2610	20, 11	SHALE, brown-black, fissile, slightly calcareous CHIMNEY ROCK 2600
2610-2620	11, 5	SHALE, as above
2620-2630	5, 6	SHALE, as above
2630-2640	5, 19	SHALE, as above; DOLOSTONE, light grey-brown, fine crystalline, dense, no cut, no fluorescence AKAH 2636

# CONNIE KRIVANEK

PETROLEUM GEOLOGIST

## SAMPLE DESCRIPTION

<u>LAGGED SAMPLES</u> <u>DEPTH (IN FEET)</u>	<u>DRILLING TIME</u> <u>(MIN./FT./5')</u>	
2640-2650	16, 17	DOLOSTONE, as above, no cut, no fluorescence; SHALE, black, fissile
2650-2660	12, 13	DOLOSTONE, tan-grey, fine crystalline, no cut, no fluorescence; ANHYDRITE, white
2660-2670	13, 16	ANHYDRITE, white-tan; SHALE, black, fissile
2670-2680	4½, 2½	SHALE, as above; ANHYDRITE, tan, massive and crystalline, probably salt SALT 2672
2680-2690	2½, 2½	SHALE, black; ANHYDRITE, brown, bladed, crystal clusters
2690-2700	2½, 2½	ANHYDRITE, brown, as above
2700-2710	2½, 10½	LIME MUDSTONE, white-cream, fine crystalline, slightly dolomitic, dense
2710-2720	9, 9	DOLOSTONE, tan, fine crystalline, dense; ANHYDRITE, white, 10%, crystal cluster
2720-2730	6, 5	DOLOSTONE, tan, dense
2730-2740	6½, 2½	ANHYDRITE, tan, massive and crystalline, probably salt
2740-2750	2½, 2½	ANHYDRITE, as above
2750-2760	2½, 2½	ANHYDRITE, as above
2760-2770	6, 15	ANHYDRITE, tan, massive
2770-2780	12, 11	ANHYDRITE, as above
2780-2790	12, 10	ANHYDRITE, as above; SHALE, black
2790-2800	2½, 2½	ANHYDRITE, SHALE, black, as above
2800-2810	2½, 2½	ANHYDRITE, white-tan
2810-2820	2½, 5½	ANHYDRITE, white; SHALE, black
2820-2830	11, 13	ANHYDRITE, white; DOLOSTONE, tan, fine, dense
2830-2840	14, 16	DOLOSTONE, as above
2840-2850	17, 14	DOLOSTONE, as above
2850-2860	8, 11	SHALE, black, fissile; DOLOMITE, tan, fine, dense
2860-2870	9, 12	ANHYDRITE, white-tan; DOLOMITE, as above
2870-2880	7, 4	ANHYDRITE, as above
2880-2890	2½, 2½	SHALE, black
2890-2900	2½, 2½	SHALE, black
2900-2910	2½, 2½	ANHYDRITE, brown, bladed, crystal clusters
2910-2920	2½, 2½	ANHYDRITE, as above
2920-2930	2, 2	ANHYDRITE, as above
2930-2940	6½, 15	ANHYDRITE, brown, massive BASE SALT 2932
2940-2950	18, 18	ANHYDRITE, as above
2950-2960	18, 14	DOLOMITE, brown, fine crystalline, dense
2960-2970	10, 12	DOLOMITE, as above
2970-2980	13, 11	DOLOMITE, as above; ANHYDRITE, brown, bladed, crystal clusters
2980-2990	12, 12	ANHYDRITE, white, massive; ANHYDRITE, brown
2990-3000	12, 13	ANHYDRITE, as above

# CONNIE KRIVANEK

PETROLEUM GEOLOGIST

## SAMPLE DESCRIPTION

LAGGED SAMPLES DEPTH (IN FEET)	DRILLING TIME (MIN./FT./5')	
3000-3010	16, 19	ANHYDRITE, white-brown, massive
3010-3020	17, 13	ANHYDRITE, brown, clusters of bladed crystals DOLOSTONE, brown, fine crystalline, dense
3020-3030	11, 11	DOLOSTONE, brown, as above
3030-3040	14, 13	DOLOSTONE, as above
3040-3050	16, 13	ANHYDRITE, white-tan; SHALE, black
3050-3060	16, 15	ANHYDRITE, white-tan, massive and medium crystalline
3060-3070	14, 13	ANHYDRITE, as above; SHALE, black 10%
3070-3080	13, 14	ANHYDRITE, white, massive; DOLOSTONE, tan, dense
3080-3090	16, 14	DOLOSTONE, tan; ANHYDRITE, white-clear-mottled
3090-3100	16, 15	ANHYDRITE, white, tan; DOLOSTONE, tan, fine, dense
3100-3110	17, 19	ANHYDRITE, white, clear
3110-3120	10, 12	SHALE, black, carbonaceous, not calcareous, faint cut, no fluorescence; crushed sample is dark brown-black
3120-3130	13, 14	ANHYDRITE, white, tan, massive; SHALE, black, as above
3130-3140	15, 15	ANHYDRITE, as above
3140-3150	16, 15	ANHYDRITE, as above
3150-3160	13, 14	ANHYDRITE, white-tan, granular; SHALE, black
3160-3170	15, 15	ANHYDRITE, as above
3170-3180	15, 15	ANHYDRITE, as above
3180-3190	16, 20	ANHYDRITE, tan, granular and massive; DOLO- STONE, grey, fine, dense, shaley
3190-3200	15, 16	ANHYDRITE, white, massive, tan, granular; SHALE, black
3200-3210	15, 17	ANHYDRITE, as above
3210-3220	18, 22	ANHYDRITE, as above; DOLOSTONE, grey, fine, dense
3220-3230	15, 16	ANHYDRITE, as above
3230-3240	24, 32	ANHYDRITE, as above
3240-3250	33, 29	ANHYDRITE, as above
3250-3260	35, 26	ANHYDRITE, as above; DOLOSTONE, grey, dense
3260-3270	22, 27	ANHYDRITE, light brown, crystalline
3270-3280	31, 25	ANHYDRITE, as above, tan
3280-3290	31, 28	ANHYDRITE, as above
3290-3300	29, 29	ANHYDRITE, white, granular
3300-3310	19, 18	ANHYDRITE, white, crystalline; SHALE, black
3310-3320	18, 17	ANHYDRITE, as above; SHALE, black
3320-3330	18, 17	ANHYDRITE, as above, tan, massive, oil stain, no fluor., no cut; SHALE, black
3330-3340	19, 18	ANHYDRITE, white, light brown, granular and crystalline

# CONNIE KRIVANEK

PETROLEUM GEOLOGIST

## SAMPLE DESCRIPTION

<u>LAGGED SAMPLES</u> <u>DEPTH (IN FEET)</u>	<u>DRILLING TIME</u> <u>(MIN./FT./5')</u>	
3340-3350	22, 23	LIME MUDSTONE, tan, dense; ANHYDRITE, as above PINKERTON TRAIL 3340
3350-3360	20, 22	LIME MUDSTONE, as above; SHALE, black
3360-3370	23, 17	LIME MUDSTONE, as above
3370-3380	20, 17	LIME MUDSTONE, as above
3380-3390	21, 27	LIME MUDSTONE, as above; CHERT, tan; SHALE, black
3390-3400	17, 27	DOLOSTONE, tan, dense, limey
3400-3410	24, 23	LIME MUDSTONE, tan, dense, clean
3410-3420	24, 29	LIME MUDSTONE, tan, dense
3420-3430	26, 24	LIME MUDSTONE, as above
3430-3440	26, 27	SHALE, black; LIME MUDSTONE, brown & tan, dense
3440-3450	28, 27	LIME MUDSTONE, tan, brown, fine crystalline, dense; CHERT, tan; SHALE, black
3450-3460	27, 26	LIME MUDSTONE, tan-brown, as above; CHERT, brn.
3460-3470	32, 26	LIME MUDSTONE, as above; CHERT, brown
3470-3480	29, 30	LIME MUDSTONE, cream, chalky, sandy, dense
3480-3490	26, 29	LIME MUDSTONE, as above
3490-3500	32, 22	LIME MUDSTONE, as above
3500-3510	27, 24	LIME MUDSTONE, as above
3510-3520	20, 24	LIME MUDSTONE, as above; CHERT, clean, 10%
3520-3530	22, 23	LIME MUDSTONE, as above; CHERT, lt. blue, 30%
3530-3540	22, 26	LIME MUDSTONE, chalky, grey green, dense; CHERT, light orange
3540-3550	17, 13	LIME MUDSTONE, white, tan, dense; SHALE, black; CHERT, light milky blue
3550-3560	8, 9	LIME MUDSTONE, cream, chalky, fine crystalline, dense; MUDSTONE, grey green; CHERT, above, 20%
3560-3570	24, 27	LIME MUDSTONE, as above; MUDSTONE, mottled pink, grey green
3570-3580	29, 23	LIME MUDSTONE, as above; MUDSTONE, grey green
3580-3590	19, 21	MUDSTONE, as above, trace pink; LIME MUDSTONE, as above, trace; SILTSTONE, tan, sandy
3590-3600	17, 16	MUDSTONE, grey-pink, grey green; SANDSTONE, tan fine, silty, tight
3600-3610	10, 15	MUDSTONE, lt. purple, lt. grey, non calcareous
3610-3620	14, 20	MUDSTONE, grey-purple; SANDSTONE, lt. tan, fine, tight, 10%; CHERT, clear; LIME MUDSTONE, tan, dense
3620-3630	11, 19	LIME MUDSTONE, as above, chalky; SANDSTONE, tan, fine, trace; MUDSTONE, green, trace
3630-3640	30, 39	LIME MUDSTONE, as above; MUDSTONE, grey green; LIME MUDSTONE, red stain, trace MOLAS 3639
3640-3650	35, 37	LIME MUDSTONE, white, chalky, brick red stain; MUDSTONE, light grey-grey green
3650-3660	46, 43	MUDSTONE, grey green; LIME MUDSTONE, as above

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS, AND MINING

5. LEASE DESIGNATION AND SERIAL NO.  
ML-31332

6. IF INDIAN, ALLOTTEE OR TRIBE NAME  
-----

7. UNIT AGREEMENT NAME  
Woodenshoe Federal Unit

8. FARM OR LEASE NAME  
Woodenshoe

9. WELL NO.  
2

10. FIELD AND POOL, OR WILDCAT  
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA  
Sec. 32, T36S, R18E

12. COUNTY ~~SAN JUAN~~ 13. STATE  
San Juan Utah

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL  GAS WELL  OTHER Exploratory

2. NAME OF OPERATOR  
SUN EXPLORATION & PRODUCTION COMPANY

3. ADDRESS OF OPERATOR  
P. O. Box 340180; Dallas, TX 75234

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)  
At surface 500' FSL & 1830' FEL (SW SE)

14. PERMIT NO.  
43-037-30789

15. ELEVATION (Show whether OF, RT, GR, etc.)  
6585 GR

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input checked="" type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(Other) _____	(Other) _____

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

WELL DATA: TD 3660'. 80' 16", 52.5#, Conductor set w/145 sx Class B cement.  
18 joints of 9-5/8" (36#, K-55) surface casing set @ 722' w/625 sx Class B cement. Cemented to surface. Drld. 8-3/4" hole to TD.

PLUGGING INFORMATION:	PLUG NO.	DEPTH INTERVALS	NO. OF SX	TYPE OF CEMENT
	1	3656-3506	58	Class B
	2	2400-2300	40	Class B
	3	1700-1600	50	Class B
	4	770- 670	50	Class B
	5	Surface (Cut off 2' below grd.)	10	Class B

Well abandonment marker has been set.

Restoration of location has not been completed. As soon as location is ready for inspection, we will inform you.

APPROVED BY THE STATE  
OF UTAH DIVISION OF  
OIL, GAS, AND MINING

DATE: 7/29/82  
BY: [Signature]

18. I hereby certify that the foregoing is true and correct

SIGNED M. A. Skrabanek TITLE Engineering Aide DATE July 16, 1982  
M. A. Skrabanek

(This space for Federal or State office use)

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
CONDITIONS OF APPROVAL, IF ANY:

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS, AND MINING

15

LEASE DESIGNATION AND SERIAL NO.

ML-31332

IF INDIAN, ALLOTTEE OR TRIBE NAME

UNIT AGREEMENT NAME

Woodenshoe Federal Unit

FARM OR LEASE NAME

Woodenshoe

WELL NO.

2

FIELD AND POOL, OR WILDCAT

Wildcat

SEC., T., R., M., OR BLOCK AND SURVEY OR AREA

Sec. 32, T36S, R18E

COUNTY OR

~~SAN JUAN~~  
San Juan

STATE

Utah

WELL COMPLETION OR RECOMPLETION REPORT AND LOG \*

1. TYPE OF WELL: OIL WELL  GAS WELL  DRY  Other Exploratory

b. TYPE OF COMPLETION: NEW WELL  WORK OVER  DEEP-EN  PLUG BACK  DIFF. RESVR.  Other P&A

2. NAME OF OPERATOR  
SUN EXPLORATION AND PRODUCTION COMPANY

3. ADDRESS OF OPERATOR  
P. O. Box 340180; Dallas, TX 75234

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)\*  
At surface 500' FSL & 1830' FEL (SW SE)

At top prod. interval reported below

At total depth

14. PERMIT NO. 43-037-30789 | DATE ISSUED 05-20-82

12. COUNTY OR STATE  
San Juan | Utah

15. DATE SPUDDED 06-07-82 | 16. DATE T.D. REACHED 06-20-82 | 17. DATE COMPL. (Ready to prod.) P&A 06-22-82 | 18. ELEVATIONS (DF, RKB, RT, GR, ETC.)\* 6585' GR | 19. ELEV. CASINGHEAD 6585'

20. TOTAL DEPTH, MD & TVD TD 3660' | 21. PLUG, BACK T.D., MD & TVD TD 3660' | 22. IF MULTIPLE COMPL., HOW MANY\* | 23. INTERVALS DRILLED BY | ROTARY TOOLS 0-3660' | CABLE TOOLS

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)\*  
None | 25. WAS DIRECTIONAL SURVEY MADE Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN Being sent under separate cover: BHC, Natural GR Spect., FDC-CNL, DLL-MSFL, Cyberlook, Mud Log | 27. WAS WELL CORED No

See attached Packing List; the following

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
16" Cond.	52.5#/ft	80'	24"	145 sx, Class B	
9-5/8"	36#/FT	722'	13-3/4"	625 sx, Class B	

29. LINER RECORD | 30. TUBING RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)

31. PERFORATION RECORD (Interval, size and number)  
\*\* PLUGGING RECORD  
PLUG 5: Surface 10 sx, Class B

32. \*\* ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
PLUG 1: 3656-3506	58 sx, Class B
PLUG 2: 2400-2300	40 sx, Class B
PLUG 3: 1700-1600	50 sx, Class B
PLUG 4: 770-670	50 sx, Class B

33. N/A PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)
		P&A

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) | TEST WITNESSED BY

35. LIST OF ATTACHMENTS See attached Packing List; the following  
Being sent under separate cover: Geological Report; Cementing Reports: 16" Conductor Pipe; 9-5/8" Surface Casing; P&A

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED M.A. Skrabanek TITLE Engineering Aide DATE July 16, 1982  
M. A. Skrabanek

\*(See Instructions and Spaces for Additional Data on Reverse Side)

PACKING LIST

SUN EXPLORATION & PRODUCTION COMPANY  
Sun Exploration Division

WOODENSHOE #2  
Section 32-T36S-R18E  
San Juan County, UT

<u>ITEM</u>	<u>DATE</u>	<u>NO. COPIES</u>
DOWELL		
<u>Cementing Service Report</u>		
16" Conductor Pipe	06-06-82	3
9-5/8" Surf. Csg.	06-10-82	3
P&A	06-21-82	3
DRILL STEM TEST #1	06-23-82	3
GEOLOGICAL REPORT	06-25-82	3
<u>LOGS</u>		
BHC	06-20-82	3
DLL	06-20-82	3
FDC-CNL	06-20-82	3
Mud Log	06-20-82	3
Natural Gamma Spect	06-20-82	3
Cyberlook	06-20-82	3

07-16-82

mas



**Sun Exploration  
Company**  
4600 North Fuller Drive  
Irving Texas 75062  
Post Office Box 340180  
Dallas Texas 75234  
214 258 4000  
Telex 73 2469  
TWX: 910 860 5769

July 16, 1982

State of Utah  
Department of Natural Resources  
Division of Oil, Gas, & Mining  
4241 State Office Building  
Salt Lake City, Utah 84114

Gentlemen:

SUBJECT: Woodenshoe #2  
Section 32-T36S-R18E  
San Juan County, UT

Attached are four copies of Sundry Notices-Subsequent Report of Abandonment, Form OGC-1b, and two copies of Well Completion, Form OGC-3, on the above subject well.

If further information is needed, please contact me at 214/258-4142.

Very truly yours,

Mary Anne Skrabanek

Attachments

cc: R. L. Harris  
L. Kornkven  
G. Peyton  
R. Standaert  
C. Bourgeois (For Partner Distr.)  
Well File  
Permit File  
  
B. Frisbie, C&LA  
D. J. Hajdu, FA  
J. Morrow, Matls. Mgmt.  
F. Blankemeier, Matls. Mgmt.  
  
J. W. Strickland, Gas Sales  
Sun Gas Co.  
  
V. Whiteside  
Sun Production Co.

**RECEIVED**  
JUL 28 1982

**DIVISION OF  
OIL, GAS & MINING**



STATE OF UTAH  
NATURAL RESOURCES  
Oil, Gas & Mining

Norman H. Bangerter, Governor  
Dee C. Hansen, Executive Director  
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 23, 1985

TO: John R. Baza, Petroleum Engineer  
FROM: Patrick deGruyter, Oil and Gas Field Specialist PD  
RE: Sun Exploration & Production, Woodenshoe Unit # 2,  
SW SE, Sec.32, T.36S, R.18E, San Juan County, Utah

The above-referenced location was inspected following a telephone conversation on May 2, 1985, with Jeff Connor, Natural Resource Specialist with the National Park Service in Moab, Utah. Mr. Connor had received a report from Gary Hasty, Unit Manager, Natural Bridges National Monument, concerning seepage from this location, which was apparently killing vegetation in the area.

Mr. Connor and Mr. Hasty are concerned about this location because of its close proximity to the Natural Bridges National Monument boundary.

Well Information According to Well Records

Operator: Sun Exploration and Production Company  
P.O. Box 3401 80  
Dallas, Texas 75234

Lease: ML-31332-Lease relinquished November 26, 1984  
Not currently held by anyone

Unit: Woodenshoe Federal Exploration Unit-expired  
December 21, 1982

Spud: June 7, 1982

T.D.: 3656 (Molas Formation)

P&A: June 22, 1982

Plugs: #1-3656-3506  
#2-2900-2300  
#3-1700-1600  
#4- 770- 670  
#5-Surface

### Observations

The location was inspected on May 6, 1985, and again on May 8, 1985, and the following observations were made:

The well pad and access road have been satisfactorily recontoured and revegetated. A P&A marker has been erected and is also satisfactory. The northern portion of the pad, as well as drainages in the area, were very wet with pools of standing water noted in two areas. A powdery, white, salty tasting deposit, salt crystals, and salty tasting water were found in the drainages flowing directly off the north central and northwest portions of the pad. Vegetation along and immediately adjacent to these drainages appears very unhealthy, ranging from dead (complete loss of leaves and needles) to dying (leaves and needles turning brown and falling off). The drainages to the west of the pad, which do not flow off the pad, contained pools of water that were slightly sweet to taste (alkali?). Powdery, white deposits in these drainages were not salty to taste, and vegetation along and adjacent to these drainages appeared green and healthy. A tributary drainage north of the pad, which does not flow off of the pad, is also wet. Wet dirt from this drainage was not salty to taste nor was any powdery, white deposit noted in this drainage. Vegetation in this drainage appears green and healthy. The area of contamination and unhealthy vegetation ranges from the northwest and north central portion of the well pad north along and adjacent to the drainages, approximately 400 feet to the north. Also observed were numerous greasewood in these drainages, as well as a single tamarisk (10' to 12', 2' diameter at base) and an area with moss growing on the ground adjacent to a drainage (see accompanying Exhibits A, B, and C).

### Conclusions

The presence of fairly abundant intermittent riparian vegetation (numerous greasewood, one tamarisk, and moss growing in a drainage) would indicate the presence of perennial surface or near surface water. The pad location and surrounding area appears to be a natural seep, which no doubt has seasonal variation in flow.

There are two possible sources for the salt that is contaminating the water from this seep:

1. A problem downhole; i.e., a hole in the casing, bad cement job, or bad plugging job.
2. Leaching of salt from the buried reserve pit; i.e., salt used in the drilling fluid and salt from Paradox evaporites (cuttings) left in the reserve pit.

Page 3  
John R. Baza  
May 23, 1985

Action

In a conversation with Ed Bonner, Division of State Lands and Forestry, he advised me that Sun Exploration and Production has a current statewide \$25,000 blanket bond. His suggestion was that the Division of State Lands and Forestry write Sun Exploration and Production a letter explaining the problem and asking that it be resolved and that the Division of Oil, Gas and Mining write a similar letter.

I informed Mr. Bonner that I would send a report to him for review upon completion of my investigation of this matter.

sb

Attachments

cc: Sun Exploration and Production  
National Park Service, Moab  
Division of State Lands and Forestry

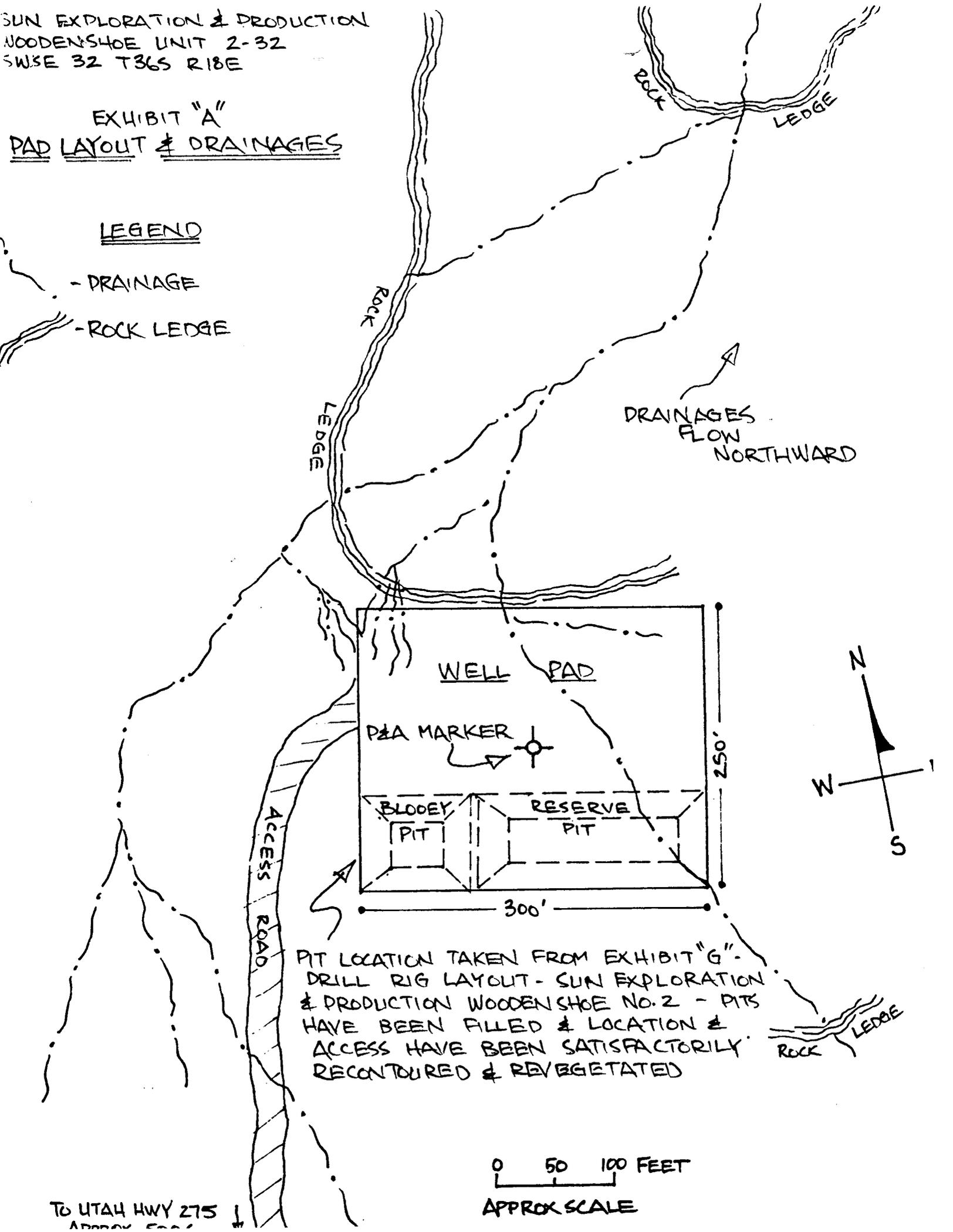
0127T-16-18

SUN EXPLORATION & PRODUCTION  
WOODENSHOE UNIT 2-32  
SWSE 32 T36S R18E

EXHIBIT "A"  
PAD LAYOUT & DRAINAGES

LEGEND

- DRAINAGE
- ROCK LEDGE



PIT LOCATION TAKEN FROM EXHIBIT "G" -  
DRILL RIG LAYOUT - SUN EXPLORATION  
& PRODUCTION WOODENSHOE NO. 2 - PITS  
HAVE BEEN FILLED & LOCATION &  
ACCESS HAVE BEEN SATISFACTORILY  
RECONTOURED & REVEGETATED

0 50 100 FEET

APPROX SCALE

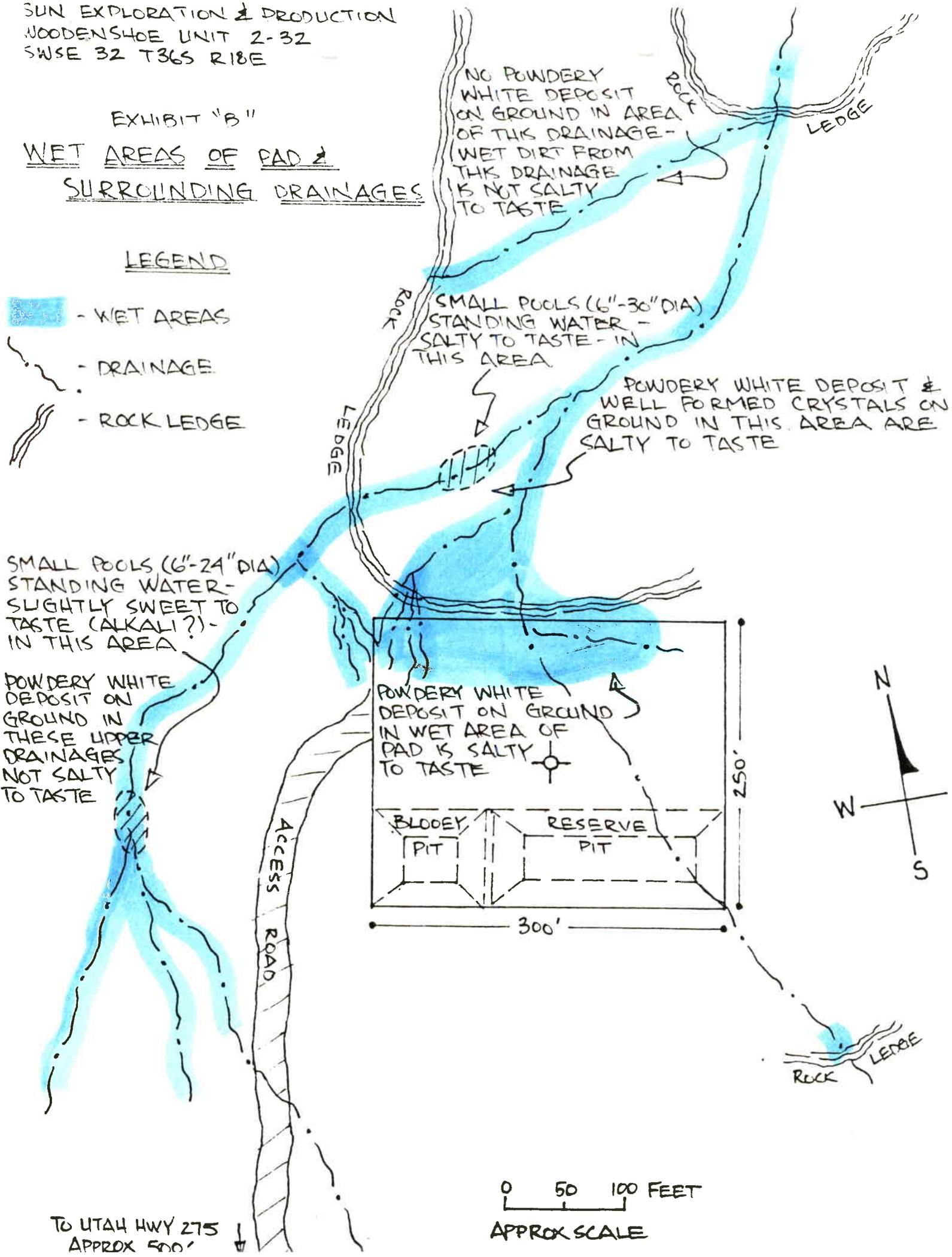
TO UTAH HWY 275  
APPROX 500'

EXHIBIT "B"

WET AREAS OF PAD &  
SURROUNDING DRAINAGES

LEGEND

-  - WET AREAS
-  - DRAINAGE
-  - ROCK LEDGE



TO UTAH HWY 275  
APPROX 500'

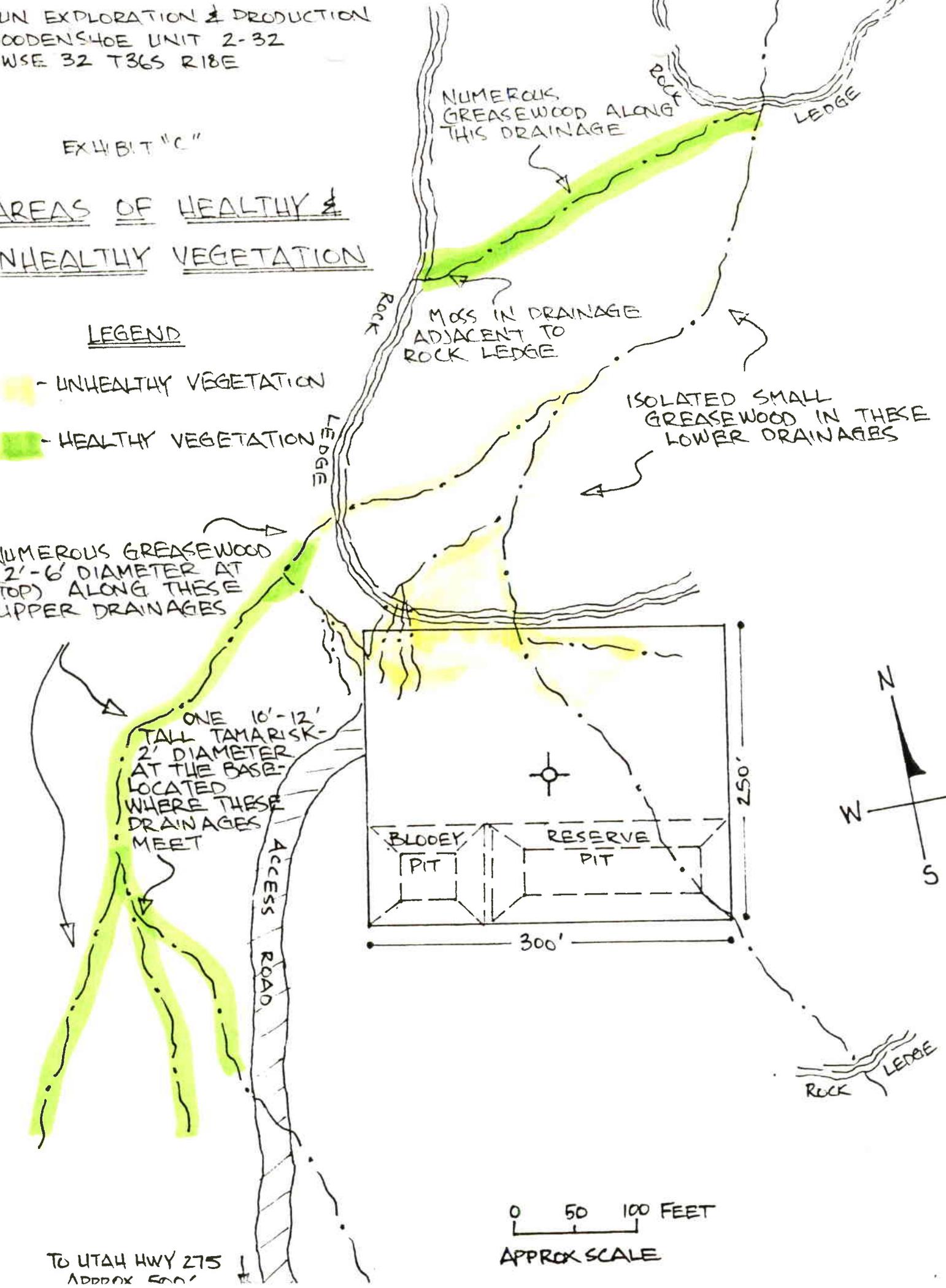
0 50 100 FEET  
APPROX SCALE

EXHIBIT "C"

AREAS OF HEALTHY &  
UNHEALTHY VEGETATION

LEGEND

- UNHEALTHY VEGETATION
- HEALTHY VEGETATION



TO UTAH HWY 275  
APPROX 500'

0 50 100 FEET  
APPROX SCALE

NICKENS and ASSOCIATES

P.O. Box 727  
Montrose, Colorado 81402  
Phone: (303) 249-3411

RECEIVED

JUN 07 1982

May 25, 1982

SUNMARK EXP. CO.  
DOMESTIC OPNS.

Mr. Daryl Cooper  
Energy Consulting Services  
815 Metrobank Building  
475 17th Street  
Denver, Colorado 80202

RE: Cultural resource inspection of a  
Sun Exploration proposed location  
near Natural Bridges National Monu-  
ment, San Juan County, Utah

Dear Mr. Cooper:

On 14 April 1982 we forwarded a Bureau of Land Management Summary Report of Inspection for Cultural Resources for the referenced location, situated in Section 32, Township 36S, Range 18E. At your request, I revisited the project area on 20 April 1982 to provide a cultural resource survey for a proposed change in the access to the drillpad. Prior to arriving at the project area, I stopped at the BLM-Monticello office and discussed the situation with Mr. Bob Turri. He indicated that a change in the proposed access was required but that a new route had not been flagged to his knowledge. Following this meeting, I proceeded to the project area and met with Mr. Ron Thorensen at Natural Bridges National Monument. Mr. Thorensen accompanied me to the proposed location and indicated the access route preferred by the Department of Transportation. The new route departs from the Natural Bridges road opposite a dirt road leading south to the National Park Service dump and runs north, slightly northwest to the proposed pad. Consequently, the newly proposed access to the pad exits the blacktop approximately 100 yards east of the earlier flagged route (see accompanying sketch map).

The new route was inspected for cultural resources with negative results. Since the centerline had not been flagged, a larger area was checked, including all the ground between the old and new access roads. It is our recommendation that the new access road alignment will not impact any cultural resources. This particular area is, however, relatively rich in archaeological sites and the dirt contractor should be made aware that buried cultural deposits could be present. If archaeological artifacts appear as a result of earth disturbing activities, the work should immediately cease and the appropriate land manager should be notified.

An invoice to cover our work is also included.

Revised Archaeological Report

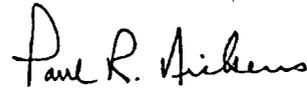
R. L. Harris  
Craig Bourgeois  
Dixie Lundquist  
Kerene Peyton  
Lynne Korman

Will File  
Dermitt File

Mr. Daryl Cooper  
Energy Consulting Services  
May 25, 1982  
Page 2

Should you have any questions on this work, please do not hesitate to contact me.

Sincerely,

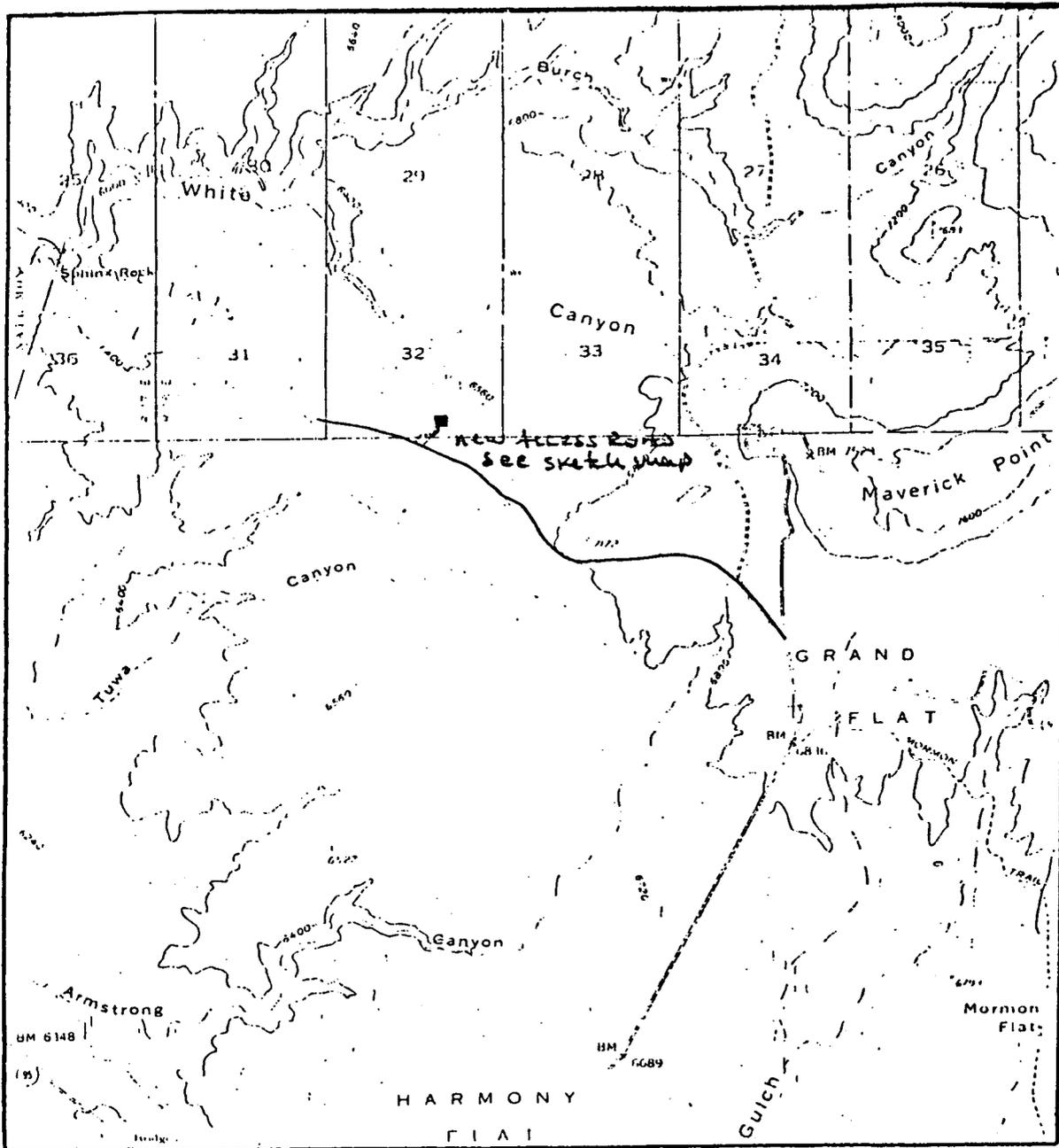


Paul R. Nickens, Ph.D.  
Principal Investigator

df

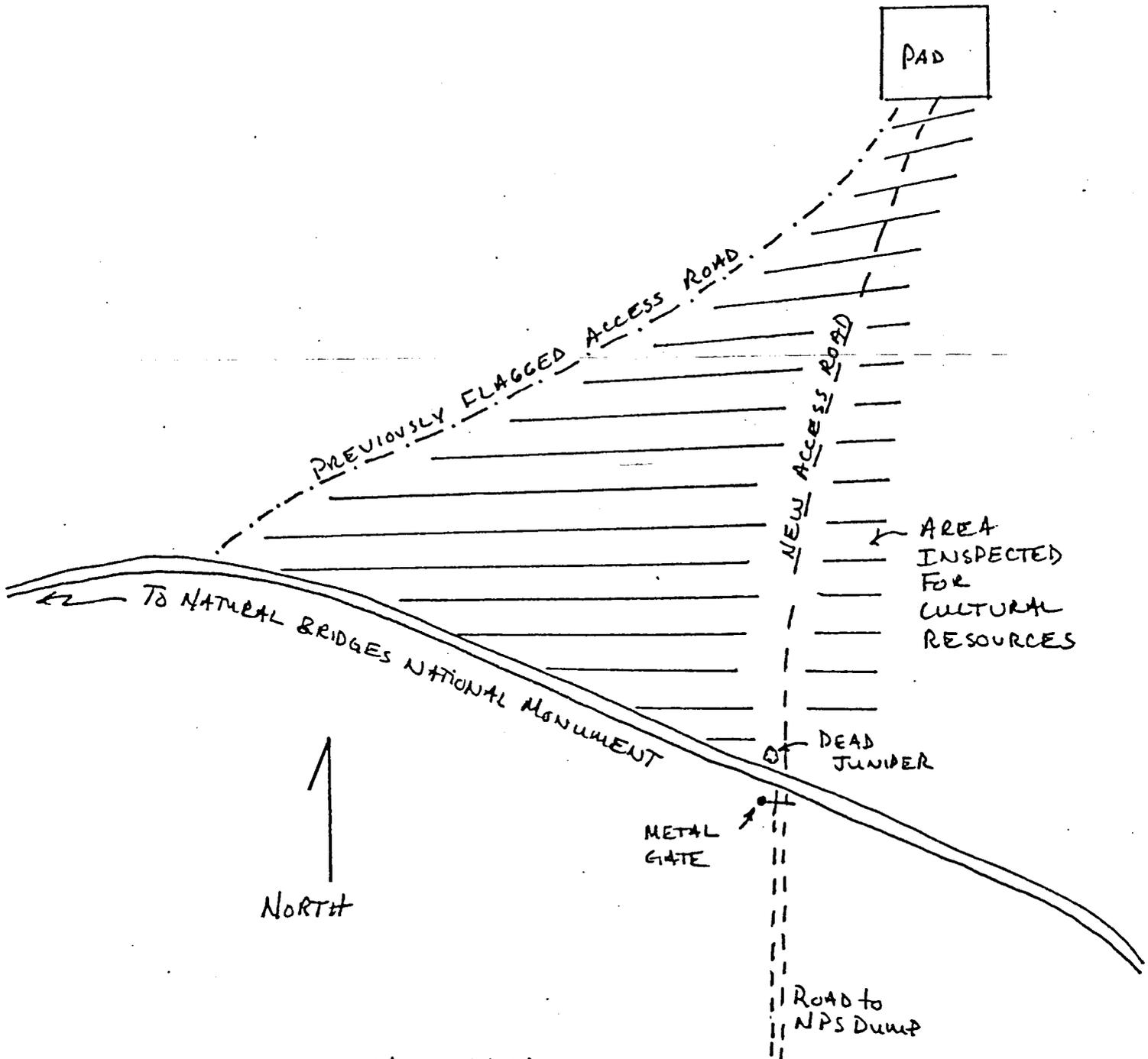
Enc.

cc: BLM-Moab District  
BLM-San Juan Resource Area  
Utah State Antiquities Section



Bears Ears 15 Minute U.S.G.S. Quadrangle  
 Township 36 and 37 South, Range 18 East

Proposed well pad ■  
 Proposed access road .....  
 Utah State Highway 550 (to Natural Bridges) ———



SKETCH MAP OF AREA  
 INSPECTED ON 5/20/82



# United States Department of the Interior

NATIONAL PARK SERVICE  
ARCHES AND CANYONLANDS NATIONAL PARKS  
NATURAL BRIDGES NATIONAL MONUMENT  
MOAB, UTAH 84532

IN REPLY REFER TO:

N2427

June 5, 1985

Ron Firth  
State of Utah  
Division of Oil, Gas and Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

RECEIVED

JUN 07 1985

DIVISION OF OIL  
GAS & MINING

Dear Mr. Firth:

On May 4, 1985 it was brought to our attention by the Unit Manager of Natural Bridges National Monument that numerous trees had died or were dying in the vicinity of an abandoned oil and gas well, on a state section of land adjacent to Natural Bridges National Monument. The well is in the SW1/4 SE1/4, Sec. 32, T.36S, R.18E, San Juan County, Utah and is labeled Woodenshoe Unit #2 drilled by Sun Exploration and Production in 1982.

Upon investigation by Pat DeGruyter, State Oil and Gas Field Specialist, Jeff Connor, Natural Resource Specialist with the National Park Service, and Bob Turri of the Bureau of Land Management it was decided that vegetation damage was due to high salt concentrations in the water and soils originating from either the well or the resource pit.

It is Pat DeGruyter's opinion that the contaminated water and soil is caused from subsurface water moving through the oil pad and mixing with salts from the reserve pit. He believes there is a natural seep in a wash below the well location and the well was placed in the path of water flowing towards this seep.

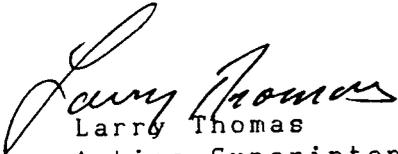
Conductivity and Ph tests were done on the water. Results showed a conductivity of 36,200 umho/cm with a Ph of 5.3. Discussing these results with two hydrologists, Ron Hermance of the National Park Service and Les Dobson of the Bureau of Land Management, it is their opinion that because of the high conductivity count it is possibly brine water originating from the well and not the reserve pit that is causing the problem.

We are concerned about this problem for two reasons. One is the proximity to Natural Bridges National Monument. The drainage where the die off has occurred flows towards the Monument with dying vegetation occurring presently .8 mile from the boundary.

If the problem is not corrected there is the possibility of killing vegetation in the Monument. Secondly if the well not the reserve pit is the problem is contamination occurring in the Monuments drinking water? Natural Bridges has two wells one 750 feet deep and the other 700 feet. The water wells are located approximately one mile from the oil well. If brine water is coming from beneath the ground has it mixed with the Monuments drinking water? This well was abandoned in June of 1982. Evidence shows that trees have been dying for at least two years. The well should have been monitored much more closely than it was. If our aquifer is contaminated it may already be too late to save our domestic water supply.

We would like to see this problem resolved as soon as possible. We could make recommendations on rehabilitation work and monitoring of the vegetation and the Monuments drinking wells if you would like to have our assistance. In the future we would like to be involved in any proposed drilling adjacent to Natural Bridges National Monument, Canyonlands National Park, or Arches National Park.

Sincerely,

  
Larry Thomas  
Acting Superintendent



# United States Department of the Interior

NATIONAL PARK SERVICE  
ARCHES AND CANYONLANDS NATIONAL PARKS  
NATURAL BRIDGES NATIONAL MONUMENT  
MOAB, UTAH 84532

IN REPLY REFER TO:

N2427

June 5, 1985

Ron Firth  
State of Utah  
Division of Oil, Gas and Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

Dear Mr. Firth:

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RECEIVED

JUN 07 1985

DIVISION OF OIL  
GAS & MINING

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Sincerely,

  
Larry Thomas  
Acting Superintendent

~~Carol~~ file  
pts in well  
file



STATE OF UTAH  
NATURAL RESOURCES  
Oil, Gas & Mining

*Dianne Nielson*

Norman H. Bangerter, Governor  
Dee C. Hansen, Executive Director  
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 23, 1985

TO: John R. Baza, Petroleum Engineer  
FROM: Patrick deGruyter, Oil and Gas Field Specialist PD  
RE: Sun Exploration & Production, Woodenshoe Unit # 2,  
SW SE, Sec.32, T.36S, R.18E, San Juan County, Utah

The above-referenced location was inspected following a telephone conversation on May 2, 1985, with Jeff Connor, Natural Resource Specialist with the National Park Service in Moab, Utah. Mr. Connor had received a report from Gary Hasty, Unit Manager, Natural Bridges National Monument, concerning seepage from this location, which was apparently killing vegetation in the area.

Mr. Connor and Mr. Hasty are concerned about this location because of its close proximity to the Natural Bridges National Monument boundary.

Well Information According to Well Records

Operator: Sun Exploration and Production Company  
P.O. Box 3401 80  
Dallas, Texas 75234

Lease: ML-31332-Lease relinquished November 26, 1984  
Not currently held by anyone

Unit: Woodenshoe Federal Exploration Unit-expired  
December 21, 1982

Spud: June 7, 1982

T.D.: 3656 (Molas Formation)

P&A: June 22, 1982

Plugs: #1-3656-3506  
#2-2900-2300  
#3-1700-1600  
#4- 770- 670  
#5-Surface

### Observations

The location was inspected on May 6, 1985, and again on May 8, 1985, and the following observations were made:

The well pad and access road have been satisfactorily recontoured and revegetated. A P&A marker has been erected and is also satisfactory. The northern portion of the pad, as well as drainages in the area, were very wet with pools of standing water noted in two areas. A powdery, white, salty tasting deposit, salt crystals, and salty tasting water were found in the drainages flowing directly off the north central and northwest portions of the pad. Vegetation along and immediately adjacent to these drainages appears very unhealthy, ranging from dead (complete loss of leaves and needles) to dying (leaves and needles turning brown and falling off). The drainages to the west of the pad, which do not flow off the pad, contained pools of water that were slightly sweet to taste (alkali?). Powdery, white deposits in these drainages were not salty to taste, and vegetation along and adjacent to these drainages appeared green and healthy. A tributary drainage north of the pad, which does not flow off of the pad, is also wet. Wet dirt from this drainage was not salty to taste nor was any powdery, white deposit noted in this drainage. Vegetation in this drainage appears green and healthy. The area of contamination and unhealthy vegetation ranges from the northwest and north central portion of the well pad north along and adjacent to the drainages, approximately 400 feet to the north. Also observed were numerous greasewood in these drainages, as well as a single tamarisk (10' to 12', 2' diameter at base) and an area with moss growing on the ground adjacent to a drainage (see accompanying Exhibits A, B, and C).

### Conclusions

The presence of fairly abundant intermittent riparian vegetation (numerous greasewood, one tamarisk, and moss growing in a drainage) would indicate the presence of perennial surface or near surface water. The pad location and surrounding area appears to be a natural seep, which no doubt has seasonal variation in flow.

There are two possible sources for the salt that is contaminating the water from this seep:

1. A problem downhole; i.e., a hole in the casing, bad cement job, or bad plugging job.
2. Leaching of salt from the buried reserve pit; i.e., salt used in the drilling fluid and salt from Paradox evaporites (cuttings) left in the reserve pit.

Page 3  
John R. Baza  
May 23, 1985

Action

In a conversation with Ed Bonner, Division of State Lands and Forestry, he advised me that Sun Exploration and Production has a current statewide \$25,000 blanket bond. His suggestion was that the Division of State Lands and Forestry write Sun Exploration and Production a letter explaining the problem and asking that it be resolved and that the Division of Oil, Gas and Mining write a similar letter.

I informed Mr. Bonner that I would send a report to him for review upon completion of my investigation of this matter.

sb

Attachments

cc: Sun Exploration and Production  
National Park Service, Moab  
Division of State Lands and Forestry

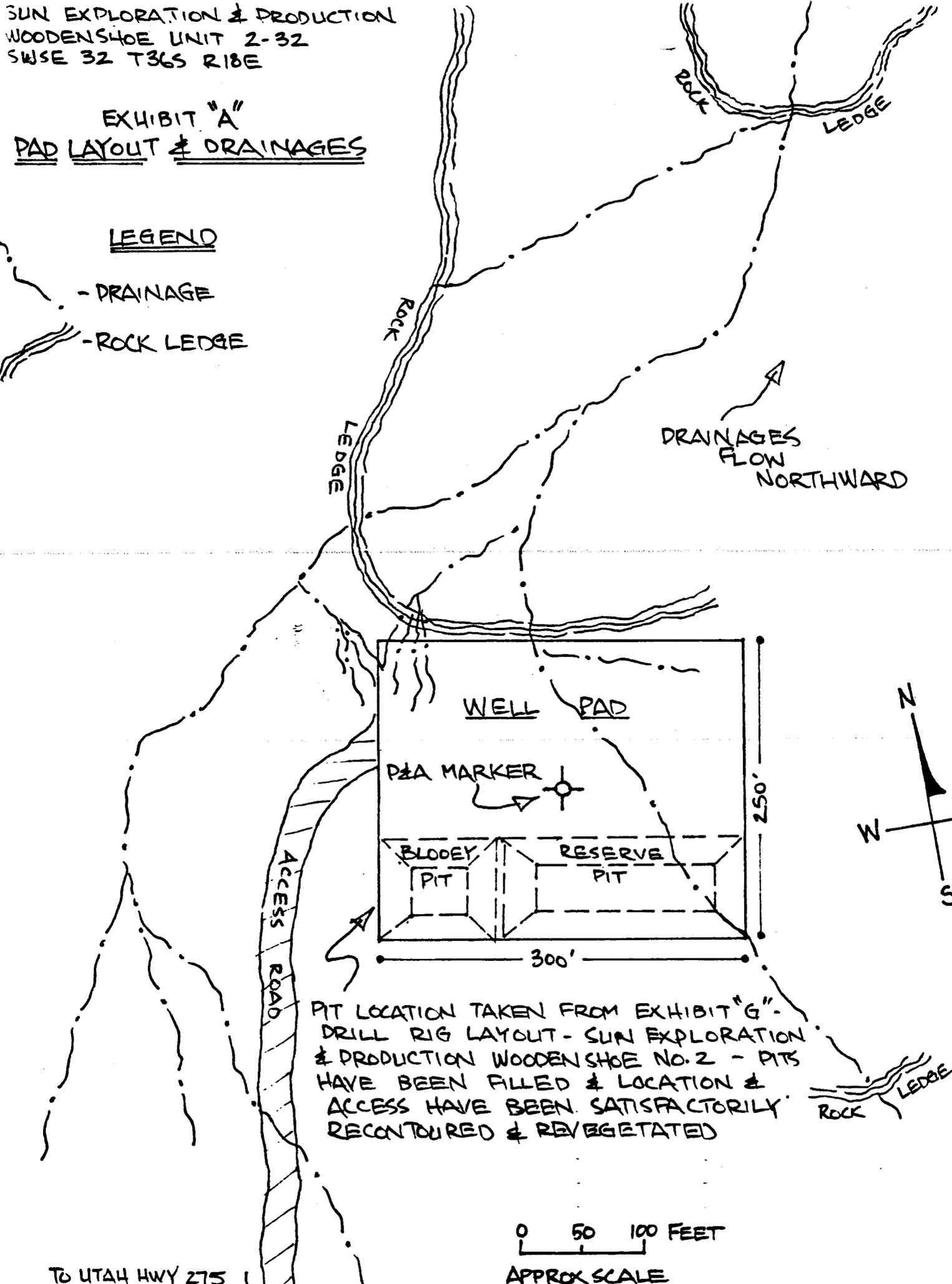
0127T-16-18

SUN EXPLORATION & PRODUCTION  
WOODENSHOE UNIT 2-32  
SWSE 32 T36S R18E

EXHIBIT "A"  
PAD LAYOUT & DRAINAGES

LEGEND

- DRAINAGE
- ROCK LEDGE



PIT LOCATION TAKEN FROM EXHIBIT "G".  
DRILL RIG LAYOUT - SUN EXPLORATION  
& PRODUCTION WOODENSHOE NO. 2 - PITS  
HAVE BEEN FILLED & LOCATION &  
ACCESS HAVE BEEN SATISFACTORILY  
RECONTOURED & REVEGETATED

0 50 100 FEET  
APPROX SCALE

TO UTAH HWY 275 ↓

EXHIBIT "B"

WET AREAS OF PAD &  
SURROUNDING DRAINAGES

LEGEND

- WET AREAS
- DRAINAGE
- ROCK LEDGE

NO POWDERY  
WHITE DEPOSIT  
ON GROUND IN AREA  
OF THIS DRAINAGE -  
WET DIRT FROM  
THIS DRAINAGE  
IS NOT SALTY  
TO TASTE.

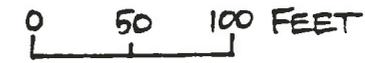
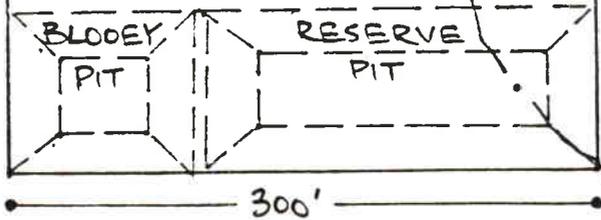
SMALL POOLS (6"-30" DIA)  
STANDING WATER -  
SALTY TO TASTE - IN  
THIS AREA.

POWDERY WHITE DEPOSIT &  
WELL FORMED CRYSTALS ON  
GROUND IN THIS AREA ARE  
SALTY TO TASTE

SMALL POOLS (6"-24" DIA)  
STANDING WATER -  
SLIGHTLY SWEET TO  
TASTE (ALKALI?) -  
IN THIS AREA

POWDERY WHITE  
DEPOSIT ON  
GROUND IN  
THESE UPPER  
DRAINAGES  
NOT SALTY  
TO TASTE

POWDERY WHITE  
DEPOSIT ON GROUND  
IN WET AREA OF  
PAD IS SALTY  
TO TASTE



APPROX SCALE

TO UTAH HWY 275 1

EXHIBIT "C"

AREAS OF HEALTHY & UNHEALTHY VEGETATION

LEGEND

- UNHEALTHY VEGETATION
- HEALTHY VEGETATION

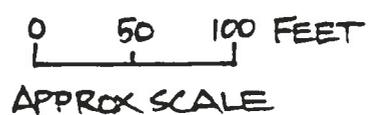
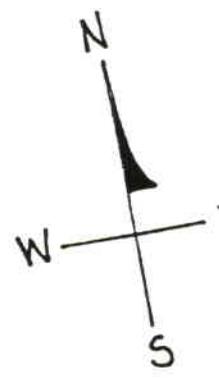
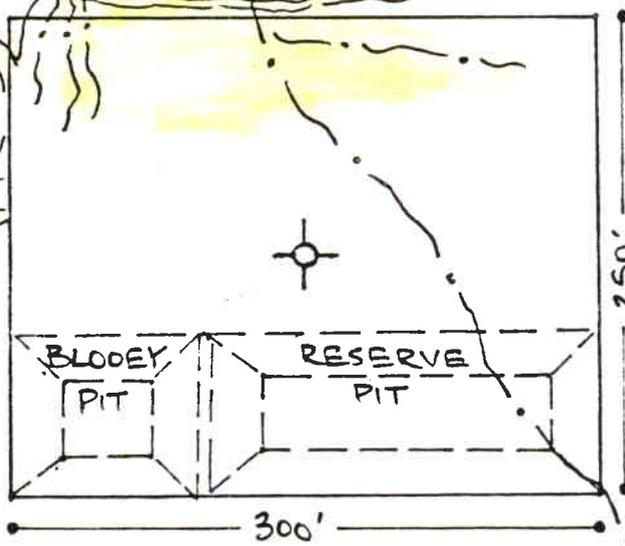
NUMEROUS GREASEWOOD (2'-6' DIAMETER AT TOP) ALONG THESE UPPER DRAINAGES

ONE 10'-12' TALL TAMARISK - 2" DIAMETER AT THE BASE - LOCATED WHERE THESE DRAINAGES MEET

NUMEROUS GREASEWOOD ALONG THIS DRAINAGE

MOSS IN DRAINAGE ADJACENT TO ROCK LEDGE

ISOLATED SMALL GREASEWOOD IN THESE LOWER DRAINAGES



TO UTAH HWY 275

*Well file*

Subject

Plan of Operation to Re-Enter and Plug  
SED Wooden Shoe Federal Unit #2

Interoffice  
Correspondence

Date July 10, 1985

Location RMD-Denver

From Bob Baker

To Vernon Hale  
Ron Harris

**RECEIVED**

**JUL 12 1985**

DIVISION OF OIL  
GAS & MINING

From the investigation on July 2, it has been deemed necessary to re-enter and squeeze off salt water migration to the surface. Attached is a procedure to perform this work and a copy of the proposed rehabilitation plan supplied by the Park Service. The work has been verbally approved by John Baza, Pat Degruyter, Jeff Connor and Ed Bonner with State Lands Division. This work should commence on or before July 15 and be completed by July 20.

*Bob Baker*

Bob Baker

cc: Bill Brawley  
John Baza, State of Utah Natural Resources  
Oil, Gas and Mining  
Jeff Connor, Park Service

SUBJECT: SED WOODENSHOE FEDERAL UNIT #2  
500' FSL & 1830' FEL SECTION 32-T36S-R18E  
SAN JUAN COUNTY, UTAH  
PLAN OF OPERATION TO RE-ENTER & PLUG  
SUBJECT WELL

WELL DATA: 80' of 16" 525# CONDUCTOR  
722' of 9-5/8" 36# K-55 CMTD w/ 625 SX  
Class "B" CMT  
CIRC. CMT TO SURFACE  
8-3/4" OPEN HOLE FROM 722' TO TD (3660)  
CMT PLUGS SET @ 3656-3506 w/ 58 SX  
2400-2300 w/ 40 SX  
1700-1600 w/ 50 SX  
776-670 w/ 50 SX  
10 SX @ SURFACE

PROCEDURE:

1. Build road & pad (Wright's Roustabout Service, Inc.)
2. Weld on 9-5/8" Csg to surface. Weld on 9-5/8" Csg HD & NU BOP's.
3. Drill out top plug. RIH & TAG CMT Plug @ 670'.
4. Drill out plug from 670' to 776'. RIH & tag plug @ 1600'. CIRC. clean and POOH.
5. RIH OE to 1600'. Spot 25 SX Class "B" Plug.
6. POOH to 1000'. Spot 100 SX Class "B" Plug. POOH & WOC 6-8 hrs.
7. RIH OE & tag CMT plug. Attempt to CIRC. w/ wtr. Spot or CIRC. 100 SX Class "B" Plug. POOH to 500' SI w/ 200#. WOC 4-6 hrs. RIH & tag plug. Repeat if necessary.
8. Spot 10SX @ surface. Cut off 3' BGL & weld on cap & P&A marker. Weld on 16" x 9-5/8" cap.
9. Rehabilitation as per attached special use permit.

APPROVED BY THE STATE  
OF UTAH DIVISION OF  
OIL, GAS, AND MINING  
DATE: 7/12/85  
BY: *John R. Dean*

RECEIVED

JUL 12 1985

DIVISION OF OIL  
GAS & MINING

SPECIAL USE PERMIT CONTINUATION SHEET

AREA	PERMIT NO.	PAGE NO.
Natural Bridges National Monument	1340-5-0003	2

Seed mixture for rehabilitating the Woodenshoe #2-32, Sec. 32, T36S, R18E:

Seed ratio is based on 28 kilograms/hectare.

<u>Species</u>	<u>PLS</u>	<u>% of Mixture</u>
Bouteloua gracilis	7.5	20.0
Hilaria jamesii	3.0	8.0
Oryzopsis hymenoides	6.0	16.0
Sporobolus cryptandrus	.6	1.61
Artemisia tridentata	.6	1.61
Sphaeralcea coccinea	.3	.78
Cercocarpus montanus	4.5	12.0
Cowania mexicana	4.5	12.0
Ephedra viridis	6.0	16.0

Twelve (12) percent of the mixture should be tree seedlings of juniper and pinyon pine. The numbers of trees are as follows:

Juniperus osteosperma - 45 trees  
Pinus edulis - 45 trees

This seed mixture is to be used on the access road as well as the drill pad. Everything was computed for the entire impacted area. Seeds shall be planted by a range drill set for 1/4" below the surface (Stan Baker, State Lands Specialist by verbal agreement with Jeff Connor).

Conditions for access across National Park Service withdrawal:

1. All work will be kept to the impacted area from the previous work in 1982.
2. No trees will be removed or damaged outside the previous work area.
3. A culvert can be placed at the road entrance but must be removed when work is completed.
4. The land will be recontoured to the surrounding topography.
5. Dead trees will be placed across the access road in various places to prevent the public from using the road after work is completed.
6. Water bars will be replaced after the work is completed.
7. All trash, flagging, etc. will be removed and hauled to an authorized disposal site.
8. Loading and unloading of heavy equipment shall be done with the use of blocks. Dozing of loading ramps shall be prohibited.



STATE OF UTAH  
NATURAL RESOURCES  
Oil, Gas & Mining

Norman H. Bangerter, Governor  
Dee C. Hansen, Executive Director  
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

July 17, 1985

TO: Ed Bonner, Division of State Lands and Forestry  
FROM: John R. Baza, Petroleum Engineer SRB  
RE: Sun Exploration and Production, Woodenshoe Unit No.2, Sec.32,  
T.36S, R.18E, San Juan County, Utah.

In order to inform you of recent activity on the subject well, I am enclosing several items of correspondence which summarize the situation.

During May of this year, our Moab-based inspector, Pat deGruyter, accompanied a National Park Service representative on an inspection of the well site. The purpose of the inspection was to investigate allegations that the plugged and abandoned well was leaking fluid which was killing foliage in the area. Pat's report dated May 23, 1985, is attached. Also included is an associated letter from the Park Service to our Division dated June 5, 1985, which describes their concern about the problem.

After receiving copies of Pat's report, Sun Exploration and Production Company contacted us about setting up another onsite visit with their representative Mr. Bob Baker. Pat's inspection report for this visit is attached.

Following this meeting, Mr. Baker arranged for excavation of certain portions of the well site to further isolate the problem. It was determined from this work that fluid was indeed leaking from the old wellbore from below ground level. The solution to this problem was to bring in a workover rig, reenter the plugged wellbore, and reset plugs which may have been breached. Mr. Baker's procedure, which our Division has approved, is attached. Included with his procedure is a rehabilitation plan requested by the National Park Service.

Mr. Baker had indicated that work would start on June 15, 1985. Pat will monitor activities and we will keep you informed of further events as they occur. Please contact me if you have any questions concerning this matter.

Enclosures

cc: Stan Baker, State Lands, Moab  
D.R. Nielson  
R.J. Firth  
Well File

0155T-8

STATE OF UTAH  
DIVISION OF OIL, GAS AND MINING  
OIL AND GAS INSPECTION RECORD

OPERATOR Sun Exploration & Production Company LEASE ML-31332  
 WELL NO. Woodenshoe #2 API 43 037 30789  
 SEC. SWSE32T. 36S R. 18E CONTRACTOR \_\_\_\_\_  
 COUNTY San Juan FIELD Wildcat

COMPLETION/WORKOVER: *Witnessed Plugging*  
 APD  WELL SIGN  HOUSEKEEPING  BOPE  
 SAFETY  POLL. CONTROL  SURFACE USE  PITS  
 OPERATIONS  OTHER

SHUT-IN / TA :  
 WELL SIGN  HOUSEKEEPING  EQUIPMENT\*  SAFETY  
 OTHER

ABANDONED:  
 NA MARKER  NA HOUSEKEEPING  NA REHAB.  OTHER - reenter & replug

PRODUCTION:  
 WELL SIGN  HOUSEKEEPING  EQUIPMENT\*  FACILITIES\*  
 METERING\*  POLL. CONTROL  PITS  DISPOSAL  
 SECURITY  SAFETY  OTHER

GAS DISPOSITION:  
 VENTED/FLARED  SOLD  LEASE USE

LEGEND: Y - YES OR SATISFACTORY  
 N - NO OR UNSATISFACTORY  
 NA - NOT APPLICABLE

\*FACILITIES INSPECTED: \_\_\_\_\_

REMARKS: drilled thru surface csg plug - salt water saturated mud @ approx 860' - tagged second plug at 1563' - drilled it a little to make sure it was good cement - plan to put a 30 sx plug on top of plug at 1563 - run a plug from 800'-1000' & WOC overnight - use this plug to squeeze against in order to put a plug from 800' back approx 50' into surface csg - squeeze ~~ACTION~~ with approx 400 lbs to get cement back into where salt water has channeled up cond/sfc csg annulus - WOC approx 6 hrs - tag plug - put sfc plug & marker - reclaim location Had tagged plug at 1563 and was coming out of hole when I arrived and was going back in hole and Dowell had arrived to cement when I left

INSPECTOR: Patrick DeCoyter DATE 17 July 1985

P+A

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS, AND MINING

5. LEASE DESIGNATION AND SERIAL NO.

ML-31332

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

RECEIVED

7. UNIT AGREEMENT NAME

Woodenshoe Fed. Unit

8. FARM OR LEASE NAME

Woodenshoe

9. WELL NO.

2

10. FIELD AND POOL, OR WILDCAT

Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

Sec. 32, T36S, R18E

1. OIL WELL  GAS WELL  OTHER

2. NAME OF OPERATOR

SUN EXPLORATION AND PRODUCTION COMPANY

JUL 31 1985

3. ADDRESS OF OPERATOR

P O BOX 5940 T.A., Denver, CO 80217

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)  
At surface

500' FSL & 1830' FEL (SW SE)

DIVISION OF OIL  
GAS & MINING

14. PERMIT NO.

15. ELEVATIONS (Show whether OF, RT, GR, etc.)

6585' GR

12. COUNTY OR PARISH

San Juan

13. STATE

Utah

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

SUBSEQUENT REPORT OF:

TEST WATER SHUT-OFF

PULL OR ALTER CASING

WATER SHUT-OFF

REPAIRING WELL

FRACTURE TREAT

MULTIPLE COMPLETE

FRACTURE TREATMENT

ALTERING CASING

SHOOT OR ACIDIZE

ABANDON\*

SHOOTING OR ACIDIZING

ABANDONMENT\*

REPAIR WELL

CHANGE PLANS

(Other) See Below

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Procedure attached

Note: This is a PxA well. I have coordinated certain additional work w/ original operator & this is a report of that work. The well remains PxA & no other information is needed. Plz. file this info. accordingly.

JRB

18. I hereby certify that the foregoing is true and correct

SIGNED Ana McKinnick

TITLE Sr. Acctg. Assist.

DATE 7/25/85

(This space for Federal or State office use)

APPROVED BY \_\_\_\_\_  
CONDITIONS OF APPROVAL, IF ANY:

TITLE \_\_\_\_\_

DATE \_\_\_\_\_

STATE OF UTAH  
DIVISION OF OIL, GAS AND MINING  
OIL AND GAS INSPECTION RECORD

OPERATOR: SJN EXPLOR & PRODUCTION CO LEASE: STATE  
WELL NAME: WOODEN SHOW # 2 API: 43-037-30789  
SEC/TWP/RNG: 32 36.0 S 18.0 E CONTRACTOR:  
COUNTY: SAN JUAN FIELD NAME:

DRILLING/COMPLETION/WORKOVER:

- APD - WELL SIGN - HOUSEKEEPING - ROPE  
- SAFETY - POLLUTION CNTL - SURFACE USE - PITS  
- OPERATIONS - OTHER

SHUT-IN / TA :

- WELL SIGN - HOUSEKEEPING - EQUIPMENT \* - SAFETY  
- OTHER

ABANDONED:

Y MARKER Y HOUSEKEEPING Y REHAB - OTHER

PRODUCTION:

- WELL SIGN - HOUSEKEEPING - EQUIPMENT \* - FACILITIES \*  
- METERING \* - POLLUTION CNTL - PITS - DISPOSAL  
- SECURITY - SAFETY - OTHER

GAS DISPOSITION:

- VENTED/FLARED - SOLD - LEASE USE

LEGEND: Y = YES/SATISFACTORY N = NO/UNSATISFACTORY A = NOT APPLICABLE

\*FACILITIES INSPECTED:

P-A LOCATION

REMARKS:

WELL WAS REENTERED AND REPLUGGED, LOCATION IS RE CONTOURED AND SEEDED. LEAK IN THE WELL HAS CEASED.

ACTION:

INSPECTOR: PAT DEGRUYTER

DATE: 07/31/85

RECEIVED

JUL 31 1985

DIVISION OF OIL  
GAS & MINING

WOODENSHOE #2-PROCEDURE

WELL WAS ORIGINALLY P&A'D 6/22/82/ WELL WAS LEAKING AROUND 9-5/8" CSG/ STATE REQUESTED THAT SUN RE-PLUG/ MIRU POOL WS/ WELD ON 9-5/8" CSG HD/ TIH W/8½" BIT' ON 2-7/8" TBG TO 9'/ DRL 1' OF CMT/ FELL FREE/ TOH/ TIH W/4-4½" DC'S & 8½ BIT ON 2-7/8" TBG TO 221'/ NU STRIPPING HEAD/ LOAD HOLE

DRILL CEMENT & MUD SACKS @ 221'/ FELL FREE/ LAY DOWN POWER SWIVEL/ ATTEMPT TO RUN IN HOLE/ UNABLE TO GO IN WITHOUT POWER SWIVEL/ PU POWER SWIVEL & ROTATE DOWN EACH JT/ RECOVERING CEMENT/ HEAVY MUD & MUD SACKS/ TAG CEMENT PLUG @ 820'/ DRILL 40'/ LOST CIRCULATION @ 860'/ REGAIN CIRCULATION & DRILL CEMENT TO 913'/ TOTAL 93' CEMENT/ CIRC HOLE CLEAN/ CIRC & ROTATE EACH JT TO 1430'/ HIT BRIDGE @ 1430'/ DRILL 5' & CIRC CLEAN/ BIT PLUGGED/ WORK BIT 1 HR/ UNPLUGGED/ WORK PIPE TO 1500'/ REC HEAVY DRILLING MUD/ CIRC HOLE CLEAN/ POOH 15 STANDS/ CLEAN MUD TANKS/

TIH W/15 STANDS/ CIRC & ROTATE 2 JTS DOWN/ RECOVER HEAVY MUD/ TAG CEMENT @ 1563'/ DRILL 2' TP 1565'/ CIRC CLEAN/ POH & LAY DOWN BHA/ RIH OPEN ENDED TO 1565'/ RIG UP DOWELL/ SPOT 30 SKS CLASS "H" W/2% CACL 1565-1495'/ POH & LAY DOWN 19 JTS/ TBG SEAT 1005'/ SPOT 100 SKS CLASS "H" W/2% CACL 1005-800'/ POH W/5 STANDS/ LAY DOWN 6 JTS/ CIRC CLEAN/

RIH W/5 STANDS/ PU 4 JTS TBG/ TAG CEMENT @ 931'/ LAOD HOLE W/11 BBLS WTR/ HOLE STOOD FULL/ RIH/ TS 931/ LOAD HOLE W/14 BBLS WATER/ BROKE CIRCULATION/ DOWELL PUMPED 200 SKS CLASS "H" W/2% CACL/ POH W/5 STDS & LAY DOWN 14 JTS/ TS 210'/ REVERSE TBG CLEAR/ SHUT IN & PRESSURED TO 400 PSI/ BLED TO 0 IN 5 MIN WOC 10 MIN/ INCREASE PRESSURE TO 400 PSI/ SHUT IN/STAGED IN UNTIL PRESSURE STABILIZED @ 400 PSI/ 10 STAGED REQUIRED/WOC 4 HRS/ RIH & TAG CEMENT @ 670'/ PRESSURE TEST TO 500 PSI F 20 MIN/ PRESSURE HELD/ POH & LAYDOWN 19 JTS TBG/ DOWELL CEMENTED W/15 SX F 31' TO SURFACE - POH & LAY DOWN 1 JT TBG/ CUT OFF 9-5/8" CSG 3' BELOW GL & WELD ON P&A MARKER/ WELD ON 9-5/8 x 16" CAP/ RIG RELEASE



STATE OF UTAH  
NATURAL RESOURCES  
Oil, Gas & Mining

Norman H. Bangerter, Governor  
Dee C. Hansen, Executive Director  
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

August 20, 1985

Mr. Bob Baker  
Sun Exploration and Production Company  
P.O. Box 5940 TA  
Denver, Colorado 80217

*paid*

Dear Mr. Baker

RE: Woodenshoe Unit Well #2, SW SE, Sec.32, T36S, R.18E, San Juan County, Utah

The above referenced location was inspected on July 31, 1985. The replugging and reclamation work have been satisfactorily completed.

I would like to take this opportunity to thank you and your staff for your prompt and effective actions in the replugging of this well. Your professional handling of this matter speaks well of Sun Exploration and Production Company as a responsible, conscientious operator.

Thank you again and we look forward to working with you in the future.

Sincerely,

*John R. Baza*  
John R. Baza  
Petroleum Engineer

sb  
cc: D.R. Nielson  
R.J. Firth  
Pat deGruyter  
Well File

0127T-21



United States Department of the Interior  
NATIONAL PARK SERVICE

WATER RESOURCES DIVISION  
301 SOUTH HOWES ST., ROOM 349  
FT. COLLINS, COLORADO 80521

*Li. Jeff*  
*W. Pete*  
*L. Gary*

IN REPLY REFER TO:

September 11, 1985

L54 (479)  
CANY/Gen.

Memorandum

To: Superintendent, CANY  
From: Acting Chief, Water Resources Division  
Subject: Pollution of Natural Bridges Water Well #3 by  
Abandoned Sun Oil Well

My staff has reviewed the data transmitted by Natural Resource Specialist Connor, September 4th, of the subject pollution problem. The sample analyzed on July 5, 1985, of wash water indicates a serious natural resource problem. This water is approaching the salinity of sea water. It will kill any type of vegetation. We understand, after discussions with your Chief of Maintenance, that the oil company has redrilled the well and plugged it again to a point below the potable aquifer. This would have been our first recommendation.

The three chloride analyses on the potable well #3 in Natural Bridges are as follows:

June 14, 1979	15 mg/l
June 7, 1985	23 mg/l
July 15, 1985	29 mg/l

This shows all parameters, including chloride, to be well below the level of concern at the present time for potable water. We recommend, however, that you continue to monitor well #3 for chemical constituents, particularly chlorides, each year for a period of time. Chlorides have doubled in the last six years and indicate that there might be a leak from the old oil well into the aquifer. This may rise slowly or jump if a plume reaches the pumping supply in the future. If it does jump, the water will have to be abandoned for use. If the plug is successful, this may never occur and your fears will be resolved. We think you should also periodically check well numbers 1 and 2 as they also may become contaminated. If they are no longer used, this will not be necessary.

*Richard W. Kutchan*  
Acting  
*Er* Thomas W. Lucke

cc: Regional Director, RMR  
Ron Hermance, RMR

MESSAGE RECORD

DATE: 9/10/85

SUBJECT: Nat. Bridges Aquifer

Routed For:

Information

Action

Route to:

Incoming  Outgoing  Office Visit

Between Dick Ketchum of Water Resources

And Larry (in lieu of Jeff)

1 Superintendent WJ

Mgmt. Assistant

2 Resource Mgmt. J.C.

3 Maintenance 10/1/85

Administration

ARCHES

4 NABR JP

CANY

Concessions

Interpretation

5 File

MESSAGE:

Ft. Collins has looked at the water samples from  
Bridges. The well water is well within, in fact way  
below limits of drinking water for chlorides, sulfates,  
sodium and calcium.

The chlorides have doubled between '79 and '85 which  
indicates the well is, or has been, leaking into the aquifer. But the levels are  
minute and are of no consequence as far as affecting the water quality (at this time).  
They should also test for organics (hydrocarbons), and will in the future.

Dick recommends we continue the testing and see if the trend continues with increasing  
chlorides.

He will send a letter with this information.

I checked on what hydrocarbons need to be tested.

Dick Ketchum stated that even though the tests show good water, some  
of the tests such as chloride has doubled since 1979. It probably  
means that some contamination has taken place.

Follow-up Action to be Taken: \_\_\_\_\_

Follow-up Action Taken: \_\_\_\_\_



# United States Department of the Interior

NATIONAL PARK SERVICE  
ARCHES AND CANYONLANDS NATIONAL PARKS  
NATURAL BRIDGES NATIONAL MONUMENT  
MOAB, UTAH 84532

RECEIVED

DEC 16 1985

IN REPLY REFER TO:  
N3617

December 11, 1985

DIVISION OF OIL  
GAS & MINING

Memorandum

To: Energy Mining and Mineral Division, National Park Service

From: Acting Superintendent, Canyonlands National Park

Subject: A report on the possible contamination of Natural Bridges drinking water and killing of vegetation on state land adjacent to Natural Bridges National Monument by saline waters from an improperly plugged oil well.

On April 26, 1982 we were informed by Energy Consulting Services, Denver, Colorado that an exploratory well for oil and gas was to be drilled in the SW 1/4 SE 1/4 sec. 32 T36S R18E by Sun Exploration and Production Company. Section 32 is located adjacent to Natural Bridges National Monument (see Figure 1).

The drilling began in May 1982 and the hole was plugged and abandoned on June 22, 1982.

On May 3, 1985 Gary Hasty, the Unit Manager for Natural Bridges National Monument reported that numerous juniper and pinyon trees were dead and/or dying in a wash below the plugged well (see Figure 2). He also reported that a small amount of water was flowing in the wash and it had a salty taste. Douglas Crispin, a park ranger at Natural Bridges National Monument, examined the site the next day and filled out a case incident report (attached).

Pat deGruyter, the State Oil and Gas Specialist for southern Utah was notified, and on May 20 the site was inspected by Mr. deGruyter and Jeff Connor, Natural Resource Specialist (see attached State of Utah Natural Resources Memorandum dated May 23, 1985).

Mr. deGruyter's conclusion was that the salt water could have been from either the well or the reserve pit. The source of contamination was verified to be the well by Sun Exploration on July 2, 1985.

Bridges area should be around 700 umho/cm. The excess conductivity is directly related to the brine water brought to the surface from the abandoned oil well. Conductivity measures the numbers of ions present in water. Salts are a primary source of ions.

We were concerned about brine water coming from the well for two reasons:

**Ground Water:** The oil well was drilled to 3700 feet, passing through the geologic formation the ground water from which Natural Bridges obtains its drinking water. The water well is approximately one mile away from the plugged oil well.

**Surface Water:** One particular wash flowing from the vicinity of the plugged well towards Natural Bridges National Monument contained a disproportionate amount of dead or dying vegetation. We were concerned that this trend may continue into the pack boundaries.

A plan of operations was filed on July 10, 1985 with the Park Service and the well was replugged and abandoned by July 20, 1985. The State Oil and Gas Division and Sun Oil should be commended on how fast they corrected the problem once it was brought to their attention. Water disappeared from the wash within a week of the well being replugged.

With the approval of the State, contaminated water, soil samples of contaminated soil, uncontaminated soil, and Natural Bridges water well #3 were analyzed by Utah Biomedical Test Laboratories (UBTL) (results are attached). The results, along with previous water sample results of the water well, were sent to the Water Resources Division to be reviewed (see attached memorandum dated September 11, 1985). The data showed that Chloride levels have doubled from 15 mg/l to 30 mg/l since 1979 with an increase of six mg/l between June and July. Their conclusion was that some contamination might be taking place in the Natural Bridges water well and we should continue monitoring. The water well will be sampled four times a year for one year and if no increase in chloride levels are noted, once a year for two additional years. If levels continue to increase, further measures will be taken.

The State Lands Division gave the Park Service permission to establish a vegetation transect through the dying vegetation (see attached photos, Table 1, and map). This transect was established on August 21, 1985 and will be monitored for several years to determine the extent of damage and amount of time necessary for the plants to recover.

are growing among the dead trees.

We suggest that other NPS units be notified about the potential impacts of abandoned wells or oil and gas exploration. The well outside of Natural Bridges went unnoticed for almost three years. This well was on a state section of land and was not under the jurisdiction of the Park Service, but because of the potential threat to ground water in the Monument, these sites should be monitored for at least a year. Often times the responsible agency inspecting these sites may only visit it once after the area has been revegetated and something such as brine water may go unnoticed.

  
Larry Thomas

cc:  
Regional Director, RMR

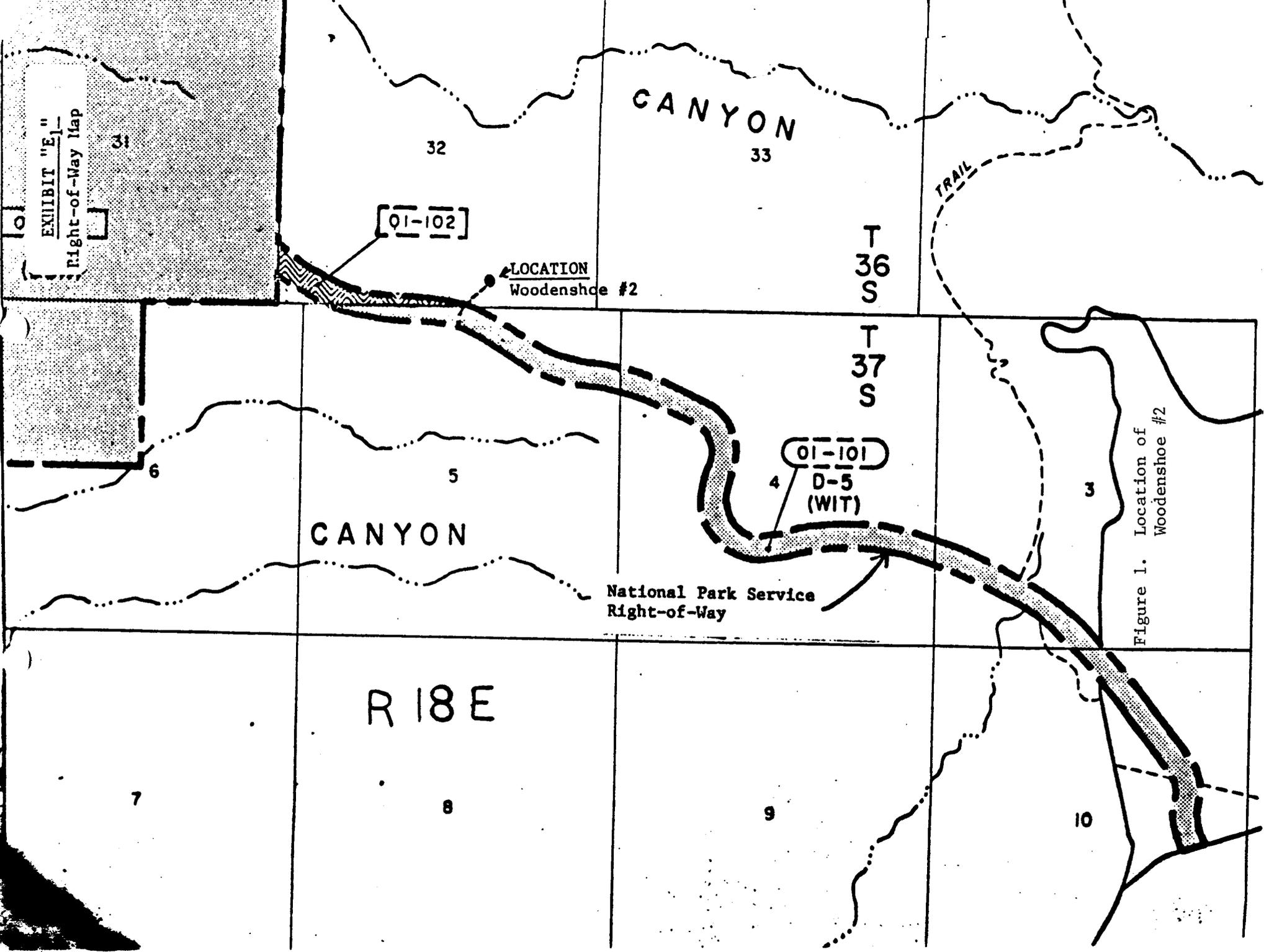


Figure 1. Location of Woodshoe #2

SUN EXPLORATION & PRODUCTION  
 WOODENSHOE UNIT 2-32  
 SWSE 32 T36S R18E

EXHIBIT "A"  
PAD LAYOUT & DRAINAGES

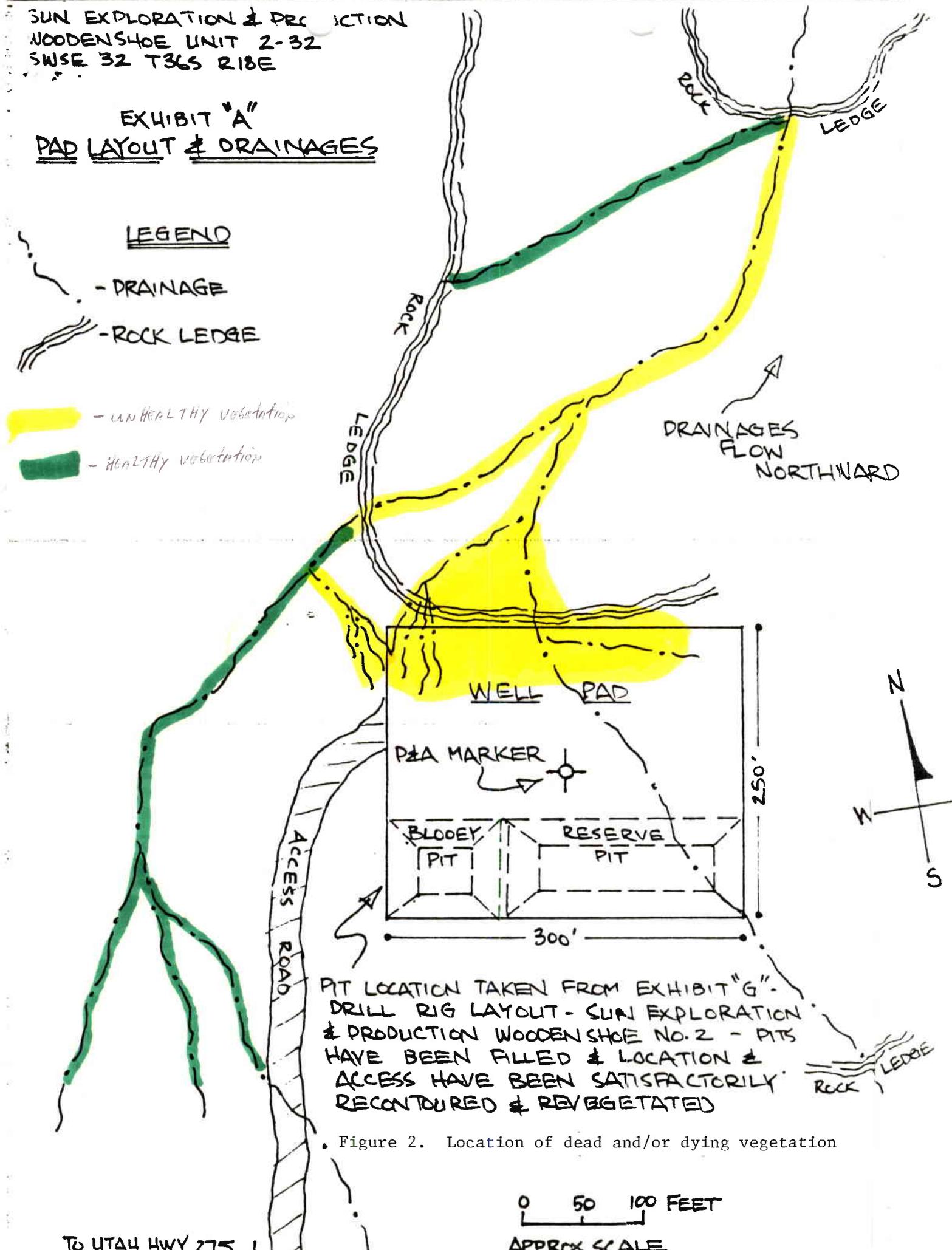
LEGEND

- DRAINAGE

- ROCK LEDGE

- UNHEALTHY vegetation

- HEALTHY vegetation



PIT LOCATION TAKEN FROM EXHIBIT "G".  
 DRILL RIG LAYOUT - SUN EXPLORATION  
 & PRODUCTION WOODENSHOE NO. 2 - PITS  
 HAVE BEEN FILLED & LOCATION &  
 ACCESS HAVE BEEN SATISFACTORILY  
 RECONTOURED & REVEGETATED

• Figure 2. Location of dead and/or dying vegetation

0 50 100 FEET  
 APPROX SCALE

TO UTAH HWY 275 1

ROUTING AND TRANSMITTAL SLIP		ACTION	
1 TO (Name, office symbol or location) <i>Pete XMM</i>	INITIALS	CIRCULATE	<input checked="" type="checkbox"/>
	DATE	COORDINATION	
2 <i>Larry W</i>	INITIALS	FILE	
	DATE	INFORMATION	
3 <i>Jeff J.C.</i>	INITIALS	NOTE AND RETURN	
	DATE	PER CONVERSATION	
4 <i>Bob</i>	INITIALS	SEE ME	
	DATE	SIGNATURE	
REMARKS  789-9550  Rm. 303			
Do NOT use this form as a RECORD of approvals, concurrences, disapprovals, clearances, and similar actions.			
FROM (Name, office symbol or location) <i>Gary</i>		DATE	<i>5/7/8</i>
		PHONE	

OPTIONAL FORM 10  
AUGUST 1967  
GSA FPMR (41CFR) 100-11.206

48-16-81804-1 552-103 GPO 5041-101

# 5 PARTS - WRITE FIRML

FORM 10-343  
Rev. (1/76)

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

## CASE INCIDENT RECORD

1. ORGANIZATION CODE 1		2. ORGANIZATION (PARK) NAME Natural Bridges National Monument			3. LOCATION CODE 0 5 0 0		4. CASE/INCIDENT NO. 8 5 0 0 2 0				
5. LOCATION OF INCIDENT Sec. #32 Drill Hole, NABR East Boundary					6. WHEN DID IT OCCUR?	MO. 0 5	DAY 0 4	YR. 8 5	24 HOUR TIME HRS. 1 4 MIN. 0 0	7. DAY OF WEEK 7	
8. OFFENSE/INCIDENT CODE 8 0 1 0 0 0		9. NATURE OF INCIDENT Special Patrol			10. HOW REPORTED In Person						
11. REPORTED BY Gary M. HASTY Unit Manager				12. ADDRESS staff				13. PHONE { HOME BUSINESS ---			
14. RECEIVED BY Jeff CONNERS Nat. Res. Spec.				15. WHEN RECEIVED: DATE 5/2/85		16. TIME BROADCAST 1400		17. WHEN INVESTIGATED DATE 5/4/85 TIME 1400			
18. INVESTIGATED BY Douglas CRISPIN Park Technician				19. OFFICER/RANGER NO. 0 5 1 2		20. WHEN CLEARED DATE 5/4/85 TIME 1514			21. DISPOSITION		

22. INVOLVED PERSONS	23. ADDRESS	24. PHONE	25. SEX	26. RACE	27. AGE	28. DATE OF BIRTH
1	Exploratory drill hole drilled in June, 1981 by:					
2	Sun Exploration and Production Co.					
3						
4						

### 29. DETAILS OF INCIDENT

**REPORT:** While out hiking in section 32, adjacent to the east boundary of NABR, HASTY discovered what appeared to be contaminated water and dead and dying trees near an abandoned drill pad and drill hole.

### INVESTIGATION:

I examined the area on foot, 5/4/85, 1400 - 1515 hrs. I observed a small seep of liquid in the NW corner of the drill pad. The liquid oozing out of the ground was clear but had a very salty taste. In the immediate area of the seep, many of the trees were dead or had leaves/needles turning brown. I continued down stream from the seep. In total, I counted 66 Pinyon Pines, 35 Utah Junipers, and a few Service berry and Single-leaf Ash bushes that were either recently dead (1-2 yrs), or had needles and leaves turning brown or that look un-healthy. I continued down (N) small drainage until it met Upper White Canyon. Within 100-150 yards of seep is where I notice all of the sick or dead vegetation. Trees beyond approx. 150 yds of seep appeared health. Vegetation up-stream of the seep, in a drainage just west of seep, looked health, with green colored leaves/needles.

### ACTION:

I made a sketch of the drill pad area, counted approx. number of affected trees, took four photographs, and reported my findings.

30. QUANTITY	31. PROPERTY STOLEN OR DAMAGED	32. ESTIMATED VALUE	RECOVERED	
			33. DATE	34. VALUE
35. PROPERTY CODE OF HIGHEST VALUE	36. TOTAL		37. TOTAL	

INVESTIGATED BY (Signature and Date)

Douglas F. Crispin 5/4/85

APPROVED BY (Signature and Date)

*[Signature]* 5/5/85

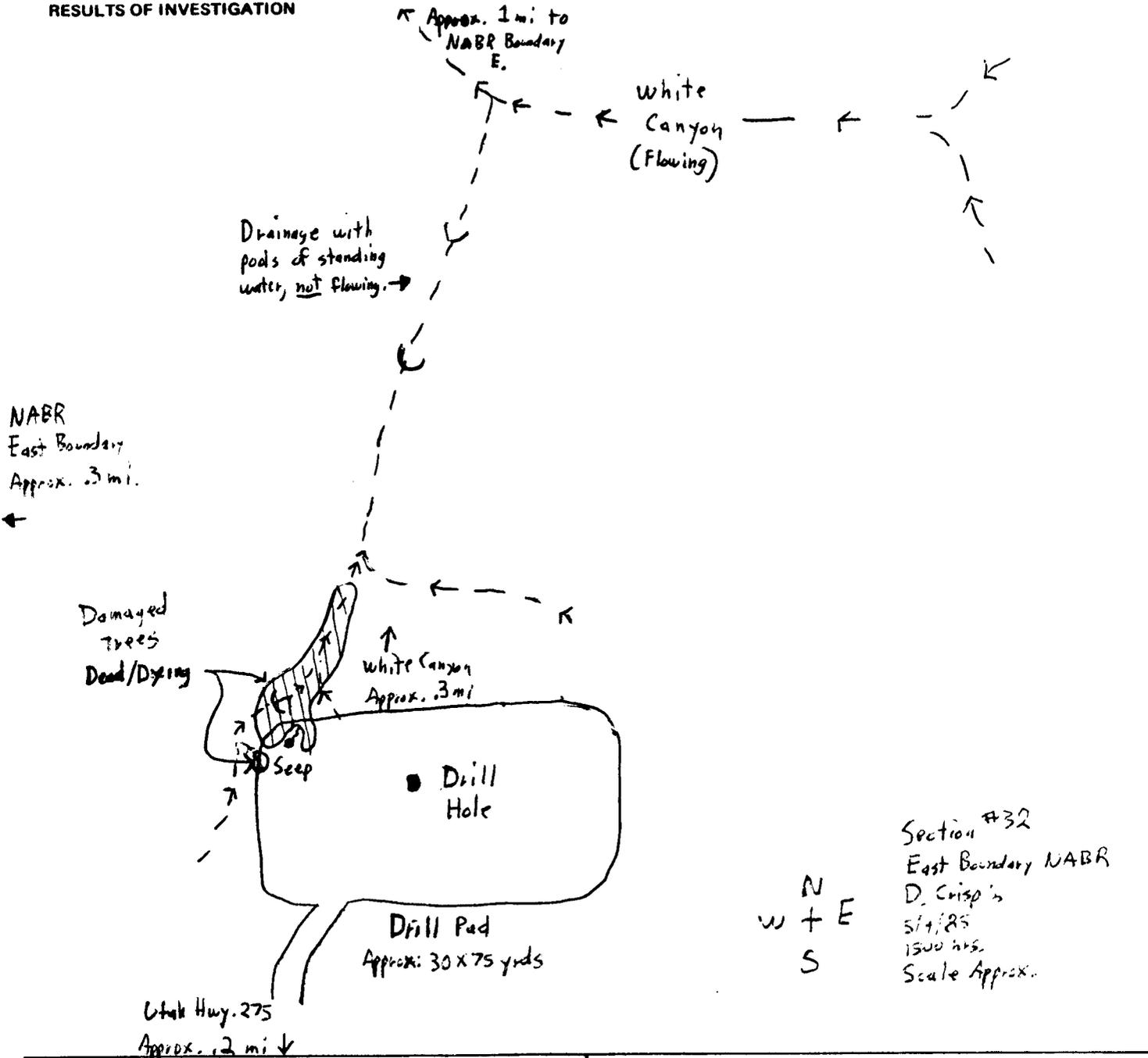
FORM NO. 10-344  
(Rev. 3-73)

U.S. DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

SUPPLEMENTARY CASE/INCIDENT RECORD

ORGANIZATION (PARK) NAME Natural Bridges National Monument		CASE/INCIDENT NUMBER 8 5 0 0 2 0	
LOCATION OF INCIDENT Sec. #32, NABR east boundary		DATE OF INCIDENT MO DA YR 0 5 0 4 8 5	
NATURE OF INCIDENT Special Patrol			
COMPLAINANT'S NAME -		COMPLAINANT'S ADDRESS -	

RESULTS OF INVESTIGATION



SUBMITTED BY (SIGNATURE AND DATE)

APPROVED BY (SIGNATURE AND DATE)



EXHIBIT "B"  
GEOLOGIC & ENGINEERING PLAN

Sun Exploration & Production Company  
Woodenshoe #2  
Sec. 32 T36S, R18E  
San Juan County, Utah

1. The Geologic Surface Formation

The surface formation is the Cutler Formation.

2. Estimated Tops of Important Geologic Markers

Honaker Trail	1500	Molas 3700'
Paradox Ismay	2400'	
Desert Creek	2600	<u>Total Depth 3700'</u>
Akab	2750'	
Salt	2800'	
Pinkerton Trail	3400'	

3. Estimated Depths of Anticipated Water, Oil, Gas or Minerals

<u>Paradox</u>	<u>2400'</u>	Water/Oil
----------------	--------------	-----------

4. The Proposed Casing Program

<u>HOLE SIZE</u>	<u>INTERVAL</u>	<u>SECTION LENGTH</u>	<u>SIZE (OD)</u>	<u>WEIGHT, GRADE &amp; JOINT</u>	<u>NEW OR USED</u>
12 1/4"	0-700'	700'	9 5/8"	36# K-55, ST&C	New
8 3/4"	0-3700'	3700'	5 1/2"	15.5#, K-55, LT&C	New
Tubing	0-3700'	3700'	2 3/3	4.7#, J-55, EUE	

Cement Program

Surface - 520 sxs Class "B" + 2%  $\text{CaCl}_2$

Production - 300 sxs Class "H" + 50/50 Lite poz  
200 sxs Class "H" + 10% D-44

5. The Operator's Minimum Specifications for Pressure Control

EXHIBIT "C" is a schematic diagram of the blowout preventer equipment. The BOP's will be hydraulically tested to the full working pressure after nipling up and after any use under pressure. Pipe rams will be operationally checked each 24-hour period, as will blind rams and annular preventer each time pipe is pulled out of the hole. Such checks of BOP will be noted on daily drilling reports.

Accessories to BOP will include an upper kelly cock, floor safety valve, and choke manifold with pressure rating equivalent to the BOP stack.

6. The Type and Characteristics of the Proposed Circulating Muds

Mud system will be gel-chemical with adequate stocks of sorptive agents on site to handle possible spills of fuel and oil on the surface. Heavier muds will be on location to be added if pressure requires.

<u>DEPTH</u>	<u>TYPE</u>	<u>WEIGHT #/gal.</u>	<u>VISCOSITY-sec./qt.</u>	<u>FLUID LOSS cc</u>
0 - 700'	Water	8.4 - 8.6	As Required	N/C
700 - 2200'	Water	8.4 - 8.6	As Required	N/C
2200' - T.D.	Sat. Salt Gel	10.2 - 10.6	35 - 45	less than 15

6. Construction Materials

- A. No construction materials are needed for drilling a well or constructing access roads into the location during drilling. The surface soil materials will be sufficient.
- B. No construction materials will be taken off Federal land.
- C. All surface soil materials for construction of access roads for drilling are sufficient. If well is productive, and material from road and pad grading is not sufficient, surfacing materials will be provided by the Dirt Contractor.
- D. All major access roads presently exist as shown on EXHIBIT "E".

7. Handling of Waste Materials and Disposal

- (1) Drill cuttings will be buried in the reserve pit.
- (2) Drilling fluids will be handled in the reserve pit.
- ✓ (3) Any fluids produced during drilling test or while making production test will be collected in a test tank. If a test tank is not available during drilling, fluids will be handled in reserve pit. Any spills of oil, gas, salt waters or other noxious fluids will be cleaned up and removed. If well is productive, produced water will be disposed of on-site for 30 days only, or 90 days with permission of District Engineer. After that time application will be made for approval of permanent disposal method in compliance with NTL-2b.
- ✓ (4) Chemical facilities will be provided for human waste.
- ✓ (5) Garbage and non-flammable waste and salt and other chemicals produced during drilling or testing will be handled in trash pit. Flammable waste will be disposed of in trash pit. Drill fluids, water, drilling mud and tailings will be kept in reserve pit, as shown on EXHIBIT "F". The trash pit will be totally enclosed with small mesh wire to prevent wind scattering trash before being buried or removed. Reserve pit will be fenced on three sides during drilling and fourth side fenced upon removal of the rig.
- (6) After the rig moves out, all materials will be cleaned up and no adverse materials will be left on location. All dangerous open pits will be fenced during drilling and kept closed until such time as the pit is leveled.

8. Ancillary Facilities

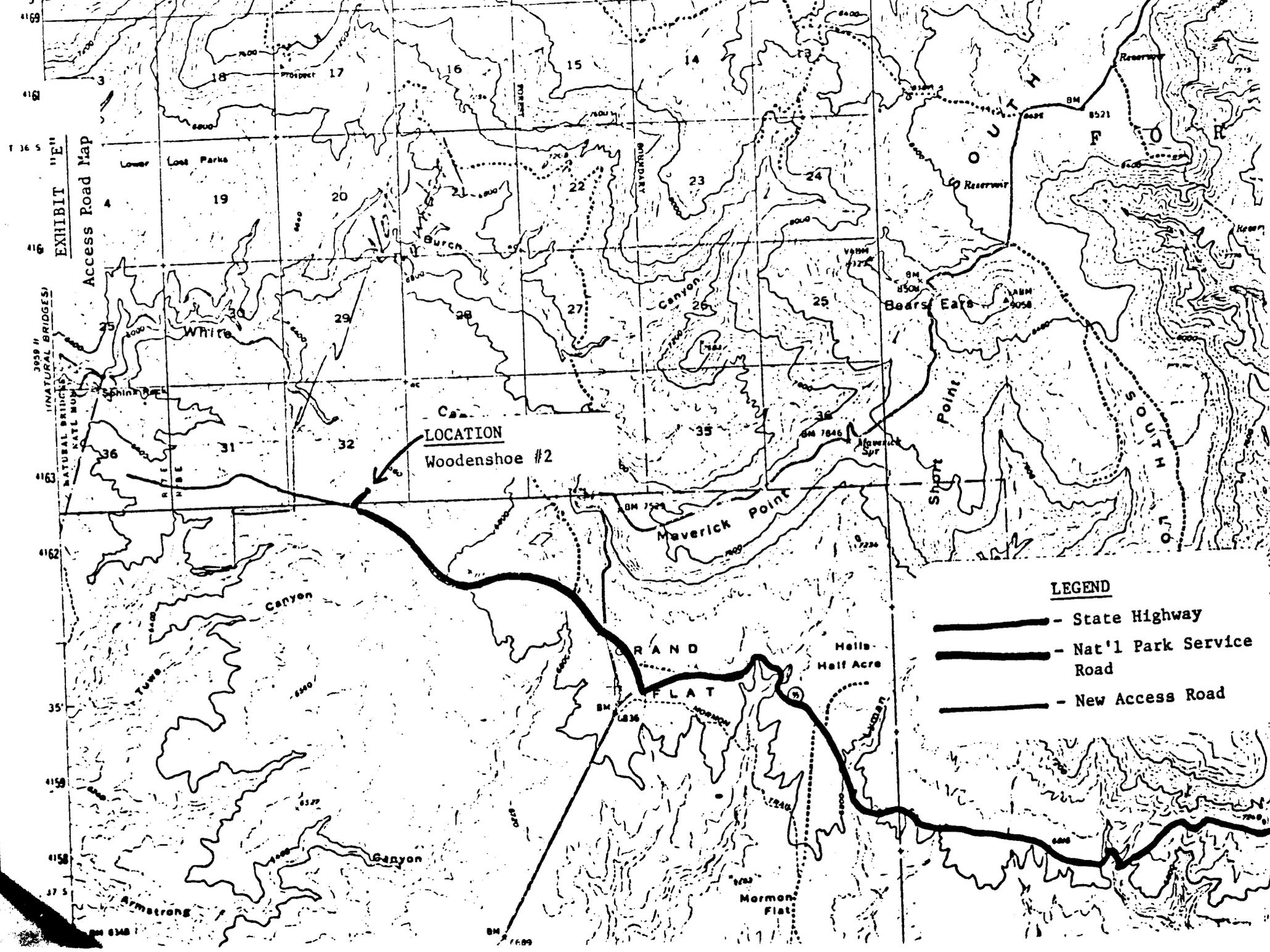
No air strip, camp or other facilities will be built during drilling of this well.

9. Well Site Layout

- (1) EXHIBIT "F" is the Drill Pad Layout as staked with elevations. Cuts and fills have been drafted to visualize the planned cut across the location spot and to the deepest part of the pad. Topsoil will be stockpiled per Park Service specifications determined at time of pre-drill inspection.
- (2) EXHIBIT "G" is a plan diagram of the proposed rig and equipment, reserve pit, trash pit, pipe racks and mud tanks, access road, parking and turnaround. No permanent living facilities are planned. There will be a trailer on site.
- (3) EXHIBIT "F" is a diagram showing the proposed production facilities layout.
- ✓ (4) The reserve pit will be lined with bentonite, if needed.

10. Plans for Restoration

- ✓ (1) If well is abandoned, site will be restored to original condition as nearly as possible. Backfilling, leveling and contouring are planned as soon as all pits have dried. Waste disposal and spoils materials will be buried or hauled away to an approved sanitary landfill immediately after drilling is completed. If production is obtained, the unused area will be restored as soon as possible.
- (2) *also state* The soil banked material will be spread over the area. Revegetation will be accomplished by planting mixed grasses as per formula provided by the Park Service. Revegetation is recommended for road area, as well as around drill pad.
- ✓ (3) Three sides of the reserve pit will be fenced during drilling operations. Prior to rig release, the reserve pit will be fenced on the fourth side to prevent livestock or wildlife from entering; and, the fencing will be maintained until leveling and cleanup are accomplished.
- (4) If any oil is on the pits and is not immediately removed or burned after operations cease, the pit containing the oil or other adverse substances will be flagged overhead or covered with wire mesh.
- (5) The rehabilitation operations will begin immediately after the drilling rig is removed. Removal of oil or other adverse substances will begin immediately or area will be flagged and fenced. Other cleanup will be done as needed. Planting and revegetation is considered best in the Spring of 1983 unless requested otherwise.



LOCATION  
Woodenshoe #2

**LEGEND**

-  - State Highway
-  - Nat'l Park Service Road
-  - New Access Road

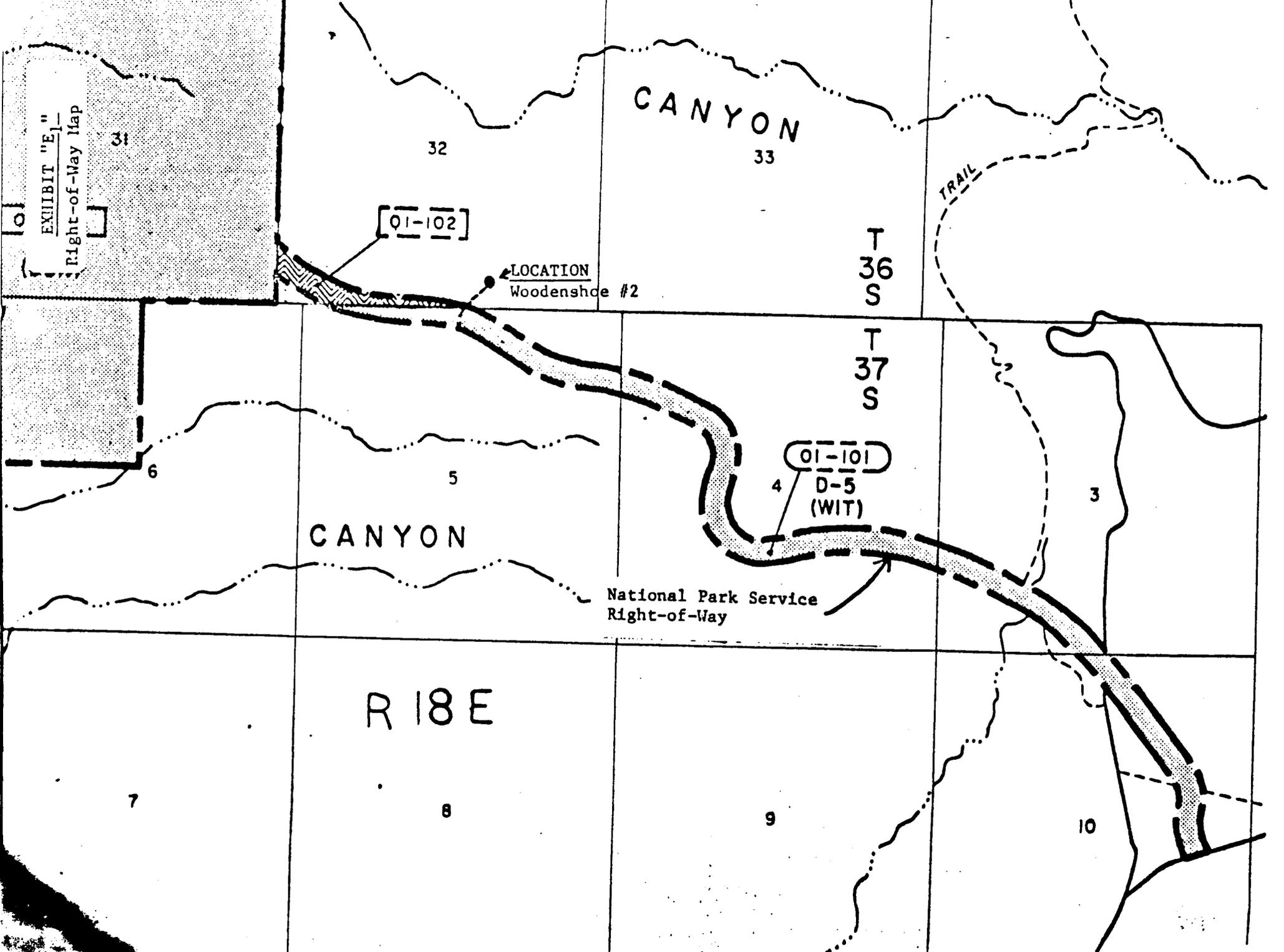


EXHIBIT "E"  
Right-of-Way Map

31

32

CANYON

33

TRAIL

01-102

LOCATION  
Woodshed #2

T  
36  
S

T  
37  
S

6

5

01-101  
D-5  
(WIT)

3

CANYON

National Park Service  
Right-of-Way

R 18 E

7

8

9

10

## Stipulations

Permittee shall conduct operations on the NPS right-of-way in conformance with his approved plan of operations as modified by terms and conditions.

Permittee shall halt construction activities and notify the Superintendent immediately upon discovery of any archeological, paleontological or historical finds. The Superintendent shall determine within 10 working days the action to be taken.

Site distance and traffic control signing at the junction of the park road and the proposed well access road will be in accordance with standards of the Utah DOT. During operations, a sign at the junction will be posted to prevent unauthorized entry by park visitors. Signs to reduce the speed limit to 25 mph shall be posted 500 feet in advance of the junction.

Clearing of vegetation and surface disturbance shall be held to the minimum required to achieve the 16 foot wide running surface specified in the plan of operation.

On NPS surface 16 feet shall be the maximum width of the road. ((means that the actual road surface can be 16 feet but we understand there may be a little shoulder so the width may be a little bit more.)

The proposed well access road shall join the park road at a 90° angle. As soon as the tree line is penetrated, the road shall be curved slightly to avoid a straight line of site view down the road by passersby.

At least the top 6 inches of soil shall be removed and stockpiled for later reclamation of the disturbed portions of the NPS right-of-way.

Construction operations on NPS right-of-way are not permitted during periods of wet and water logged soils to prevent unnecessary road damage. Vegetative debris and slash shall be removed and disposed of elsewhere except for material to be used for reclamation. All surface disturbance on NPS administered lands shall be confined to the well access road permitted herein.

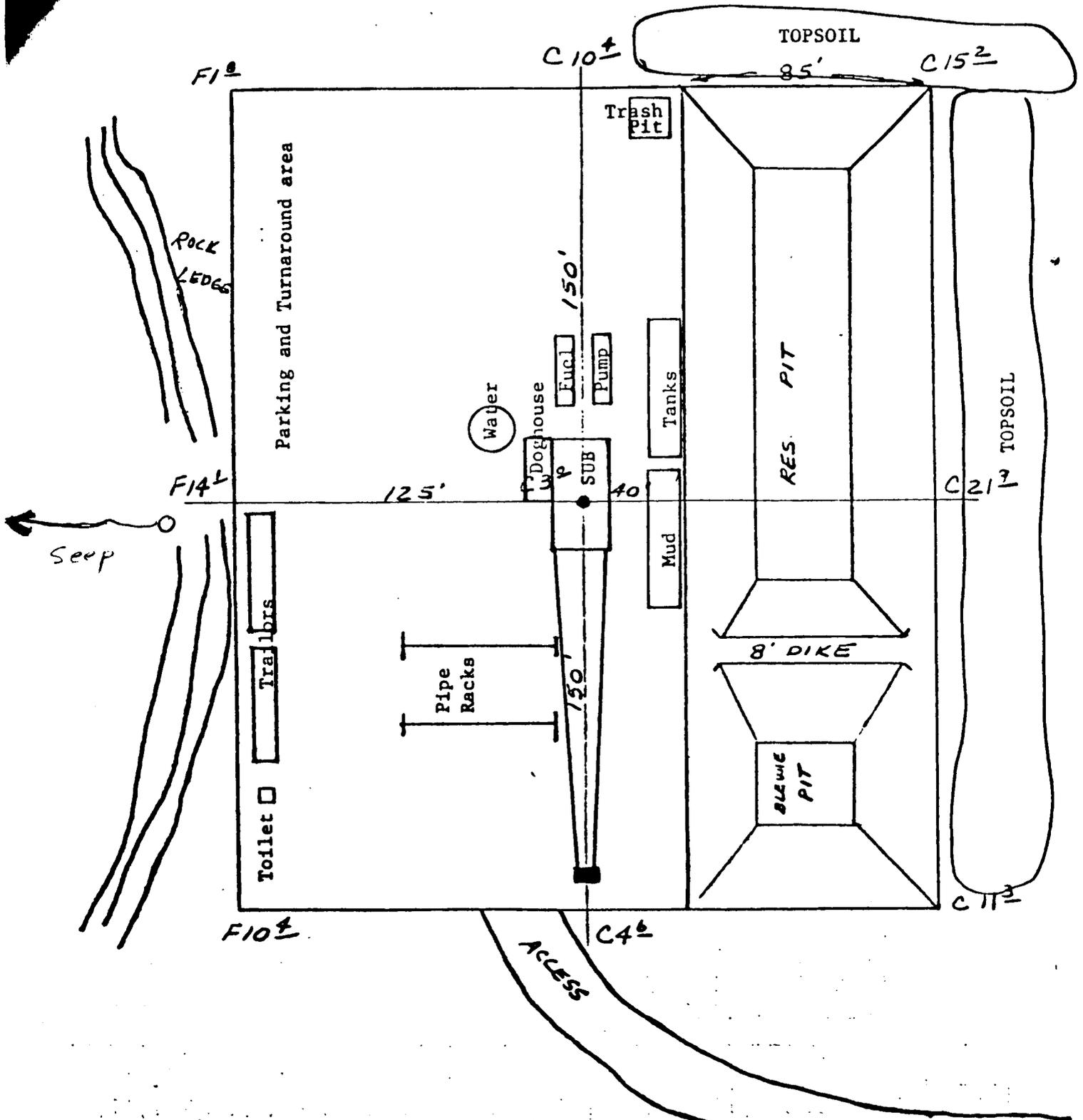
### Reclamation

Upon completion of operations, the disturbed area on NPS right-of-way shall be reclaimed as follows:

1. Any gravel used on the road surface and the culvert shall be removed. The right-of-way shall be recontoured to its natural grade.
2. Compacted soil shall be ripped to the depth of compaction.
3. Top soil is to be redistributed on the road surface and then scarified if necessary.
4. Following recontouring and top soil work, the Superintendent shall be consulted regarding final surfacing.

If the surface appears sufficiently stable, no further work may be necessary; however, additional measures to prevent erosion could include drainage channels, vegetative debris from the original cleaning process may have to be chipped to mulch size and distributed over the right-of-way surface; the larger size slash may be thinly

NORTH

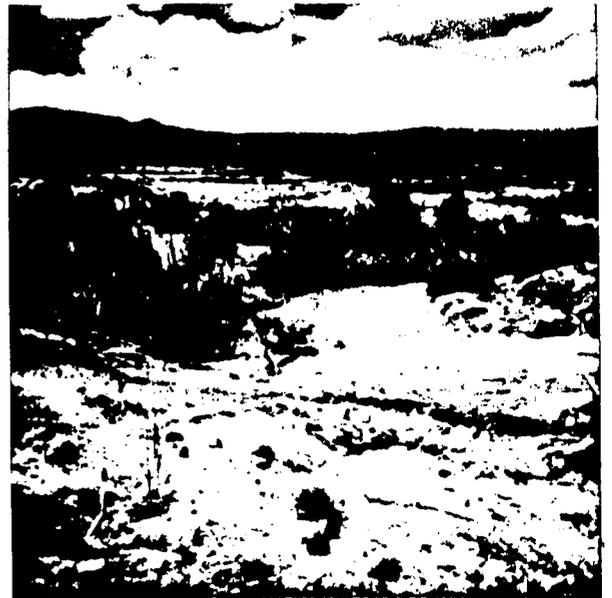


SUN EXPLORATION AND PRODUCTION CO.

WOODENSHOE NO. 2

DRAW

scattered on the surface in an aesthetic manner if required by the Superintendent. Following reclamation a drift fence may be required at the end of the NPS right-of-way segment to prevent visitor access. If necessary, such a fence will be installed at the request of the Superintendent.





STATE OF UTAH  
NATURAL RESOURCES  
Oil, Gas & Mining

Norman H. Bangert, Governor  
Dee C. Hansen, Executive Director  
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 23, 1985

TO: John R. Baza, Petroleum Engineer  
FROM: Patrick deGruyter, Oil and Gas Field Specialist  
RE: Sun Exploration & Production, Woodenshoe Unit # 2,  
SW SE, Sec.32, T.36S, R.18E, San Juan County, Utah

The above-referenced location was inspected following a telephone conversation on May 2, 1985, with Jeff Connor, Natural Resource Specialist with the National Park Service in Moab, Utah. Mr. Connor had received a report from Gary Hasty, Unit Manager, Natural Bridges National Monument, concerning seepage from this location, which was apparently killing vegetation in the area.

Mr. Connor and Mr. Hasty are concerned about this location because of its close proximity to the Natural Bridges National Monument boundary.

Well Information According to Well Records

Operator: Sun Exploration and Production Company  
P.O. Box 3401 80  
Dallas, Texas 75234

Lease: ML-31332-Lease relinquished November 26, 1984  
Not currently held by anyone

Unit: Woodenshoe Federal Exploration Unit-expired  
December 21, 1982

Spud: June 7, 1982

T.D.: 3656 (Molas Formation)

P&A: June 22, 1982

Plugs: #1-3656-3506  
#2-2900-2300  
#3-1700-1600  
#4- 770- 670  
#5-Surface

Page 3  
John R. Baza  
May 23, 1985

Action

In a conversation with Ed Bonner, Division of State Lands and Forestry, he advised me that Sun Exploration and Production has a current statewide \$25,000 blanket bond. His suggestion was that the Division of State Lands and Forestry write Sun Exploration and Production a letter explaining the problem and asking that it be resolved and that the Division of Oil, Gas and Mining write a similar letter.

I informed Mr. Bonner that I would send a report to him for review upon completion of my investigation of this matter.

sb

Attachments

cc: Sun Exploration and Production  
National Park Service, Moab  
Division of State Lands and Forestry

0127T-16-18

### Observations

The location was inspected on May 6, 1985, and again on May 8, 1985, and the following observations were made:

The well pad and access road have been satisfactorily recontoured and revegetated. A P&A marker has been erected and is also satisfactory. The northern portion of the pad, as well as drainages in the area, were very wet with pools of standing water noted in two areas. A powdery, white, salty tasting deposit, salt crystals, and salty tasting water were found in the drainages flowing directly off the north central and northwest portions of the pad. Vegetation along and immediately adjacent to these drainages appears very unhealthy, ranging from dead (complete loss of leaves and needles) to dying (leaves and needles turning brown and falling off). The drainages to the west of the pad, which do not flow off the pad, contained pools of water that were slightly sweet to taste (alkali?). Powdery, white deposits in these drainages were not salty to taste, and vegetation along and adjacent to these drainages appeared green and healthy. A tributary drainage north of the pad, which does not flow off of the pad, is also wet. Wet dirt from this drainage was not salty to taste nor was any powdery, white deposit noted in this drainage. Vegetation in this drainage appears green and healthy. The area of contamination and unhealthy vegetation ranges from the northwest and north central portion of the well pad north along and adjacent to the drainages, approximately 400 feet to the north. Also observed were numerous greasewood in these drainages, as well as a single tamarisk (10' to 12', 2' diameter at base) and an area with moss growing on the ground adjacent to a drainage (see accompanying Exhibits A, B, and C).

### Conclusions

The presence of fairly abundant intermittent riparian vegetation (numerous greasewood, one tamarisk, and moss growing in a drainage) would indicate the presence of perennial surface or near surface water. The pad location and surrounding area appears to be a natural seep, which no doubt has seasonal variation in flow.

There are two possible sources for the salt that is contaminating the water from this seep:

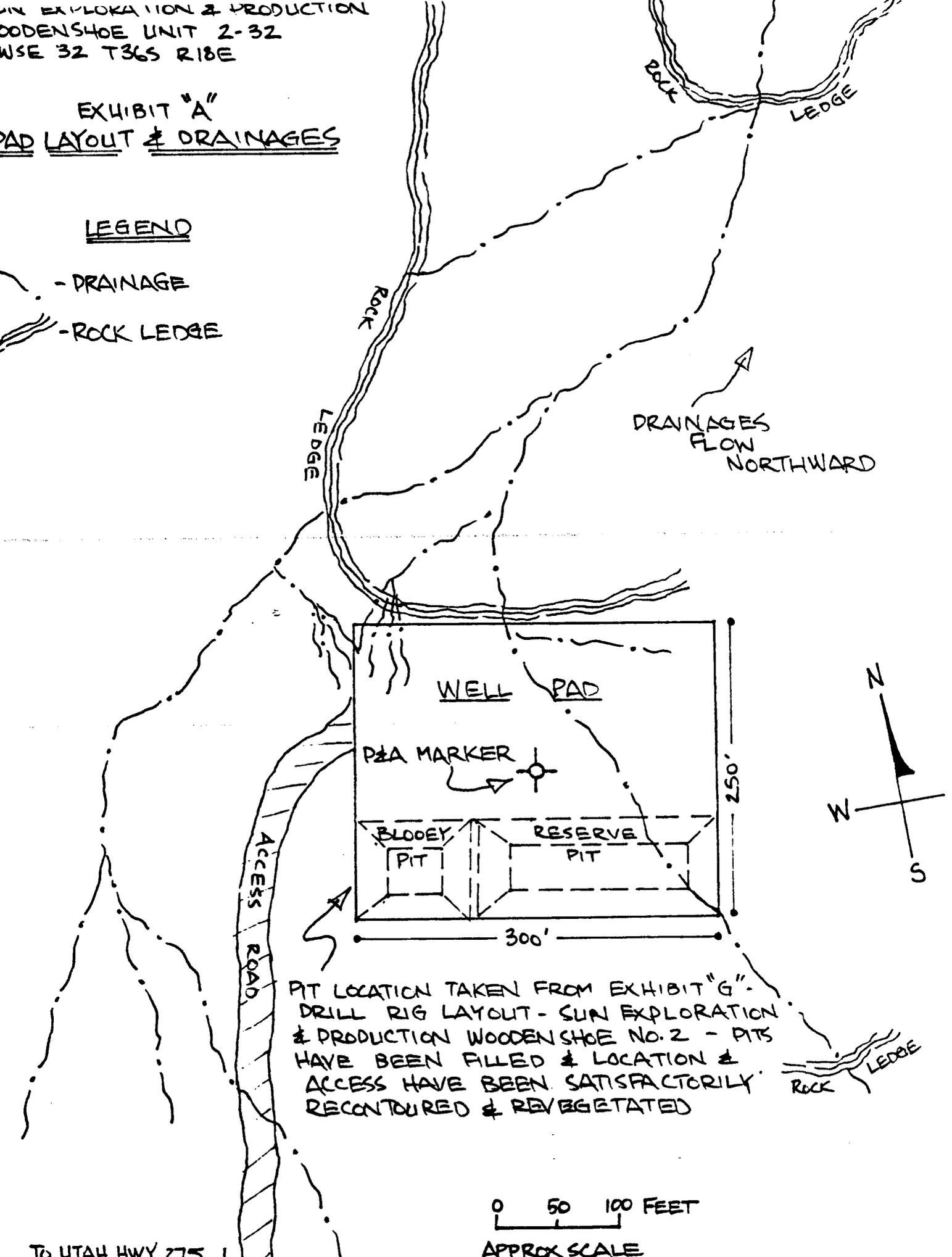
1. A problem downhole; i.e., a hole in the casing, bad cement job, or bad plugging job.
2. Leaching of salt from the buried reserve pit; i.e., salt used in the drilling fluid and salt from Paradox evaporites (cuttings) left in the reserve pit.

SUN EXPLORATION & PRODUCTION  
WOODENSHOE UNIT 2-32  
SWSE 32 T36S R18E

EXHIBIT "A"  
PAD LAYOUT & DRAINAGES

LEGEND

- DRAINAGE
- ROCK LEDGE



PIT LOCATION TAKEN FROM EXHIBIT "G" -  
DRILL RIG LAYOUT - SUN EXPLORATION  
& PRODUCTION WOODENSHOE NO. 2 - PITS  
HAVE BEEN FILLED & LOCATION &  
ACCESS HAVE BEEN SATISFACTORILY  
RECONTOURED & REVEGETATED

0 50 100 FEET  
APPROX SCALE

TO UTAH HWY 275

SUN EXPLORATION & PRODUCTION  
 WOODENSHOE UNIT 2-32  
 SWSE 32 T36S R18E

EXHIBIT "B"

WET AREAS OF PAD &  
SURROUNDING DRAINAGES

LEGEND

-  - WET AREAS
-  - DRAINAGE
-  - ROCK LEDGE

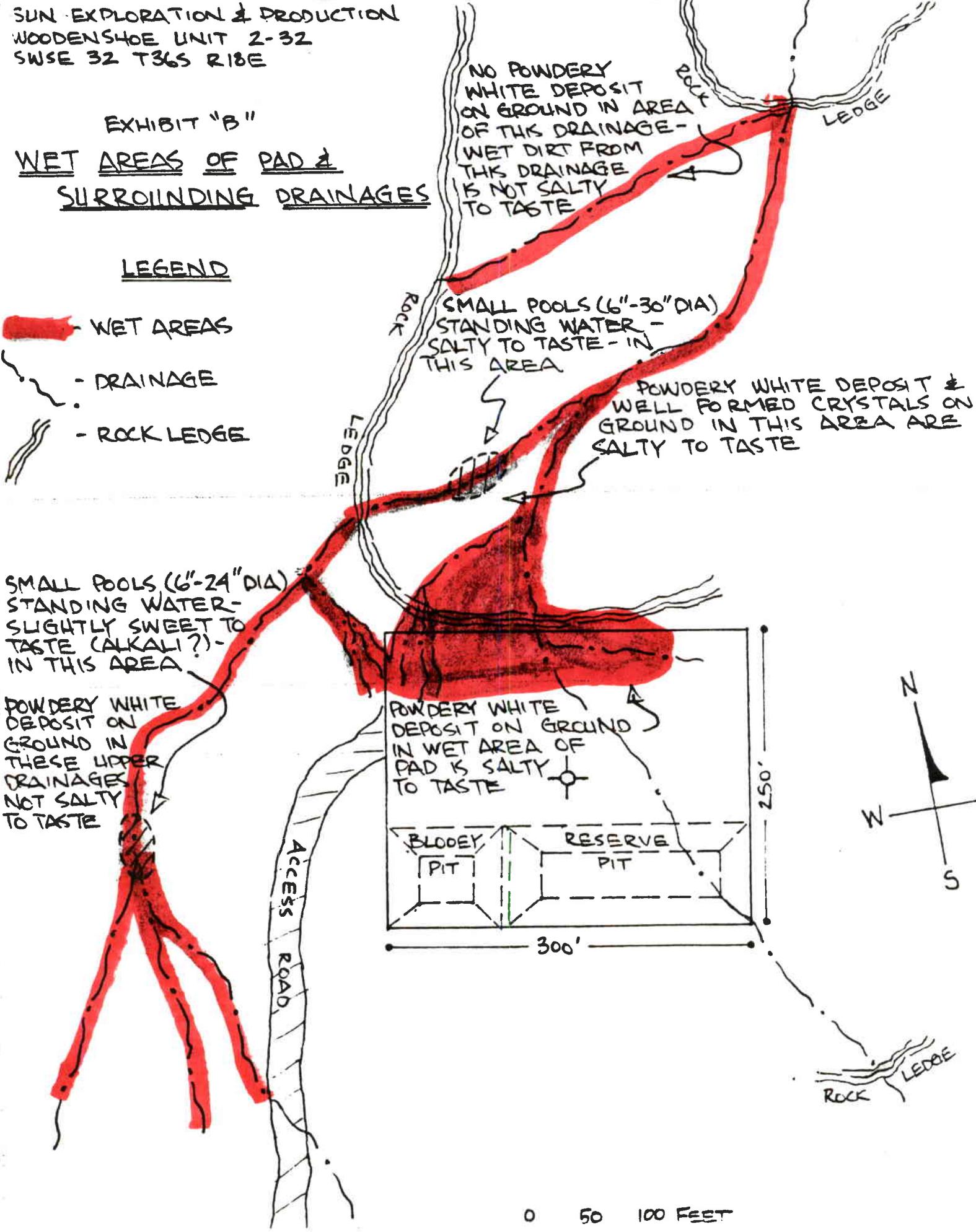


EXHIBIT "C"

AREAS OF HEALTHY & UNHEALTHY VEGETATION

LEGEND

- UNHEALTHY VEGETATION
- HEALTHY VEGETATION

\* note: greasewood was not present the plants are not planted

NUMEROUS GREASEWOOD (2'-6' DIAMETER AT TOP) ALONG THESE UPPER DRAINAGES

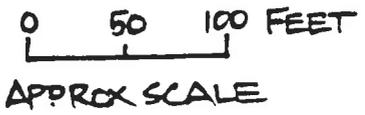
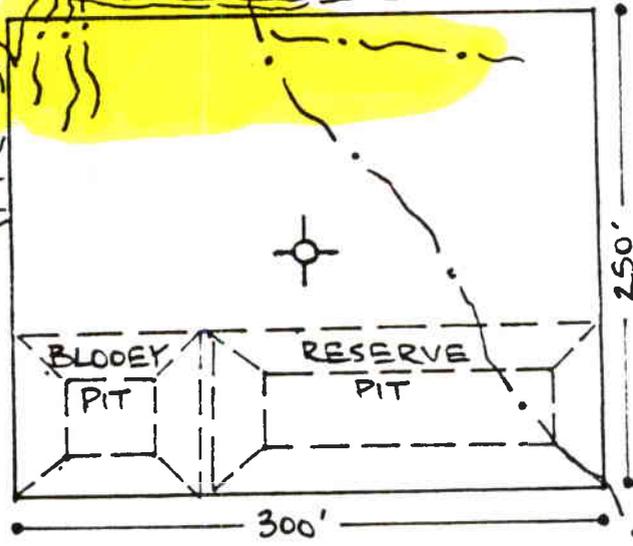
NUMEROUS GREASEWOOD ALONG THIS DRAINAGE

MOSS IN DRAINAGE ADJACENT TO ROCK LEDGE

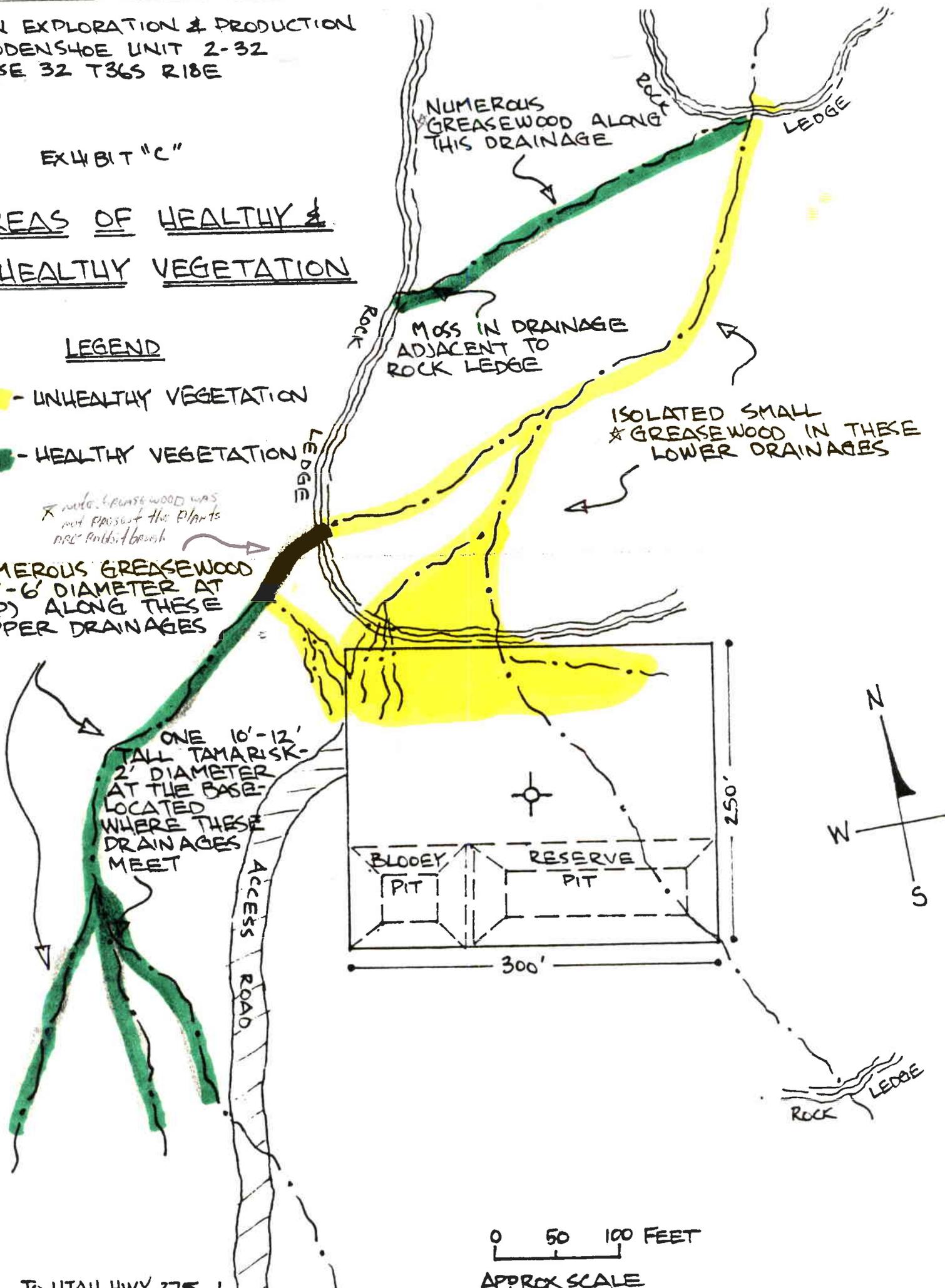
ISOLATED SMALL GREASEWOOD IN THESE LOWER DRAINAGES

ONE 10'-12' TALL TAMARISK- 2' DIAMETER AT THE BASE- LOCATED WHERE THESE DRAINAGES MEET

ACCESS ROAD



TO UTAH HWY 275



UNITED STATES GOVERNMENT  
memorandum

DATE: July 3, 1985

REPLY TO  
ATTN OF: Jeff Connor

SUBJECT: Oil well adjacent to NABR

TO: Pete Parry, Larry Thomas and Gary Hasty

On July 3, 1985, I met with Pat DeGruyter, State Oil and Gas Inspector; Bob Baker, Petroleum Engineer, Sun Oil Company; Jim Holland, Glen Canyon National Recreation Area and Terry Roth, Natural Bridges, on site at the abandoned oil well adjacent to Natural Bridges. Sun Oil brought in a backhoe and dug a eight foot deep pit around the site locator. The reason for digging the pit was to determine the origin of brine water that has been killing vegetation in the area. They dug down to the conductor casing and found water leaking out through cement. Apparently the cement plugs were done improperly and water is coming up the drill hole to the surface, flowing down hill killing vegetation (see attached photos).

Sun Oil is willing to correct the problem and will begin work as soon as possible. The biggest concern is what has happened to Natural Bridges drinking water. The drinking wells are approximately one mile distance from the oil well. The drinking wells are 700 and 750 feet deep and the oil well is 3700 feet deep. Reading the logs from the oil well they were finding good water to 2200 feet and at 2200 feet they found brine water.

Talking to Bob Baker, Sun Oil, he said the chloride in the brine water was about 35,000 mg/l. I conducted some conductivity tests on the brine water at the surface and it was 33,000 to 36,000 umhos/cm. The two number are different units but they essentially measure the same parameter. The brine water at the surface is probably originating from at least 2200 feet below the surface.

Natural Bridges has good records on their drinking wells and every three years have been doing a total inorganic analysis on cations, anions and total metals. A sample was recently sent in and we should have results back shortly. If the conductivity, chloride, boron, sulfides, sodium or ph has changed to higher numbers, Natural Bridges might as well kiss their wells goodbye.

We should begin to analyze water samples at least four times a year. Some aquifers are slow moving and water may only move about 12 inches a year, other aquifers much faster. It may be another year or more before anything will be noticed in Natural Bridges wells.

Meanwhile, Sun Oil should have the well fixed in about 14 days.



Jeff

Recommended Seed Mixture For Rehabilitating the Woodenshoe #2-32 Sec.32,T36S,R18E

Seed ratio is based on 28 kilograms/hectare.

<u>Species</u>	<u>PLS</u>	<u>% of Mixture</u>
Bouteloua gracilis	7.5	20.0
Hilaria jamesii	3.0	8.0
Oryzopsis hymenoides	6.0	16.0
Sporobolus cryptandrus	.6	1.61
Artemisia tridentata	.6	1.61
Sphaeralcea coccinea	.3	.78
Cercocarpus montanus	4.5	12.0
Cowania mexicana	4.5	12.0
Ephedra viridis	6.0	16.0

We would request that 12% of the mixture be tree seedlings of juniper and pinyon pine. The number of trees are as follows:

Juniperus osteosperma	45 trees
Pinus edulis	45 trees

This seed mixture is to be used on the access road as well as the drill pad. Everything was computed for the entire impacted area. Seeds shall be planted by a range drill set for ½" below the surface.

The Park Service would like to have the site fenced to monitor revegetation for three years.

Conditions for access across National Park Service land:

1. All work will be kept to the impacted area from the previous work.
2. No trees will be removed or damaged.
3. A culvert can be placed at the road entrance but must be removed when work is completed.
4. The land will be recontoured to the surrounding topography.
5. Dead trees will be placed across the access road in various places to prevent the public from using the road after work is completed.
6. Water bars will be replaced after the work is completed.
7. All trash, flagging, etc. will be removed and hauled to an authorized disposal site.
8. Loading and unloading of heavy equipment shall be done with the use of blocks. Dozing of loading ramps shall be prohibited.

RECEIVED  
AUG 23 '85  
CANYONS  
NATIONAL PARK

August 13, 1985



ANALYTICAL REPORT

SUBMITTED TO: National Park Service

SUBMITTED BY: Tim S. Mikesell

REFERENCE DATA:

Analysis of: Minerals and Metals as noted below

Identification No.: 85-1860

Sample(s): 2 Analyses: 10

UBTL Laboratory No.: CF 11720 through CF 11721

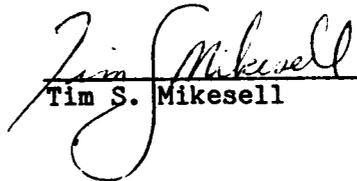
UBTL, INC.  
520 WAKARA WAY  
SALT LAKE CITY,  
UTAH 84108  
801 / 584-3232

The above numbered water samples were analyzed according to "EPA-600/4-79-020 Methods for Chemical Analysis of Water and Wastes."

The limits of detection and method numbers according to the above reference are as follows:

	<u>LOD</u>	<u>Method No.</u>
Boron	0.1 mg/L	212.4
Chloride	1. mg/L	325.2
Nitrate (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	0.1 mg/L	353.2
Nitrite (NO <sub>2</sub> -N)	0.02 mg/L	354.1
Sulfate (SO <sub>4</sub> )	5. mg/L	375.2

The results are tabulated on the following page(s).

  
Tim S. Mikesell

  
Rand Potter

MEDICINE  
BIOENGINEERING  
CHEMISTRY  
RESEARCH  
DEVELOPMENT  
ANALYSIS

July 31, 1985



ANALYTICAL REPORT

SUBMITTED TO: National Park Service

SUBMITTED BY: Tanya Cheklin

REFERENCE DATA:

Analysis of: Inorganic Parameters  
Identification No.: 85-1860  
Sample(s): 2 Analyses: 6  
UBTL Laboratory No.: CF 11720 through CF 11721

UBTL, INC.  
520 WAKARA WAY  
SALT LAKE CITY,  
UTAH 84108  
801 / 584-3232

The above numbered water samples were analyzed in accordance with "EPA Methods for the Chemical Analysis of Water and Waste," EPA 600/4-79-020.

The EPA Method number according to the above reference and the limits of detection (LOD) are as follows:

<u>Parameter</u>	<u>EPA Method</u>	<u>LOD</u>
pH	150.1	0.1 unit
Total Dissolved Solids	160.1	1 mg/L
Specific Conductivity	120.1	1. $\mu$ hos/cm

The results are tabulated on the following pages.

*Tanya Cheklin*  
Tanya Cheklin

*Rand Potter*  
Rand Potter

MEDICINE  
BIOENGINEERING  
CHEMISTRY  
RESEARCH  
DEVELOPMENT  
ANALYSIS

August 12, 1985



ANALYTICAL REPORT

SUBMITTED TO: National Park Service

SUBMITTED BY: Clint Merrell

REFERENCE DATA:

Analysis of: Minerals and metals as noted below

Identification No.: 85-1860

Sample(s): 2 Analyses: 12

UBTL Laboratory No.: CF 11720 through CF 11721

UBTL, INC.  
520 WAKARA WAY  
SALT LAKE CITY,  
UTAH 84108  
801 / 584-3232

The above numbered water samples were analyzed according to "EPA-600/4-79-020 Methods for Chemical Analysis of Water and Wastes."

The limits of detection and method numbers according to the above reference are as follows:

<u>Analyte</u>	<u>LOD</u>	<u>Method No.</u>
Iron	0.4 mg/L	236.1
Magnesium	0.01 mg/L	242.1
Calcium	0.1 mg/L	215.1
Copper	0.02 mg/L	220.1
Manganese	0.02 mg/L	243.1
Sodium	0.6 mg/L	273.1

The results are tabulated on the following page(s).

  
Clint Merrell

  
Rand Potter

MEDICINE  
BIOENGINEERING  
CHEMISTRY  
RESEARCH  
DEVELOPMENT  
ANALYSIS



# ANALYTICAL REPORT FORM

Date 8/20/85

UBTL Identification Number 85-1860

Corporate/Agency Name National Park Service, Arches & Canyonlands Natl Parks

Address Natural Bridges National Monument

Moab, UT 84532

### Sampling Collection, Shipment, and Analysis

Sample Matrix Water Date of Collection July 5, 1985

Date Samples Received at UBTL July 15, 1985

Date of Analysis: Started July 15, 1985 Completed \_\_\_\_\_

Analytical Results mg/L

Analytes	Field Number	WELL #3	WASH H <sub>2</sub> O			
	Lab Number	CF 11720	CF 11721			
Boron		0.1	1.3			
Calcium		70.	490.			
Chloride		29.	11000.			
Conductance ( $\mu$ mhos/cm)		770.	33000			
Copper		<0.02	0.05			
Iron		<0.4	<0.4			
Magnesium		39.	1100.			
Manganese		0.06	0.03			
Nitrate (NO <sub>3</sub> -N + NO <sub>2</sub> -N)		<0.1	<0.1			
Nitrite (NO <sub>2</sub> -N)		<0.02	0.07			

Comments \_\_\_\_\_

Report Prepared by: *Daniel W. Sayer*

Reviewer: \_\_\_\_\_

Laboratory Supervisor: *Robert J. Ferguson*





<u>Date</u>	<u>Tree Species</u>	<u>Tree Number</u>	<u>Tree Condition</u>	<u>Side of Wash</u>	<u>Distance From Small Wash Pour Off</u>
21 August	Pi ed	1	Fair condition - 20-30% of needles brown, chlorotic needles common.	R	19.5 m
	Be fr	2	Leaves turning brown on some branches, especially upper ends.	R	29.8 m
	Pi ed	3	A few needles brown, some yellowing of needles, but in overall good shape.	R	46.6 m (around corner in wash)

63.3 m to middle of main wash. Dead and heavily damaged trees appear to occur more often on left side (as face down stream) of small wash than right side - i.e., between small and main washes.

<u>Tree Species</u>	<u>Tree Number</u>	<u>Tree Condition</u>	<u>Side of Wash</u>	<u>Distance From Pour Off Of Main Wash</u>
Ju os	4	About 40-60 % of foliage dead - only about 30% of tree has foliage at all (dead or alive)	L	9.7 m
Am ut	5	Almost completely leafless. 3-4 branches with green leaves and most of those leaves brown, chlorotic, or with necrotic spots.	L	39.7 m
Am ut	6	Most leaves beginning to yellow - 50% of shrubs that had foliage this growing season has lost it (brown and/or dropped off).	R	85 m
Pi ed	7	Many needles yellowing, especially lower branches. Some branches with all needles dead.	L	94.6 m
Pi ed	8	Extensive damage to needles, both on this tree and the little one behind it. Very few needles left on tree (80% of those live). 6-8 slumps of new growth at base of 1st branches (lowest).	R	112.3 m
Ju os	9	50% of foliage damaged, especially outer branches. Inner branches appear to have new growth.	L	157.7 m
Pi ed	10	Good condition - less than 30% of needles brown or yellowed.	R	162
Am ut	11	Fair condition - 40-50% of leaves chlorotic or dead, especially on wash side of plant.	R	186.8 m
Am ut	12	Over all good condition, chlorotic leaves on wash side, especially upstream, few dead leaves.	R	223 m
Ju os	13	Good condition - few brown leaves, lots of cones for next year (o ) some galls.	R	226.8 m
Pi ed	14	Good condition - less than 10% of needles brown, but 30-40% of needle tips yellowed.	L	265 m
Am ut	15	Fair condition - many leaves chlorotic and many with necrotic spots, at least some of damage appears due to insects, especially leaf miners.	L	266 m
Ju os	16	Fair condition - 30% of leaves brown, especially bases (perhaps new foliage above brown).	R	280.7 m
Qu ga	17	Excellent condition - no sign of dying foliage.	R	295 m
Be fr	18	Fair condition - 20% of leaves brown or yellowed edges of leaves appear browned on many leaves.	L	297.7

N A B R

Analysis of Well Water, Well #3

by

NATURAL RESOURCES LABORATORY, INC.

June 14, 1979

<u>ANALYSES</u>	<u>RESULTS</u>	<u>ANALYSES</u>	<u>RESULTS</u>
Ag, mg/l	0.001	CN <sup>-</sup> , mg/l	0.01
Al, mg/l	0.5	F <sup>-</sup> , mg/l	0.3
As, mg/l	0.002	NO <sub>2</sub> as N, mg/l	0.01
Ba, mg/l	0.1	NO <sub>3</sub> as N, mg/l	0.12
Be, mg/l	0.002	pH	8.4
Cd, mg/l	0.001	PO <sub>4</sub> <sup>=</sup> , mg/l	0.01
Ca, mg/l	64.	SO <sub>4</sub> <sup>=</sup> , mg/l	84.
Cr, mg/l	0.001	Solids (filt)	480.
Cu, mg/l	0.001	mg/l	5.
Fe, mg/l	0.5	Solids (nonfilt)	763.
Hg, mg/l	0.0001	K umhos/cm	4.2
K, mg/l	5.7	Turbidity, JTU	
Mg, mg/l	43.		
Mn, mg/l	0.12		
Na, mg/l	53.		
Ni, mg/l	0.001		
Pb, mg/l	0.001		
Se, mg/l	0.002		
U, mg/l	16.		
Zn, mg/l	1.3		
Alkalinity as CaCO <sub>3</sub> mg/l	350.		
Hardness as CaCO <sub>3</sub> mg/l	340.		
CO <sub>3</sub> <sup>=</sup> , mg/l	7.		
HCO <sub>3</sub> <sup>=</sup> , mg/l	410.		
Cl, mg/l	15.		



June 14, 1979  
Job: 9D58  
Order No.: PX-1200-9-054

WATER

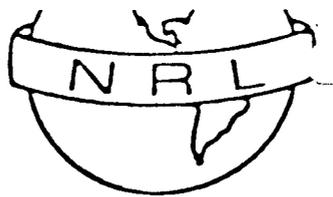
NATURAL RESOURCES LABORATORY, INC.

R. Ferrance  
National Park Service  
655 Parfet St., P.O. Box 25287  
Denver, Colorado 80225

REPORT OF ANALYSES

ANALYSES	START	PUMPED 1/2 hrs		PUMPED 1/2 hrs		Hite Tap	NATURAL RESOURCES LABORATORY E.P. 10 C NB
	Hite 1a	6 A.M.	Hite 1b	6 P.M.	Hite 1c		
Ag, mg/l	0.002		0.002		0.002	0.001	<0.001
Al, mg/l	<0.5		<0.5		0.5	<0.5	<0.5
As, mg/l	<0.002		0.005		0.006	0.002	<0.002
Ba, mg/l	<0.1		<0.1		<0.1	<0.1	<0.1
Be, mg/l	0.010		0.006		0.010	<0.002	0.002
Cd, mg/l	0.010		0.012		0.025	<0.001	<0.001
Ca, mg/l	200.		490.		520.	60.	64.
Cr, mg/l	0.001		0.001		0.001	0.001	0.001
Cu, mg/l	0.006		0.004		0.004	0.008	<0.001
Fe, mg/l	21.		20.		17.	<0.1	0.5
Hg, mg/l	0.0001		<0.0001		0.0001	<0.000	0.0001
K, mg/l	36.		29.		58.	3.5	5.7
Mg, mg/l	220.		250.		250.	23.	43.
Mn, mg/l	0.57		0.39		0.34	0.002	0.12
Na, mg/l	440.		710.		740.	68.	53.
Ni, mg/l	<0.040*		<0.040*		<0.040*	<0.001	<0.001
Pb, mg/l	0.290		0.280		0.320	0.001	0.001
Se, mg/l	<0.002		<0.002		<0.002	<0.002	<0.002
T, mg/l	<0.		2.		2.	5.	16.
Zn, mg/l	0.14		0.39		0.24	0.13	1.3
Alkalinity as CaCO <sub>3</sub> mg/l	420.		720.		760.	130.	350.
Hardness as CaCO <sub>3</sub> mg/l	1410.		2260.		2330.	250.	340.
CO <sub>3</sub> <sup>2-</sup> , mg/l	N.D.		N.D.		N.D.	N.D.	7.
HCO <sub>3</sub> <sup>-</sup> , mg/l	510.		860.		920.	160.	410.
Cl <sup>-</sup> , mg/l	700.		1200.		1300.	40.	35.

1349-80A



June 14, 1979

Job: 9D58

Order No.: PX-1200-9-05

## WATER

## NATURAL RESOURCES LABORATORY, INC.

Analyses	Start	Pumped 2 1/2 Hrs. @ 48 G.P.M.	Pumped 2 1/2 Hrs. @ 48 G.P.M.	Hite Tap	NATURAL BRIDGE Pumped @ 10 G.P.M.
	Hite 1a	Hite 1b	Hite 1c		NB
CN <sup>-</sup> , mg/l	**	**	<0.01	**	<0.01
F <sup>-</sup> , mg/l	1.3	1.3	1.2	0.3	0.3
NO <sub>2</sub> as N, mg/l	<0.01	<0.01	<0.01	<0.01	<0.01
NO <sub>3</sub> as N, mg/l	0.01	0.06	0.06	0.63	0.12
pH	7.4	6.6	6.6	8.1	8.4
PO <sub>4</sub> <sup>=</sup> , mg/l	<0.01	<0.01	<0.01	<0.01	<0.01
SO <sub>4</sub> <sup>=</sup> , mg/l	960.	1600.	1600.	190.	84.
Solids (filt) mg/l	3100.	5500.	5400.	510.	480.
Solids (nonfilt)	200.	100.	54.	<5.	<5.
$\bar{E}$ , $\mu$ mho/cm	4110.	6330.	6490.	719.	763.
Turbidity, JTU	440.	100.	76.	8.2	4.2

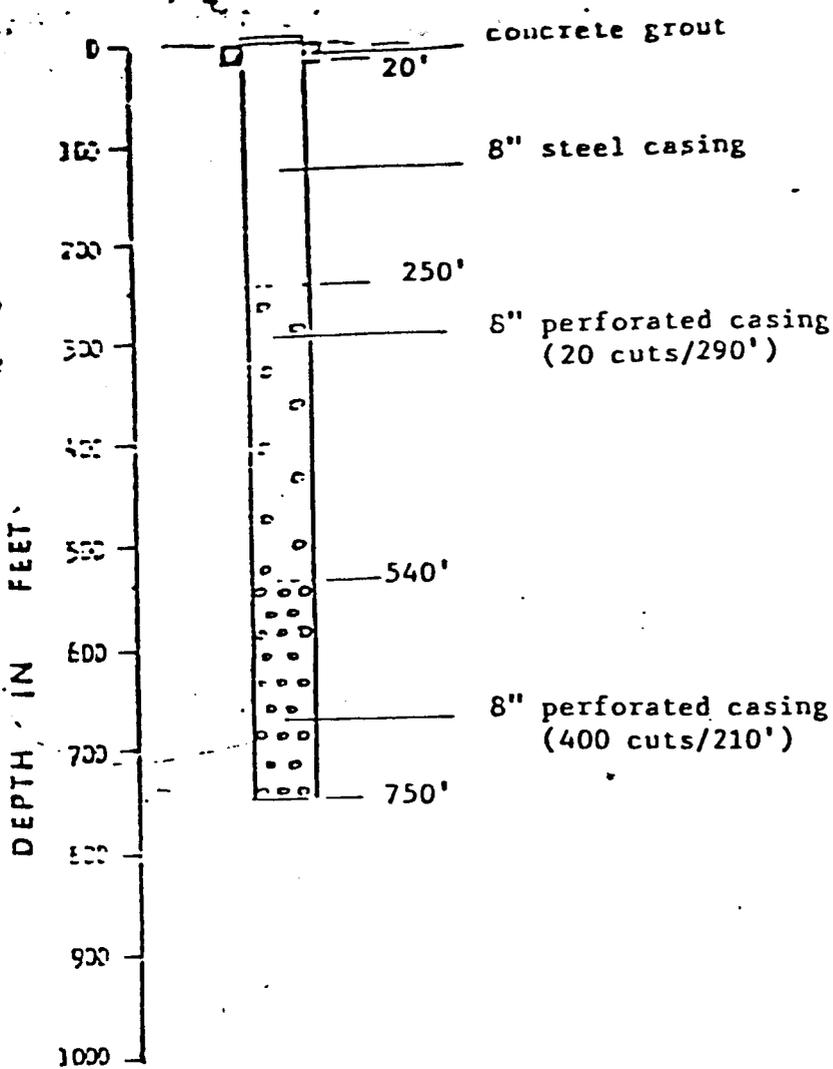
\* Unable to determine at lower level due to interferences.

\*\* Insufficient sample.

Thank you,

 Carol Fleckner  
 Environmental Scientist

1349-80A



Well drilling date:  
 Started: 1/19/79  
 Completed: 3/6/79

Location:  
 State: Utah  
 Latitude:  
 Longitude:  
 Township: 37S  
 Range: 18E  
 Section: NW $\frac{1}{4}$ , Sec 6

Depth:  
 750'  
 Casing: 750'  
 Perforation: 500'  
 Perforation Size:  
 3/8"X2"  
 Plug: none

Log Data:  
 see well log

Driller:  
 William Peck

Drilling Method:  
 cable tool

Water Level:  
 520'

WELL SPECIFICATION (as built)

1349-80A

Rev. 3/82

Field No.

001

TC  
PC

TM  
PM

Net  
BOD

Post.  
Rad.  
Bact.  
Spec.

Date Recd.

Received By:

UTAH STATE DEPARTMENT OF HEALTH

ENVIRONMENTAL HEALTH

WATER ANALYSES

Sample No. 2623

701

Water Syst. No. Source No. 19244

Date Collected 05/02/07 Time Collected 1330

Water Rights No. 707

Exact Description of Sampling Point  
WELL #3 NATURAL BRID  
GFS W.V.  
BLVD WIG UTAH

Supply Owned by DEVAL FILTER BLDG 712

Sample Type 710

Sample Collected by D. ALLISON 713

SEND REPORT TO: Phone 25877164

SUPT. CANYON ALDS W 716  
125 W 200 S 648  
MOAB UTAH 74532 717

Sample Source 022 719

County 119 617

Current use  708  
Proposed use  709

1. Culinary  
2. Agricultural  
3. Industrial  
4. Other **B** 361

Cost Code 201

1 FIELD TESTS

Temperature (°C) 792  
D.O., mg/l 793  
Sp. Cond. at mhos 653  
pH 651  
Sp. Gravity 608  
Transparency, m 649

CO<sub>2</sub>, mg/l 572  
Depth, m 609  
Cl Resid., mg/l 753  
Flow, MGD 652  
Flow, GPM 604  
Flow, cfs 659

2 Temperature (°C) 650 pH 782 WASTEWATER ANALYSIS BACT. LAB. No.

B.O.D.<sub>5</sub> 784  
Tot. Sus. Solids 787  
NO<sub>2</sub>+NO<sub>3</sub>-N 603  
T.K.N. 778  
Oil & Grease 780

T.O.C. 671  
C.O.D. 777  
Cyanide 776  
Phenolics 783  
Sulfide 672

M.P.N. Total Coliforms/100ml 658  
M.P.N. Fecal Coliforms/100ml 657  
Fecal Strep C/100ml. 656  
M.F. Total Coliforms/100ml. 654  
M.F. Fecal Coliforms/100ml. 655  
Plate Count-Org./ml. 599

3 CATIONS mg/l ug/l (ppb)

Ammonia as N 6.1 722  
Arsenic 723  
Barium 724  
Boron 726  
Cadmium 727  
Calcium 3.74 715 728  
Chromium 729  
Chromium, Hex. as Cr < 5 730  
Copper 732  
Iron, dissolved 733  
Lead 734  
Magnesium 3.31 410 737  
Manganese 738  
Nickel 740  
Potassium 1.0 742  
Selenium 743  
Silver 744  
Sodium 2.48 57 745  
Zinc 95 746

TOTAL CATIONS 176

Sp. Cond. Alk/mhos/cm. 795 782  
TDS @ 180°C 478 786

4 CHEMICAL ANALYSIS mg/l

ANIONS

Bicarbonate 912 758  
Carbon Dioxide 3 759  
Carbonate 9 760  
Chloride .65 23 763  
CO<sub>3</sub> Solids 6.74 202 765  
Fluoride 035 766  
Hydrosulfide 00 767  
Nitrate as N 0.01 605  
Nitrite as N 0.01 606  
Phosphate, Ortho as P 0.02 607  
Silica, dissolved as SiO<sub>2</sub> 1.0 750  
Sulfate 1.75 84 772

TOTAL ANIONS 319  
GRAND TOTAL 495

Tot. Phosphorus 785  
Total Alk. as CaCO<sub>3</sub> 337 752  
T. Hds. as CaCO<sub>3</sub> 353 754  
Surfactant as MBAS 773  
Turbidity, as NTU 5.8 767  
Sp. Gravity 608

5 TOTAL METALS ANALYSIS mg/l ug/l (ppb)

Aluminum 800  
Arsenic < 5 660  
Barium < 105 661  
Beryllium 801  
Cadmium < 1 662  
Chromium < 5 663  
Cobalt 804  
Copper < 20 664  
Gold 700  
Iron < 54 755  
Lead < 5 665  
Manganese < 80 666  
Mercury < 1 739  
Molybdenum 802  
Nickel < 1 667  
Selenium < 5 668  
Silver < 2 669  
Uranium 601  
Vanadium 803  
Zinc < 265 670

6 RADIOLOGICS

Alpha, gross 631  
Beta, gross 632  
Tridium, <sup>3</sup>H 633  
226 Radium 634  
228 Radium 635  
90 Sr 636

89 Sr 637  
131 I 638  
134 Cs 639  
137 Cs 640

Analyses Approved By: REU Date: 850722

INTERPRETATION OF ANALYSES:  
"DOES NOT EXCEED DRINKING WATER STANDARDS"

Based on State Standards, this sample was:

B.O.D.<sub>5</sub>  
Tot. Sus. Solids  
M.P.N. Total Coliform.  
M.P.N. Fecal Coliform.

By: *Robert A. Helfer*  
ENVIRONMENTAL HEALTH

August 21, 1985



ANALYTICAL REPORT

SUBMITTED TO: National Park Service

SUBMITTED BY: Clint Merrell

REFERENCE DATA:

Analysis of: Minerals and metals as noted below

Identification No.: 85-1861

Sample(s): 2 Analyses: 12

UBTL Laboratory No.: CF 11722 through CF 11723

UBTL, INC.  
520 WAKARA WAY  
SALT LAKE CITY,  
UTAH 84108  
801 / 584-3232

The above numbered soil samples were analyzed according to "EPA-600/4-79-020 Methods for Chemical Analysis of Water and Wastes."

Approximately 1 gram of sample was ashed with nitric and perchloric acids and diluted to 25 mL with deionized water.

The limits of detection and method numbers according to the above reference are as follows:

<u>Analyte</u>	<u>LOD</u>	<u>Method No.</u>
Calcium	3 µg/L	215.1
Copper	0.5 µg/L	220.1
Iron	10. µg/L	236.1
Magnesium	0.3 µg/L	242.1
Manganese	0.5 µg/L	243.1
Sodium	20. µg/L	273.1

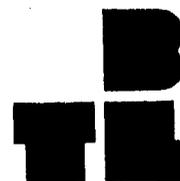
The results are tabulated on the following page(s).

  
Clint Merrell

  
Rand Potter

MEDICINE  
BIOENGINEERING  
CHEMISTRY  
RESEARCH  
DEVELOPMENT  
ANALYSIS

August 13, 1985



UBTL, INC.  
520 WAKARA WAY  
SALT LAKE CITY,  
UTAH 84108  
801 / 584-3232

ANALYTICAL REPORT

SUBMITTED TO: National Park Service  
SUBMITTED BY: Tim S. Mikesell  
REFERENCE DATA:  
Analysis of: Minerals and Metals as noted below  
Identification No.: 85-1861  
Sample(s): 2 Analyses: 10  
UBTL Laboratory No.: CF 11722 through CF 11723

The above numbered soil samples were analyzed according to "EPA-600/4-79-020 Methods for Chemical Analysis of Water and Wastes."

The limits of detection and method numbers according to the above reference are as follows:

	<u>LOD</u>	<u>Method No.</u>
Boron	10. µg/g	212.4
Chloride	100. µg/g	325.2
Nitrate (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	10. µg/g	353.2
Nitrite (NO <sub>2</sub> -N)	2. µg/g	354.1
Sulfate (SO <sub>4</sub> )	500. µg/L	375.2

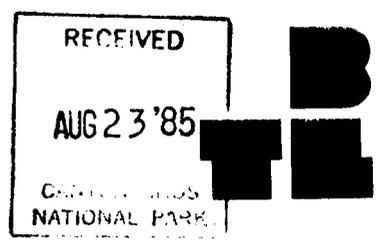
The results are tabulated on the following page(s).

  
Tim S. Mikesell

  
Rand Potter

MEDICINE  
BIOENGINEERING  
CHEMISTRY  
RESEARCH  
DEVELOPMENT  
ANALYSIS

Jeff Tim  
July 31, 1985



ANALYTICAL REPORT

SUBMITTED TO: National Park Service

SUBMITTED BY: Tanya Cheklin

REFERENCE DATA:

Analysis of: Inorganic Parameters  
Identification No.: 85-1861  
Sample(s): 2 Analyses: 4  
UBTL Laboratory No.: CF 11722 through CF 11723

UBTL, INC.  
520 WAKARA WAY  
SALT LAKE CITY,  
UTAH 84108  
801 / 584-3232

The above numbered soil samples were analyzed in accordance with "EPA Methods for the Chemical Analysis of Water and Waste," EPA 600/4-79-020.

The EPA Method number according to the above reference and the limits of detection (LOD) are as follows:

<u>Parameter</u>	<u>EPA Method</u>	<u>LOD</u>
pH	150.1	0.1 unit
Specific Conductivity	120.1	1. $\mu$ mhos/cm

The results are tabulated on the following pages.

Tanya Cheklin  
Tanya Cheklin

Rand Potter  
Rand Potter

MEDICINE  
BIOENGINEERING  
CHEMISTRY  
RESEARCH  
DEVELOPMENT  
ANALYSIS



# ANALYTICAL REPORT FORM

Date 7/20/85

UBTL Identification Number 85-1861

Corporate/Agency Name National Park Service, Arches & Canyonlands Natl Parks

Address Natural Bridges National Monument

Moab, UT 84532

### Sampling Collection, Shipment, and Analysis

Sample Matrix Soil Date of Collection July 5, 1985

Date Samples Received at UBTL July 15, 1985

Date of Analysis: Started July 15, 1985 Completed \_\_\_\_\_

### Analytical Results µg/g

Analytes	Field Number	#10 SOIL	#13 SOIL			
	Lab Number	CF 11722	CF 11723			
Boron		<10.	<10.			
Calcium		88,000.	56,000			
Chloride		870.	<100.			
Conductance (µmhos/cm)		1800.	110.			
Copper		5.2	5.6			
Iron		4500.	7000.			
Magnesium		3400.	2300.			
Manganese		340.	140.			
Nitrate (NO <sub>3</sub> -N + NO <sub>2</sub> -N)		26.	12.			
Nitrite (NO <sub>2</sub> -N)		<2.	<2.			

Comments \_\_\_\_\_

Report Prepared by: Jim Mikroell

Reviewer: \_\_\_\_\_

Laboratory Supervisor: [Signature]



Thomas W Lynch  
Vice President and  
Chief Counsel

RECEIVED

JAN 02 1986

DIVISION OF OIL  
GAS & MINING

Sun Exploration and  
Production Company  
Four NorthPark East  
5656 Blackwell  
P O Box 2880  
Dallas TX 75221-2880  
214 890 6204

December 10, 1985

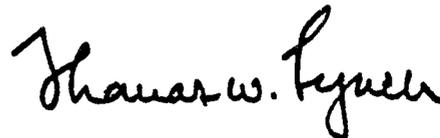
Dear Vendor:

Effective December 1, 1985, Sun Exploration and Production Company (Sun E&P) conveyed to Sun Operating Limited Partnership all of its domestic oil and gas business, properties and related assets, as part of a legal reorganization. This move does not materially affect your relationship with Sun E&P.

Sun E&P will serve as the managing general partner and will be responsible for all the management and operational functions of the partnership. As a result, you should continue doing business with Sun E&P as you have in the past. All billings, correspondence and payments should be addressed to the Sun E&P office currently being utilized.

If you have any questions in this regard, please contact the Sun E&P office with which you are currently dealing.

Very truly yours,



Thomas W. Lynch

34 S. 17E. 11  
Woodenshoe Fed: 1-11

34 S. 18E. 32  
Woodenshoe #2



United States Department of the Interior

NATIONAL PARK SERVICE  
ARCHES AND CANYONLANDS NATIONAL PARKS  
NATURAL BRIDGES NATIONAL MONUMENT  
MOAB, UTAH 84532

IN REPLY REFER TO:

L2427

March 20, 1986

Bob Baker  
Sun Exploration and Production Company  
P.O. Box 3401 80  
Dallas, Texas 75234

RECEIVED  
APR 17 1986

Dear Mr. Baker:

DIVISION OF  
OIL, GAS & MINING

Last summer drilled by nearby vegeta unit #2 well water migra Bridges Nat located in Woodenshoe The water w records and depth of 37 The water w June 14, 19

*John - this is a copy of the letter the NPS just sent out to Bob Baker/Sun Exploration & Prod concerning the Woodenshoe #2 well near Natural Bridges Natl Men & possible effects on their drinking water well*

all killing federal a salt tural is y from the ty, Utah. or well to a r well. aken on

Since we we Monument we November 21 Monument are as follows:

*Rt*

ter in the and in the

June 14, 1979	15 mg/l
June 6, 1985	23 mg/l
July 2, 1985	29 mg/l
November 21, 1986	34 mg/l

The results of the analyses have shown that chloride levels have more than doubled since 1979. More importantly the chloride level has jumped from 23 mg/l in June 1985 to 34 mg/l in November 1985.

The present chloride level of 34 mg/l is still below the recommended safe level of 250 mg/l but if levels continue to rise the Monument's water supply may become too contaminated to drink. We hope since the Woodenshoe #2 well was re-drilled and plugged last summer that the chloride will eventually level off in the Monument's drinking water. This spring we will also test the drinking water for oil. We will keep you informed on future water sample results.

Sincerely,

*Peter L. Perry*  
Peter L. Perry  
Superintendent



# United States Department of the Interior

## NATIONAL PARK SERVICE

ARCHES AND CANYONLANDS NATIONAL PARKS  
NATURAL BRIDGES NATIONAL MONUMENT  
MOAB, UTAH 84532

IN REPLY REFER TO:

L2427

March 20, 1986

Bob Baker  
Sun Exploration and Production Company  
P.O. Box 3401 80  
Dallas, Texas 75234

**RECEIVED**  
APR 17 1986

DIVISION OF  
OIL, GAS & MINING

Dear Mr. Baker:

Last summer it was brought to your attention that an exploratory oil well drilled by Sun Oil in San Juan County, Utah was leaking salt water and killing nearby vegetation. During a meeting on July 2, 1985 at the Woodenshoe federal unit #2 well, it was brought to your attention by Jeff Connor, that the salt water migration in the improperly plugged well may be contaminating Natural Bridges National Monument's drinking water. The Monument's water well is located in the NW1/2, sec. 6, T.37S, R.18E, approximately one mile away from the Woodenshoe #2 well in the SW SE, Sec. 32, T.36S, R.18E, San Juan, County, Utah. The water well was drilled to a depth of 750' and according to the water well records and oil well records, the woodenshoe #2 well which was drilled to a depth of 3700' passed through the same geologic formations as the water well. The water well was completed on March 6, 1979 and water samples were taken on June 14, 1979.

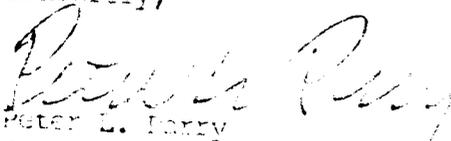
Since we were concerned about salt water contaminating the drinking water in the Monument we have had water samples taken on June 6, 1985, July 2, 1985 and November 21, 1986. The four chloride analyses on the potable well #3 in the Monument are as follows:

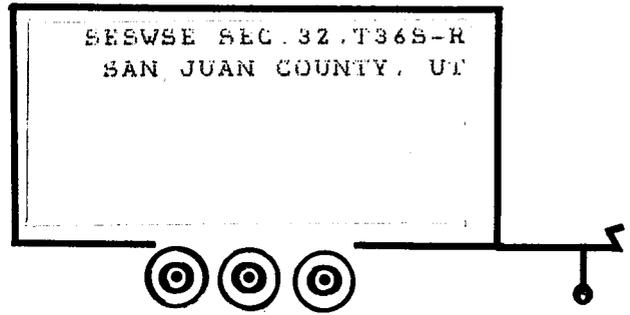
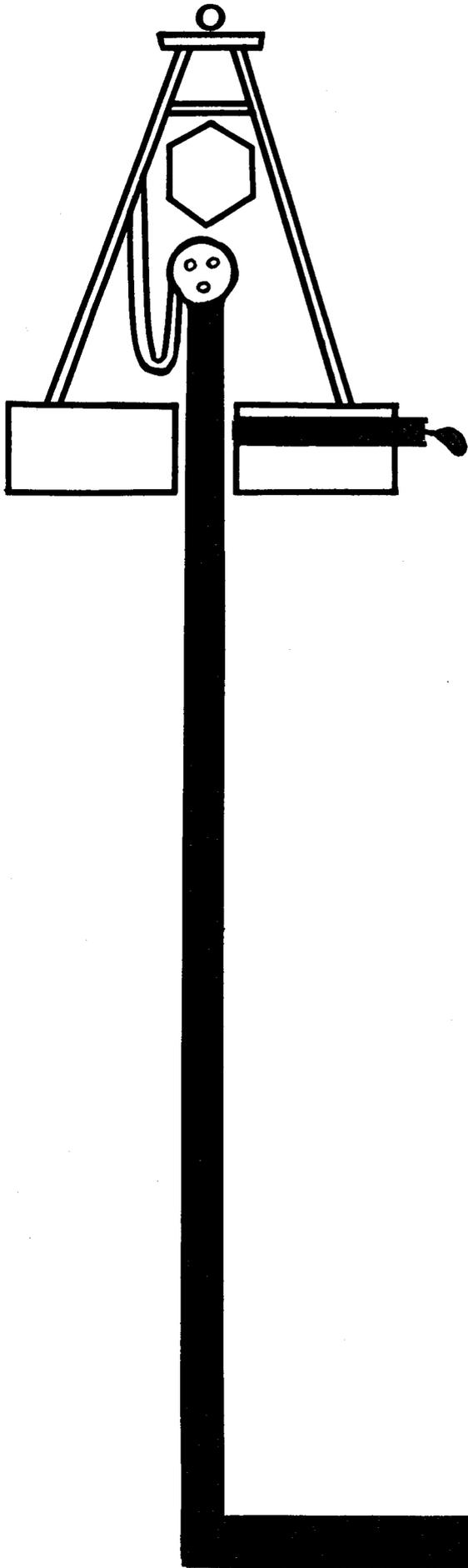
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Sincerely,

  
Peter L. Barry  
Superintendent



SESWSE SEC. 32, T36S-R  
SAN JUAN COUNTY, UT

SUN EXPLO. & PROD. CO.  
2-32 WOODENSHOE  
SESWSE SEC. 32, T36S-R18E  
SAN JUAN COUNTY, UTAH

SMITH MUD LOGGING  
352-2275 ROAD  
DELTA, COLORADO 81416

PH: (303) 874-7451

SUN EXPLORATION & PRODUCTION CO.  
#2-32 WOODENSHOE  
SE SW SE SEC. 32, T36S-R18E  
SAN JUAN COUNTY, UTAH

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3. Deviation Record Sheet	3
4. DST & Show Sheets	4-5

(1) COPY, FINAL MUD LOG ( 5"=100' )  
(1) COPY, FINAL MUD LOG ( 2.5"=100' )

DRILLING CONTRACTOR: ENERGY SEARCH RIG # 1  
FARMINGTON, NEW MEXICO

DRILLING FOREMAN: MR. GARY WEAVERN

PUSHER: MR. B. J. (BILL) WILEY

GEO-TECHNOLOGISTS: MR. DREW G. BAVIN  
MR. NICK LARKIN  
SMITH MUD LOGGING  
DELTA, COLORADO

DRILLING FLUID: MR. SALOMON M. GARCIA  
N. L. BAROID  
CORTEZ, COLORADO

DRILL STEM TESTS: TEST # 1, MR. DAVE DAVIS  
TEST # 1, MR. PENN PENNFIELD  
HALLIBURTON  
FARMINGTON, NEW MEXICO

WIRE LINE LOGS: MR. GREG JANDRO  
SCHLUMBERGER  
GRAND JUNCTION, COLORADO

GEOLOGIST: MR. CONNIE M. KRIVANEK

SUN EXPLORATION & PRODUCTION CO.  
 #2-32 WOODENSHOE  
 SE SW SE SEC. 32, T36S-R18E  
 SAN JUAN COUNTY, UTAH

## SUMMARY OF DAILY ACTIVITY

DATE	ACTIVITY	MIDNITE DEPTH	24 HOUR FOOTAGE
06-09-82	Unit#1644 on location, rigged up	718	0
06-10-82	Wait on cement, wait on bit, weld drill head	718	0
06-11-82	Testing BOP, 3 P.M. started drilling	718	255
06-12-82	Drilling, 1/2 hour service rig, surveys	973	509
06-13-82	Drilling, Surveys, 1/2 hour service	1482	388
06-14-82	Drilling, Surveys, 1/2 hour service	1870	589
06-15-82	Drilling, TOH NB#5, TIH, Reaming, Drilling, condition for DST	2359	167
06-16-82	DST, TOH, TIH, Drilling	2526	127
06-17-82	Drilling	2653	585
06-18-82	Drilling, TOH, Hole in pipe	3238	157
06-19-82	TIH, Drilling	3395	264
06-20-82	Drilling	3659	1
	TD 3660, Unit #1644 released		

SUN EXPLORATION & PRODUCTION CO.  
 #2-32 WOODENSHOE  
 SE SW SE SEC. 32, T36S-R18E  
 SAN JUAN COUNTY, UTAH

## BIT RECORD

BIT#	MAKE	SIZE	TYPE	DEPTH	FOOTAGE	HOURS
				OUT	USED	
1	HUGHES	13 3/4	OWV	130	50	5
2	SMITH	13 3/4	BT	292	162	-
3	SEC.	13 3/4	S-3-J	718	426	19
4	SEC.	8 3/4	S-84-F	969	251	6
4A	SEC.	8 3/4	S-84-FRR	2461	1492	74 1/2
5	STC	8 3/4	F-3 RR	3298	837	34 1/4
6	STC	8 3/4	F-3 RR			

SUN EXPLORATION & PRODUCTION CO.  
#2-32 WOODENSHOE  
SE SW SE SEC. 32, T96S-R18E  
SAN JUAN COUNTY, UTAH

## DEVIATION RECORD SHEET

DEPTH	DEVIATION(Deg)
	o
231	0.25
	o
416	0.75
	o
634	1.00
	o
665	1.25
	o
718	1.25
	o
969	1.75
	o
1268	2.50
	o
1393	2.50
	o
1482	1.75
	o
1635	2.00
	o
1727	1.75
	o
1788	1.50
	o
1848	1.25
	o
2033	1.50
	o
2526	1.75
	o
3298	1.75

SMITH MUD LOGGING  
DST & SHOW SHEET

SHOW #1 INTERVAL 2823 TO 2827  
 COMPANY: SUN EXPLORATION & PRODUCTION CO. DATE: 06/14/82  
 WELL: #2-32 WOODENSHOE  
 FIELD: WILDCAT

	BEFORE SHOW	DURING SHOW	AFTER SHOW
DRILLING RATE	3min/ft	1min/ft	3min/ft
TOTAL GAS UNITS	0	2	2
%METHANE	0	.4	0
%ETHANE	0	.03	0
%PROPANE	0	.001	0
%BUTANE (ISO)	0	.001	0
%BUTANE (NORM)	0	.001	0
%PENTANES	0	0	0

SAMPLE LITHOLOGY: 100% Limestone: Tan, white, buff, chalky. Trace of  
 Shale: red brown, medium sandy.  
 SAMPLE FLUO-CUT: Limestone: 10 to 15%. Bright blue yellow fluorescence,  
 streaming out.

DST #	INTERVAL	TO	DATE:		
			TIME	PRESSURE (osi)	
			min.	top chart	bottom chart

INITIAL HYDROSTATIC

	from	to	from	to
INITIAL OPEN				
INITIAL SHUT-IN	to		to	
SECOND OPEN	from	to	from	to
SECOND SHUT-IN	to		to	

FINAL HYDROSTATIC

BHT ( F. ):  
 1ST FLOW:  
 2ND FLOW:  
 REMARKS :  
 DRILL PIPE RECOVERY:  
 SAMPLE CHAMBER REC.:

	WT.	R/W	NITRATES	CHLORIDES	CHROMATES
	ppm		ppm	ppm	ppm
DRILL PIPE: top: /	/	at... F./	/	/	/
middle: /	/	at... F./	/	/	/
Bottom: /	/	at... F./	/	/	/
SAMPLE CHMBR: /	/	at... F./	/	/	/
PIT MUD: /	/	at... F./	/	/	/

( GAUGED FLOW: )

GEO-TECHNOLOGIST: MR. DREW HAVIN

SMITH MUD LOGGING  
DST & SHOW SHEET

SHOW #2 INTERVAL 2482 TO 2518  
 COMPANY: SUN EXPLORATION & PRODUCTION CO. DATE: 06/15/82  
 WELL: #2-32 WOODENSHOE  
 FIELD: WILDCAT

	BEFORE SHOW	DURING SHOW	AFTER SHOW
DRILLING RATE	3-3.5min/ft	1.5min/ft	4min/ft
TOTAL GAS UNITS	0	8	1
%METHANE	0	2	0
%ETHANE	0	.16	0
%PROPANE	0	.05	0
%BUTANE (ISO)	0	.03	0
%BUTANE (NORM)	0	.06	0
%PENTANES	0	.18	0

SAMPLE LITHOLOGY: Limestone: black, dark brown, oil smell. Trace of shale, trace of Chert.

SAMPLE FLUO-CUT: SEE LOG

DST #1	INTERVAL 2442	TO 2526	DATE: 06/16/82	
			TIME	PRESSURE (psi)
	min.		top chart	bottom chart
INITIAL HYDROSTATIC			1069	1136
INITIAL OPEN	30		from 27 to 27	from 53 to 53
INITIAL SHUT-IN	60		to 295	to 345
SECOND OPEN	120		from 27 to 27	from 53 to 53
SECOND SHUT-IN	120		to 215	to 265
FINAL HYDROSTATIC	1069		1136	

BHT (F.): 84

1ST FLOW: NO GAS TO SURFACE, DEAD THROUGHOUT

2ND FLOW: NO GAS TO SURFACE, DEAD THROUGHOUT

REMARKS :

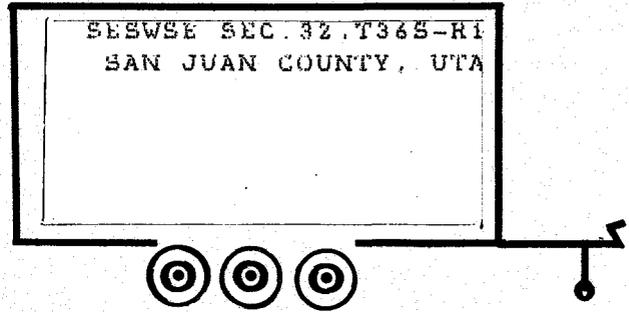
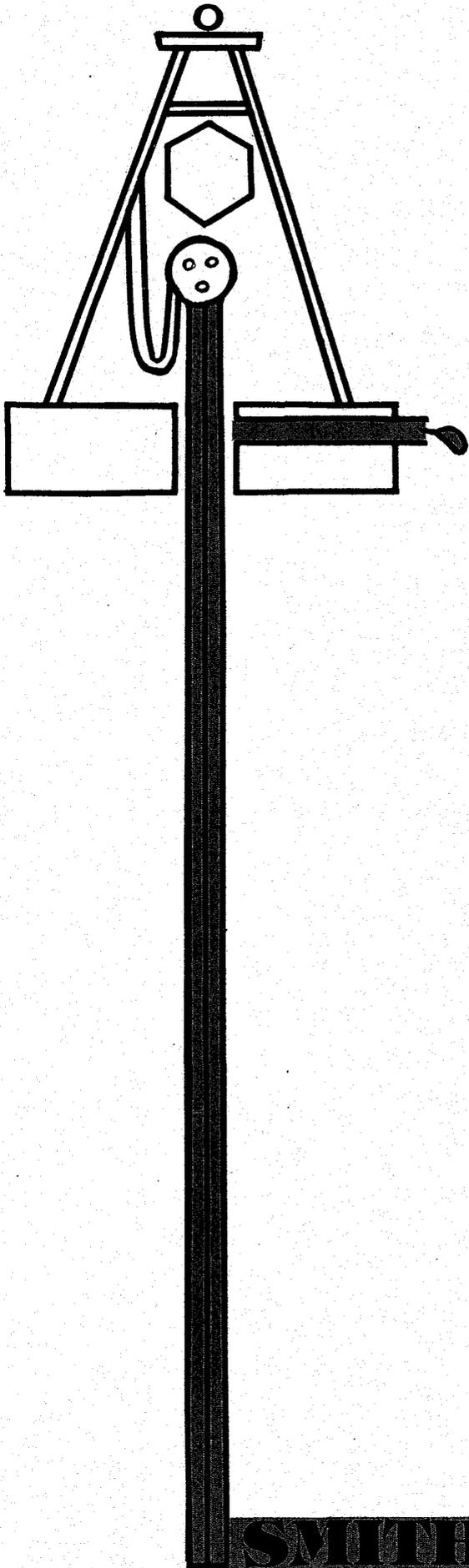
DRILL PIPE RECOVERY: 5 FEET DRILLING FLUID

SAMPLE CHAMBER REC.: 5 psi, 1450 cc Drilling Fluid

	WT. ppg	H/W	NITRATES ppm	CHLORIDES ppm	CHROMATES ppm
DRILL PIPE: top:	/	/	at...F./	/	/
middle:	/	/	at...F./	/	/
bottom:	/	/	at...F./	/	/
SAMPLE CHMBR:	/	4.1	at 85.F./	1100	/
FIT MUD:	8.6	3.5	at 83.F./	1350	/

(GAUGED FLOW: )

GEO-TECHNOLOGIST: MR. NICK LARKIN



**SMITH MUD LOGGING INC.**

SUN EXPLO. & PROD. CO.  
2-32 WOODENSHOE  
SESWSE SEC. 32, T36S-R18E  
SAN JUAN COUNTY, UTAH

SMITH MUD LOGGING  
352-2275 ROAD  
DELTA, COLORADO 81416

PH: (303) 874-7451

SUN EXPLORATION & PRODUCTION CO.

#2-32 WOODENSHOE

SE SW SE SEC. 32, T36S-R18E

SAN JUAN COUNTY, UTAH

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DRILLING CONTRACTOR:

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FARMINGTON, NEW MEXICO

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GEO-TECHNOLOGISTS:

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MR. NICK LARKIN  
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DELTA, COLORADO

DRILLING FLUID:

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SCHLUMBERGER  
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SUN EXPLORATION & PRODUCTION CO.  
 #2-32 WOODENSHOE  
 SE SW SE SEC. 32. T36S-R18E  
 SAN JUAN COUNTY, UTAH

## SUMMARY OF DAILY ACTIVITY

DATE	ACTIVITY	MIDNITE DEPTH	24 HOUR FOOTAGE
06-09-82	Unit#1644 on location, rigged up	718	0
06-10-82	Wait on cement, wait on bit, weld drill head	718	0
06-11-82	Testing BOP, 3 P.M. started drilling	718	255
06-12-82	Drilling, 1/2 hour service rig, surveys	973	509
06-13-82	Drilling, Surveys, 1/2 hour service	1482	388
06-14-82	Drilling, Surveys, 1/2 hour service	1870	589
06-15-82	Drilling, TOH NB#5, TIH, Reaming, Drilling, condition for DST	2359	167
06-16-82	DST, TOH, TIH, Drilling	2526	127
06-17-82	Drilling	2653	585
06-18-82	Drilling, TOH, Hole in pipe	3238	157
06-19-82	TIH, Drilling	3395	264
06-20-82	Drilling	3659	1
	TD 3660, Unit #1644 released		

SUN EXPLORATION & PRODUCTION CO.  
 #2-32 WOODENSHOE  
 SE SW SE SEC. 32, T36S-R18E  
 SAN JUAN COUNTY, UTAH

## BIT RECORD

BIT#	MAKE	SIZE	TYPE	DEPTH	FOOTAGE	HOURS
				OUT	USED	
1	HUGHES	13 3/4	OWV	130	50	5
2	SMITH	13 3/4	BT	292	162	-
3	SEC.	13 3/4	S-3-J	718	426	19
4	SEC.	8 3/4	S-84-F	969	251	6
4A	SEC.	8 3/4	S-84-FRR	2461	1492	74 1/2
5	STC	8 3/4	F-3 RR	3298	837	34 1/4
6	STC	8 3/4	F-3 RR			

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## DEVIATION RECORD SHEET

DEPTH	DEVIATION(Deg)
	o
231	0.25
	o
416	0.75
	o
634	1.00
	o
665	1.25
	o
718	1.25
	o
969	1.75
	o
1268	2.50
	o
1393	2.50
	o
1482	1.75
	o
1635	2.00
	o
1727	1.75
	o
1788	1.50
	o
1848	1.25
	o
2033	1.50
	o
2526	1.75
	o
3298	1.75

SMITH MUD LOGGING  
DST & SHOW SHEET

SHOW #1 INTERVAL 2823 TO 2327  
 COMPANY: SUN EXPLORATION & PRODUCTION CO. DATE: 06/14/82  
 WELL: #2-32 WOODENSHOE  
 FIELD: WILDCAT

	BEFORE SHOW	DURING SHOW	AFTER SHOW
	3min/ft	1min/ft	3min/ft
DRILLING RATE			
TOTAL GAS UNITS	0	2	2
%METHANE	0	.4	0
%ETHANE	0	.05	0
%PROPANE	0	.001	0
%BUTANE (ISO)	0	.001	0
%BUTANE (NORM)	0	.001	0
%PENTANES	0	0	0

SAMPLE LITHOLOGY: 100% Limestone: Tan, white, buff, chalky. Trace of Shale: red brown, medium sandy.  
 SAMPLE FLUO-CUT: Limestone: 10 to 15%, Bright blue yellow fluorescence, streaming cut.

DST # INTERVAL TO DATE:  
 TIME min. PRESSURE (psi) top chart bottom chart

INITIAL HYDROSTATIC

	from	to	from	to
INITIAL OPEN				
INITIAL SHUT-IN	to		to	
SECOND OPEN	from	to	from	to
SECOND SHUT-IN	to		to	

FINAL HYDROSTATIC

BHT ( F. ):  
 1ST FLOW:  
 2ND FLOW:  
 REMARKS :  
 DRILL PIPE RECOVERY:  
 SAMPLE CHAMBER REC.:

	WT. ppg	R/W	NITRATES ppm	CHLORIDES ppm	CHROMATES ppm
DRILL PIPE: top:	/	/	at... F./	/	/
middle:	/	/	at... F./	/	/
bottom:	/	/	at... F./	/	/
SAMPLE CHMHR:	/	/	at... F./	/	/
PIT MUD:	/	/	at... F./	/	/

( GAUGED FLOW: )

GEO-TECHNOLOGIST: MR. DREW BAVIN

SMITH MUD LOGGING  
DST & SHOW SHEET

SHOW #2 INTERVAL 2482 TO 2518  
 COMPANY: SUN EXPLORATION & PRODUCTION CO. DATE: 06/15/82  
 WELL: #2-32 WOODENSHOE  
 FIELD: WILDCAT

	BEFORE SHOW	DURING SHOW	AFTER SHOW
DRILLING RATE	3-3.5min/ft	1.5min/ft	4min/ft
TOTAL GAS UNITS	0	8	1
%METHANE	0	2	0
%ETHANE	0	.16	0
%PROPANE	0	.05	0
%BUTANE (ISO)	0	.05	0
%BUTANE (NORM)	0	.06	0
%PENTANES	0	.18	0

SAMPLE LITHOLOGY: Limestone: black, dark brown, oil smell. Trace of shale, trace of Chert.

SAMPLE FLUO-CUT: SEE LOG

DST #1 INTERVAL 2442 TO 2526 DATE: 06/16/82  
 TIME min. PRESSURE (psi) top chart bottom chart

INITIAL HYDROSTATIC		1069		1136
INITIAL OPEN	30	from 27	to 27	from 53 to 53
INITIAL SHUT-IN	60	to 295		to 345
SECOND OPEN	120	from 27	to 27	from 53 to 53
SECOND SHUT-IN	120	to 215		to 265
FINAL HYDROSTATIC	1069		1136	

BHT (F.): 84

1ST FLOW: NO GAS TO SURFACE, DEAD THROUGHOUT

2ND FLOW: NO GAS TO SURFACE, DEAD THROUGHOUT

REMARKS :

DRILL PIPE RECOVERY: 5 FEET DRILLING FLUID

SAMPLE CHAMBER REC.: 5 psi, 1450 cc Drilling Fluid

	WT. ppg	R/W	NITRATES ppm	CHLORIDES ppm	CHROMATES ppm
DRILL PIPE: top:	/	/ at ... F./	/	/	/
middle:	/	/ at ... F./	/	/	/
bottom:	/	/ at ... F./	/	/	/
SAMPLE CHMBR:	/	/ 4.1 at 85 F./	/	/ 1100	/
PIT MUD:	/ 8.6	/ 3.5 at 83 F./	/	/ 1350	/

(GAUGED FLOW: )

GEO-TECHNOLOGIST: MR. NICK LARKIN