



THE NAVAJO NATION

P.O. BOX 308 • WINDOW ROCK, ARIZONA 86515 • (602) 871-4941

PETERSON ZAH
PRESIDENT

MARSHALL PLUMMER
VICE PRESIDENT

July 7, 1993

Mr. Toby McWilliams
Boyd & McWilliams Energy Group, Inc.
300 W. Texas, Suite 704
Midland, Texas 79701

Dear Mr. McWilliams:

Enclosed is a copy of the Navajo Nation Archaeology Department's report NNAD 93-200. The report details the results of the archaeological inventory of a proposed well pad location on McCracken Mesa, San Juan County, Utah.

Since no cultural properties were identified during the NNAD inventory, archaeological clearance is being recommended for the proposed well location. A copy of this report is being sent to the Navajo Nation Historic Preservation Department (NNHPD) for review. Once the NNHPD has made a clearance determination, you will be notified directly by them.

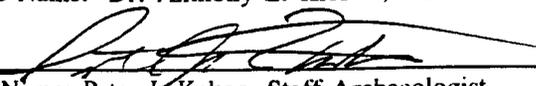
As we discussed, since no upgrading of access roads is anticipated, a survey was not needed in those areas.

If you have any questions or comments concerning this report, please call me at (505) 327-6115.

Sincerely,

Peter J. Kakos
NNAD Archaeologist
609 south Behrend
Farmington, New Mexico 87401

Enclosure

1. HPD REPORT NO.	2. (FOR HPD USE ONLY)	3. RECIPIENTS ACCESSION NO.
4. TITLE OF REPORT: An Archaeological Survey of a Proposed Well Location for Boyd & McWilliams Energy Group on McCracken Mesa, San Juan County, Utah AUTHOR(S): Peter J. Kakos		5. FIELDWORK DATES 6-30-93
7. CONSULTANT NAME AND ADDRESS: Gen'l Charge: Dr. Anthony L. Klesert Org. Name: Navajo Nation Archaeology Department Org. Address: P. O. Box 689 Window Rock, Arizona 86515 Phone: (602) 871-6540		6. REPORT DATE 7-7-93
10. SPONSOR NAME AND ADDRESS: Ind. Responsible: Toby McWilliams Org. Name: Boyd & McWilliams Energy Group, Inc. Org. Address: 300 W. Texas, suite 704 Midland, Texas 79701 Phone: (602) 729-5721 415-684-7921		8. Permit No. NTC
13. LOCATION (MAP ATTACHED): a. Chapter: Aneth b. Agency: Shiprock c. County: San Juan d. State: Utah e. Land Status: Navajo Indian Reservation f. UTM Center: Zone 12; N4142180, E650360 g. Area: T.39S R.24E, Sec. 8 E 1/2 NW 1/4 NE 1/4; SL PM&B h. 7.5' Map Name(s): McCracken Spring, Utah 1989 (provisional)		9. Consultant Report No. NNAD 93-200
14. REPORT /x/ OR SUMMARY (REPORT ATTACHED) // a. Description of Undertaking: See Supplemental Sheet b. Existing Data Review: See Supplemental Sheet c. Area Environmental & Cultural Setting: See Supplemental Sheet d. Field Methods: See Supplemental		11. SPONSOR PROJECT NO. N/A
15. CULTURAL RESOURCE FINDINGS: a. Location/Identification of Each Resource: No cultural properties were identified b. Evaluation of Significance of Each Resource (above): N/A		12. AREA OF EFFECT: 1.52 ac AREA SURVEYED: 4.82 ac
16. MANAGEMENT SUMMARY (RECOMMENDATIONS): Since no cultural properties were identified during the NNAD inventory, archaeological clearance is recommended.		
17. CERTIFICATION: SIGNATURE: _____ General Charge Name: Dr. Anthony L. Klesert, Director SIGNATURE:  Direct Charge Name: Peter J. Kakos, Staff Archaeologist		DATE: _____ DATE: 7-7-93

AIR Supplemental Sheet: NNAD 93-200

14. REPORT:

- a. **Description of Undertaking:** The Boyd & McWilliams Energy Group, Inc. proposes to construct a well pad on McCracken Mesa, San Juan County, Utah. The location is situated 660 feet (201 m) from the north line and 1850 feet (564 m) from the east line of Section 8, Township 39 South, Range 24 E, SLPM. The B & M Energy Group plans to construct a well head, reserve pit, and associated facilities in an area measuring 300 feet (91.46 m) by 220 feet (67.07m). Extensive surface and subsurface disturbance is anticipated within the well location. Heavy equipment will be used to clear the area for the well pad and reserve pit. Drilling equipment will eventually be used for subsurface drilling.

Access to the well location will be made on existing paved roads, and two-track dirt roads, and will not require any mechanical upgrading.

The total area of effect for the project measures 300 feet (91.46 m) by 220 feet (67.07 m) or about 1.52 acres (.62 ha.).

- b. **Existing Data Review:** A records check of NNAD, and BIA-NAO records prior to the fieldwork indicates no previously recorded sites are located within a 0.5-mile (0.8-km) radius of the project area. Numerous seismic line surveys were conducted in the vicinity of the project area by the NNAD for Chuska Energy Company (see Cleveland 1993).

A check of Van Valkenburgh (1974) indicates that the nearest sacred places are the Bears Ears (*Shash Jaa*--Bears Ears), which is located about 35 miles (56 km) northwest, and Sleeping Ute Mountain (*Dzilnaazhini*--Black Mountain Sloping Down), which is located about 25 (40 km) miles southeast of the project area. General overviews for the prehistory of the area can be provided by Brew (1946), and by Hewett, Powers, and Kemrer (1979).

Brew, John O.

1946 Archaeology of Alkali Ridge, Southeastern Utah. *Papers of the Peabody Museum of American Archaeology and Ethnology* 21.

Cleveland, Elaine O.

1993 An Archaeological Survey of Chuska Energy Company's Program 1991 SW McCracken Mesa, Group 2 Seismic Lines near Montezuma Creek in San Juan County, Utah. *Navajo Nation Archaeology Department Report* 91-077.

Hewett, Nancy S., Margaret A. Powers, and Meade Kemrer

1979 An Archaeological Survey and Evaluation of Cultural Resources Along the San Juan River near Aneth, Utah. *Division of Conservation Archaeology Contributions to Anthropology Series* 46.

AIR Supplemental Sheet: NNAD 93-200

Van Valkenburgh, Richard F.
1974 Navajo Sacred Places. In *Navajo Indians III*, edited by Clyde Kluckhohn,
pp. 9-199. Garland Publishing, New York, New York.

- c. Area Environmental & Cultural Setting: The project area is located on McCracken Mesa. Elevation is about 5150 feet (1570 m) above mean sea level. Sediments in the immediate vicinity consist of eolian sands and silt. Alkali Canyon is located about 1 mile (1.6 km) to the northeast. Vegetation consists primarily of sage, snakeweed, and cheatgrass.

There is very little development in the area. No power lines, or commercial enterprises occur, except for Hatch's Trading Post which is located about 7 miles (11 km) east of the project area. Local residents live in scattered homesites that dot the mesa tops. Livelihood is derived from livestock raising, and some jobs that may occur in nearby Montezuma Creek, Aneth, and Blanding.

- d. Field methods: A total of 4.82 acres (1.95 ha.) was surveyed in conjunction with this project. The area surveyed measures 500 feet (152.44 m) by 420 feet (128.05 m) which includes the area of effect encompassing 300 feet (91.46 m) by 220 feet (67.07 m) and a 100-foot (30.49 m) wide buffer zone.

The survey was conducted by walking parallel transects space about 10 m apart. Notes were taken on the environmental and cultural setting, and the project area location during the NNAD inventory. An ethnographic interview was attempted with nearby residents in order to acquire information on traditional cultural properties, sacred places, and burials that might be located in the vicinity; however, local residents were unavailable during the course of the NNAD field work.

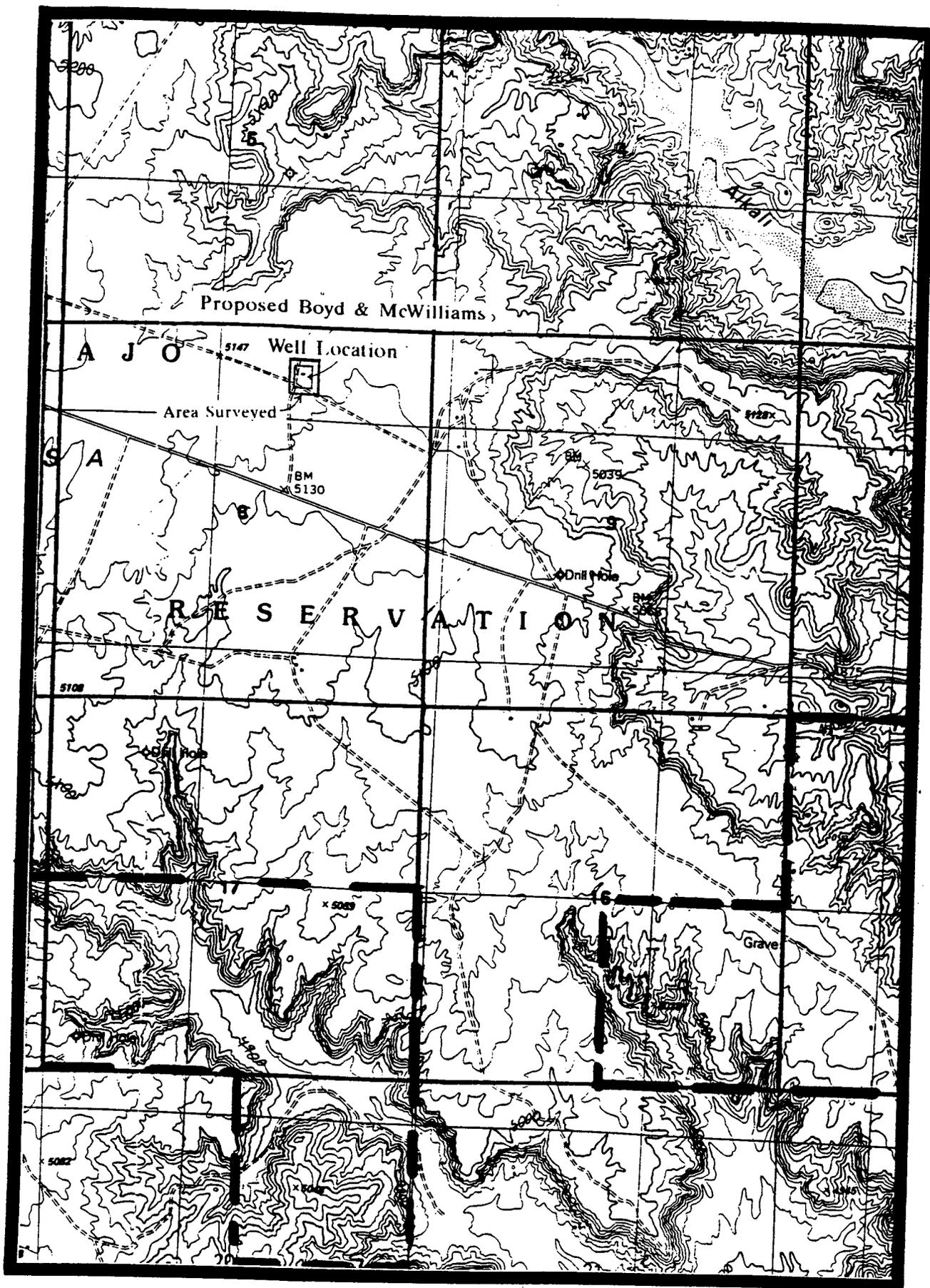


Figure 2. Vicinity map showing location of proposed Boyd and McWilliams well location. McCracken Spring, Utah, 1989 (Provisional); T.39S, R.24E (NNAD 93-200).

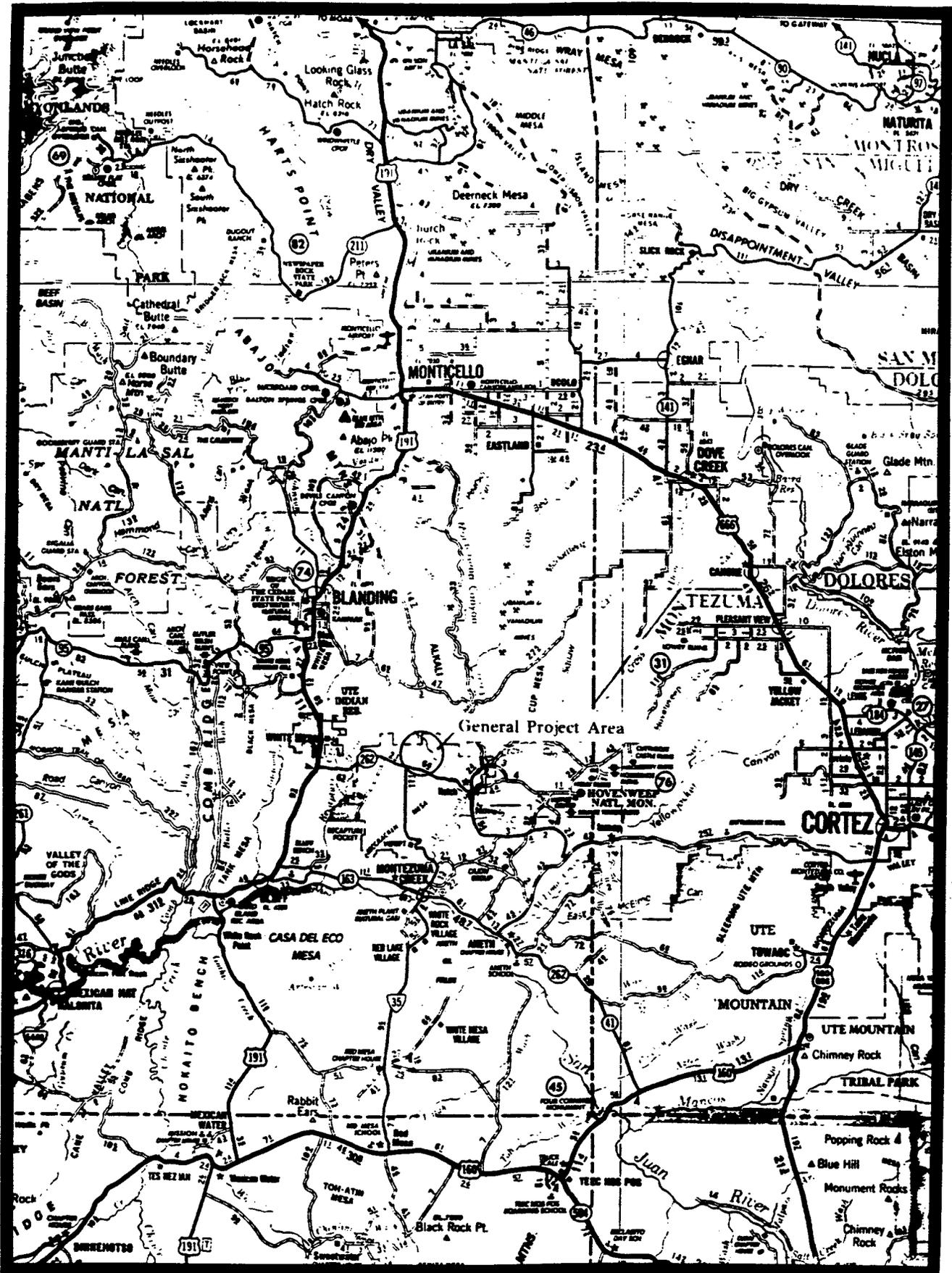
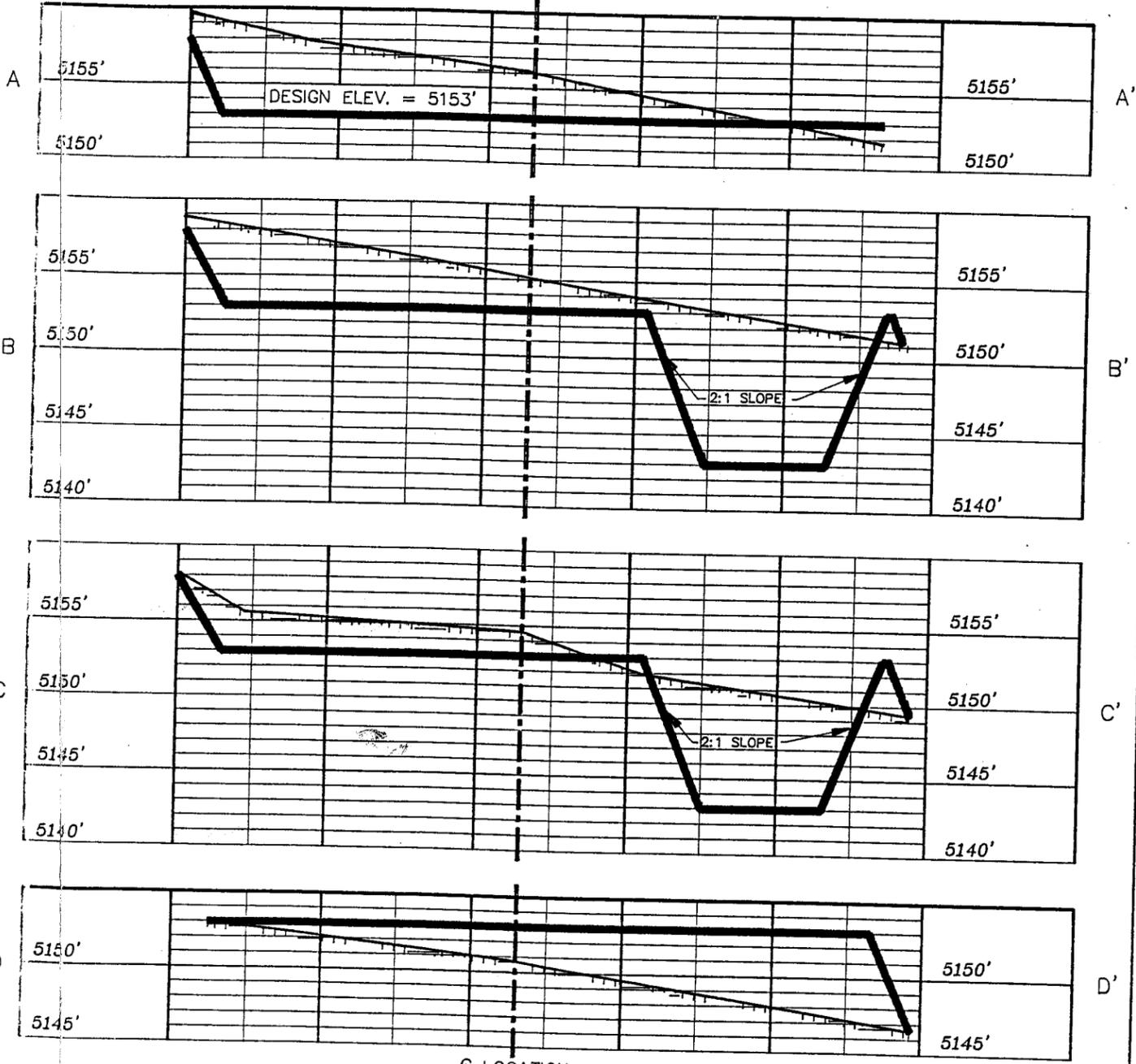
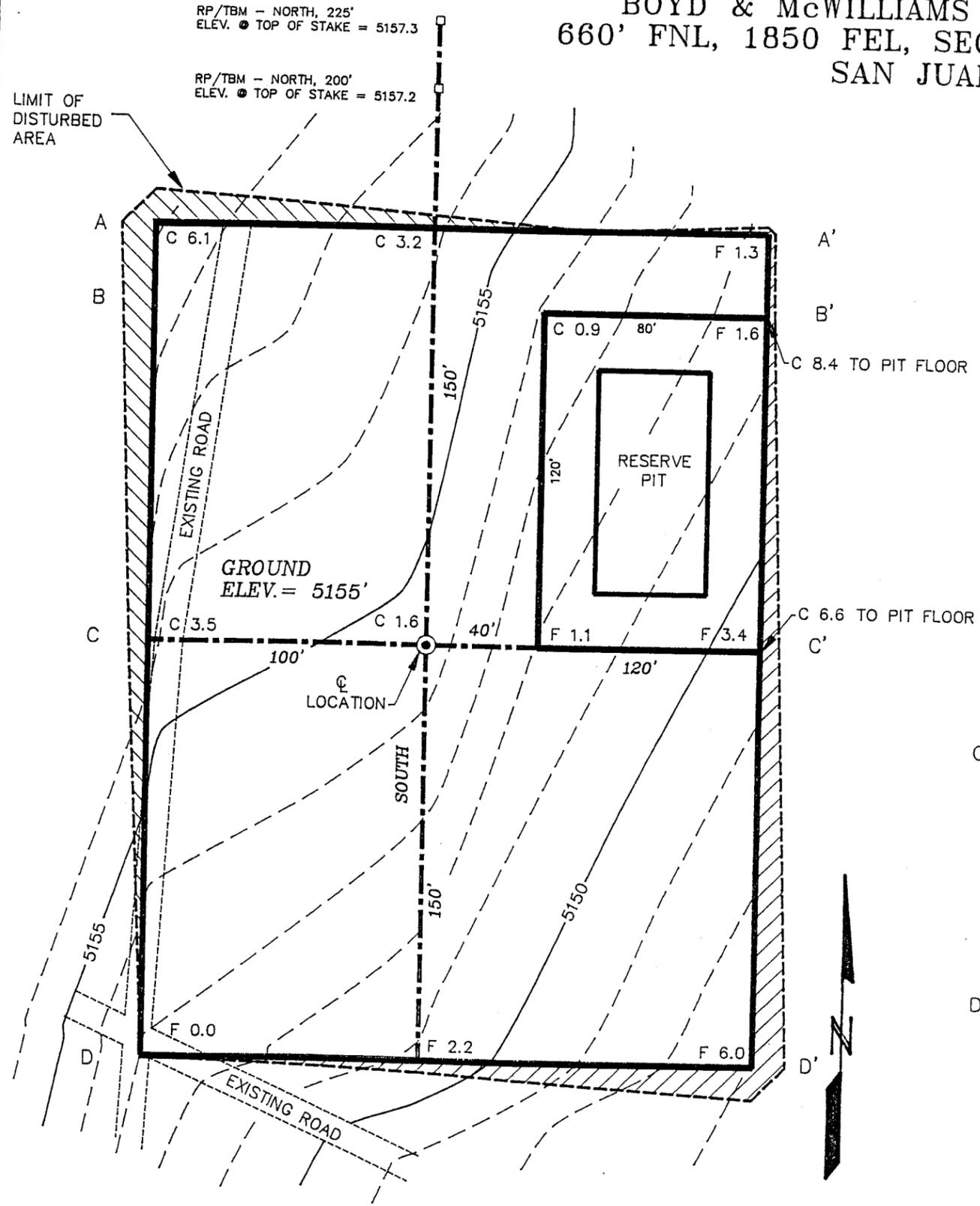


Figure 1. General project area vicinity map. Indian Country Road Map, 1989 (NNAD 93-200).

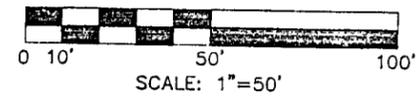
BOYD & McWILLIAMS - TURQUOISE HORSE No. 1
660' FNL, 1850 FEL, SECTION 8, T 39 S, R 24 E, S.L.M.
SAN JUAN COUNTY, UTAH

CROSS SECTIONS
 HORIZONTAL SCALE: 1" = 50'
 VERTICAL SCALE: 1" = 10'



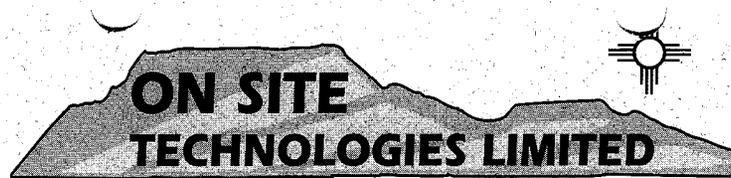
VOLUMES
 TOTAL CUT = 4757 cu. yds.
 TOTAL FILL = 2401 cu. yds.
 TOP SOIL = 407 cu. yds.
 WASTE = 1949 cu. yds.
 RESERVE PIT CAPACITY = 10686 bbls.

REVISED 7-9-93 TO CORRECT
 PROFILE AND TBM ELEVATIONS
 REVISED 7-12-93 TO CHANGE
 WELL NAME.



CONTOUR INTERVAL = 1.0'

BOYD & McWILLIAMS		
SCALE: 1" = 50'	WELL SITE PLAN	DRAWN BY: DOF
DATE: 7-01-93		REVISED: 7-12-93
TURQUOISE HORSE No. 1 SECTION 8, T 39 S, R 24 E, SLM SAN JUAN COUNTY, UTAH		
SURVEYED BY CLARK-REED & ASSOC. P.O. BOX 3031, DURANGO, COLORADO 81301 (303) 247-0307		JOB NUMBER RB93031



July 27, 1993

RECEIVED

JUL 29 1993

DIVISION OF
OIL GAS & MINING

Frank Matthews
State of Utah
Division of Oil, Gas and Mining
355 West Northtemple
#3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1230

Re: Application for Permit to Drill
Turquoise Horse #1
Section 8, T39S, R24E,SLM

Dear Mr. Matthews:

Pursuant to our discussion earlier this month, please find enclosed The Bureau of Land Management Application for Permit to Drill. During our conversation you requested that I send you copies of all documentation sent to the Bureau of Land Management regarding the above-mentioned.

If you have any questions or concerns, please do not hesitate to contact me at (505) 326-6393. Thank you.

Very truly yours,

Tora Baldwin
Engineering Tech

tb
enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
JUL 29 1993

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK
 DRILL DEEPEN

b. TYPE OF WELL
 OIL WELL GAS WELL OTHER

2. NAME OF OPERATOR
 BOYD & MCWILLIAMS ENERGY GROUP, INC.

3. ADDRESS AND TELEPHONE NO.
 300 WEST TEXAS, SUITE 704, MIDLAND, TEXAS 79701

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
 At surface: 660' FNL and 1850' FNL
 At proposed prod. zone: SECTION 8, T39S, R24E, SLM

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
 NW 1/4 NE 1/4

15. DISTANCE FROM PROPOSED LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drig. unit line, if any) 660'

16. NO. OF ACRES IN LEASE 1680.00

17. NO. OF ACRES ABANDONED TO THIS WELL 40

18. DISTANCE FROM PROPOSED LOCATION TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT. 4500

19. PROPOSED DEPTH 7800'

20. ROTARY OR CABLE TOOLS ROTARY

21. ELEVATIONS (Show whether DF, RT, GR, etc.) 5118 GLE

22. APPROX. DATE WORK WILL START* AS SOON AS PERMITTED

5. LEASE DESIGNATION AND SERIAL NO.
 U65994

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME, WELL NO.
 TURQUOISE HORSE

9. API WELL NO.
 #1

10. FIELD AND POOL, OR WILDCAT
 WILDCAT

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA.
 NE4, SEC 8, T39S, R24E

12. COUNTY OR PARISH | 13. STATE
 SAN JUAN | UTAH

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"	48#	80'	150 sks 1.8 ft ³ /sks 177 cu ft.
12-1/4"	8-5/8"	36#	2000'	Lead 500 sks 2.3 ft ³ /sks - 236 cu ft.
7-7/8"	5-1/2"	15.5 & 20#	7800'	Tail 400 sks 1.18 ft ³ /sks - 472 cu ft.
				Lead 350 sks 2.32 ft ³ /sks - 812 cu ft.
				Tail 50 sks 1.18 ft ³ /sks - 59 cu ft.

BOYD & MCWILLIAMS ENERGY GROUP, INC., PROPOSE TO DRILL THE SUBJECT TURQUOISE HORSE OIL WELL. PLEASE SEE ATTACHED DATA.

APPROVED BY THE STATE
 OF UTAH DIVISION OF
 OIL, GAS, AND MINING
 DATE: 9/23/93
 BY: [Signature]
 WELL SPACING: 2649-2-3

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

SIGNER: [Signature] TITLE: ENGINEER DATE: 7-20-93

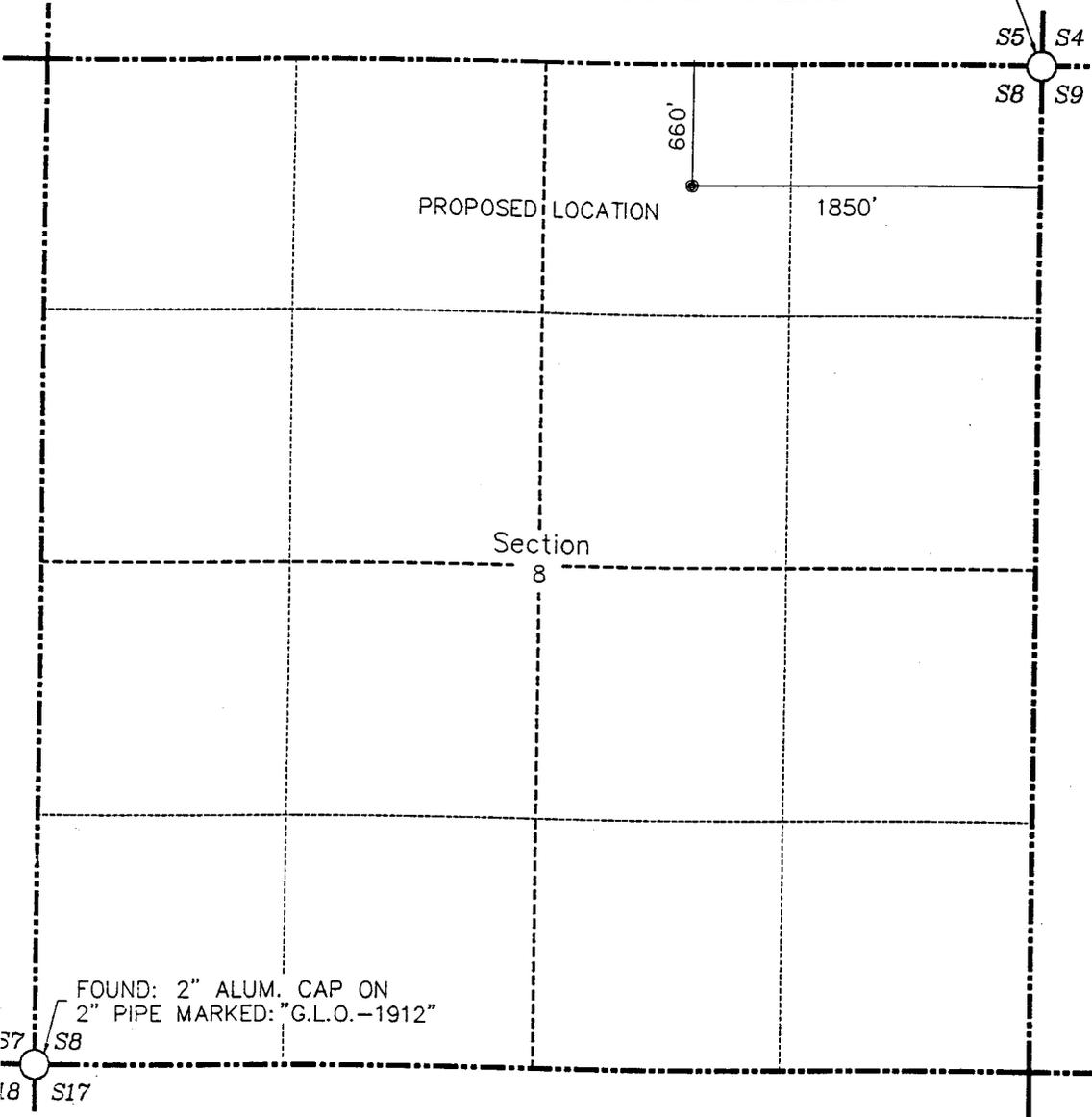
(This space for Federal or State office use)
 PERMIT NO. 43-037-31716 APPROVAL DATE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
 CONDITIONS OF APPROVAL, IF ANY:

APPROVED BY _____ TITLE _____ DATE _____

WELL LOCATION PLAT

FOUND: 2" ALUM. CAP ON
2" PIPE MARKED: "G.L.O.-1912"



SCALE: 1"=1000'

WELL LOCATION: BOYD & McWILLIAMS - TURQUOISE HORSE NO. 1

Located 660 feet South of the North line and 1850 feet West of the East line of Section 8, Township 39 South, Range 24 East, Salt Lake Meridian, San Juan County, Utah.

Existing Ground elevation determined at 5155 feet, based on N.G.S. monument = 5130.00 feet.

HEREBY CERTIFY THAT THIS PLAT REPRESENTS A SURVEY PERFORMED BY ME, OR UNDER MY DIRECT RESPONSIBILITY, SUPERVISION, AND CHECKING, AND THAT I BELIEVE IT CORRECT TO THE BEST OF MY BELIEF AND KNOWLEDGE.

24315



LOUIS JOBE
REGISTERED LAND SURVEYOR

BOYD & McWILLIAMS
MIDLAND, TEXAS

WELL LOCATION PLAT
TURQUOISE HORSE NO. 1
SECTION 8, T39S, R24E, SLM
SAN JUAN COUNTY, UTAH

Clark-Reed & Assoc.
Durango, Colorado

DRAWN BY: DOF

DATE: 7/01/93

JOB NUMBER
A93031

Application for Permit to Drill
 Boyd & McWilliams Energy Group, Inc.
 Turquoise Horse #1
 NE/4 Section 8, T-39-S, R-24-E
 San Juan County, Utah

A. **Drilling Program**

1. Surface Formation and Estimated Formation Tops:

Wingate	1695'
Chinle	2020'
Shinarump	2910'
Cutler	3045'
Ismay	6020'
Gothic	6200'
Desert Creek	6235'
Chimney Rock	6320'
Akah	6345'
Barker Creek	6675'
Alkali Gulch	7114'
Leadville	7565'

2. Estimated Depth at which Oil, Gas, Water or Other Mineral-Bearing Zones are Expected to be Encountered:

	<u>Formation</u>	<u>Depth</u>
Expected Oil Zones:	Ismay	6020'
	Desert Creek	6235'
	Barker Creek	6675'
	Leadville	7565'
Expected Gas Zones:	N/A	
Expected Water Zones:	Wingate	1695'
	Chinle	2020'
Expected Mineral Zones:	N/A	

All fresh water and prospectively valuable minerals encountered during drilling will be recorded by depth, cased and cemented. All oil and gas shows will be tested to determine commercial potential.

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3. Pressure Control Equipment: BOP's to be used are detailed in the attached diagram.

Testing of BOP – All Blow Out prevention equipment will be tested upon installation. This will include casing, casing head and all related equipment and connections associated with blow out prevention and/or control. Testing will be to the lesser of the following: (1) Full manufacturer's working pressure rating of equipment; (2) 70% of minimum internal yield pressure of casing; (3) or 1 psi/ft. of last casing string depth.

All BOP's will be checked each trip for physical operation. Morning tower driller will also check operation components of BOP, test operation of BOP and record on driller's log.

4. Casing Program and Auxiliary Equipment:

Surface casing will be 88' of 3/8" casing.

Intermediate casing will be 2000' of 8 5/8" casing.

Production casing will be 7800 of 5 1/2" casing.

Proposed Cementing Program:

Surface casing will be cemented to surface as follows:

- a. Break circulation with water;
- b. Pump 150 sks of Class "B" cement containing 2% CaCL and 1/4#/sk cellophane flasks;
- c. Displace cement to 30' above end of casing shoe with water;
- d. WOC 12 hours.

Intermediate casing will be cemented to surface as follows:

- a. Break circulation with water;
- b. Pump 500 sks Class "B" cement containing 3% salt, 16% gel and 1 light dispersant, tail in with 200 sks of Class "B" cement containing 2% salt;

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- c. Drop cement wiper plug and displace to float with water;
- d. WOC 12 hours.

Production casing will be cemented as follows:

- a. DV tool will be set at +,- 5000'
- b. Break circulation with mud;
- c. Pump 20 bbl of chemical mud wash;
- d. Cement first stage with 400 sx class "B: cement containing fluid loss;
- e. Drop cement wiper plug and displace to float with water;
- f. Drop bomb, open tool circulate four hours and cement second state with 350sx 50/50 Poz and 50sx Class "B" neat;
- g. WOC for 72 hours or until compressive strength of 1000 psi or greater.

5. Mud Program and Circulating Medium:

Surface: 0-88'; drill 17-1/2" hole with water treated polymer/gel and lime (spud mud).

Intermediate: 88'-2000'; drill 12-1/4" hole with water treated with polymer/gel and lime. Sweep hole at intervals with gel-lime pills to clean hole. Control lost circulation with gel-LCM pills. Control seepage with Mud-Seal and fine mica.

Production Hole: 2000'-TD; drill 7-7/8" hole with fresh water/gal system to about 6000'. At 6000' convert mud system to at saturated salt mud. Maintain this system to TD. Build mud weight to 9.6#/gallon before the Lower Desert Creek, or to a mud weight sufficient to handle any abnormal pressures. Sweep and clean hole to log with 40-45 sec/qt. mud.

6. Coring, Logging and Testing program: This well will be evaluated on the basis of induction Electric Survey, Gamma Ray, Compensation Density-Application for Permit to Drill Neutron, Sonic and Caliper surveys. Cased hole logs will consist of CCL and Cement Bond Logs and Gamma Ray.

Boyd & McWilliams Energy Group, Inc.
Turquoise Horse #1
NE/4 Section 8, T-39-S, R-24-E
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7. Abnormal Conditions, Bottom Hole Pressures and potential hazards:

Bottom hole pressure gradient is 8.89#/gal - .462 psi/ft. We will prepare for drilling problems by controlling solids and mud weight.

8. Anticipated Starting Dates and notifications of Operations:

As soon as permitted.

B. THIRTEEN-POINT SURFACE USE PLAN

1. Existing Roads

- a. Existing Roads - The proposed location is situated within an existing road system which is accessed from State Road 262. Roads will be maintained in the same or better condition than presently exists.

Travel west from the "Y" on State Road 262 for 1 7/8 miles. Turn left to an unimproved road. Travel north for 3/10mile this will take you to the proposed site.

- b. Plans for improvement and/or maintenance of existing roads: Roads will be maintained in the same or better condition than presently exists.

2. Planned Access Roads:

- a. Access to the location will be along an unimproved road. Maximum grade <1% with no cuts or fills. There will be no turn outs, culverts, bridges or foreign surface materials.

The access (including any existing non-county) road will be rehabilitated or brought to Resource (Class III) Road Standards by meeting the following minimum design requirements within sixty (60) days of completion of drilling operations:

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Surface disturbance and vehicular travel will be limited to the approved location and access road. Any additional area needed will be approved by the Area Manager in advance.

The topsoil from the access road will be reserved in place. Trees and brush removed from building of the road will be stacked next to road to be used in rehabilitation.

3. Location of Existing Wells:

All wells within a one mile radius are shown on the attached map.

4. All permanent above-ground facilities (6 months or longer) will be painted a neutral, non-reflective (Juniper Green) color to blend into the surrounding area.

If a tank battery is constructed on this location it will be surrounded by a dike of sufficient capacity to contain 1-1/2 times the storage capacity of the largest tank; all load lines and valves will be placed inside the dike surrounding the tank battery.

All site security guidelines identified in 43 CFR 3162.7-5 and ONSHORE OIL AND GAS ORDER NO. 3 - SITE SECURITY will be adhered to.

Gas measurements will be conducted in accordance with the ONSHORE OIL AND GAS ORDER NO. 5 - GAS MEASUREMENT and 43 CFR 3162.7-3.

Gas meter runs for each well will be located within five hundred (500) feet of the well head. The gas flowline will be buried from the well head to the meter and downstream for the remainder of the pad. meter runs will be housed and/or fenced.

Oil measurement will be conducted in accordance with ONSHORE OIL AND GAS ORDER NO. 4; OIL MEASUREMENT as of the effective of August 23, 1989 and 43 CFR 3162.7-2.

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5. Location and type of Water Supply:

All water needed for drilling purposes will be obtained from:

The San Juan River at Montezuma Creek.

A temporary water use permit for this operation will be obtained from the Utah State Engineer in Pice, Utah..

Water obtained on private land, or land administered by another agency, will require approval from the owner or agency for use of that water.

6. Source of Construction Material:

Pad construction material will be obtained from on site and in place materials. Twelve (12) inches of top soil will be reserved for future rehabilitation and will be stock piled along the north edge of location. Brush and trees that are removed in order to build the proposed location will be stockpiled on the east end of the location.

The use of materials under BLM jurisdiction will conform to 43 CFR 3610.

7. Methods of Handling Waste Disposal:

The reserve pit will be constructed with at least 1/2 of the capacity in cut material.

Three sides of the reserve pit will be fenced within 24 hours after completion of construction and the fourth side within 24 hours after drilling operations cease with four (4) strands of barbed wire, or woven wire topped with barbed wire to a height of not less than four (4) feet. The fence will be kept in good repair while the pit is drying.

No liquid hydrocarbons (i.e. fuels, lubricants, formation) will be discharged to the reserve pit.

No chrome compounds will be on location.

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All garbage will be placed in a garbage basket and hauled to a county refuge facility. There will be no burning on location.

Produced waste water will be confined to the reserve pit for a period not to exceed ninety (90) days after initial production. During the ninety (90) day period, an application for approval of a permanent disposal method and location, along with the required water analysis, will be submitted for the District Manager's approval pursuant to NTL-2B.

8. Ancillary Facilities:

Chemical toilets will be provided and maintained during drilling operations.

9. Well Site Layout:

The reserve pit will be located: In the Northeast corner of pad. (See attached cut and fill diagram, also see Drilling Rig Location Plat.) (See Attached Well Site Plan, also see Well Location Plat)

10. Plans for Restoration of Surface:

- a. Within 24 hours of completion of drilling, the location and surrounding area will be cleared of all debris, materials, and junk not required for production.
- b. As soon as the reserve pit has dried or within eighteen months (18 mos.) whichever is least, all areas not needed for production (including access road) will be filled in, recontoured to approximately natural contours and as much top soil as was removed) replaced leaving enough for future restoration. The remaining top soil (if any) will be stabilized and seeded in place. If the well is a dry hole, the location and access road will be rehabilitated in total.

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c. The area will be seeded between November 1, 1993 and April 4, 1994 with:

6	lbs/acre Crested Wheatgrass
4	lbs/acre Fourwing Saltbrush
2	lbs/acre Desert/Antelope bitterbrush
1	lbs/acre Yellow Sweetclover
2	lbs/acre Forage Kochia
2	lbs/acre Bottlebrush squirreltail
2	lbs/acre Russian wildrye

d. Seed will be broadcast followed by a light harrowing. If the seed is drilled, the seeding rate can be reduced by 25% and harrowing can be eliminated.

After seeding the trees and brush will be scattered over the sight.

Scarefire, riping, water bars or other soil treatments may be required by the authorized officer at the time, depending on the soil and water conditions at the time of rehabilitation.

11. Surface and Mineral Ownership:

Surface Disposition- Navajo Tribal Trust
Mineral Ownership- Public Domain

12. Other Information:

There will be no deviation from the proposed drilling and/or work over program without prior approval from the District Manager. Safe drilling and operation practices must be observed. All wells, whether drilling, producing, suspended or abandoned and/or separate facilities, will be identified in accordance with 43 CFR 3162.6.

"Sundry Notice and Report on Wells" (Form 3160-5) will be filed for approval for all changes of plans and other operations in accordance with 43 CFR 3162.6.

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The dirt contractor will be provided with an approved copy of the surface use plan.

The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly distributing historic or archaeological sites, or for collecting artifacts. If historical or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places;
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and a time frame for the AO to complete and expedited review under 36 CFR 800.11 to confirm, through the State Historic

Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expenses of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

This permit will be valid for a period of one (1) year from the date of approval. After permit termination, a new application will be filed for approval for any future operations. If at any time the facilities located on public lands authorized by the terms of the lease are no longer included in the lease (due to a contraction in the unit or other lease or unit boundary change)

Application for Permit to Drill
Boyd & McWilliams Energy Group, Inc.
Turquoise Horse #1
NE/4 Section 8, T-39-S, R-24-E
San Juan County, Utah
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unit or other lease or unit boundary change)the BLM will process a change in authorization to the appropriate statute. The authorization will be subject to appropriate rental, or other financial obligation determined by the authorized officer.

13. Lessee's or Operator's Representative and Certification:

Representative:

Joe Wilbanks
On Site Technologies, Limited
3005 Northridge, Suite F
Farmington, New Mexico 87401
(505) 325-8786 Office
(303) 247-9210 Home

CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions that exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and the work associated with operations proposed herein will be performed by Boyd & McWilliams Energy Group, Inc. and its contractors in conformity with this plan, and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

By: Joe Wilbank Date: 7-20-93

Joe Wilbank
On Site Technologies, Ltd.
3005 Northridge, Suite F
Farmington, New Mexico 87401

(505) 325-8786 Office
(303) 247-9210 Home

Boyd & McWilliams Energy Group, Inc.

300 W. Texas, Suite 704

Midland, Texas

RECEIVED

JUL 29 1993

prepared by

W. D. Armstrong & Associates, Ltd.

Box 1131, Gallup, New Mexico

2 July 1993

DIVISION OF
OIL, GAS & MINING

ENVIRONMENTAL ASSESSMENT

TURQUOISE HORSE OIL & GAS LEASE AREA

McCracken Mesa

T 39 S, R 24 E, SLM, San Juan County, Utah

Federal Minerals, Navajo Surface

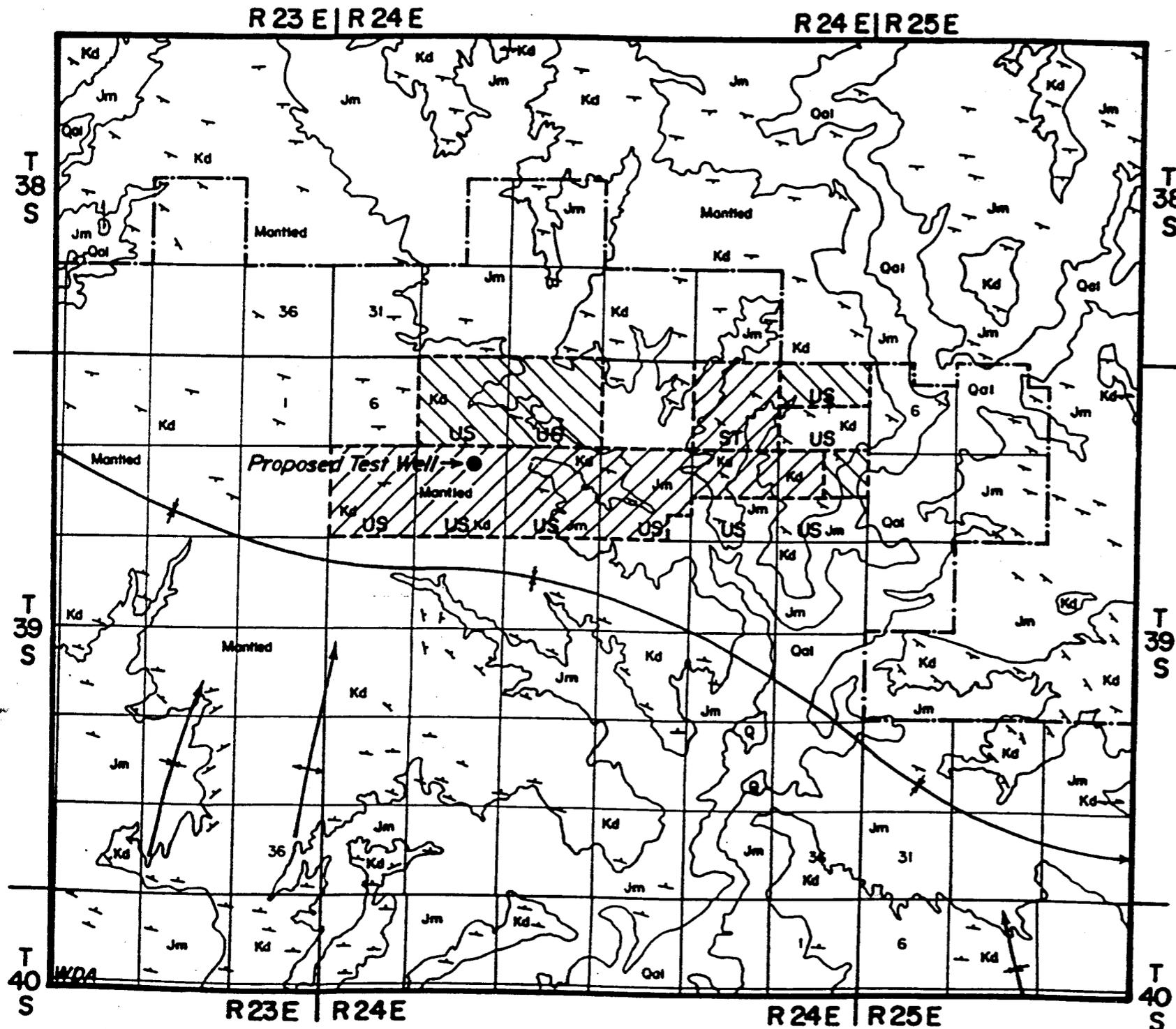
Geologic Map

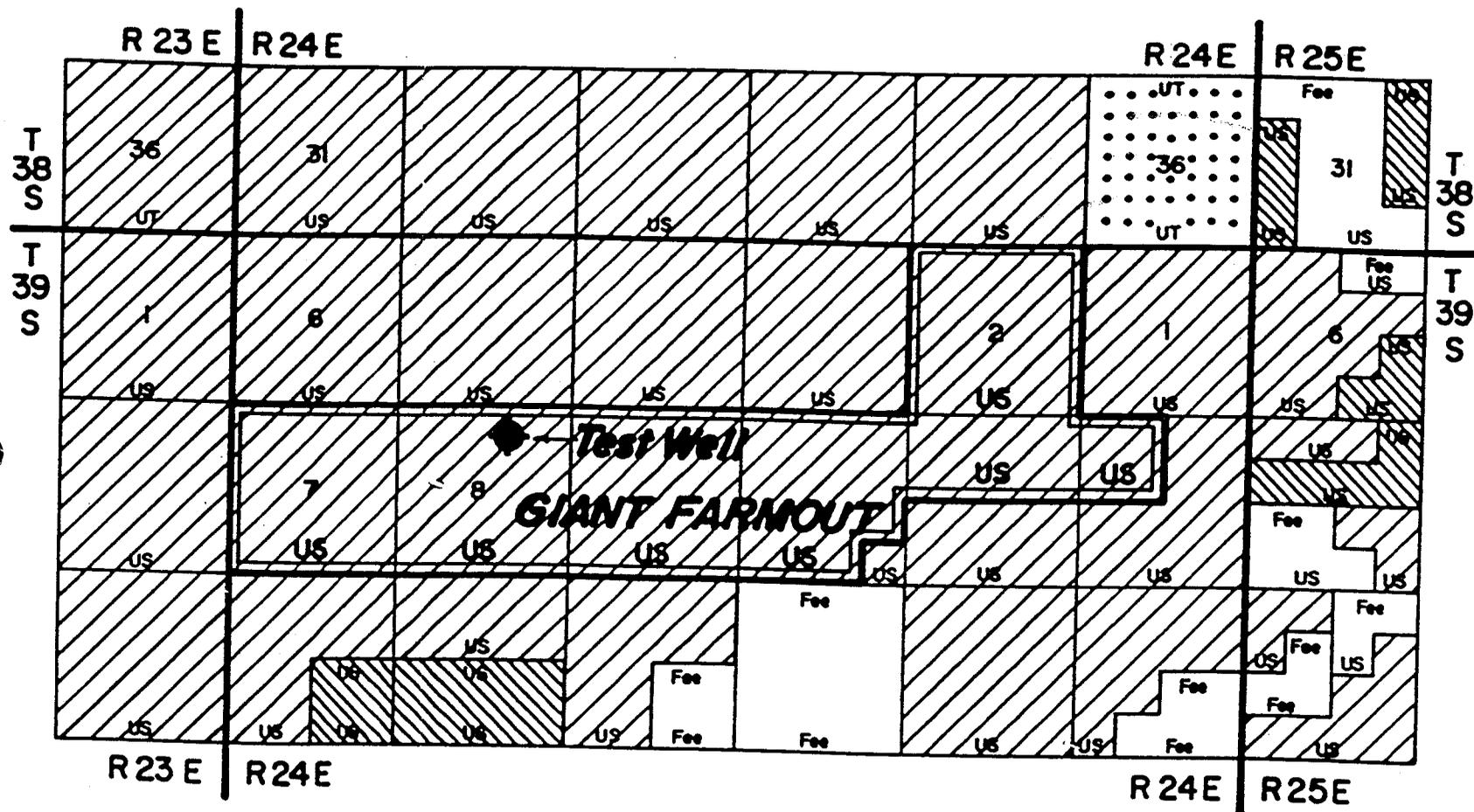
Boyd & McWilliams Oil & Gas Lease Area San Juan County, Utah Giant Farmout

W.D. Armstrong, 6/93

LEGEND

- Qal Quaternary Alluvium
- Q Quaternary Terrace & Hillwash Deposits
- Kd Dakota Sandstone, includes Burro Canyon Fm.
- Jm Morrison Formation
- Navajo Nation Boundary, Surface Ownership
- Oil & Gas Lease Boundary, BLM or State Min.
- Anticline, Arrow Denotes Plunge
- Syncline, Arrow Denotes Plunge
- US/ST Minerals Ownership, BLM/State of Utah
- Dip, 0° to 3°
- Dip, 3° to 10°
- Dip, 10° to 25°



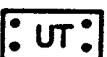
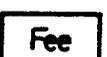


Land Status

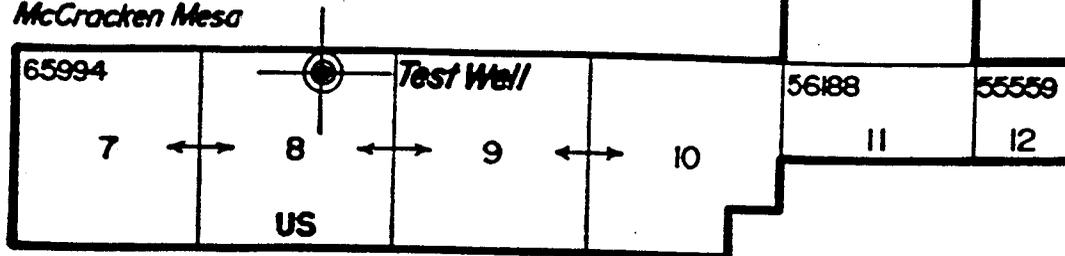
Boyd & McWilliams
 Oil & Gas Lease Area
 San Juan County, Utah
(Giant Farmout)

W.D. Armstrong, 6/93

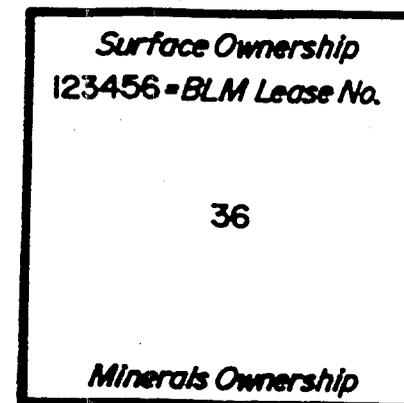
LEGEND

-  Navajo Nation Surface Ownership, Reservation
-  US Surface/Minerals Ownership, BLM Juris.
-  State of Utah Surface/Minerals Ownership
-  Private (Deeded) Surface/Minerals Ownership

Giant Farmout, Boyd & McWilliams Test Well
 San Juan County, Utah, T39S, R24E, Sec. 8, SLM
 650' FNL, 1980' FEL; US Minerals, Navajo Res. Surface
 McCracken Mesa



Sample Section



ENVIRONMENTAL ASSESSMENT MATRIX

Boyd & McWilliams Oil & Gas Lease Area

T 39 S, R 24 E, San Juan County, Utah

EXPLANATION:

An environmental assessment of the proposed Boyd & McWilliams lease area located on McCracken Mesa, San Juan County, Utah, can best be summarized and illustrated by a matrix analysis, using the NEPA Compliance Worksheet (Rev. 10/01/82) as a guideline. The accompanying matrices identify all proposed project actions along the left margin of the graph, and plot their respective anticipated impacts against the existing environmental conditions as listed across the top of the matrix. A box located at the intersection of each proposed action and the corresponding existing environmental condition, divided by a diagonal, shows both short-term and long-term impacts. The upper-left portion of any box contains a number which represents the short-term magnitude of the impact, and the lower-right portion of each box contains a number which expresses the long-term magnitude of the impact. Numbers in these boxes range between -1 and -10 for negative impacts, and between 1 and 10 for positive ones. Smaller numbers indicate less impact-magnitude than larger ones, and zeros represent no anticipated impact whatsoever.

A total of forty-one existing environmental conditions applicable to the proposed oil and gas development project were plotted against the nine program phases. A large number of boxes located at intersections of proposed actions and existing environmental conditions show little or no short-term impacts on the present environment, and no long-term effects. In fact, some of the long-term effects of this development project will be an improvement over existing conditions, especially in areas such as erosion control and increased grass cover resulting from the reclamation of those areas disturbed.

MATRIX EXAMPLE:

The box in the matrix which is located at the intersection of Grasses (an existing environmental condition) and the geophysical survey (a proposed action) contains a -2 in the upper-left corner, signifying a minor short-term impact on existing grass conditions because of vehicular traffic and resulting soil compaction. The lower-right corner of this box indicates a 4, signifying considerable positive long-term effects due to the comprehensive reseeded of those areas affected. The explanation of the matrix factors is as follows:

PHYSICAL & CHEMICAL CONDITIONS

EARTH:

Mineral Resources:

Oil, natural gas, uranium, vanadium, and coal have been the predominant economic mineral resources in the Four Corners portion of the American Southwest. Oil and gas development in the area began in 1908 with the drilling of a very shallow well in the vicinity of Mexican Hat, Utah. Uranium and vanadium production began in 1942 from the Monument Valley area, and large-scale strip-pable coal operations started in the mid-1960's on Black Mesa and in the western margin of the San Juan Basin in New Mexico.

Of the nine proposed actions, only oil production will impact local mineral resources. The lease in question exists for the purpose of developing and producing oil and gas from Pennsylvanian and Mississippian rocks. A producing well in this area will deplete, to some extent, in-place oil and gas reserves within the field. This depletion is a logical consequence of leasing, and the magnitude of the depletion is dependent upon several factors such as oil prices, the area of influence of the well, and the percentage of oil and gas recoverable.

From the standpoint of depletion of non-renewable resources, the short-term production effects have been assigned a magnitude of -1. This reflects

the anticipation that production from any given well will have a limited impact on the total oil and gas potential of the area as a whole. The long-term impact received a magnitude of -3, based on the assumption that revenues derived from production more than offset the depletion of the resource. No other mineral resource will be impacted by any of Boyd & McWilliams proposed actions.

Construction Materials:

Primary construction materials in the general area are restricted to a number of limited and site-specific deposits of sand and gravel. Few, if any, of these potential sand and gravel deposits in the vicinity of the lease area can be considered economic at this time. They are eclipsed, both in quality and extent, by potential sites to the northwest along the San Juan River. Unless used within a very restricted local area, transportation costs should make any potential construction materials site uneconomic for development.

Well-location preparation, well drilling, well completion, oil production, and pipeline construction phases of the proposed project will all have very minimal and site-specific short-term negative effects upon any development of construction materials in the immediate areas surrounding producing wells and pipeline sites, but will have no impact upon the construction materials themselves. Proposed activities will have no effect upon the quality or quantity of any sand and gravel deposits in the area, and short-term impacts are limited to possible logistic difficulties should attempts be made to develop a sand and gravel pit simultaneously with drill-site or pipeline construction at the same location. No proposed action will have any long-term impact upon any construction material present.

Soils:

From a regional overview, the soils in the area of interest are characteristic of soils developed in semi-arid continental climates, and can be classified as predominantly sandy loams and clays. Finer soil particles have been deposited only in those areas in which water has accumulated. Low precipitation has slowed soil development throughout the area, and winds have worked

and intermixed the basic sandstone materials. Large areas have been denuded of soil by wind erosion and, to a much lesser extent, water erosion.

Soils in the vicinity of the San Juan River to the east can be classified as a very fine-grained sandy loam. Here, soils are relatively shallow, medium textured, slowly permeable, and moderately well drained, with soil depths which range between 10 and 20 inches. These soils grade into a more shaly sandy loam to the south, and into loamy fine sand in the area of interest.

Generations of overgrazing have drastically reduced soil cover throughout the area, and has created serious erosion and adverse vegetation changes. Erosion and gullying are widespread throughout vast portions of the area of interest, and are on the increase especially in those areas where vegetative cover has been reduced or removed. Range conditions are poor.

Any geophysical survey will have a slight negative short-term impact on area soils because of compaction by vehicular traffic, but no long-term effects are anticipated after production areas are abandoned and reseeded. Location preparation will have a great temporary impact within very localized well locations will comprise only a tiny portion of the total acreage within the field, the overall impact will be very slight. The same holds true for disturbances caused by pipeline construction. Well drilling, well completion, oil and gas production, and pipeline activities will also have slight short-term negative impacts upon soils within areas which are effected, primarily in the form of soil compaction by vehicular traffic. However, these effects are only temporary because all disturbed areas will be reseeded properly in accordance with accepted conservation practices and all existing guidelines upon project completion.

Land Forms:

The most distinctive landscape forms in the area under consideration consist of dry arroyos, rock terraces, small canyons, cuernas, and erosional escarpments. These features are the result of long periods of erosion acting upon gently-dipping sediments in an arid to semiarid climate. Erosion takes place during spring windstorms and late summer thunderstorms.

Short-term and long-term impacts on existing land forms by any proposed development activities appear slight because all phases of the program have sufficient latitude to avoid most, if not all, significant topographic features. The exception may be dry wash or arroyo crossings deemed necessary for access to productive areas. Road and pipeline construction will be held to a minimum, for economic as well as environmental reasons. Those areas disturbed during pipeline construction will be reclaimed and reseeded shortly after the pipeline(s) are covered, and the roads and drill sites will be restored to a condition environmentally better than that which now exists.

WATER:

Surface Water:

The entire Four Corners region is water-deficient, and most streams in the area are intermittent and flow only during parts of wet years, or are ephemeral and flow only during storms or snow-melt periods. All streams are ephemeral in the area of planned activities.

Boyd & McWilliams proposed project will have no significant short-term or long-term impact upon any surface water in the area. No dams or impoundments are planned, nor is the use of any existing surface waters contemplated. Drainages will not be altered, and no toxic substances will be discharged into any existing drainage or surface water. Any geophysical survey, well location preparation, or pipeline construction activities may have slight negative short-term effects upon surface waters by possible minor and site-specific drainage diversions for access to drill sites, but no long-term effects are anticipated.

Ground Water:

Many sandstone units with recharge capabilities, sufficient porosity, and adequate permeability exist within the area of interest. Potential aquifers encountered during the drilling program will be sealed-off to prevent contamination with other water-bearing horizons. A slight negative localized impact may occur temporarily during well drilling, in a situation where small and

tation was depleted or destroyed, topsoils are unprotected and subjected to severe erosion by spring wind action and summer thunderstorms to the point where nothing remains to slow or restrict runoff, and natural or man-made low spots become flooded occasionally. Boyd & McWilliams' proposed actions will have no significant effect on flooding within the area of interest, although a slight positive long-term impact should result from the reseeding program.

Erosion:

Erosion-related problems include the loss of land as a result of stream-bank and gully erosion, loss of stream nutrients, degradation of water quality by sedimentation, sediment deposition in stream channels and reservoirs, the release of soluble salts by the erosion process, and damage to structural or stratigraphic features on eroding lands.

Unstable soils and adverse topography, in addition to the loss of vegetative cover, create conditions which are sensitive to erosion, especially in the form of headcutting. The degradation of headcuts and incised channels can produce sediment yields several orders of magnitude greater than the rest of a given drainage basin. Active flow along a channel involving a headcut may reach its sediment-carrying capacity in a relatively short distance, sometimes within the headcut itself. As the channel-slope decreases, deposition occurs, further decreasing the slope and capacity. The downstream incised channel will fill with sediment and form a braided channel which widens into a swale as the headcut moves up the drainage basin. This type of sediment moves in steps until it finally reaches a major perennial stream. Because of the natural conditions in many areas, the sediment outflow and headcutting are in equilibrium.

During the last half of the 19th Century, ephemeral tributaries of the main streams began to deepen their respective channels quite rapidly. Widespread erosion accelerated during the 1880's, primarily due to very intense overgrazing and unstable climatic conditions which caused rapid runoff from violent thunderstorms. Generations of serious overgrazing have had a severe adverse effect on most native vegetation within the area.

Erosion rates vary greatly within the region. Not only do these variations exist from place to place, but they vary greatly with time. Many inter-related factors are responsible for these variations, some of which are directly related to climate. Most of the precipitation which causes significant erosion occurs as infrequent, but intense, localized summer thunderstorms, some of which may cause more erosion than several years of annual average conditions. The amount and vigor of vegetative cover is greatly influenced by climatic variations, and the destruction of this vegetative cover leads to an erosion cycle which may be impossible to reverse if allowed to go unchecked.

There are other natural factors besides climate which influence erosion and over which man has relatively little control, such as: (1) soil properties, (2) slope steepness, (3) lengths of slopes and topography, (4) the occurrence and geological character of rock outcrops, and coarse fragments of rock and gravel on the land surface. Some soil properties which influence erosional potential include texture, structure, organic matter, and permeability. In some areas, an erosional pavement occurs on the surface, affording excellent soil protection if not disturbed.

Drill site and pipeline construction, well drilling, and production phases of the proposed program will have minor short-term effects which may adversely effect existing erosional conditions. However, upon project completion, all disturbed areas will be reseeded in accordance with accepted and prudent revegetative practices, and the long-term effects will be positive. In semiarid environments, roads and trails frequently become arroyos as continued vehicular traffic kills vegetative cover and compacts soils. A competent and comprehensive program of reseeding native grasses will tend to loosen soils and slow water runoff, and thereby allow headcuts and incised channels to heal themselves. The reseeding aspects of the program will have a significant positive long-term impact on the area from an erosional standpoint.

Deposition:

The by-product of erosion is sediment, defined as solid material which has been detached from its place of origin and is being transported to lower-lying areas, or has been deposited. Sediment transport occurs at variable rates in

direct proportion to runoff, and is dependent upon erosion to produce the sediment. As in the case of erosion, many variables affect sediment yield and sediment delivery, to include: (1) the type of erosional forces at work, (2) particle size of the sediment, (3) the velocity of water or winds which transport the sediment, (4) the distance from the sediment source to a defined channel, (5) climatic factors, and (6) topography. In addition to these natural factors, man-made structures such as dams and impoundments influence sediment transport and deposition.

Sediment has long been recognized as the greatest single pollutant of surface waters, degrading surface waters and reducing reservoir capacities. Damaging effects of sediment carried in suspension may occur when sediment-laden water is used for irrigation. Sediment deposited on irrigated lands can change the texture of the soil surface and restrict intake rates, and will often cause buildups of salts in badland areas.

It is anticipated that only the well-site preparation, pipeline construction, and oil production phases of the project will in any way impact existing depositional conditions. Unlike the slight negative short-term effect on any erosion caused by well-drilling, this activity is not expected to have any impact whatsoever upon deposition because of the limited surface disturbance and the short period of time during which drilling takes place. Denuded roads and other disturbed areas will, to some extent, wash into lower-lying areas. This impact will only be short-term, however, for scheduled reseeding will create more grass cover than now exists, and long-term effects will be positive. In addition, every attempt will be made to ensure that sediment from bare roads and other areas will not be washed into drainages or surface waters. In all probability, with the exception of a violent thunderstorm during construction phases, this proposed project will have no significant effect upon erosion or deposition. Were a thunderstorm to occur after the sites were disturbed but prior to reseeding, the very limited surface areas disturbed preclude any serious impacts.

Soil Compaction:

Soil compaction ranks with the loss of vegetative cover as a primary factor causing erosional problems. As soils are compacted, plant individuals are

killed or stunted without being replaced with other plants of the same species. Sheet erosion leads to gullying in these areas, and arroyos can form rapidly, especially along old dirt roads or trails.

To some extent, all phases of the proposed program will adversely effect soils through compaction along roads to drill sites for the duration of the project. However, the total area involved in roads required for the project are severely limited, and represents only a fraction of one percent of the total area. The proposed test-well-site is located immediately adjacent to an existing road. Short-term effects will be soil compaction by vehicular traffic in those areas needed for access to drill sites and a possible pipeline route during the construction phase. Long-term impacts will be negligible to non-existent if, and only if, the roads are plugged and reseeded. If, however, the local residents and the Navajo Nation decide to keep any roads open after operations cease, a slight negative impact will result with respect to soil compaction along an open road. Those areas disturbed will be reseeded, and will become a slight long-term positive factor.

BIOLOGICAL FACTORS

FLORA:

Trees:

The McCracken Mesa area is generally treeless, and contains no stands of commercial timber. From the standpoint of regional vegetation community zones, the area can best be described as what was once plains and desert grasslands grading to piñon-juniper on the tops of some of the buttes and mesas. Generations of overgrazing and fuelwood harvesting have denuded large areas within this region, and, therefore, only a very slight short-term impact within the region can be expected. No impact whatsoever will occur at the proposed drill site, although a possible subsequent pipeline route may have a very minor effect on trees, which is dependent upon the pipeline route.

Shrubs:

Mormon tea (Ephedra viridis), rubber rabbitbrush (Chrysothamnus nauseosus), and snakeweed (Gutierrezia sarothrae) are common throughout an area dominated by gray horsebrush (Tetradymia canescens). Shadscale (Atriplex confertifolia), Japanese brome (Bromus japonicus), prickly pear (Opuntia chlorotica), Utah yucca (Yucca utahensis), and spiny muhly (Muhlenbergia pungens) are also present throughout the area.

Any geophysical survey, well-site preparation, pipeline construction, and associated activities will have a negative short-term impact upon shrubs in the immediate area, and then only in the vicinity of development activities. No long-term effects are anticipated.

Grasses:

Range conditions in the McCracken Mesa area are poor, resulting from uncontrolled grazing and, possibly, natural cyclical climatic changes since the 1880's. Area rangelands support a limited number of subsistence livestock operations. There is concern that any activity in the fragile ecosystems of the semiarid rangelands will result in the irreparable damage to the vegetation system. For the McCracken Mesa area, this concern comes too late. Grasses throughout the area have been overgrazed for generations, altering the vegetation and eroding the soils. Few, if any, isolated tracts of land throughout the area have vegetation near climax. Large quantities of soil have been lost to erosion during the past hundred years or so.

Vegetation dynamics show that plant species composition evolves over time until an equilibrium between plant requirements and the environment has been reached. This succession begins with pioneer plants which are the first to occupy bare soil. These are generally annual plants which can tolerate the harsh conditions. Many of the less desirable forage species fall into this category. After the initial establishment of plants on a bare soil area, the environment becomes modified, allowing other plants to succeed the pioneer plant community. This succession process continues until the plant species

reach a balance with the environment, forming a climax plant community which will continue to perpetuate itself until there is an outside force which will destroy this equilibrium.

Overgrazing is one such disturbing factor. As plants are excessively grazed, an insufficient amount of photosynthetic surface is left to maintain the carbohydrate reserves. Plant individuals decrease in size or die without being replaced by other individuals of the same species. Unoccupied soils are then open for invasion by species which are not palatable, thus not affected by grazing livestock. Less desirable plants then tend to increase so the plant community becomes lower of the successional scale than climax. When the disturbance totally denudes existing vegetation, plants must then completely reinvade the site.

In the McCracken Mesa area, most of the land is far below climax, with plant communities mainly composed of species which are unpalatable, poisonous, or armed, or which can otherwise withstand grazing pressures. These plant communities are far lower in production of livestock and wildlife forage than are those at or near climax. Many of the plant communities are very responsive to management, and can be restored to a much higher level of production.

The McCracken Mesa area can be described as a shrub and grass-dominated cold desert. Vegetation is low-growing, and often divided into large stands of a single species. This habitat-type occurs above 4,000 feet, with an annual precipitation between 5 and 12 inches, and a shortage of water for both livestock and wildlife. Habitat management usually consists of brush and shrub removal, with subsequent reseeding. This practice can come into serious conflict with wildlife when brush is cleared on deer or antelope winter feeding grounds.

The area used to be a plains and desert grassland habitat, dominated by short grama grasses. This type habitat is dominated by blue, black, sideoats, and other grama species, with shrubs comprising some 0% to 5% of the total plant population. However, major invasions of brush have occurred in many areas because of overgrazing. Galleta (Hilaria jamesii), blue grama (Bouteloua gracilis), black grama (Bouteloua eriopoda), sideoats grama (Bouteloua curtipendula), Indian ricegrass (Oryzopsis hymenoides), little bluestem (Schizachyrium scoparium), dropseeds (Sporobolus spp.), squirreltail (Sitanion hystrix), needle and

thread (Stipa comata), and western wheatgrass (Agropyron smithii) were once common throughout the area, but are absent in the vicinity of the area of interest. Consequently, any activities pertaining to drill sites will have little or no adverse effect on existing grasses. The reseeding of disturbed areas will have a significant positive impact with respect to grass communities. Reseeding of grasses could be used to introduce or reintroduce recommended grass species not native to the area, or grasses which were once native to the area but which are now totally removed by overgrazing.

Crops:

With the exception of small, local cornfields, no croplands exist within the area under consideration. This project will have no impact on any small cropland acreage because they can easily be avoided. A check will be made with local residents so any potential cropland acreage will not be affected.

Endangered Species:

No known locations or habitats for any federally listed or proposed plant species in the project area. The McCracken Mesa area may possibly contain two Category 2 candidate species, Cronquist milkvetch (Astragalus cronquistii), and Cutler milkweed (Asclepias cutlerii) could potentially occur in the project area, although both are typically found at lower elevations. Sclerocactus mesa-verde has been recorded in northwestern San Juan County, New Mexico, and southwestern Montezuma County, Colorado. Pediocactus knowltonii occurs only along the Los Pinos River south of the Colorado State Line in New Mexico. Every attempt will be made to avoid any endangered plant species, if any are present.

FAUNA:

Birds:

The region is thought to support some 300 species of birds, representing 17 taxonomic orders. Of these, more than 200 depend upon riparian (surface-

water) habitat. Only 96 bird species are supported by a grassland/desert-shrub community as is found throughout most of the area, and 26 of these species are restricted to this environment. Approximately one-fourth of the bird species are considered to be year-round residents, whereas the others visit the area on an occasional or migratory basis. Most raptors will be found along the San Juan River, or in mountainous areas. Permanent residents in the region include the great blue heron, red-winged blackbird, golden eagle, several species of hawks, ducks, owls, woodpeckers, and morning dove. A complete inventory of birds and habitats is provided in Schemnitz, et al, 1979, No. 43.

The proposed project will have a very limited short-term impact on the bird population, and no long-term negative effects. The short-term negative impact may be caused by noise pollution and small, site-specific disturbances of nesting habitat. The reseeding program will have a slight positive long-term impact because of the increase in seeds from new plants as well as an increase in the insect population. Both factors will increase the food supply, and thereby benefit the bird population.

Animals:

Grassland/desert-shrub environments which have been severely overgrazed have low to negligible value for wildlife and livestock. Some 99 species of wild mammals have been identified in the Four Corners area. These include 44 species of native rodents, 16 species of bats, and 7 species of lagomorphs (rabbit-related species).

The coyote (Canis latrans) is the most common carnivore throughout the region. Badgers (Taxidea taxus) and bobcats (Lynx rufus) are equally widespread, but fewer in number. Other animals living within, or occasionally passing through the area include: mule deer (Odocoileus hemionus), white-tailed prairie dogs (Cynomys gunnisoni), white-footed mice (Peromyscus eucopus), white-throated wood rat (Neotoma albigula), horned larks (Eremophila alpestris), spotted ground squirrels (Citellus spilosoma), blacktail jackrabbits (Lepus californus), prairie rattlesnakes (Crotalus viridis), cottontails (Sylvilagus nuttali), sagebrush lizards (Sceloporus graciosus), and Ord's kangaroo rats (Dipodomys ordii).

Well-site preparation and pipeline construction may have a slight short-term negative impact on wildlife in the area because of vehicular traffic and road-kill possibilities. However, the long-term impact from this project will be slightly positive because of direct and indirect benefits from reseeding.

Fish:

No phase of the proposed program will have any short- or long-term impact on fish in the area because there are no streams or rivers, and therefore no fish, in the project area. The nearest fish populations are found in the San Juan River.

Insects:

An unknown, but negligible, impact on insects will result from the proposed project. The major effect on the insect population may result from traffic and site disturbance. However, slight long-term positive effects will be the result of the reseeding of disturbed areas.

Endangered Species:

A wildlife survey of the Colorado Plateau has identified the following as endangered or threatened:

1. Black-footed ferret: (*Mustela nigripes*) is assumed to be almost totally dependent on prairie dogs for food, and on their burrows for shelter. The black-footed ferret has not been sighted in the Four Corners area for several decades.
2. Spotted bat: (*Euderma maculata*) has never been common, and its habitat requirements are little known.
3. Bald eagle: (*Haliaeetus leucocephalus*) is water-oriented, and is somewhat common during winters and migration seasons. Bald eagle populations have increased during the past decade.

4. Peregrine falcon: (*Falco peregrinus anatum*) also favors riparian habitat, and has been sighted periodically along the San Juan River and mountain lakes. It is thought that the peregrine falcon population is slowly increasing.
5. Mississippi kite: (*Ictinia mississippiensis*) prefers a lowland riparian habitat, and vagrants of this species occur along the San Juan River.
6. Osprey: (*Pandion haliaetus carolinensis*) lives on fish, and has been observed as a migrant along the San Juan River.
7. Buff-breasted flycatcher: (*Empidonax fluvifrons pygmaeus*) has a range which extends northward and westward from the Four Corners area, but has not been sighted since 1921. It is logical to assume that it is no longer found in the area.
8. Zone-tailed hawk: (*Buteo albonotatus*) can occasionally be found inhabiting piñon-juniper, ponderosa pine, and riparian communities, and may migrate through the project area.
9. Baird sparrow: (*Ammodramus bairdii*) is a migrant which prefers grassland habitats, but has been sighted occasionally in the area.
10. Red-headed woodpecker: (*Melanerpes erythrocephalus*) is known to inhabit only low-elevation riparian woodlands and planted tree groves.
11. Swainson's hawk: (*Buteo swainsoni*) is a candidate for federal listing, and thought to migrate through the project area.
12. Ferruginous hawk: (*Buteo regalis*) is another migrant candidate for federal listing, which might be sighted occasionally.

Any geophysical survey, site preparation, pipeline construction, and well-completion phases of the proposed project may have a slight short-term impact on endangered species because of noise pollution or vehicular traffic, but no portion of the project will have any long-term negative effects on any species endangered or threatened. In fact, reclamation and reseeding should have a slight positive impact on all fauna within the area.

For example, the black-footed ferret is dependent on prairie dogs for food, and their burrows for shelter. Prairie dogs eat grass, and will not excavate prairie dog towns in areas devoid of vegetation. A successful reseeding program will establish or reintroduce grass species which may attract prairie dogs which, in turn, may attract ferrets if any are left in the area.

However, from a practical standpoint, prairie dogs will face competition for food from domestic livestock on reseeded areas. In addition, prairie dogs are considered vermin by ranchers, and are routinely shot or poisoned so that their holes will pose no hazard to livestock.

CULTURAL CHARACTERISTICS

LAND USE:

Forest-Firewood Habitat:

No commercial stands of timber occur within the project area, but scattered piñon-juniper environments exist within the region. No proposed project activities will have any impact on fuelwood sources.

Grazing:

The primary surface use in the area of interest is grazing small herds of sheep and goats, with secondary oil and gas development. The 1974 B.I.A. technical report titled Utah Soil and Range Inventory, Navajo Area, Tuba City Agency, Districts 2 & 8 indicates a carrying capacity ranging between 34 and 75 acres per sheep unit per year throughout southern San Juan County, Utah. Rangeland Resources International, 1978, reports a carrying capacity of 2 to 4 animal units per section per year for the same area, with an animal unit defined as one cow with calf.

Any geophysical program within the area is expected to cause very minor short-term negative impacts through soil compaction and consequent stunting or killing of individual plants. The pipeline and well-site construction phases will kill all plant individuals within the disturbed areas, but these effects will be site-specific and minor because of the limited acreage disturbed. In addition, a small amount of grazing land will be taken out of use during construction phases. However, a competent reseeding program will have a small but positive long-term impact on carrying capacities. Existing roads provide access to the project site and, consequently, road-building will be minimal.

Range conditions throughout the project area are poor, with large areas denuded of grass cover by generations of overgrazing. The reseeding program will, however, establish small grass communities capable of expansion.

Agriculture:

Agricultural croplands within the project area are limited to a few small, local cornfields or semi-wild herb gardens. These areas can be avoided during all program phases, if any were to be present in the development area. It is logical to assume that this project will have no effect whatsoever on any croplands.

Residential:

No cities, towns, or villages exist within the project area. A number of Navajos live within the region, however, as extended families in somewhat remote family clusters at some distance from one another. The only anticipated effects upon Navajo residents in these clusters may be a nuisance factor created by some degree of increased traffic on existing roads, with associated noise and dust. No long-term impacts are expected.

The oil and gas industry is not considered labor-intensive, and this project will not create employment opportunities of such magnitude that anyone will move into the area because of job opportunities.

RECREATION:

Hunting:

Hunting in the Colorado Plateau province can be divided into four general categories: (1) big game, (2) waterfowl, (3) upland game birds, and (4) varmints. Big game animals found in San Juan County, Utah, include desert bighorn sheep, mule deer, and antelope. Critical habitat for the bighorn sheep has been identified as two areas in the northern portion of the County from the Dark Canyon

Primitive Area to the Manti-La Salle National Forest, and the presence of the animal in the project area is very unlikely. Pronghorn antelope are found in portions of San Juan County, Utah, especially in grassland areas to the north and west of the Navajo Reservation. Mule deer habitat is limited to the tops of some buttes and mesas throughout the area.

Waterfowl hunting is restricted to riparian areas such as the San Juan River and various lakes and ponds in the northern portion of the County, and is not an environmental factor in the project area. Upland game birds prefer grasslands and cultivated grain fields, with some species limited to forested areas ranging from piñon-juniper zones through mixed-conifer forests. Upland game birds are uncommon in the project area, and the proposed development activities will have no impact on them. Varmints are generally shot on sight by livestock owners. Predators, such as the coyote, are poisoned or shot for the protection of herds of sheep and goats, and rodents such as the prairie dog are killed because their burrows pose threats to grazing livestock. Horses and cattle can break legs by stepping into prairie dog holes.

The project area is not public land, although the federal government owns the minerals estate. Consequently, an influx of non-resident hunters is not anticipated because permission to hunt must be obtained from the Tribal government and local landusers. No development activities proposed will have any impact on existing hunting conditions, or hunting potential.

Fishing:

The San Juan River and scattered mountain lakes offer the only fishing opportunities in the region, and all potential fishing locations are at a considerable distance from the project area. No toxic substances will be discharged into any drainage during the project, and all operations will be conducted at such a distance from any fishing sites that fishing will not be impaired. No project phase will impact fish habitat or fishing potential in any fashion whatsoever.

Camping or Hiking:

No designated campsites exist within the project area, which is composed of Reservation lands divided into customary-use areas. It is logical to assume that the local Navajo residents would be opposed to the general public trespassing on their respective use areas for the purposes of camping or hiking. Therefore, none of B&M's proposed activities are expected to have any effect on recreational camping or hiking.

Picnicking:

There are no picnic sites in or near the project area and, consequently, no project activities will impact picnicking in the area.

ASTHETICS:

Scenic Views & Vistas:

The entire region is scenic, although rarely seen by tourists. A number of proposed development activities will have some short-term impact upon scenic views and vistas. This adverse effect will vary in intensity from site to site, with "hidden" sites having no effect whatsoever. For short periods of time, a highly visible location will be an eyesore for a short period of time. However, any such disturbed area will comprise only a tiny fraction of the total acreage within the field. Any adverse impacts to scenic views and vistas will be of a very short duration, and no long-term effects will result.

Open Space Qualities:

Problems with open space qualities are similar to those of scenic views and vistas, and similar impact assessments are applicable. Minor short-term impacts will result from the project, but no long-term effects are anticipated.

Archaeological & Historical Sites:

An archaeological survey of the proposed well-site has been completed by the Navajo Nation Archaeology Department, and is included in the APD. There are no known sites listed on the National Register of Historic Places on or near the project site. Consequently, there will be no short- or long-term impact on archaeological or historical sites by any program phase.

CULTURAL:

Cultural Patterns (Life Styles):

The Navajo economy in the project area consists of: (1) extended families relying on a combination of sheep raising, handicrafts, seasonal labor, welfare support, and a number of subsidized services such as education and health; (2) a small but increasing cadre of educated Navajos holding public service jobs with the Navajo Tribe or various federal agencies, and (3) corporate Navajo income provided by the development of natural resources. The subsistence economy of the past no longer supports the ever-increasing Navajo population restricted to a finite land area.

The local Navajo economy resembles that of the rest of the Reservation in that resources are exported and goods and services are imported. It differs from off-Reservation areas within the region in that there is a very tiny commercial-retail sector.

The Navajo people are essentially rural-dwelling, but with increasing tendency for younger and better educated Navajos to live in or near communities where work can be found. Their orientation is to extended families and clans. The extended family is often headed by traditional grandparents living on the Reservation, with younger skilled and semi-skilled children working in off-Reservation areas. Extended families, linked to specific territorial areas, are stressed by, but also adapting to, incursions of the modern wage economy.

Individually, Navajos can be highly communal, individualistic, or opportunistic, depending on circumstances. There is a tendency to spread blame, risk, and decisions, and to be non-confrontational in interpersonal relations, and to withdraw and await clues to an outcome prior to commitment. Local autonomy is valued highly, and authority is not readily delegated to distant organizations because authority in general is distrusted. This attitude leads to considerable criticism of Tribal government. There is a general tendency to feel alienated from decision-making which affects their lives, but a significant awareness of Indian "self-determination" and sovereignty.

Traditionally, among Navajo people, promises are rarely made, but once made, are expected to be kept. There is a reluctance to predict the future, and everyone is expected to share material goods with relatives. A revitalization of Navajo culture is causing some people to return home, increasing the pressure on the finite land base. Unemployment is tragically high, and "ownership" or stewardship of land is identified with the preservation of an identity as a Navajo and a traditional way of life. Sheep-raising not only supplies meat, but also serves as a type of "bank account" which provides a significant role for elders.

Most non-Navajo newcomers to the Reservation lack understanding of the complexities of Navajo kinship relations as they relate to local territory, and do not realize that extended families often cross Chapter boundaries. An extended family often lives in several camps, which may or may not lie within any given Chapter area. These rural family networks have outposts of relatives living in the Reservation border towns, or further away in cities such as Denver, Phoenix, or Albuquerque. These outposts are composed of the younger skilled workers who left the Reservation for financial opportunities, but maintain family ties by visiting, sending money, or moving homes between jobs. Typically, several matrilineal extended families live within any given Chapter area, and marriages between families unrelated by blood or clan who reside in different Chapter areas widen the network of relatives.

On the Navajo Reservation, the area occupied by a Navajo extended family is known as a "customary use area." Title to these lands lies with the federal government in its role as trust-responsibility-guarantor, and both surface and mineral estates are 'managed' for the benefit of the Navajo people. In other

words, the Tribal government gives permission for both surface and minerals use, except in areas in which surface and minerals estates are divided with minerals ownership vested in a third party, and all proceeds from the leasing of Reservation lands go into the Tribe's general fund. Herein lies the root of the minerals leasing problem.

Local Navajos feel treated unfairly because minerals-derived revenues go into the Tribal coffers and little, if any, returns to Chapters and families on whose lands minerals development takes place. Most Navajos believe that local individuals and entities should have more involvement in the leasing process, and feel ignored by the companies involved, the Tribal government, and the Bureau of Indian Affairs. Many local Navajos who reside in areas of minerals development experience only the nuisance of exploration, development, and production activities, and feel that they are denied any benefits from these operations. Therefore, many are reluctant to approve permits for mineral-development activities because of unpleasant experiences over decades of minerals-related activities. General awareness of energy development on Tribal lands depends to a considerable extent on the press and informal information networks. However, there has been a lack of factual, in-depth research and educational programs pertaining to the complexities behind reported events. This problem has contributed to an apparent tendency to polarize into pro- and anti-development factions. Therefore, it is prudent for any company working on the Navajo Reservation to provide necessary information to those people directly affected at the grassroots and Chapter levels. Timely communications at the local level will lessen chances that inevitable misunderstandings, irritations, and conflicts are blown out of proportion.

A great many Navajos feel that minerals development, and the influx of non-Navajo outsiders involved in development activities, leads to the destruction of traditional culture and life-style. To some extent, these fears are well-founded. However, the loss of traditional values, mores, language, and religion is more the result of younger and better-educated Navajos being forced to relocate to off-Reservation urban areas in order to make a living. The unfortunate result of these job-related moves is that their children, raised in a non-Navajo environment, rapidly lose Navajo language skills and traditional values. Consequently, periodic visits to grandparents living on the Reservation in a traditional manner and speaking little, if any, English, become awkward and unpleasant. The benefits

and responsibilities of kinship are poorly understood, and both blood and clan ties are weakened. Traditional Navajos describe these people as "bila-sáana" which translates into English as apple, with the connotation that they are red on the outside but white inside.

To recapitulate, Navajo values and cultural aspects pertinent to impact analyses include a sense of powerlessness over major decisions which affect them, increased demands for local control, distrust of authority, use of gossip and rumor as social sanctions, and a lack of experience with leasing procedures and minerals development. A few decades of community development by the BIA, Public Health Service, and Tribal entities has created the expectation that bureaucracies and large organizations should be more responsive to local needs and wishes. It must be borne in mind that Navajos residing on Reservation lands receive no royalty benefits from minerals development in their customary-use areas, whereas those living on individual Indian allotments do. Historically, debate over controversial issues such as minerals development at the Chapter level has tended to factionalize rather than unify communities.

A production phase will be the only development activity which may affect existing cultural patterns. Production will probably have a slight negative short-term impact on existing life styles in the form of nuisance factors which may arise from company personnel conducting periodic and routine maintenance on pumps and pipelines. Other proposed activities may also result in a nuisance factor impact, but these have been considered negligible because of their short duration. No development activities will have any long-term impact on cultural patterns and life styles.

Health & Safety:

Any industrial activity creates possibilities for work-related injuries, and the proposed project is no exception. In general, health and safety factors can be divided into two categories: (1) job-related accidents restricted to company employees, and (2) accidents which may result from increased traffic and related factors which may affect the general public as well as employees. Prudent operations minimize all health and safety threats.

Employment:

Oil and gas operations are not labor-intensive and, consequently, employment opportunities for local Navajo residents are somewhat limited. Except for the archaeological survey and any geological phases of the proposed project, various short-term temporary employment opportunities may occur. Boyd & McWilliams will abide by existing Navajo labor regulations, and will also encourage the utilization of Navajo employees at all levels within project constraints. In addition, every attempt will be made to use Navajo contractors and subcontractors, as was done by the selection of the Navajo Nation Archaeological Department to conduct the archaeological survey of the proposed well-site. No long-term employment opportunities are anticipated.

Population Density:

No project-related changes in population density are expected because of the small lease size and limitations on temporary job opportunities. Consequently, the population density will remain unaffected from short- and long-term impacts.

FACILITIES:

Structures:

Man-made structures will not be required for the proposed project, with the possible exception of a pumping station should the project be successful to the point that several wells are producing more oil than feasible for a tank farm. Anticipated short-term impacts will be negligible even under a worst case scenario, and will be non-existent from a long-term standpoint as any such structures would be removed when operations cease.

Transportation Network:

Access requirements beginning with the well-site preparation and possible pipeline construction phases will necessitate some degree of improvements to a

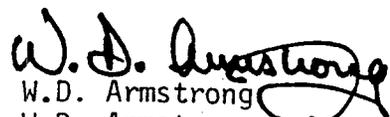
small road. Existing roads and trails will be utilized as much as possible, and any subsequent road improvements will be minimal and dependent upon the success of the initial test well. Any impact from road improvements will be temporary and short-term, and all disturbed areas will be reseeded upon project completion. No long-term effects are expected.

Utility Network:

Production and possible subsequent pipeline operations may or may not require some degree of electrification. However, the need for electricity is totally dependent on the success of the program.

MITIGATING MEASURES:

The construction of any facilities will be in accordance with the Applicant's established procedures and with the Navajo Area Land Clearing, Excavation, and Reclamation Stipulations. All waste materials will be removed from construction areas and disposed of in authorized disposal areas. All disturbed areas will be cleaned up and graded to conform with the existing landscape. Erosion control structures will be installed as deemed necessary. Reseeding will be conducted on all lands disturbed. Applicant agrees to carry out the applicable mitigation measures in accordance with 25 CFR 161.5, as well as applicable Tribal and BIA requirements. Applicant agrees to provide for periodic leakage surveys as a part of regular operating and maintenance procedures in accordance with 49 CFR 192.


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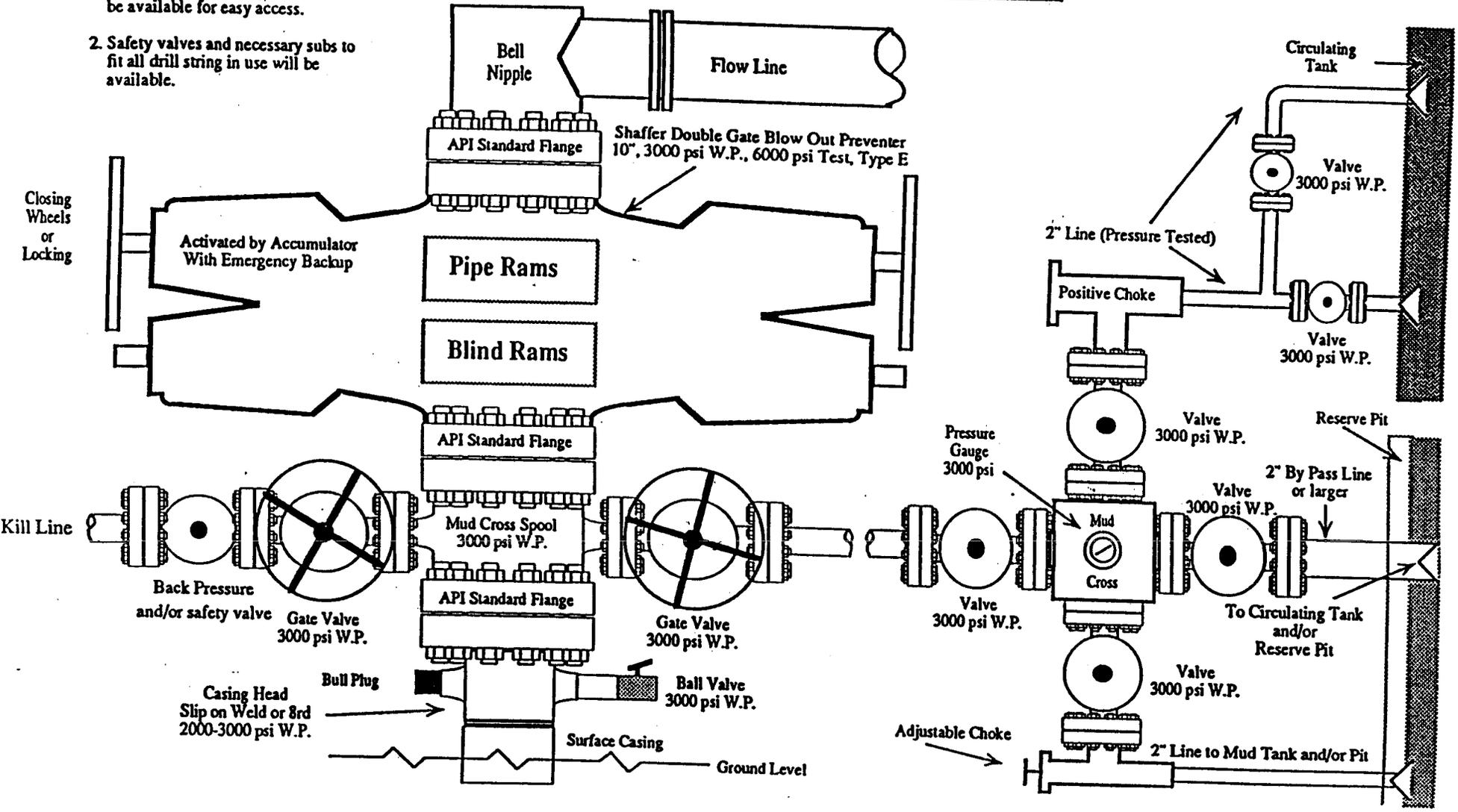
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**Giant Exploration & Production Company
Pressure Control Equipment**

Alkali Point No. 1

- Note: 1. An upper Kelly cock valve will be utilized during drilling. Handle will be available for easy access.
2. Safety valves and necessary subs to fit all drill string in use will be available.



Note: This equipment is designed to meet requirements for a 2-M rating standard per 43 CFR part 3160 (amended). Proper operation and testing of equipment will be carried out per standard. 2,000 psi equipment can be substituted in the

RECEIVED

JUL 29 1993

Bond

Form 3000-4
June 1988

DIVISION OF OIL, GAS & MINING UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

Bond Number B04153

OIL AND GAS OR GEOTHERMAL LEASE BOND

Act of February 25, 1920 (30 U.S.C. 181 et seq.)
Act of August 7, 1947 (30 U.S.C. 351-359)
Department of the Interior Appropriations Act, FY 1981 (42 U.S.C. 6508)
Act of December 24, 1970 (30 U.S.C. 1001-1025)
Other Oil and Gas and Geothermal Leasing Authorities as Applicable

Lease Serial Number (For Individual Bond Only)

CHECK ONE: OIL AND GAS GEOTHERMAL RESOURCES

CHECK ONE SURETY BOND

KNOW ALL BY THESE PRESENTS, THAT BOYD & MCWILLIAMS ENERGY GROUP, INC. (name)

of 300 W. Texas, Suite 704, Midland, TX 79701 (address)

as principal, and PLANET INDEMNITY COMPANY (name)

of 410 Seventeenth Street, Suite 1675, Denver, CO 80202 (address), as surety.

are held and firmly bound unto the United States of America in the sum of TWENTY FIVE THOUSAND AND NO/100 dollars (\$ 25,000.00),

lawful money of the United States, which may be increased or decreased by a rider hereto executed in the same manner as this bond.

PERSONAL BOND

KNOW ALL BY THESE PRESENTS, That _____ (name)

of _____ (address), as principal, is held and firmly

bound unto the United States of America in the sum of _____ dollars (\$ _____), lawful money of the United States which sum may be increased or decreased by a rider hereto executed in the same manner as this bond

The principal, in order to more fully secure the United States in the payment of the aforesaid sum, hereby pledges as security therefore United States negotiable securities of a par value equal to the amount specified. The principal, pursuant to the authority conferred by Section 1 of the Act of September 13, 1982 (31 U.S.C. 9303), does hereby constitute and appoint the Secretary of the Interior to act as his attorney. The interest accruing on the United States securities deposited, in the absence of any default in the performance of any of the conditions, or stipulations set forth in this bond and the instrument(s) granting rights and interests in Federal lands, must be paid to the principal. The principal hereby for himself/herself, any heirs, executors, administrators, successors, and assigns, joint and severally, ratifies and confirms whatever the Secretary shall do by virtue of these presents.

The principal/surety shall apply this bond or the Secretary shall transfer this deposit as security for the faithful performance of any and all of the conditions and stipulations as set forth in this bond and the instrument(s) granting rights and interests in Federal lands. In the case of any default in the performance of the conditions and stipulations of such undertaking, it is agreed that: (1) for a Surety Bond, the surety/principal shall apply the bond or any portion thereof; (2) for a Personal Bond, the Secretary shall have full power to assign, appropriate, apply or transfer the deposit or any portion thereof, to the satisfaction of any damages, assessments, late payment charges, penalties, or deficiencies arising by reason of such default.

This bond is required for the use and benefit of (1) the United States; (2) the owner of any of the land subject to the coverage of this bond, who has a statutory right to compensation in connection with a reservation of the oil and gas and geothermal deposits to the United States; (3) any lessee, permittee, or contractor, under a lease, permit, or resource sale contract issued, or to be issued, by the United States covering the same land subject to this bond, covering the use of the surface of the property for, or the development of other mineral deposits in any portion of such land, to be paid in the United States. For such payment, well and truly to be made, we bind ourselves and each of our heirs, executors, administrators, successors, and assigns, jointly and severally.

This bond shall cover all surface disturbing activities related to drilling operations on a Federal leasehold(s) in accordance with authorization(s) granted under the Acts cited above for.

- CHECK ONE
 NATIONWIDE BOND -- Operations conducted by or on behalf of the principal(s) or on the leasehold(s) of the principal(s) in the United States including the National Petroleum Reserve in Alaska (NPR-A) when a rider sufficient to bring the amount in conformance with 43 CFR 3134 is provided, and provided a rider is obtained, also coverage of multiple exploration operations.
 STATEWIDE BOND -- Operations conducted by or on behalf of the principal(s) or on the leasehold(s) of the principal(s), except the NPR-A, and provided a rider is obtained, also coverage of multiple exploration operations within the single state of Utah
 INDIVIDUAL BOND -- Operations conducted by or on behalf of the principal or on the leasehold of the principal on the single lease identified by the serial number above
 NATIONAL PETROLEUM RESERVE IN ALASKA (NPR-A) BOND -- This bond shall cover:
 NPR-A LEASE BOND -- The terms and conditions of a single lease
 NPR-A WIDE BOND -- The terms and conditions of all leases, and provided a rider is obtained, coverage of multiple exploration operations.

BOND CONDITIONS

The conditions of the foregoing obligations are such that:

- 1. WHEREAS the principal has an interest in a lease(s) and/or responsibility for operations on a lease(s) issued under the Acts cited in this bond; and
- 2. WHEREAS the principal and surety agree(s) that with notice to the surety the coverage of this bond, in addition to the present holding(s) of and/or authorization(s) granted to the principal, shall extend to and include
 - a. Any lease(s) hereafter issued to or acquired by the obligor/principal, except under individual lease bonds, the coverage is to be confined to the principal's holding(s) and/or authorization(s) granted under the Acts cited in this bond, and to become effective immediately upon such authorization, approval or issuance of a transfer in favor of the principal; and
 - b. Any transfer(s) of operating rights hereafter entered into or acquired by the principal affecting lease(s); and
 - c. Any activity subsequent hereto of the principal as operator under a lease(s) issued pursuant to the Acts cited in this bond; and

Provided, That the surety may elect to terminate the additional coverage authorized under this paragraph. Such termination will become effective 30 days after the BLM receives notice of the election to terminate. After the termination becomes effective, the additional interest(s) identified in this paragraph will not be covered by this bond; and

- 3. WHEREAS the principal and surety agree(s) that with notice to the surety that this bond shall remain in full force and effect notwithstanding. Any assignment(s) of an undivided interest in any part or all of the lands in the lease(s) in which event the assignee(s) shall be considered to be coprincipal(s) on an individual or NPR-A bond as fully and to the same extent as though his/her or their duly, authenticated signatures appeared thereon; and
- 4. WHEREAS the obligor/surety hereby waives any right to notice of, and agrees that this bond shall remain in full force and effect notwithstanding:
 - a. Any assignment(s) of 100% of some of the lands described in the lease(s), the bond to remain in full force and effect only as to the lands retained in the lease(s); and
 - b. Any transfer(s) either in whole or in part, of any or all of the operating rights and further agrees to remain bound under this bond as to the interests in the operating rights retained by the principal; and
 - c. Any modification of a lease or operating right, or obligation thereunder, whether made or effected by commitment of lease or operating right to unit, cooperative, communitization or storage agreements, or development contracts, suspensions of oper-

ations or production, waivers, suspensions or changes in rental, minimum royalty and royalties, compensatory royalty payments, or otherwise; and

- d. Any extension of a lease(s) covered by this bond, such coverage to continue without any interruption due to the expiration of the term set forth in the lease(s); and
- 5. WHEREAS the principal and surety hereby agree(s) that notwithstanding the termination, expiration, cancellation or relinquishment of any lease(s), whether by operation of law or otherwise, the bond shall remain in full force and effect as to the terms and conditions of all remaining leases and obligations covered by the bond; and
- 6. WHEREAS the principal, as to any lease or part of a lease for land on which he/she is the operator, in consideration of being permitted to furnish this bond in lieu of the lessee(s) or operating rights owner(s), agrees and by these presents does hereby bind himself/herself to fulfill on behalf of each lessee or operating rights owner all obligations of such for the entire leasehold in the same manner and to the same extent as though he/she were lessee or operating rights owner; and
- 7. WHEREAS the obligor/principal and surety agree(s) that the neglect or forbearance of said lessor in enforcing, as against any responsible party, the payment of rentals or royalties or the performance of any other term or condition of the lease(s) shall not, in any way, release the principal and surety, or either of them from any liability under this bond; and
- 8. WHEREAS the principal and surety agree(s) that in the event of any default under the lease(s) the lessor may commence and prosecute any claim, suit, or other proceeding against the principal and surety or either of them, without the necessity of joining the lessee(s); and
- 9. WHEREAS if the principal fails to comply with any provisions of an oil and gas lease, and the noncompliance continues for thirty (30) days after written notice thereof, such lease shall be subject to cancellation and the principal shall also be subject to applicable provisions and penalties of the Federal Oil and Gas Royalty Management Act (30 U.S.C. 1701 et seq.) or the Federal Onshore Oil and Gas Leasing Reform Act. This provision shall not be construed to prevent the exercise by the United States of any other legal and equitable remedy, including waiver of the default
- 10. NOW, THEREFORE If said principal, his/her heirs, executors, administrators, successors, or assigns shall in all respects faithfully comply with all of the provisions of the instrument(s) granting rights and interests in Federal lands referred to above, then the obligations are to be void; otherwise to remain in full force and effect

Signed this 23rd day of June, 1993, in the presence of:

NAMES AND ADDRESSES OF WITNESSES

BY: Alice Bane
 Alice Bane, 300 W. Texas, Suite 704, Midland, TX 79701

BY: David McWilliams
 David McWilliams, 300 W. Texas, Suite 704, Midland, TX 79701

BY: Victoria
 8 Greenway Plaza, Suite 400, Houston, TX 77046

BY: Nancy Cruz
 8 Greenway Plaza, Suite 400, Houston, TX 77046

BOYD & MCWILLIAMS ENERGY GROUP, INC.

BY: Paul McElroy Vice President (Principal)
 300 W. Texas, Suite 704
 Midland, Texas 79701
 PLANET INDEMNITY CO. (Business Address)

BY: Roy G. Dye (Surety) Attorney-in-Fact
 410 Seventeenth Street, Suite 1675
 Denver, CO 80202 (Business Address)

If this bond is executed by a corporation, it must bear the seal of that corporation.

GENERAL POWER OF ATTORNEY

CERTIFIED COPY

KNOW ALL MEN BY THESE PRESENTS: That PLANET INDEMNITY COMPANY, a corporation organized and existing under the laws of the State of Colorado, and having its principal office in the City of Denver, Colorado does hereby constitute and appoint: ROY C. DIE

its true and lawful attorney-in-fact to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, which are or may be allowed, required or permitted by law, statute, rule, regulation, contract or otherwise, in an amount not to exceed:

*****FIFTY THOUSAND AND NO/100*****

and the execution of all such instrument(s) in pursuance of these presents, shall be binding upon said PLANET INDEMNITY COMPANY as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal office

This Power of Attorney is executed, and may be certified to and may be revoked, pursuant to and by authority of Article V, Section 6(C) of the By-Laws adopted by the Board of Directors of PLANET INDEMNITY COMPANY, at a meeting called and held on this third day of March, 1987 of which the following is a true transcript of said Section 6(C):

- The President or any Vice President, Assistant Vice President, Secretary or Resident Secretary shall have power and authority (1) to appoint Attorneys-in-fact, and to authorize them to execute on behalf of the Company, and attach the Seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, and (2) to appoint special Attorneys-in-fact, who are hereby authorized to certify to copies of any power-of-attorney issued in pursuance of this section and/or any of the By-laws of the Company, and (3) to remove, at any time, any such Attorney-in-fact or Special Attorney-in-fact and revoke the authority given to him

Further, this Power of Attorney is signed and sealed by facsimile pursuant to resolution of the Board of Directors of said Company adopted at a meeting duly called and held on the third day of March, 1987, of which the following is a true excerpt:

"Now therefore the signatures of such officers and the seal of the Company may be affixed to any such power of attorney or any certificate relating thereto by facsimile, and any such power of attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by facsimile signatures and facsimile seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached."

IN TESTIMONY WHEREOF, PLANET INDEMNITY COMPANY has caused this instrument to be signed and its corporate seal to be affixed by its authorized officer, E. H. Frank, III, on this the twenty eighth day of August, 1991.



E. H. Frank, III President

STATE OF COLORADO COUNTY OF DENVER

On this 28th Day of August, 1991, before me came the individual who executed the preceding instrument, to me personally known, and, being duly sworn, said that he is the therein described and authorized officer of PLANET INDEMNITY COMPANY; that the seal affixed to said instrument is the Corporate Seal of said Company; that the said Corporate Seal and his signature were duly affixed by order of the Board of Directors of said Company.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal, at the city of Denver, Colorado, the day and year first above written.



Roy C. Die Notary Public, Denver County, Colorado

CERTIFICATION

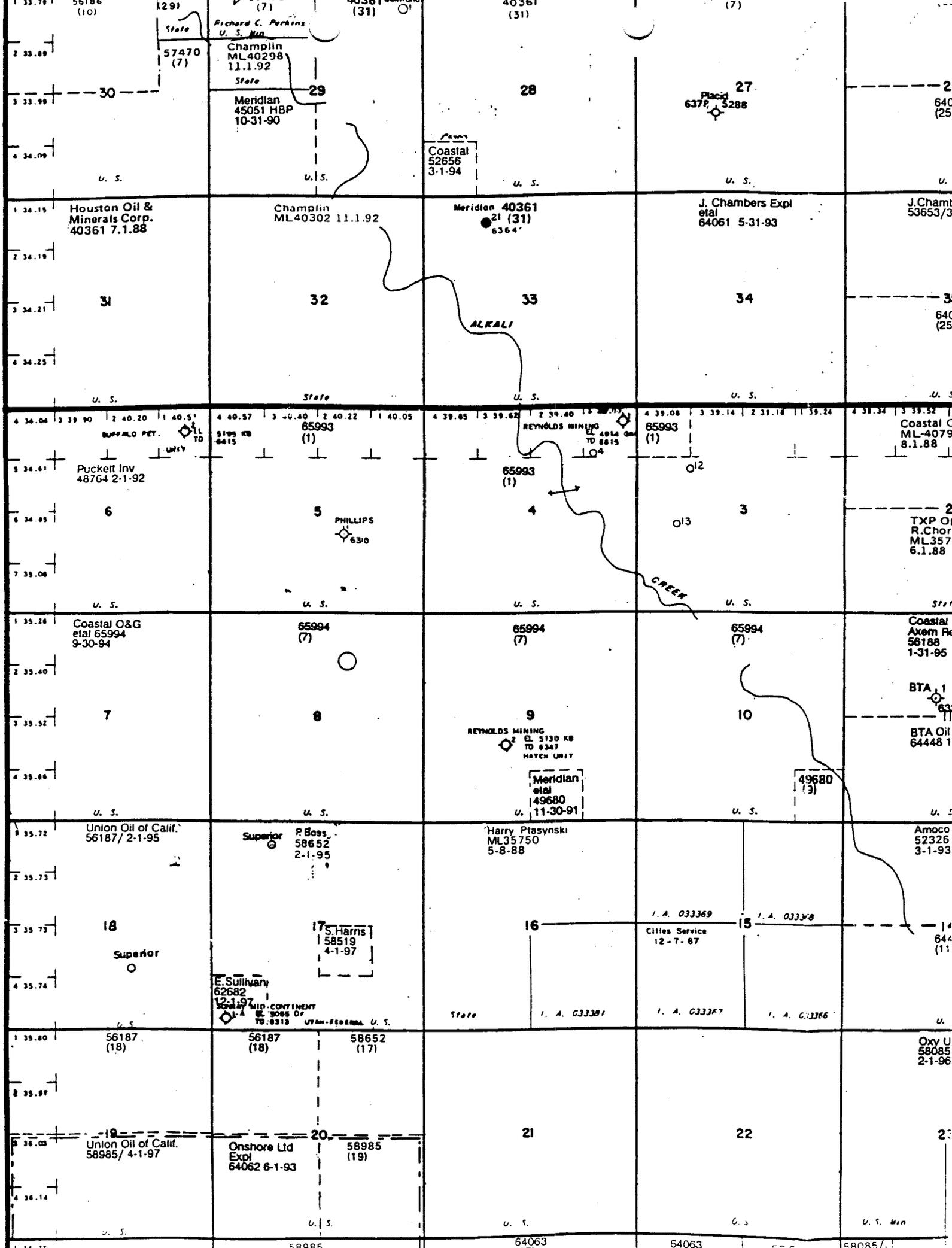
I, the undersigned officer of PLANET INDEMNITY COMPANY, do hereby certify that I have compared the foregoing copy of the Power of Attorney and affidavit, and the copy of the Section of the By-Laws of said Company as set forth in said Power of Attorney, and that the same are correct transcripts thereof, and of the whole of the said originals, and that the said Power of Attorney has not been revoked and is now in full force and effect.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 23RD day of JUNE, 1993



Pat Doehring Assistant Secretary

Only a certified copy of Power of Attorney bearing the Certificate of Authority No. printed in red on the upper right corner is binding. Photocopies, carbon copies or other reproductions of this document are invalid and not binding upon the Company. ANY INSTRUMENT ISSUED IN EXCESS OF THE PENALTY AMOUNT STATED ABOVE IS TOTALLY VOID AND WITHOUT VALIDITY.



56186 (10)
 1291
 State
 57470 (7)
 U. S.

Richard C. Perkins
 U. S. Min.
 Champlin
 ML40298
 11.1.92
 State
 Meridian
 45051 HBP
 10-31-90
 U.S.

40361 (31)
 Coastal
 52656
 3-1-94
 U. S.

40361 (31)
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 Placid
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 U. S.

6408 (25)
 U. S.

Houston Oil & Minerals Corp.
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Champlin
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Meridian
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J. Chambers Expl
 etal
 64061 5-31-93
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J. Chambers
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Puckett Inv
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REYNOLDS MINING
 EL. 4914 OM
 TO 8815
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Coastal O
 ML-4079:
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 R. Chorr
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65994 (7)
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REYNOLDS MINING
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 TO 6347
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65994 (7)
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Coastal
 Axem Re
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 BTA
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 BTA Oil
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 U. S.

Union Oil of Calif.
 56187/ 2-1-95
 18
 Superior
 U. S.

Superior
 P. Boss
 58652
 2-1-95
 S. Harris
 58519
 4-1-97
 E. Sullivan
 62682
 12-1-97
 MID-CONTINENT
 EL. 3085 Dr
 TO: 8313 U.S. FEDERAL U. S.

Harry Ptasynski
 ML35750
 5-8-88
 16
 I. A. 033381
 U. S.

I. A. 033369
 Cities Service
 12-7-87
 I. A. 033367
 I. A. 033368
 I. A. 033366
 U. S.

Amoco
 52326
 3-1-93
 14
 644 (11)
 U. S.

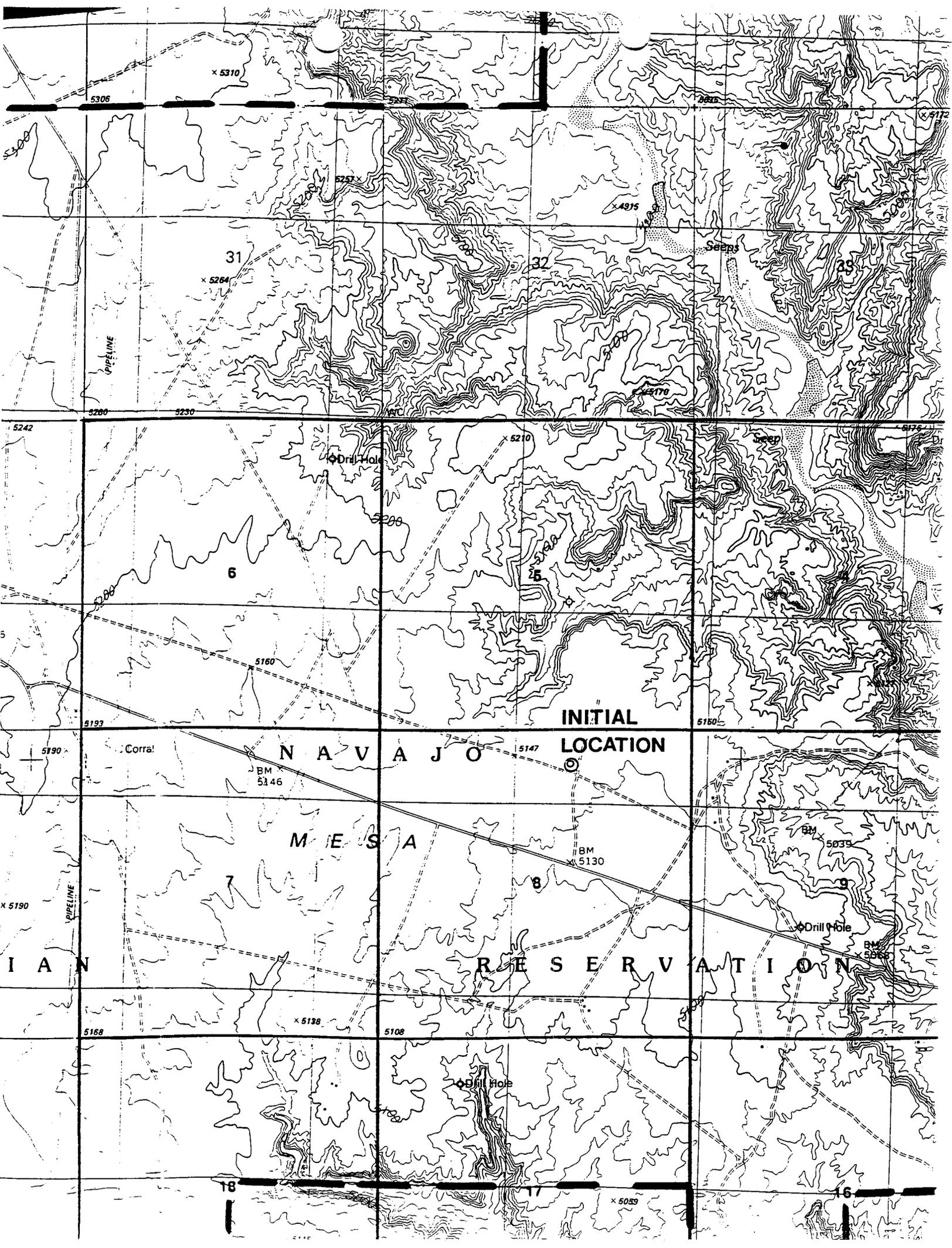
56187 (18)
 18
 Union Oil of Calif.
 58985/ 4-1-97
 U. S.

56187 (18)
 58652 (17)
 Onshore Ltd
 Expl
 64062 6-1-93
 58985 (19)
 U. S.

21
 64063 (27)
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22
 U. S.

Oxy U
 58085
 2-1-96
 U. S. Min
 58085/1



x 5310

5306

31

x 5264

32

x 4975

33

PIPELINE

5200

5230

5242

Drill Hole

5210

6

5

5160

5193

INITIAL LOCATION

5150

5190

Corral

N A V A J O

5147

BM 5146

M E S A

BM 5130

BM 5039

x 5190

PIPELINE

H O P I

R E S E R V A T I O N

Drill Hole

BM 5037

5168

x 5188

5108

Drill Hole

18

17

16

x 5059

WORKSHEET
APPLICATION FOR PERMIT TO DRILL

DATE RECEIVED: 07/29/93

OPERATOR: BOYD & MCWILLIAMS ENERGY
WELL NAME: TURQUOISE HORSE 1

OPERATOR ACCT NO: N- 5975

API NO. ASSIGNED: 43 - 037 - 31716

LEASE TYPE: FED LEASE NO: U 65994
LOCATION: NWNE 08 - T39S - R24E SAN JUAN COUNTY
FIELD: WILDCAT (001) FIELD CODE: 001

RECEIVED AND/OR REVIEWED: <input checked="" type="checkbox"/> Plat <input type="checkbox"/> Bond <u>FEDERAL</u> (Number _____) <input checked="" type="checkbox"/> Potash (Y/N) <input checked="" type="checkbox"/> Oil shale (Y/N) <input checked="" type="checkbox"/> Water permit (Number _____) <input checked="" type="checkbox"/> RDCC Review (Y/N) (Date: _____)	LOCATION AND SITING: <u>PENDING</u> <input checked="" type="checkbox"/> R649-2-3. Unit: <u>UTU 2354X</u> <input type="checkbox"/> R649-3-2. General. <input type="checkbox"/> R649-3-3. Exception. <input type="checkbox"/> Drilling Unit. Board Cause no: _____ Date: _____
--	---

COMMENTS: WILL SUPPLY INFO ON WATER USE BY
SUNDRY PAID TO SPUD.

STIPULATIONS: _____

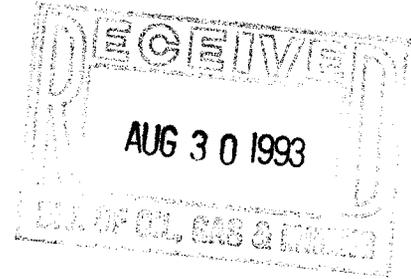
cc: San Juan County Assessor.
By LM, moab



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE RESOURCES

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
Timothy H. Provan
Division Director

Southeastern Region
455 West Railroad Avenue
Price, Utah 84501-2829
801-637-3310
801-637-7361 (Fax)



August 23, 1993

Frank R. Matthews
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180

Dear Frank:

In response to RDCC Item #9 on the August 24, 1993 agenda, the Division of Wildlife Resources has reviewed Boyd & McWilliams Energy Group, Inc.'s Application for Permit to Drill (APD) the Turquoise Horse #1 Well on Federal Lease U-65994 in San Juan County. We have the following comments and recommendations regarding this APD.

The drilling of wildcat wells has the potential to affect wildlife through habitat destruction, impacts to water sources, contamination with toxic substances, and disturbance. Because of the potential for these impacts, we recommend that certain measures be used while constructing and drilling the proposed wildcat well.

We urge that the construction of new roads be kept to a minimum. Construction of roads results in habitat destruction, as well as improved access encouraging increased human disturbance. We recommend that all new roads be closed and reclaimed following exploration and/or production. If the well does not go to production, the well pad and other disturbed areas should also be reclaimed in an appropriate manner. Enclosed is a seed prescription we recommend for use during the reclamation of this site.

A number of threatened, endangered and sensitive wildlife species inhabit the general vicinity of the proposed well. These species include the peregrine falcon, bald eagle, ferruginous hawk, golden eagle, loggerhead shrike, burrowing owl, Utah milksnake and the chuckwalla. Water is a limiting factor for these species and we urge that all water sources be protected from disturbance and contamination. Additionally, the reserve pits associated with wildcat drilling are often viewed as a source of water by



(2)

Frank R. Matthews

August 23, 1993

wildlife. Due to the possible presence of petroleum products and other toxins, wildlife which come in contact with the contents of the reserve pit could become contaminated. The San Juan Resource Area of the BLM has initiated a program of fencing and netting the reserve pits associated with wildcat wells in order to minimize the potential of wildlife contamination or mortality. We recommend that this program be followed with regard to the proposed well.

The above recommendations should minimize any impacts to local wildlife. We appreciate the opportunity to provide our input on this APD. If you have any questions, please contact Ken Phippen, Regional Habitat Manager.

Sincerely,

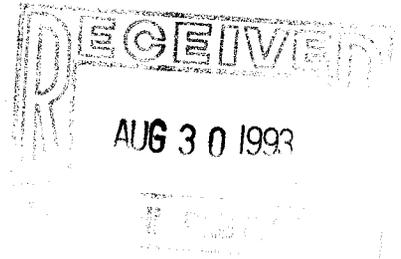


Miles Moretti
Regional Supervisor

SR/lcl

Enclosure

Copy: Ralph Miles, DWR
Kate Kitchell, BLM



SOUTHEASTERN UTAH ASSOCIATION OF LOCAL GOVERNMENTS

WILLIAM D. HOWELL
Executive Director

P. O. Drawer 1106 • Price, Utah 84501 • Telephone 637-5444

AREAWIDE CLEARINGHOUSE A-95 REVIEW

14 01 07

NOI ___ Preapp ___ App ___ State Plan ___ State Action X Subdivision ___ (ASP # 8-818-12)

Other (indicate) _____ SAI Number UT930804-020

Applicant (Address, Phone Number):

Oil, Gas and Mining
355 West North Temple
3 Triad Center Ste 350
Salt Lake City, Utah 84180-1203

Federal Funds:

Requested: _____

Title:

APPLICATION FOR PERMIT TO DRILL

RECEIVED

SEP 07 1993

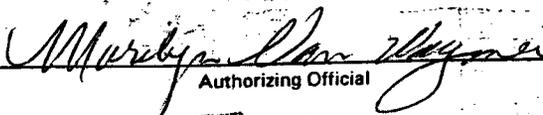
DIVISION OF
OIL, GAS & MINING

- No comment
- See comments below
- No action taken because of insufficient information
- Please send your formal application to us for review. Your attendance is requested

The applicant should forward any written review comments to the funding agency. Any written response to those comments should be forwarded to the State Clearinghouse and also to the funding agency.

Comments:

TURQUOISE HORSE NO. 1.



Authorizing Official

9-3-93

Date

REGIONAL CLEARINGHOUSE

STATE ACTIONS

Mail to:
RDCC Coordinator
116 State Capitol
Salt Lake City, Utah 84114

-
1. ADMINISTERING STATE AGENCY
OIL, GAS AND MINING
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
2. STATE APPLICATION IDENTIFIER NUMBER:
(assigned by State Clearinghouse)
-
3. APPROXIMATE DATE PROJECT WILL START:
Upon approval
-
4. AREAWIDE CLEARING HOUSE(S) RECEIVING STATE ACTIONS:
(to be sent out by agency in block 1)
Southeastern Utah Association of Governments
-
5. TYPE OF ACTION: Lease Permit License Land Acquisition
 Land Sale Land Exchange Other _____
-
6. TITLE OF PROPOSED ACTION:
Application for Permit to Drill
-
7. Boyd & McWilliams Energy Group, Inc. proposes to drill the Turquoise Horse #1 well (wildcat) on federal lease U65994 in San Juan County, Utah. This action is being presented to RDCC for consideration of resource issues affecting state interests. The U.S. Bureau of Land Management is the primary administrative agency in this action and must issue approval before operations commence.
-
8. LAND AFFECTED (site location map required) (indicate county)
NW/4 NE/4, Section 8, Township 39 South, Range 24 East, San Juan County, Utah
-
9. HAS THE LOCAL GOVERNMENT(S) BEEN CONTACTED?
-
10. POSSIBLE SIGNIFICANT IMPACTS LIKELY TO OCCUR:
See Attachment
-
11. NAME AND PHONE NUMBER OF DISTRICT REPRESENTATIVE FROM YOUR AGENCY NEAR PROJECT SITE, IF APPLICABLE:
-
12. FOR FURTHER INFORMATION, CONTACT: Frank R. Matthews
PHONE: 538-5340
13. SIGNATURE AND TITLE OF AUTHORIZED OFFICIAL:

DATE: 8/2/93
Petroleum Engineer

WOI187



State of Utah

GOVERNOR'S OFFICE OF PLANNING AND BUDGET
Resource Development Coordinating Committee

RECEIVED

SEP 21 1993

DIVISION OF
OIL, GAS & MINING

Lynne N. Koga, CPA
Office Director
Brad T. Barber
State Planning Coordinator
Rod D. Millar
Committee Chairman
John A. Harja
Executive Director

116 State Capitol
Salt Lake City, Utah 84114
Phone: (801) 538-1027
Fax: (801) 538-1547

September 20, 1993

Frank R. Matthews
Division of Oil, Gas, and Mining
355 West North Temple
Salt Lake City, UT 84180-1203

SUBJECT: Drill Permit - Turquoise Horse #1 Well
State Identifier Number: UT930804-020

Dear Mr. Shepherd:

The Resource Development Coordinating Committee, representing the State of Utah, has reviewed this proposal, and has no comments at this time.

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Utah State Clearinghouse at the above address or call Carolyn Wright at (801) 538-1535 or John Harja at (801) 538-1559.

Sincerely,

Brad T. Barber
State Planning Coordinator

BTB/ar

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK DRILL <input checked="" type="checkbox"/> DEEPEN <input type="checkbox"/>			5. LEASE DESIGNATION AND SERIAL NO. U65994	
b. TYPE OF WELL OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>			6. IF INDIAN, ALLOTTEE OR TRIBE NAME	
2. NAME OF OPERATOR BOYD & MCWILLIAMS ENERGY GROUP, INC.			7. UNIT AGREEMENT NAME	
3. ADDRESS AND TELEPHONE NO. 300 WEST TEXAS, SUITE 704, MIDLAND, TEXAS 79701			8. FARM OR LEASE NAME, WELL NO. TURQUOISE HORSE	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)* At surface 660' FNL and 1850' FNL <i>ELL</i> At proposed prod. zone SECTION 8, T39S, R24E, SLM			9. API WELL NO. #1	
14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*			10. FIELD AND POOL, OR WILDCAT WILDCAT	
15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drig. unit line, if any) 660'		16. NO. OF ACRES IN LEASE 1680.00		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. 4500		19. PROPOSED DEPTH 7800'		20. ROTARY OR CABLE TOOLS ROTARY
21. ELEVATIONS (Show whether DF, RT, GR, etc.) 5118 GLE			22. APPROX. DATE WORK WILL START* AS SOON AS PERMITTED	

PROPOSED CASING AND CEMENTING PROGRAM

RECEIVED

SEP 20 1993

DIVISION OF
OIL, GAS & MINING

CONDITIONS OF APPROVAL ATTACHED

FLARING OR VENTING OF
GAS IS SUBJECT TO NTL 4-A
Dated 1/1/80

RECEIVED
DISTRICT OFFICE
JUL 22 PM 2:53
DEPT OF THE INTERIOR
OF LAND MANAGEMENT
T-20-93

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, 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. SIGNER Joe Wilbank TITLE ENGINEER DATE T-20-93

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
CONDITIONS OF APPROVAL, IF ANY:

/S/ WILLIAM C. STRINGER

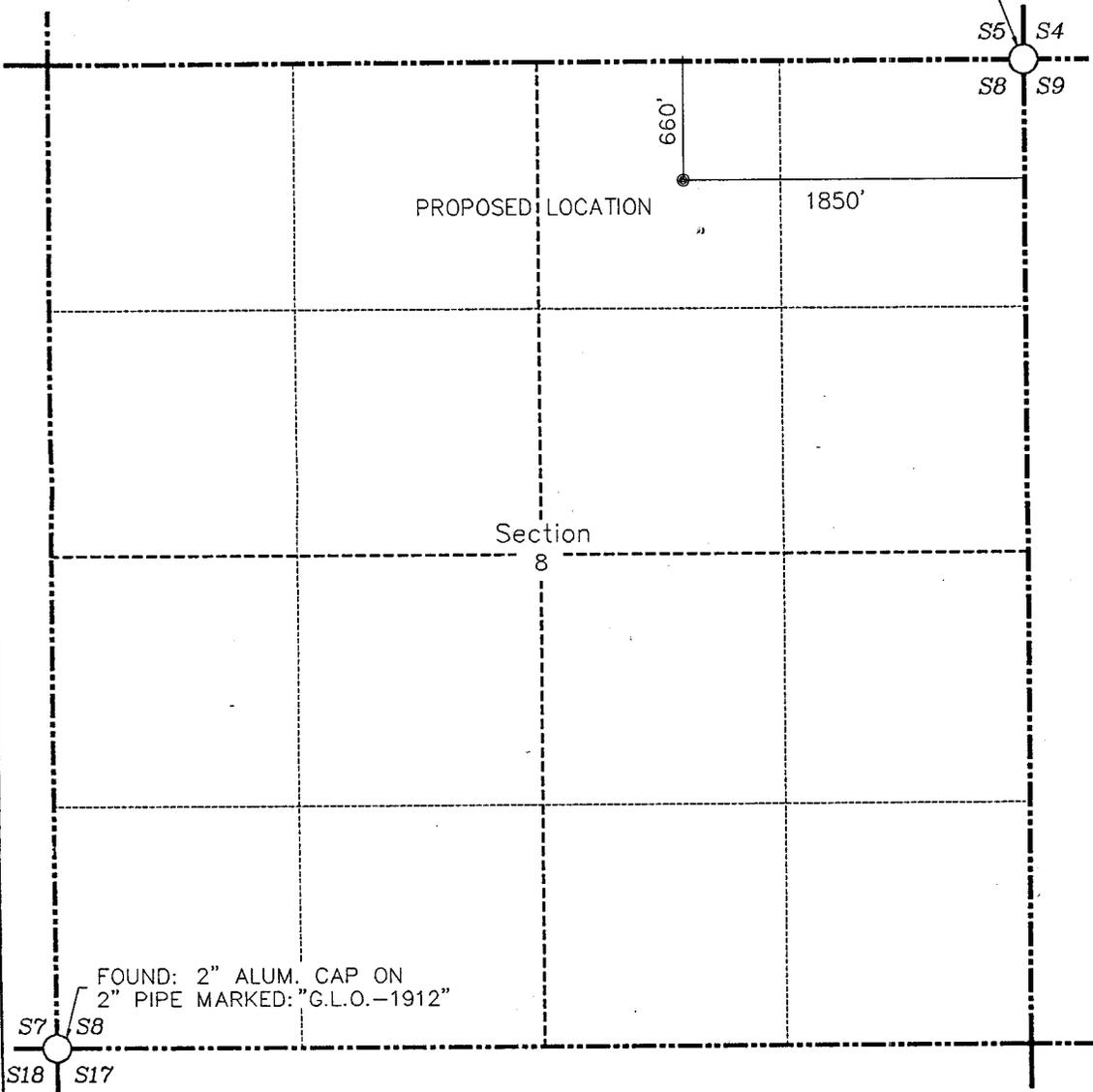
Associate District Manager

APPROVED BY _____ TITLE _____ DATE SEP 15 1993

*See Instructions On Reverse Side

WELL LOCATION PLAT

FOUND: 2" ALUM. CAP ON
2" PIPE MARKED: "G.L.O.-1912"



SCALE: 1"=1000'

RECEIVED

SEP 20 1993

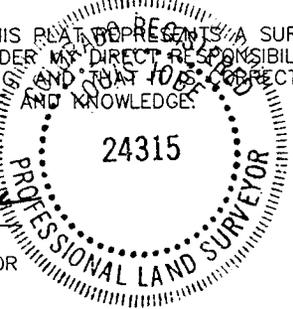
DIVISION OF
OIL, GAS & MINING

WELL LOCATION: BOYD & McWILLIAMS - TURQUOISE HORSE NO. 1

Located 660 feet South of the North line and 1850 feet West
of the East line of Section 8, Township 39 South, Range 24 East, Salt Lake Meridian,
San Juan County, Utah.
Existing Ground elevation determined at 5155 feet, based on N.G.S. monument = 5130.00 feet.

I HEREBY CERTIFY THAT THIS PLAT REPRESENTS A SURVEY
PERFORMED BY ME, OR UNDER MY DIRECT RESPONSIBILITY,
SUPERVISION, AND CHECKING, AND THAT IT IS CORRECT
TO THE BEST OF MY BELIEF AND KNOWLEDGE.

24315



LOUIS JOBE
REGISTERED LAND SURVEYOR

BOYD & McWILLIAMS
MIDLAND, TEXAS

WELL LOCATION PLAT
TURQUOISE HORSE NO. 1
SECTION 8, T39S, R24E, SLM
SAN JUAN COUNTY, UTAH

Clark-Reed & Assoc.
Durango, Colorado

DRAWN BY: DOF
DATE: 7/01/93
JOB NUMBER A93031

Boyd & McWilliams Energy Group, Inc.
Turquoise Horse #1
U-65994
Wildcat
NE4 Section 8, T.39S., R.24E.
San Juan County, Utah

CONDITIONS OF APPROVAL

Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Be advised that Boyd & McWilliams Energy Group, Inc., is considered to be the operator of the above well and is responsible under the terms and conditions of the lease for the operations conducted on the leased lands.

Bond coverage for this well is provided by UT0952 (Principal - Boyd & McWilliams Energy Group, Inc.) via surety consent as provided for in 43 CFR 3104.2.

This office will hold the aforementioned operator and bond liable until the provisions of 43 CFR 3106.7-2 continuing responsibility are met.

This permit will be valid for a period of one year from the date of approval. After permit termination, a new application must be filed for approval.

All lease operations will be conducted in full compliance with applicable regulations (43 CFR 3100), Onshore Oil and Gas Orders, lease terms, notices to lessees, and the approved plan of operations. The operator is fully responsible for the actions of his subcontractors. A copy of these conditions and the approved plan will be made available to field representatives to insure compliance.

A. DRILLING PROGRAM

1. Surface casing (13 3/8) must be cemented to the surface.
2. Intermediate casing (8 5/8) must set 50 feet into the Chinle and cemented to the surface.

NOTE: BLM calculations for internal yield of the intermediate (8 5/8") casing resulted in a sub-standard safety factor based upon a worst case scenario. Although, the proposed casing should be adequate for the anticipated conditions, be aware that the safety factor is marginal.

BUREAU OF INDIAN AFFAIRS
SURFACE MANAGEMENT STIPULATIONS
TO BE INCLUDED IN APD

COMPANY..... Boyd and McWilliams Energy Group Inc.
WELL #..... Turquoise Horse #1
DATE OF INSPECTION...July 29, 1993
PROVIDED BY.....R. CORNETT

- 1. ALL ABOVE GROUND STRUCTURES AND EQUIPMENT WILL BE PAINTED WITH THE FOLLOWING NON-GLARE COLOR.

GRAYFEDERAL STANDARD...595a-36357

- 2. COMPACTED AREAS WILL BE PLOWED OR RIPPED TO A DEPTH OF 12 TO 16 INCHES BEFORE RESEEDING. SEED WILL BE DRILLED TO A DEPTH OF .5 TO .75 INCH OR BROADCAST AND FOLLOWED BY A DRAG OR PACKER. IF BROADCAST, THE RECOMMENDED SEED MIX WILL BE APPLIED AT 150% OF THE RECOMMENDED RATE. THE FOLLOWING SEED MIX WILL BE USED:

SPECIES	LBS/ACRE/PLS
INDIAN RICEGRASS	3
(<u>Oryzopsis hymenoides</u>)	
CRESTED WHEATGRASS	3
(<u>Agropyron cristatum</u>)	
NEEDLE AND THREAD	2
(<u>Stipa comata</u>)	
YELLOW SWEETCLOVER	1
(<u>Melilotus alba</u>)	
FOUR-WING SALTBUSH	2
(<u>Atriplex canscens</u>)	
<hr/>	
TOTAL	11 lbs./acre PLS

(PURITY X GERMINATION = PLS)

- 3. THE TOP 12 INCHES OF SOIL WILL BE SALVAGED, STOCKPILED, AND STABILIZED FOR USE IN REVETATING THE SITE. UPON ABANDONMENT, THE STOCKPILED SOIL WILL BE EVENLY SPREAD ON THE WELL SITE AND RESEEDED.

- 4. ACCESS ROADS NOT NEEDED FOR THROUGH TRAFFIC WILL BE BARRICADED AND RESEEDED IN ACCORDANCE WITH #2. WATER BARS WILL BE CONSTRUCTED TO THE FOLLOWING STANDARD:

% SLOPE	INTERVAL DISTANCE
1% to 5%	200 feet
6% to 15%	100 feet
Greater than 15%	50 feet

ALL SLOPES WILL BE BERMED AT THE TOP OF THE SLOPE!

5. THE RESERVE PIT WILL BE BENTONITE LINED TO PREVENT SEEPAGE.
6. A 24" BERM WILL BE CONSTRUCTED AROUND THE FILL SIDE PERIMETER OF THE WELL PAD.
7. NO PRODUCTION PIPELINES MAY BE CONSTRUCTED UNTIL THEIR ROUTES ARE INSPECTED AND APPROVED THE THE BIA.
8. STORAGE TANKS INSTALLED ON THE LOCATION WILL BE SURROUNDED BY A DIKE OF SUFFICIENT CAPACITY TO CONTAIN ONE AND ONE-HALF TIMES THE STORAGE CAPACITY OF THE LARGEST TANK.
9. UPON ABANDONMENT, ALL MATERIALS BROUGHT IN TO PLATE THE WELL PAD OR ACCESS ROAD WILL BE REMOVED PRIOR TO RESEEDING.
10. STIPULATIONS SET FORTH IN THE ARCHEOLOGICAL CLEARANCE LETTER NO. HPD-93-200 DATED 8-11-93 WILL BE STRICTLY ADHERED TO.

ANY CHANGES/DEVIATIONS MADE FROM THE APPROVED APD MUST BE CLEARED AND APPROVED BY THE SURFACE MANAGEMENT AGENCY. CONTACT THE BUREAU OF INDIAN AFFAIRS, BRANCH OF NATURAL RESOURCES, P.O. BOX 966, SHIPROCK, NEW MEXICO 87420 OR CALL (505) 368-4427 FOR MORE INFORMATION.

C. REQUIRED APPROVALS, REPORTS AND NOTIFICATIONS

Required verbal notifications are summarized in Table 1, attached.

Building Location- Contact the Resource Area, Natural Resource Protection Specialist at least 48 hours prior to commencing construction of location.

Spud- The spud date will be reported to the Resource Area Office 24 hours prior to spudding. Written notification in the form of a Sundry Notice (Form 3160-5) will be submitted to the District Office within 24 hours after spudding, regardless of whether spud was made with a dry hole digger or big rig.

Daily Drilling Reports- Daily drilling reports shall detail the progress and status of the well and shall be submitted to the District Office on a weekly basis.

Monthly Reports of Operations- In accordance with Onshore Oil and Gas Order No. 1, this well shall be reported on Minerals Management Service (MMS) Form 3160, "Monthly Report of Operations," starting the month in which operations commence and continuing each month until the well is physically plugged and abandoned. This report will be filed directly with MMS.

Sundry Notices- There will be no deviation from the proposed drilling and/or workover program without prior approval. "Sundry Notices and Reports on Wells" (Form 3160-5) will be filed for approval for all changes of plans and other operations in accordance with 43 CFR 3162.3-2. Safe drilling and operating practices must be observed.

Drilling Suspensions- Operations authorized by this permit shall not be suspended for more than 30 days without prior approval of the Authorized Officer. All conditions of this approval shall be applicable during any operations conducted with a replacement rig.

Undesirable Events- Spills, blowouts, fires, leaks, accidents, or any other unusual occurrences shall be immediately reported to the Resource Area in accordance with requirements of NTL-3A.

Cultural Resources- If cultural resources are discovered during construction, work that might disturb the resources is to stop, and the Area Manager is to be notified.

First Production- Should the well be successfully completed for production, the District Office will be notified when the well is placed in producing status. Such notification may be made by phone, but must be followed by a sundry notice or letter not later than five (5) business days following the date on which the well is placed on production.

A first production conference will be scheduled as soon as production testing begins and hydrocarbons reach the surface. This conference should be coordinated through the Resource Area Office.

Well Completion Report- Whether the well is completed as a dry hole or as a producer, "Well Completion and Recompletion Report and Log" (Form 3160-4) will be submitted to the District Office not later than thirty (30) days after completion of the well or after completion of operations being performed, in accordance with 43 CFR 3162.4-1. Two copies of all logs, core descriptions, core analyses, well test data, geologic summaries, sample description, and all other surveys or data obtained and compiled during the drilling, workover, and/or completion operations, will be filed with Form 3160-4. Samples (cuttings and/or samples) will be submitted when requested by the District Office.

Venting/Flaring of Gas- Gas produced from this well may not be vented/flared beyond an initial, authorized test period of 30 days or 50 Mmcf, whichever first occurs, without the prior written approval of the District Office. Should gas be vented or flared without approval beyond the authorized test period, the well may be ordered shut-in until the gas can be captured or approval to continue venting/flaring as uneconomical is granted. In such cases, compensation to the lessor shall be required for that portion of the gas that is vented/flared without approval which is determined to have been avoidably lost.

Produced Water- Produced waste water may be confined to an unlined pit for a period not to exceed 90 days after initial production. During the 90 day period, an application for approval of a permanent disposal method and location, along with a water analysis, if required, will be submitted to the District Officer for approval pursuant to NTL-2B.

Off-Lease Measurement, Storage, Commingling- Prior approval must be obtained from the District Office for off-lease measurement, off-lease storage or commingling (either down-hole or at the surface).

Plugging and Abandonment- If the well is completed as a dry hole, plugging instructions must be obtained from the District Office prior to initiating plugging operations. Table 1 of this document provides the after-hours phone numbers of personnel who are authorized to give plugging instructions.

A "Subsequent Report of Abandonment" (Form 3160-5) will be filed with the District Office within thirty (30) days following completion of the well for abandonment. This report will indicate where plugs were placed and the current status of surface restoration. Final abandonment will not be approved until the surface reclamation work required by the approved APD or approved abandonment notice has been completed to the satisfaction of the Area Manager or his representative, or the appropriate surface managing agency.

TABLE 1

NOTIFICATIONS

Notify Jeff Brown, Robert Larsen, or Bob Turri at the San Juan Resource Area, at (801)-587-2141 for the following:

2 days prior to commencement of dirt work, construction or reclamation;

3 hours prior to testing the BOP

1 day prior to spudding;

50 feet prior to reaching the production casing (5-1/2") setting depth;

If the persons at the above number cannot be reached, notify the Moab District Office at (801) 259-6111. If unsuccessful, notify the person listed below.

Well abandonment operations require 24 hour advance notice and prior approval. In the case of newly drilled dry holes, verbal approval can be obtained by calling the Moab District Office, Branch of Fluid Minerals at (801) 259-6111. If approval is needed after work hours, you may contact the following:

Eric Jones, Petroleum Engineer

Office: (801) 259-6111
Home: (801) 259-2214



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor

Ted Stewart
Executive Director

James W. Carter
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340
801-359-3940 (Fax)
801-538-5319 (TDD)

September 23, 1993

Boyd & McWilliams Energy Group, Inc.
300 West Texas, Suite 704
Midland, Texas 79701

Re: Turquoise Horse #1 Well, 660' FNL, 1850' FEL, NW NE, Sec. 8, T. 39 S., R. 24 E.,
San Juan County, Utah

Gentlemen:

Pursuant to Utah Code Ann. § 40-6-18, (1953, as amended), Utah Admin. R. 649-2-3, Application of Rules to Unit Agreements and R. 649-3-4, Permitting of Wells to be Drilled, Deepened or Plugged-Back, approval to drill the referenced well is hereby granted.

In addition, the following specific actions are necessary to fully comply with this approval:

1. Compliance with the requirements of Utah Admin. R. 649-1 et seq., Oil and Gas Conservation General Rules.
2. Notification within 24 hours after commencing drilling operations.
3. Submittal of Entity Action Form, Form 6, within five working days following commencement of drilling operations and whenever a change in operations or interests necessitates an entity status change.
4. Submittal of the Report of Water Encountered During Drilling, Form 7.
5. Prompt notification prior to commencing operations, if necessary, to plug and abandon the well. Notify Frank R. Matthews, Petroleum Engineer, (Office) (801)538-5340, (Home) (801)476-8613, or R.J. Firth, Associate Director, (Home) (801)571-6068.



Page 2
Boyd & McWilliams Energy Group, Inc.
Turquoise Horse #1 Well
September 23, 1993

6. Compliance with the requirements of Utah Admin. R. 649-3-20, Gas Flaring or Venting, if the well is completed for production.

Trash and sanitary waste should be properly contained and transported to approved disposal locations, not retained in or disposed of in pits on location or downhole. Prior to the commencement of drilling operations, the operator should consult the local/county sanitarian and/or the Department of Environmental Quality, Division of Drinking Water/Sanitation, regarding appropriate disposal of sanitary waste.

This approval shall expire one year after date of issuance unless substantial and continuous operation is underway or a request for an extension is made prior to the approval expiration date. The API number assigned to this well is 43-037-31716.

Sincerely,



R.J. Firth
Associate Director, Oil and Gas

ldc
Enclosures
cc: San Juan County Assessor
Bureau of Land Management
WO11

DIVISION OF OIL, GAS AND MINING

SPUDDING INFORMATION

NAME OF COMPANY: BOYD & McWILLIAMS ENERGY GROUP

WELL NAME: TURQUOISE HORSE # 1

API NO. 43-037-31716

Section 8 Township 39S Range 24E County SAN JUAN

Drilling Contractor 4 CORNERS

Rig # 4

SPUDED: Date 12/21/93

Time 1:00 PM

How ROTARY

Drilling will commence

Reported by FAX

Telephone #

Date 12/22/93 SIGNED MKH

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

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

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

BOYD & McWILLIAMS ENERGY GROUP, INC. (915) 684-7921

3. Address and Telephone No.

ON SITE TECHNOLOGIES, LTD. (505) 325-8786
P.O. BOX 2606, FARMINGTON, NM 87499

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

660 PNL and 1850' FEL
SEC. 8, T39S, R24E

5. Lease Designation and Serial No.

UTU-65994

6. If Indian, Allottee or Tribe Name

NAVAJO

7. If Unit or CA, Agreement Designation

N/A

8. Well Name and No.

TURQUOISE HORSE #1

9. API Well No.

10. Field and Pool, or Exploratory Area

WILDCAT

11. County or Parish, State

SAN JUAN COUNTY, UTAH

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

Notice of Intent
 Subsequent Report
 Final Abandonment Notice

TYPE OF ACTION

Abandonment
 Recompletion
 Plugging Back
 Casing Repair
 Altering Casing
 Other SPUD AND CASING INFO
 Change of Plans
 New Construction
 Non-Routine Fracturing
 Water Shut-Off
 Conversion to Injection
 Dispose Water

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

13. 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.)*

- SPUD WELL ON DECEMBER 21, 1993 at 1:00pm
DRILLED 9 7/8 HOLE AT 4:00pm.
DRILLED 17 1/2 HOLE AT 5:15pm.
- DRILLED TO 97' TD, UNABLE TO GET PIPE DOWN TO TD, VERBAL APPROVAL FROM JEFF BROWN (BLM) TO SET CASING AT 68'. SET CASING AT 68' WITH 2 JOINTS OF 13 3/8, 54.50# K55 ST&C CASING, CEMENT WITH 125 CLASS B CEMENT WITH 2% CaCl, 1/4# sx CELLOSEAL DISPLACED WITH 7 1/2 BBL WATER, PUMPED 15 BBL WATER AHEAD OF CEMENT. CIRCULATED 10 BBL CEMENT TO SURFACE. SHUT DOWN DISPLACEMENT AT 10:15am ON 12/22/93.

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

Signed Mark A. Wilbanks

ON SITE TECHNOLOGIES, LTD.
AGENT FOR BOYD & McWILLIAMS

Date 12/22/93

(This space for Federal or State office use)

Approved by _____
Conditions of approval, if any:

Title _____

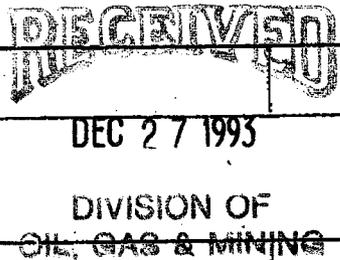
Date _____

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See instruction on Reverse Side

OPERATOR BOYD & McWILLIAMS ENERGY GROUP, INC.
 ADDRESS 300 WEST TEXAS, SUITE 704
MIDLAND, TEXAS 79701

N5975

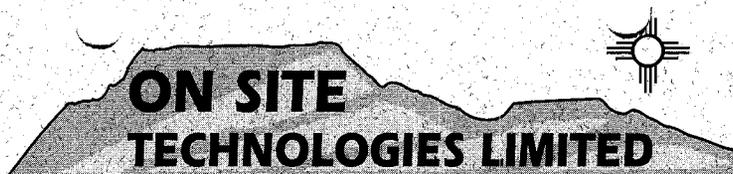
ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION					SPUD DATE	EFFECTIVE DATE
					QQ	SC	TP	RG	COUNTY		
A	99999	11590	43-037-31716	TURQUOISE HORSE #1	NE	8	39S	24E	SAN JUAN	12/21/93	12/21/93
WELL 1 COMMENTS: Entity added 12-28-93. See (Turquoise Horse Unit)											
											
WELL 2 COMMENTS:											
WELL 3 COMMENTS:											
WELL 4 COMMENTS:											
WELL 5 COMMENTS:											

ACTION CODES (See instructions on back of form)
 A - Establish new entity for new well (single well only)
 B - Add new well to existing entity (group or unit well)
 C - Re-assign well from one existing entity to another existing entity
 D - Re-assign well from one existing entity to a new entity
 E - Other (explain in comments section)

NOTE: Use COMMENT section to explain why each Action Code was selected.

(3/89)

Joe A. Wilbanks
 Signature JOE A. WILBANKS
 AGENT Title 12-22-93 Date
 Phone No. 505 325-8786
 AGENT: ON SITE TECHNOLOGIES, LTD.
 P.O. BOX 2606
 FARMINGTON, NEW MEXICO 87499



RECEIVED

December 22, 1993

DEC 27 1993

DIVISION OF
OIL, GAS & MINING

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

Re: Boyd & McWilliams Energy Group
Turquoise Horse #1
Sec. 8, T39S, R24E
San Juan County, Utah
Action Entity Form

Dear Ms. Cordova:

Please find enclosed the original Action Entity Form and two copies in reference to the above mentioned subject.

If additional information is needed regarding this well, please feel free to contact me. Thank you.

Very truly yours,

Tora Baldwin
Engineering Tech
On Site Technologies, Ltd.
Agent for Boyd & McWilliams

enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

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

5. Lease Designation and Serial No.

UTU-65994

6. If Indian, Allottee or Tribe Name

NAVAJO

7. If Unit or CA, Agreement Designation

N/A

8. Well Name and No.

TURQUOISE HORSE #1

9. API Well No.

43-037-31716

10. Field and Pool, or Exploratory Area

WILDCAT

11. County or Parish, State

SAN JUAN COUNTY, UTAH

SUBMIT IN TRIPLICATE

DEC 27 1993

DIVISION OF
OIL, GAS & MINING

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

BOYD & McWILLIAMS ENERGY GROUP, INC. (915) 684-7921

3. Address and Telephone No.

ON SITE TECHNOLOGIES, LTD. (505) 325-8786
P.O. BOX 2606, FARMINGTON, NM 87499

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

660 FNL and 1850' FEL
SEC. 8, T39S, R24E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other <u>SPUD AND CASING INFO</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

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

13. 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.)*

- SPUD WELL ON DECEMBER 21, 1993 at 1:00pm
DRILLED 9 7/8 HOLE AT 4:00pm.
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14. I hereby certify that the foregoing is true and correct

Signed

Joe A. Wilbanks
JOE A. WILBANKS

Title

ON SITE TECHNOLOGIES, LTD.
AGENT FOR BOYD & MCWILLIAMS

Date

12/22/93

(This space for Federal or State office use)

Approved by

Title

Date

Conditions of approval, if any:



ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL SITE GEOLOGY - MUD LOGGING - ANALYTICAL LABORATORY SERVICES

1000 E. MAIN BLVD

PHONE (303) 243-3044

GRAND JUNCTION, COLORADO 81505

January 21, 1994

Mr. Toby McWilliams
Boyd & McWilliams Energy Group, Inc.
300 W. Texas, Suite 704
Midland, TX 79701

Re: Turquoise Horse #1
Section 8, T39S, R24E
San Juan County, UT
43 037 31716

Dear Mr. McWilliams:

Enclosed are the final logs and geology reports on the above referenced well.

We appreciated the opportunity to serve you. If we can be of any further assistance to you in the evaluation of zones encountered, please feel free to contact us at 303-243-3044.

We are looking forward to working with you again in the near future.

Respectfully,

Bill Nagel
Senior Geologist

BN:by

Enc. 5 Final Logs (1 colored)/Geology Reports

Dry Cuts: 1 Set Shipped UPS 1/17/94 - Boyd McWilliams; Midland, TX
1 Set Shipped UPS 1/17/94 - Giant Exploration; Farmington, NM

RECEIVED

JAN 26 1994

DIVISION OF
OIL, GAS & MINING

MUD LOG

- cc: 1 Final Log/Report - Lamesa Corp.; Leslie Appelt; Houston, TX
1 Final Log/Report - W. Kline Boyd III; Memphis, TN
1 Final Log/Report - Broadmoor Exploration Co.; Tulsa, OK
1 Final Log/Report - Michael J. Daniel; Midland, TX
1 Final Log/Report - James H. Dick; Houston, TX
1 Final Log/Report - David H. Essex, Agency Account; Midland, TX
1 Final Log/Report - M. T. Halbouty Energy Co.; Glen Oskin; Houston, TX
1 Final Log/Report - Clyde W. Hanks, Jr.; Houston, TX
1 Final Log/Report - Peter A. Hetherington; Bellaire, TX
1 Final Log/Report - Jobe O&G Corp.; Mike Jobe; Houston, TX
1 Final Log/Report - Jobe Family Ltd. Partnership; Ardmore, OK
1 Final Log/Report - Thomas Mitchell Jobe; Tulsa, OK
1 Final Log/Report - Kriti Expl., Inc.; James V. Riner; Houston, TX
1 Final Log/Report - Landmark Royalty Fund; Richard K. Hestley; Kingwood, TX
1 Final Log/Report - McKallip, Ltd.; Curtis McKallip; Houston, TX
1 Final Log/Report - Marmaton Oil Co.; Levi W. Goodrich; Houston, TX
1 Final Log/Report - Richard L. Middleton; Lititz, PA
1 Final Log/Report - Frank M. Muller, Jr.; Houston, TX
1 Final Log/Report - Parallel Petro. Corp.; Larry C. Oldham; Midland, TX
1 Final Log/Report - Rangeland Expl. Co.; Midland, TX
1 Final Log/Report - Seed Oil Co.; Midland, TX
1 Final Log/Report - Smith Oil Co., Inc.; E. L. Smith, III; Dallas, TX
2 Final Logs/Reports - UNOCAL Corp.; Todd A. Brown; Sugarland, TX
2 Final Logs/Reports - Giant E&P Co.; Farmington, NM
1 Final Log/Report - ANR Production Co.; Mike Jones; Houston, TX
1 Final Log/Report - ANR Production Co.; Norman E. Porter; Bellaire, TX
1 Final Log/Report - Mike McWilliams; Dallas, TX
1 Final Log - State of Utah; SLC, UT
1 Final Log - BLM; San Juan Resource Area; Monticello, UT

**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

SUBMIT IN DUPLICATE*

(See other instructions on reverse side)

FOR APPROVED
OMB NO. 1004-0137
Expires: December 31, 1991

5. LEASE DESIGNATION AND SERIAL NO.

NOOC1420-5297

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

NAVAJO

7. UNIT AGREEMENT NAME

N/A

8. FARM OR LEASE NAME, WELL NO.

TURQUOISE HORSE #1

9. APIWELLNO.

43-037-31716

10. FIELD AND POOL, OR WILDCAT

WILDCAT

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

**NW $\frac{1}{4}$, NE $\frac{1}{4}$
Sec 8, T39S, R24E**

12. COUNTY OR PARISH

San Juan

13. STATE

Utah

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL GAS WELL DRY Other _____

b. TYPE OF COMPLETION: NEW WELL WORK OVER DEEPEN PLUG BACK DIFF. REKV. Other _____

2. NAME OF OPERATOR
BOYD & MCWILLIAMS ENERGY GROUP (915) 684-7921

3. ADDRESS AND TELEPHONE NO. **ON SITE TECHNOLOGIES, LTD
AGENT P.O. BOX 2606, FARMINGTON NM 87499**

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
At surface **660 ENL & 1850 FEL**

At top prod. interval reported below **SAME**

At total depth **SAME**

14. PERMIT NO. DATE ISSUED

--- **---**

15. DATE SPUNDED 12-21-93	16. DATE T.D. REACHED 01-14-94	17. DATE COMPL. (Ready to prod.) N/A 1-10-94 PA	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)* 5118 GLE	19. ELEV. CASINGHEAD
-------------------------------------	--	---	--	----------------------

20. TOTAL DEPTH, MD & TVD 7876 TD	21. PLUG, BACK T.D., MD & TVD 7876TD	22. IF MULTIPLE COMPL., HOW MANY* N/A	23. INTERVALS DRILLED BY 0-TD	ROTARY TOOLS	CABLE TOOLS
---	--	---	---	--------------	-------------

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
N/A

25. WAS DIRECTIONAL SURVEY MADE

26. TYPE ELECTRIC AND OTHER LOGS RUN **SNICKLOOK 2-7-94**
DLL, CNL, EDC & BHC SONIC LOGS MUD LOG

27. WAS WELL CORED
NO

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

CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	TOP OF CEMENT, CEMENTING RECORD	AMOUNT PULLED
13 3/8"	54.5, k55	ST&C 68'	17 1/2	125sx Class Bw/2%CaCl	None
8 5/8"	J55, 24#	2191	12 1/4	700sx 65/35 6% Gel	
				2% CaCl, 1/4# celloseal	
				tailed with 360 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)
N/A							

31. PERFORATION RECORD (Interval, size and number)		32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.	
INTERVAL (MD)	SIZE	DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
N/A		N/A	

33.* PRODUCTION

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

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

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

SIGNED *[Signature]* TITLE **ENGINEERING TECH** DATE **01-29-94**

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

BOYD & McWILLIAMS
TURQUOISE HORSE #1
SECTION 8, T39S, R24E
SAN JUAN COUNTY, UTAH

G.L.: 5155' K.B.: 5168'

FORMATION	FORMATION TOPS					
	PROGNOSIS	SUBSEA DATUM	SAMPLE TOP	SUBSEA DATUM	E-LOG TOP	SUBSEA DATUM
ENTRADA	----	----	----	----	----	----
CARMEL	----	----	----	----	----	----
NAVAJO	----	----	----	----	----	----
CHINLE	2235'	(+2235')	----	----	2144'	(+3024')
SHINARUMP	2935'	(+2220')	----	----	2905'	(+2263')
DECHELLE	3055'	(+2100')	----	----	3201'	(+1967')
CUTLER	3265'	(+1890')	----	----	3249'	(+1919')
HERMOSA	----	(-855')	----	----	5057'	(+111')
UPPER ISMAY	6010'	(-1045')	6028'	(-860')	6023'	(-855')
HOVENWEEP SHALE	----	----	6166'	(-998')	6160'	(-992')
LOWER ISMAY	----	----	6172'	(-1004')	6164'	(-996')
GOTHIC SHALE	----	----	6224'	(-1056')	6213'	(-1045')
DESERT CREEK	6235'	(-1080')	6262'	(-1094')	6253'	(-1085')
CHIMNEY ROCK SHALE	6320'	(-1165')	6336'	(-1168')	6329'	(-1161')
AKAH	6345'	(-1190')	6360'	(-1192')	6352'	(-1184')
UPPER PARADOX SALT	----	----	6394'	(-1226')	6385'	(-1277')
BARKER CREEK	6675'	(-1520')	6677'	(-1509')	6689'	(-1521')
LOWER PARADOX SALT	----	----	6889'	(-1721')	6880'	(-1712')
ALKALI GULCH	7137'	(-1982')	7186'	(-2018')	7179'	(-2011')
PINKERTON TRAIL	7216'	(-2061')	7460'	(-2292')	7439'	(-2271')
MOLAS	----	----	7592'	(-2424')	7553'	(-2385')
MISSISSIPPIAN	7644'	(-2489')	7698'	(-2530')	7700'	(-2532')
TOTAL DEPTH	7800'	(-2632')	7876'	(-2708')	7822'	(-2654')*

* NOTE: ELECTRIC LOGS DID NOT GO TO TOTAL BOTTOM



**ON SITE
TECHNOLOGIES, LTD.**

January 26, 1994

JAN 31 1994

DIVISION OF
OIL, GAS & MINING

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

Re: Boyd & McWilliams Energy Group
Turquoise Horse #1
Sec. 8, T39S, R24E
San Juan County, Utah
Weekly Reports

Dear Mr. Hebertson:

Enclosed please find Sundry Notices for your files regarding the above-referenced subject.

If you have any questions or concerns, please feel free to contact me. Thank you.

Very truly yours,



Tora Baldwin
Engineering Tech
On Site Technologies, Ltd.
Agent for Boyd & McWilliams Energy Gp.

enclosures

FAX: (505) 327-1496 ■ 24 HR. - (505) 327-7105 ■ OFF.: (505) 325-8786

3005-NORTHRIDGE DRIVE ■ SUITE F ■ P. O. BOX 2606 ■ FARMINGTON, NEW MEXICO 87499



January 26, 1994

RECEIVED

JAN 31 1994

DIVISION OF
OIL, GAS & MINING

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

Re: Boyd & McWilliams Energy Group
Turquoise Horse #1
Sec. 8, T39S, R24E
San Juan County, Utah
Weekly Reports

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Agent for Boyd & McWilliams Energy Gp.

enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
UTU-65994

6. If Indian, Allottee or Tribe Name
NAVAJO

7. If Unit or CA, Agreement Designation
NA

8. Well Name and No.
TUROUOISE HORSE #1

9. API Well No.
43-037-31716

10. Field and Pool, or Exploratory Area
WILDCAT

11. County or Parish, State
SAN JUAN COUNTY, UTAH

SUNDRY NOTICES AND REPORTS ON WELLS

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

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
BOYD & MCWILLIAMS ENERGY GROUP (915) 684-7921

3. Address and Telephone No.
ON SITE TECHNOLOGIES (505) 325-8786
AGENT P.O. BOX 2606, FARMINGTON, NEW MEXICO 87499

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
660' FNL and 1850' FEL
SEC. 8, T39S, R24E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other <u>Weekly Report</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

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

13. 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.)*

- 12-26-93 Shut down for Christmas.
- 12-27-93 BOP test, witnessed by Gary Torres with BLM, Drilled to 2192-2430'
- 12-28-93 Drilled from 2430' to 3115.
- 12-29-93 Drilled from 3115' to 3808.
- 12-30-93 Drilled from 3808' to 4535!
- 12-31-93 Drilled from 4535' to 5050'.
- 01-01-94 Drilled from 5050' to 5610'.



JAN 31 1994

DIVISION OF
OIL, GAS & MINING

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

Signed [Signature] Title Engineering Tech Date 01-22-94
On Site Technologies, Ltd

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

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5. Lease Designation and Serial No.
UTU-65994

6. If Indian, Allottee or Tribe Name
NAVAJO

7. If Unit or CA, Agreement Designation
NA

8. Well Name and No.
TURQUOISE HORSE #1

9. API Well No.
43-037-31716

10. Field and Pool, or Exploratory Area
WILDCAT

11. County or Parish, State
SAN JUAN COUNTY, UTAH

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
BOYD & MCWILLIAMS ENERGY GROUP (915) 684-7921

3. Address and Telephone No.
ON SITE TECHNOLOGIES (505) 325-8786
AGENT P.O. BOX 2606, FARMINGTON, NEW MEXICO 87499

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
660' FNL and 1850' FEL
SEC. 8, T39S, R24E

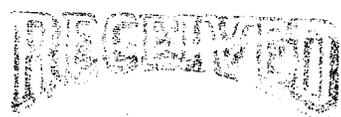
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	<input checked="" type="checkbox"/> Other <u>Weekly Report</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
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	<input type="checkbox"/> Dispose Water

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- 12-28-93 Drilled from 2430'to 3115.
- 12-29-93 Drilled from 3115'to 3808.
- 12-30-93 Drilled from 3808'to 4535'.
- 12-31-93 Drilled from 4535'to 5050'.
- 01-01-94 Drilled from 5050' to 5610'.



JAN 31 1994

DIVISION OF
OIL, GAS & MINING

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

Signed [Signature] Title Engineering Tech Date 01-22-94
On Site Technologies, Ltd

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
 Conditions of approval, if any:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

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Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.

UTU-65994

6. If Indian, Allottee or Tribe Name

NAVAJO

7. If Unit or CA, Agreement Designation

NA

8. Well Name and No.

TUROUOISE HORSE #1

9. API Well No.

43-037-31716

10. Field and Pool, or Exploratory Area

WILDCAT

11. County or Parish, State

SAN JUAN COUNTY, UTAH

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

BOYD & MCWILLIAMS ENERGY GROUP (915) 684-7921

3. Address and Telephone No.

ON SITE TECHNOLOGIES (505) 325-8786

AGENT P.O. BOX 2606, FARMINGTON, NEW MEXICO 87499

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

660' FNL and 1850' FEL
SEC. 8, T39S, R24E

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01-02-94 Drilled from 5610' to 5915'.

01-03-94 Drilled from 5915' to 6210'. Survey at 6170'.

01-04-94 Drilled from 6170' to 6366'.

01-05-94 Drilled from 6366' to 6595'.

01-06-94 Drilled from 6595' to 6719'. Prep to run DST.

01-07-94 Drilled from 6719' to 6835'. Run DST from 6604' to 6719'.

01-08-94 Drilled from 6835' to 7240'.



JAN 31 1994

DIVISION OF
OIL, GAS & MINING

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

Signed

Engineering Tech

Title On Site Technologies, LTD Date 01-22-94

(This space for Federal or State office use)

Approved by

Title

Date

Conditions of approval, if any:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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Budget Bureau No. 1004-0135
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TURQUOISE HORSE #1

9. API Well No.

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11. County or Parish, State

SAN JUAN COUNTY, UTAH

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

BOYD & MCWILLIAMS ENERGY GROUP (915) 684-7921

3. Address and Telephone No. ON SITE TECHNOLOGIES (505) 325-8786

AGENT P.O. BOX 2606, FARMINGTON, NEW MEXICO 87499

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SEC. 8, T39S, R24E

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01-09-94 Drilled from 7240' to 7380'.

01-10-94 Drilled from 7380' to 7527'.

01-11-94 Drilled from 7527' to 7669'. Request permission to drill deeper, verbal approval from Bob Turri.

01-12-94 Drilled from 7669 to 7825', circ samples.

01-13-94 Drilled from 7825' to 7870. Circ and prep for DST #2.

01-14-94 Drilled from 7870' to 7876'. Run DST #2 from 7780-7870.

01-15-94 Circulate and condition to log. Run logs DLL, CNL, EDC & BHC Sonic logs. Circulate and condition to P&A

01-16-94 P&A Rig released at 3:00am.

JAN 31 1994

DIVISION OF
OIL, GAS & MINING

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

Signed [Signature] Title Engineering Tech Date 01-22-94

On Site Technologies, Ltd.

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

RECEIVED

FEB 07 1994

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
DIVISION OF
OIL, GAS & MINING

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

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UTU-65994

6. If Indian, Allottee or Tribe Name

NAVAJO

7. If Unit or CA, Agreement Designation

NA

8. Well Name and No.

TUROUOISE HORSE #1

9. API Well No.

43-037-31716

10. Field and Pool, or Exploratory Area

WILDCAT

11. County or Parish, State

SAN JUAN COUNTY, UTAH

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

BOYD & MCWILLIAMS ENERGY GROUP (915) 684-7921

3. Address and Telephone No.

ON SITE TECHNOLOGIES (505) 325-8786

AGENT

P.O. BOX 2606, FARMINGTON, NEW MEXICO 87499

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

660' FNL and 1850' FEL

SEC. 8, T39S, R24E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- Notice of Intent
- Subsequent Report
- Final Abandonment Notice

TYPE OF ACTION

- Abandonment
- Recompletion
- Plugging Back
- Casing Repair
- Altering Casing
- Other

- Change of Plans
- New Construction
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(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

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- Well spudded on 12-21-93.
- Surface casing set at 68' cement circulated to the surface. TD on 1-14-94 at 7876'.
- Well proved to be non-productive, P&A as per BLM as follows:
 - 01-15-94 5:37 Set #1 plug with 50 sx Class H from 7750' to 7650'.
 - 01-16-94 6:41 Set #2 plug with 60 sx Class H from 7230' to 7130'.
 - 7:42 Set #3 plug with 75 sx Class H with 2% CaCl from 6352' to 6252'.
 - 4:47 Set #4 plug with 60 sx Class B from 5100' to 5000'.
 - 6:26 Set #5 plug with 60 sx Class B from 3250' to 3150'.
 - 7:33 Set #6 plug with 60 sx Class B from 2240' to 2140'.
 - 9:27 Set #7 plug with 25 sx Class B from 90' to surface.
- 10.5#/gal mud was spotted between each cement plug. Plugging was witnessed by BLM representative Jeff Brown.
- Rig was released at 3:00am on 01-16-94.
- A dry hole marker was set as per BIA Shiprock, NM and the location will be reclaimed at a future date.

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

ON SITE TECHNOLOGIES, LTD.
Engineering Tech

Signed 

Title

Date

01-29-94

(This space for Federal or State office use)

Approved by

Title

Date

Conditions of approval, if any:

RECEIVED

FEB 07 1994

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR DIVISION OF
BUREAU OF LAND MANAGEMENT OIL, GAS & MINING

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

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SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
 ROYD & MCWILLIAMS ENERGY GROUP (915) 684-7921

3. Address and Telephone No.
 ON SITE TECHNOLOGIES (505) 325-8786
 AGENT P.O. BOX 2606, FARMINGTON, NEW MEXICO 87499

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
 660' FNL and 1850' FEL
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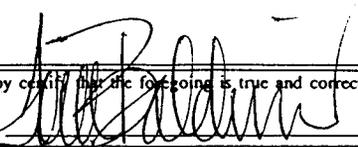
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Please note that we intend to Plug and Abandon this well according to the following procedures:

Set first plug at 7750' to 7650' with 50sx Class H, second plug at 7230' to 7130' with 60sx Class H cement, third plug at 6352' to 6252' with 75sx Class H with 2% CaCl; fourth plug at 5100 to 5000' with 60sx Class B cement; fifth plug at 3250' to 3150' with 60sx Class B cement; sixth plug at 2240' to 2140' with 60sx class B cement; seventh plug at 90' to surface with 25sx of Class B cement.

Verbal approval was given by Eric Jones.

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

Signed 

Engineering Tech
On Site Technologies, Ltd Date 1-29-94

Approved by _____ Title _____ Date _____
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