5847 San Felipe Suite 3600
Houston, Texas 77057
Telephone: (713) 780-5000
Fax (713) 780-5273
Telex 910 881 5303

OIL CONSERVATION DIVISION
RECEIVED

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September 5, 1990

State of New Mexico
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

BHP Petroleum (Americas) Inc

RE: Unorthodox Location, Administrative Approval Request
Gallegos Canyon Unit #396
SW 1/4 SW 1/4 Sec. 35 T29N R13W
San Juan County, New Mexico

9/11/90
Copy Sent to
E. Busch

Gentlemen:

BHP Petroleum respectfully requests that a non standard location be administratively approved to allow the GCU #396 well to be drilled 720' FSL and 1155' FWL to be completed in the Fruitland Coal.

The non standard location is requested due to topographical reasons and the surface owner's requirements to minimize surface disturbing activities by offsetting existing wells.

The terrain where a well could be drilled at a standard location is such that a significant amount of dirt work would be necessary. The surface is owned by the Bolack Family and they have told us any location other than the one that is adjacent to Amoco's existing #164 well is unacceptable. The Amoco well is completed in the Dakota formation.

BHP is the operator of all offsetting proration units.

Ernie Busch visited the subject location with J. C. Harris and myself on August 10, 1990 and concurred that the subject location was the most feasible, given the surface owner's stance. Mr. Busch did request that we investigate the amount of cement used in the adjacent Amoco well. We did that and submitted the results to him in a letter dated August 21, 1990.

For both economical and mechanical reasons BHP doesn't think that directionally drilling the proposed well to a standard location is feasible. Economically it is not feasible based on the extra expense of drilling a directional hole compared to the anticipated production. Our experience has shown that a rod pump will have to be installed to remove excess water from the well bore and a directionally drilled hole would greatly hinder or prohibit that.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Chuck Williams

Chuck Williams By fax
Field Services Administrator

Form 3160-3
(November 1983)
(formerly 9-331C)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: SF 078926

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1a. TYPE OF WORK: DRILL [X] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [ ] GAS WELL [X] OTHER — SINGLE ZONE [X] MULTIPLE ZONE [ ]

7. UNIT AGREEMENT NAME: Gallegos Canyon Unit

8. FARM OR LEASE NAME: Gallegos Canyon Unit

9. WELL NO.: 396

2. NAME OF OPERATOR: BHP Petorleum (Americas) Inc.

3. ADDRESS OF OPERATOR: 5847 San Felipe Ste 3600 Houston TX 77057-3005

10. FIELD AND POOL, OR WILDCAT: Basin Fruitland Coal

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: SWSW
At proposed prod. zone

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 35, T29N, R13W

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: Approximately 3 miles south of Farmington, New Mexico

12. COUNTY OR PARISH: San Juan

13. STATE: New Mexico

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): Approx.6435' from Unit Boundary

16. NO. OF ACRES IN LEASE: 2,561.19

17. NO. OF ACRES ASSIGNED TO THIS WELL: 320

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.: 150'

19. PROPOSED DEPTH: 1757'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 5851' GR

22. APPROX. DATE WORK WILL START*: Fall 1990

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
8 3/4"	7"	20#	± 130'	50 sx (57.5 cu.ft.)
6 1/4"	4 1/2"	10.5#	±1757'	221 sx (273 cu.ft.)

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

24.

SIGNED Chuck Williams TITLE Field Services Administrator DATE 8/1/90

Chuck Williams

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

***See Instructions On Reverse Side**

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.

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

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

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

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

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised 1-1-89

OIL CONSERVATION DIVISION

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
BHP PETROLEUM (AMERICAS) INC.	GALLEGOS CANYON UNIT	396

Unit Letter	Section	Township	Range	County
M	35	29 N	13 W NMPM	San Juan

Actual Footage Location of Well:
720 feet from the South line and 1155 feet from the West line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
5851	Fruitland Coal	Basin Fruitland Coal	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

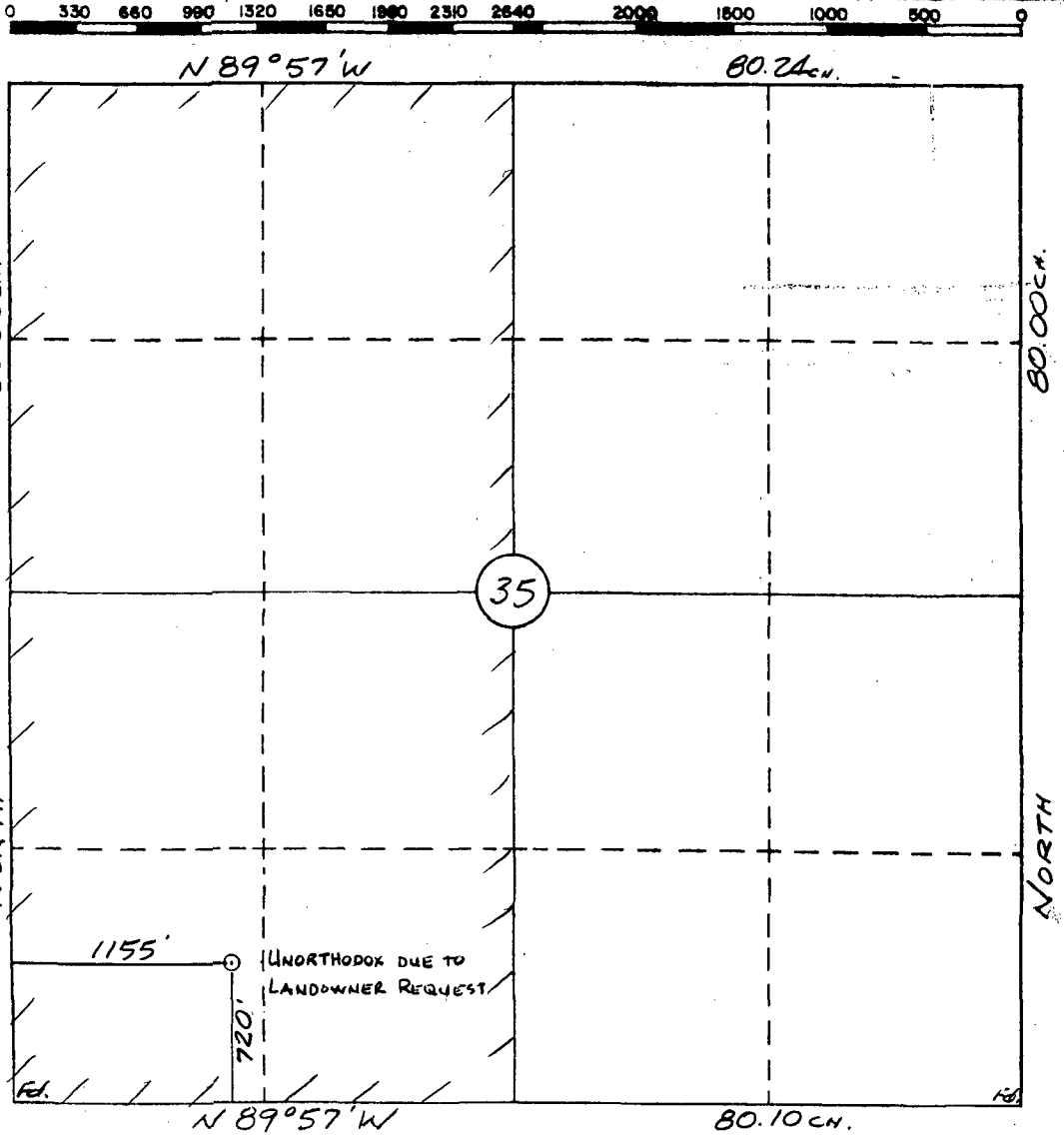
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

☐ Yes ☐ No If answer is "yes" type of consolidation _____

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

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



OPERATOR CERTIFICATION

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

Signature: Chuck Williams

Printed Name: Chuck Williams

Position: Field Services Administrator

Company: BHP Petroleum (Americas) Inc.

Date: 7/26/90

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my knowledge and belief. 7-13-90

Date Surveyed

William E. Mahnke II

Signature & Seal of Professional Surveyor

WILLIAM E. MAHNKE II NEW MEXICO #8466 REGISTERED PROFESSIONAL LAND SURVEYOR

Certificate No. 8466

BHP PETROLEUM (AMERICAS) INC.
GALLEGOS CANYON UNIT NO. 396
720' FSL & 1155' FWL SECTION 35 T29N-R13W
SAN JUAN COUNTY, NEW MEXICO
TEN POINT PROGRAM

1. **Surface Formation:** Nacimiento or valley fill

2 &
3. **Estimated Formation Tops:**

Formation	Top	Expected Production
Ojo Alamo	294	
Kirtland	407	
Fruitland	1294	
Basal Fruitland Coal	1578	Gas
Pictured Cliffs	1607	Gas
Total Depth	1757	

4. **Casing and Cementing Program:** A string of 7" 20# K-55 casing with ST&C couplings is to be set at ±130' in an 8 3/4" hole and cemented to the surface in a single stage with 50 sx Class 'H' cement (yield = 1.15 ft^3/sx) containing 3 % $CaCl_2$ and ¼ #/sx celloflake. Slurry volume assumes a 100 percent excess over calculated hole volume. Centralizers will be run on the bottom two joints as long as boulders are not encountered while drilling the surface hole. If boulders are encountered while drilling the surface hole, no centralizers will be run as it has been BHP P(A)'s experience centralizers have a tendency to knock off boulders and hang up the casing while running in the hole. Minimum clearance between collars and hole is 1.094". Prior to drilling out shoe, casing and BOPE will be tested to a minimum of 2000 psi. Safety factors utilized in the design of this casing string were: Burst = 1.1, Collapse = 1.125, and Tension = 1.8 or 100,000# overpull whichever was greater.

A production string of 4½" 10.5# K-55 casing with ST&C couplings will be run from the surface to total depth in a 6¼" hole. This string will be cemented to the surface with a minimum of 171 sx of 50-50 pozmix containing 2 % gel, 0.5 % fluid loss additive and ¼ #/sx celloflake (yield = 1.26 ft^3/sx) followed by 50 sx of Class 'G' cement containing low fluid loss additives (yield = 1.15 ft^3/sx). Slurry volume assumes a 50 percent excess over calculated hole volume. Cement volume is subject to change after review and recalculation of

hole volume from the open hole calipers. Centralizers will be spaced such that a minimum of two are located above and two are located below the Basal Fruitland Coal; and, if any Ojo Aloma is present in the open hole section at the top of the hole, a minimum of one centralizer will be run just below the base and another into the base of Ojo Alamo. Minimum clearance between collars and hole is 1.25". Prior to perforating the casing for any attempted completion, the casing will be tested to a minimum of 2500 psi. Safety factors utilized in the design of this casing string were: Burst = 1.1, Collapse = 1.125, and Tension = 1.8 or 100,000# overpull whichever was greater.

A chronological log following the completion of the cementing operations detailing the pump rate, pump pressure, slurry density, and slurry volume for each job will be submitted in a Sundry Notice.

5. **Pressure Control Equipment:** (See attached schematic diagrams) A minimum of a 2M BOPE well control system will be utilized. BOP's and choke manifold will be installed and pressure tested before drilling out under surface casing and then will be checked daily as to mechanical operation condition. Ram type preventors will be tested to 70 percent of the internal yield pressure of the casing. The annular preventor will be tested to 50 percent of its working pressure.

A full opening internal blowout preventor or drill pipe safety valve will be on the drilling floor at all times and will be capable of fitting all connections.

6. **Mud Program:** A fresh water Low Solids, Non-Dispersed mud system will be used to drill this well. Sufficient materials will be on location at all times to maintain mud properties and to control any unforeseen lost circulation problems or abnormal pressures in the Farmington Sands of the Kirtland Formation. All drilling fluids will be contained in a steel pit. At the completion of drilling, the drilling fluid will be hauled off to be used for another well. The remaining accumulation of solids in the pit will be dumped into a small earthen pit beside the steel pit. As soon as this pit dries up, it will be covered up.

Mud program summary is as follows:

Interval (feet)	Mud Weight (#/gal)	Viscosity (sec/qt)
0 - 1000	8.4 or less	30 - 38
1000 - TD	9.3 or less	40 - 55

7. **Auxiliary Equipment:**
An upper Kelly Cock will be utilized. At a minimum, a flow sensor will be installed in the system and the mud volume constantly be visually monitored.

8. **Logging Program:** SP-DIL and GR-FDC-CNL logs will be run from TD to surface casing shoe.

Coring Program: No cores are planned.

Testing Program: No tests are planned.

Stimulation Program: Perf the Basal Fruitland Coal with 2 JSPF and frac with 50,000 gals of either a 70 quality nitrogen foam or a crosslinked-gelled water containing a minimum of 50,000 lbs of 20-40 mesh sand.

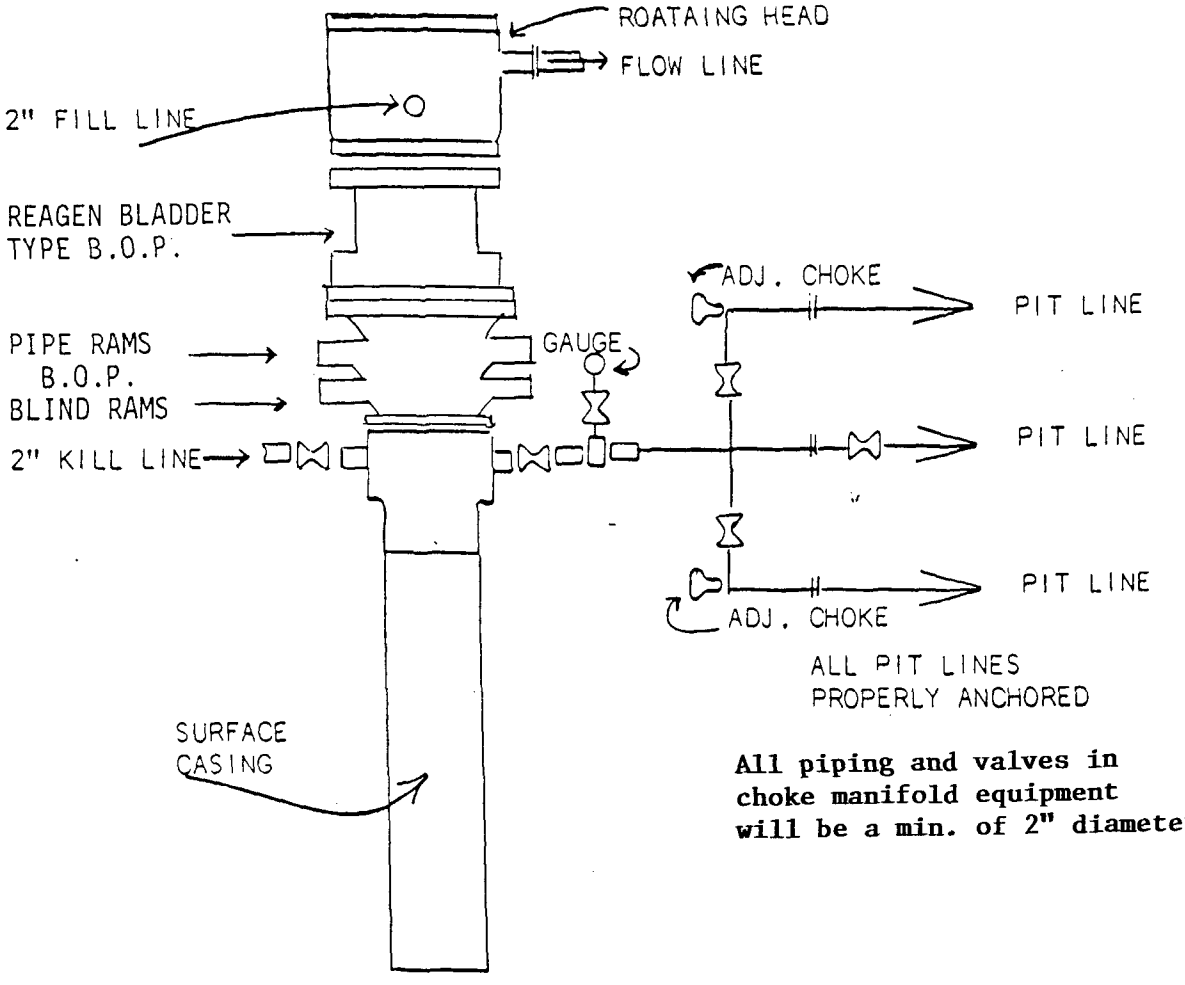
9. **Abnormal Pressure:** Although not expected, abnormal pressures are possible in the Farmington Sands of the Kirtland Formation.

Estimated Bottom Hole Pressure: 400 psi.

10. **Anticipated Starting Date:** As soon as all required approvals are received.

Duration of Operation: It is anticipated a total of 4 days will be required for drilling operations and 5 days for completion operations.

2M SYSTEM



All piping and valves in choke manifold equipment will be a min. of 2" diameter.

SURFACE USE & OPERATIONS PLAN

WELL NAME AND NO.: Gallegos Canyon Unit Well No. 396

LOCATION: 720' FSL 1155' FWL (SW/SW) Section 35, T29N-R13W

LEASE NO.: SF 078926

1) **EXISTING ROADS:**

A. See Attached map.

B. Travel south on Road #371 for approximately 5 miles, turn left on ridge road, go to auto gate, continue on ridge road for appoximately .2 miles to Amoco Production Company's #164. Proposed well is adjacent to Amoco well.

C. Access Roads to Location: See map

D. Exploratory well: N/A

E. Development Well: For all applicable access roads within a one (1) mile radius, see attached map.

F. Plans for Improvement and/or Maintenance: BHP Petroleum, Amoco, and El Paso Natural Gas Company currently maintain the non-county, state or Irrigation Project roads. Maintenance is conducted on an as-needed basis.

2) **PLANNED ACCESS ROADS:**

A. No new road is required.

3) **LOCATION OF EXISTING WELLS:**

A. Water Wells: None

B. Abandoned Wells: None

C. Temporarily Abandoned Wells: None

D. Disposal Wells: Gallegos Canyon Unit #307 is the nearest disposal well.

E. Drilling Wells: None presently.

F. Producing Wells: Amoco #164 is the nearest well, approximately 150' away. For additional wells see map.

G. Shut-in Wells: None.

H. Injection Wells: None.

I. Monitoring or Observation Wells: None.

4) **LOCATION OF EXISTING AND/OR PROPOSED FACILITIES OWNED AND/OR CONTROLLED BY BHP:**

A. Existing facilities: BHP Petroleum currently operates the Pictured Cliffs participating area within the Gallegos Canyon unit.

1. Tank Batteries: No oil or condensate is currently produced from BHP wells in the unit.

2. Production: All wells produce natural gas.
Facilities: Some wells are equipped with rod pumps to remove excess water. Wells are normally equipped with a two (2) phase separator. El Paso Natural Gas Company has a glycol dehy unit upstream of the sales meter.

3. Oil Gathering Lines: N/A

4. Gas Gathering Lines: El Paso Natural Gas Company purchases all gas produced by BHP in this unit. There are two (2) systems in which our wells are introduced depending on the initial wellhead pressure.

5. Injection Lines: N/A

6. Disposal Lines: Each well which produces water is tied into one of four (4) disposal systems.

B. New Production Facilities:

1. Proposed Tank Battery: None

2. Dimensions of Facilities: All new facilities are restricted to the existing pad area. New facilities will consist of a separator, dehy unit, meter house and two small earthen pits, unless the well requires a disposal line to remove excess water, in which case a pumping unit will be installed and the separator pit eliminated. All surface equipment to be painted tan. If water disposal pipelines are need, they will be applied for at a later date.

3. Construction Methods and Materials: The site will be leveled with a crawler type dozer. Native soils will be used. Any foundation material such as gravel will be purchased and trucked to the site if a pumping unit is needed.

4. Protective Measures and Devices: Any pits will be fenced to prevent entry by livestock or wildlife.

5) **LOCATION AND TYPE OF WATER SUPPLY:**

A. Location: San Juan River

B. Method of Transportation: Water will be hauled by truck over existing roads.

C. Water Wells to be Drilled: N/A

6) **SOURCE OF CONSTRUCTION MATERIALS:**

A. Location: Only native materials are necessary for the construction of drill site and related facilities.

B. From Federal or Indian Lands: N/A

C. Additional Materials: It may be necessary to haul gravel for a pumping unit base. If needed it will be hauled from Farmington.

D. Access Roads on Federal or Indian Lands: All roads are on private surface. Amoco Production Company's Right-of-Way easements will be utilized for access.

7) **METHODS OF HANDLING WASTE DISPOSAL:**

A. Cuttings and drilling fluids will be placed in the reserve pit.

B. Same as listed above.

C. Produced fluids (water) will be placed in the reserve pit during testing.

D. Sewage will be contained in a portable chemical toilet.

E. Garbage and other water material will be place in a small trash cage, and disposed of in an approved sanitary land fill.

F. Upon completion of the well the reserve pit will be backfilled.

8) **ANCILLARY FACILITIES:**

A. None are planned.

B. Location and Pits and Stock Piles: For location of mud tanks, reserve pit, and pipe rack see attached diagram.

C. Pad Orientation: For rig orientation and access roads, see attached diagram.

D. Lining of Pits: It is not planned to line the reserve pit.

E. O.S.H.A. Requirements: The disturbed area requested is sufficient to allow fracturing operations in a safe manner and in accordance with O.S.H.A. standards.

9) **PLAN FOR RESTORATION OF THE SURFACE:**

A. Revegetation will be in accordance with BLM stipulations.

10) **OTHER INFORMATION:**

A. Topography, Soil Characteristics, Geologic Features, Flora and Fauna:

The Gallegos Canyon Unit area topography varies considerably throughout the participating area. The southwest portion is primarily highly eroded sandstone with deep channels and rock outcroppings. The southeast portion is separated by the Gallegos Wash and is mostly

rock outcroppings. The southeast portion is separated by the Gallegos Wash and is mostly within the NAPI farming area. The north portion is separated by the San Juan River. Most all of the area north of the river is private land consisting of rural business and small farms and residences.

This site is on an existing well pad serving Amoco well #164. No significant additional disturbance will be required.

B. Surface Use: Livestock grazing.

C. Surface Ownership: Surface is privately owned.

D. Proximity of Water, Dwellings, Archaeological, Historical Sites: Closest live water is the San Juan River approximately 2.2
5 miles north of the proposed location.

E. There are no occupied dwellings within close proximity to the proposed location.

Archaeology
F. A cultural inventory report will be mailed directly to the Farmington BLM office.

11) **LESSEE'S OR OPERATOR'S FIELD REPRESENTATIVE:**

BHP Petroleum (Americas) Inc.
Post Office Box 977
Farmington, New Mexico
Houston, Texas 77057
c/o Fred Lowery

(505) 327-1639 (24 hour answering service)

BHP Petroleum (Americas) Inc.
5847 San Felipe, Suite 3600

c/o Chuck Williams

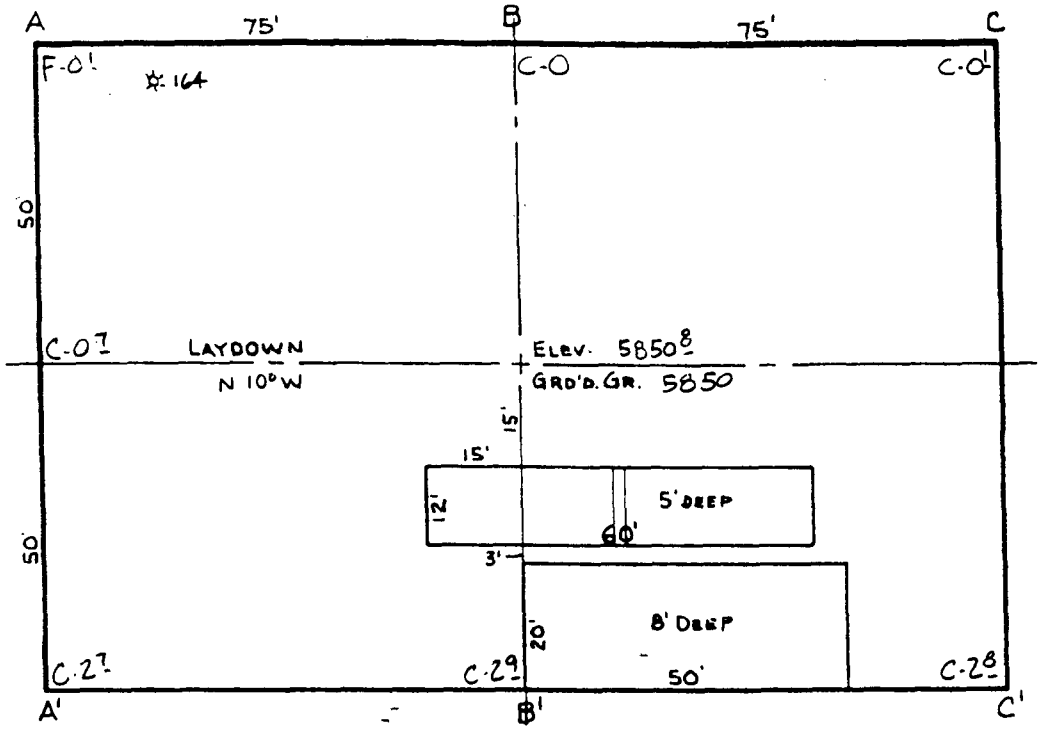
(713) 780-5448

12) **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 which presently exist; that the statements made in this plan are to the best of my knowledge true and correct; and that the work associated with the operations proposed herein will be performed by BHP Petroleum (Americas) Inc. and its contractors in conformity with this plan and the terms and conditions under which it is approved.

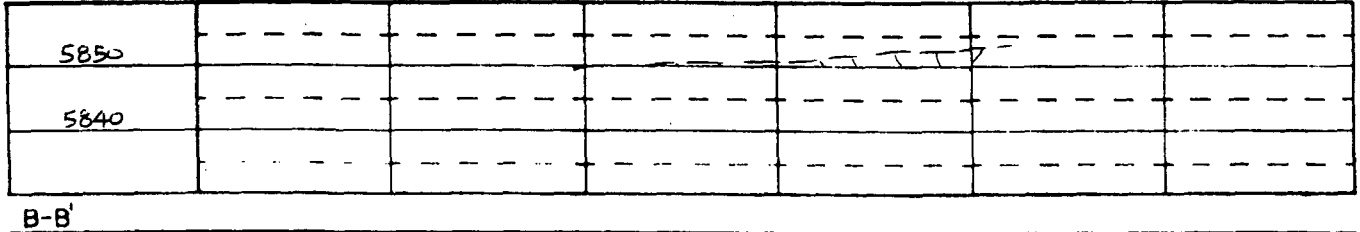
Chuck Williams
Signed

BHP PETROLEUM (AMERICAS) INC.
GALLEGOS CANYON UNIT #396
720'FSL & 1155'FWL
Sec.35, T29N, R13W
San Juan Co., N.M.

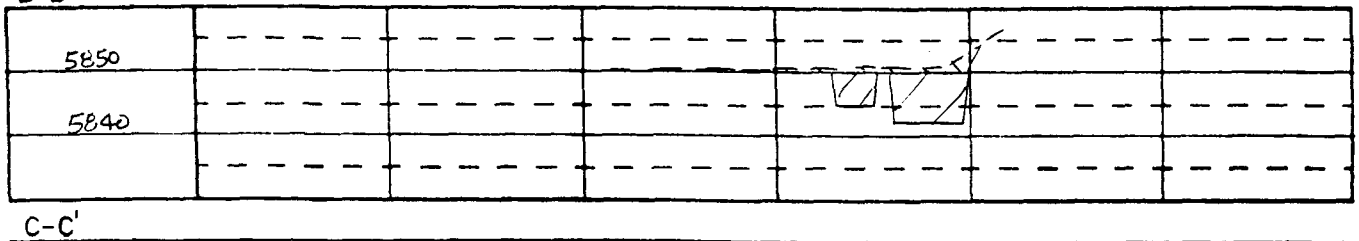


SCALE: 1" = 30'

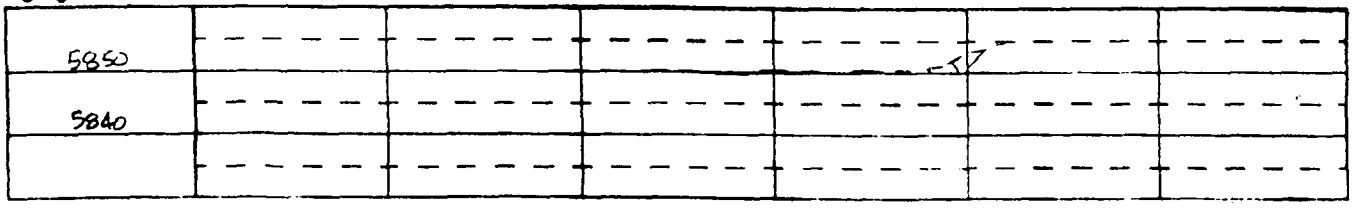
A-A' Vert.: 1" = 30' Horiz.: 1" = 50' C/L

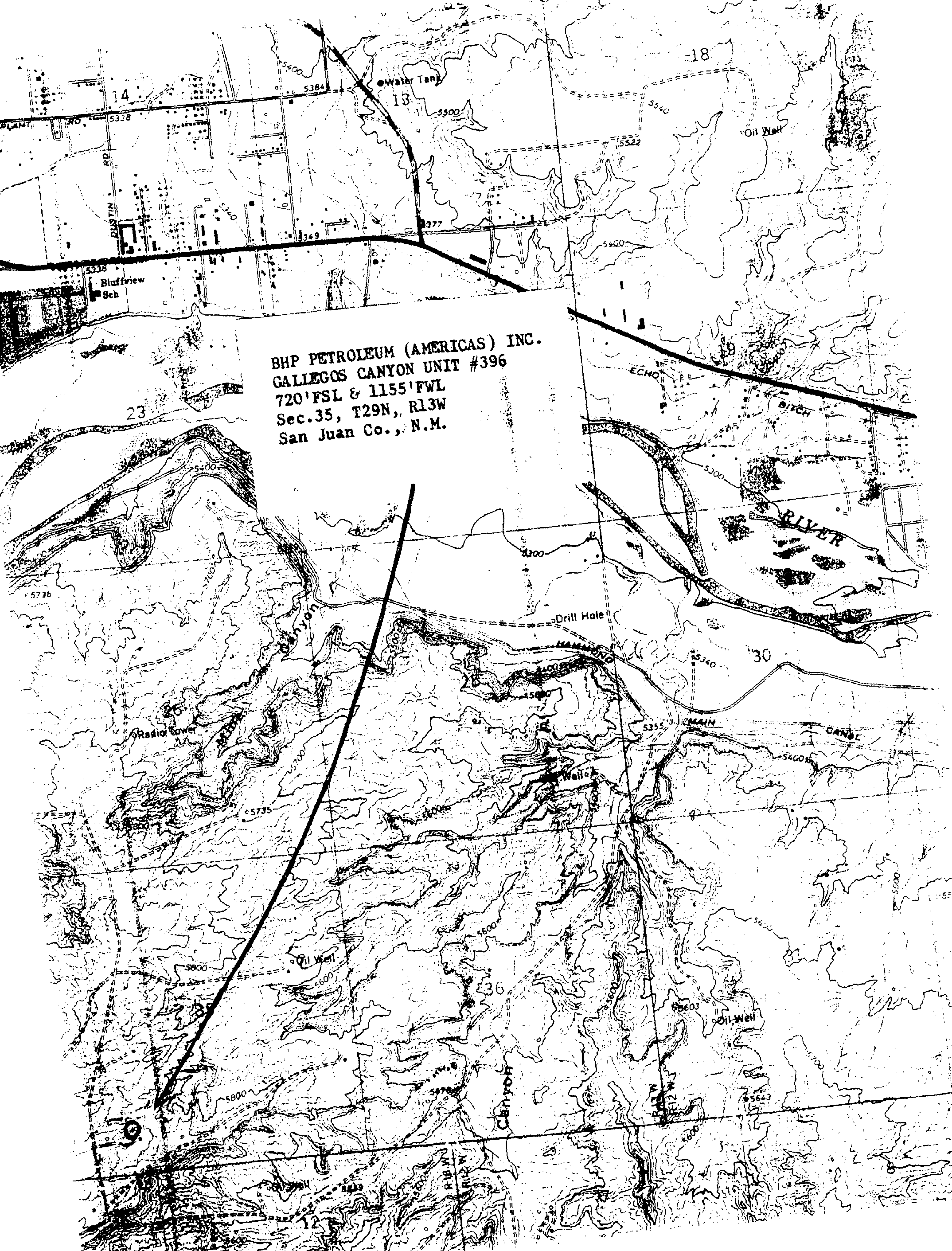


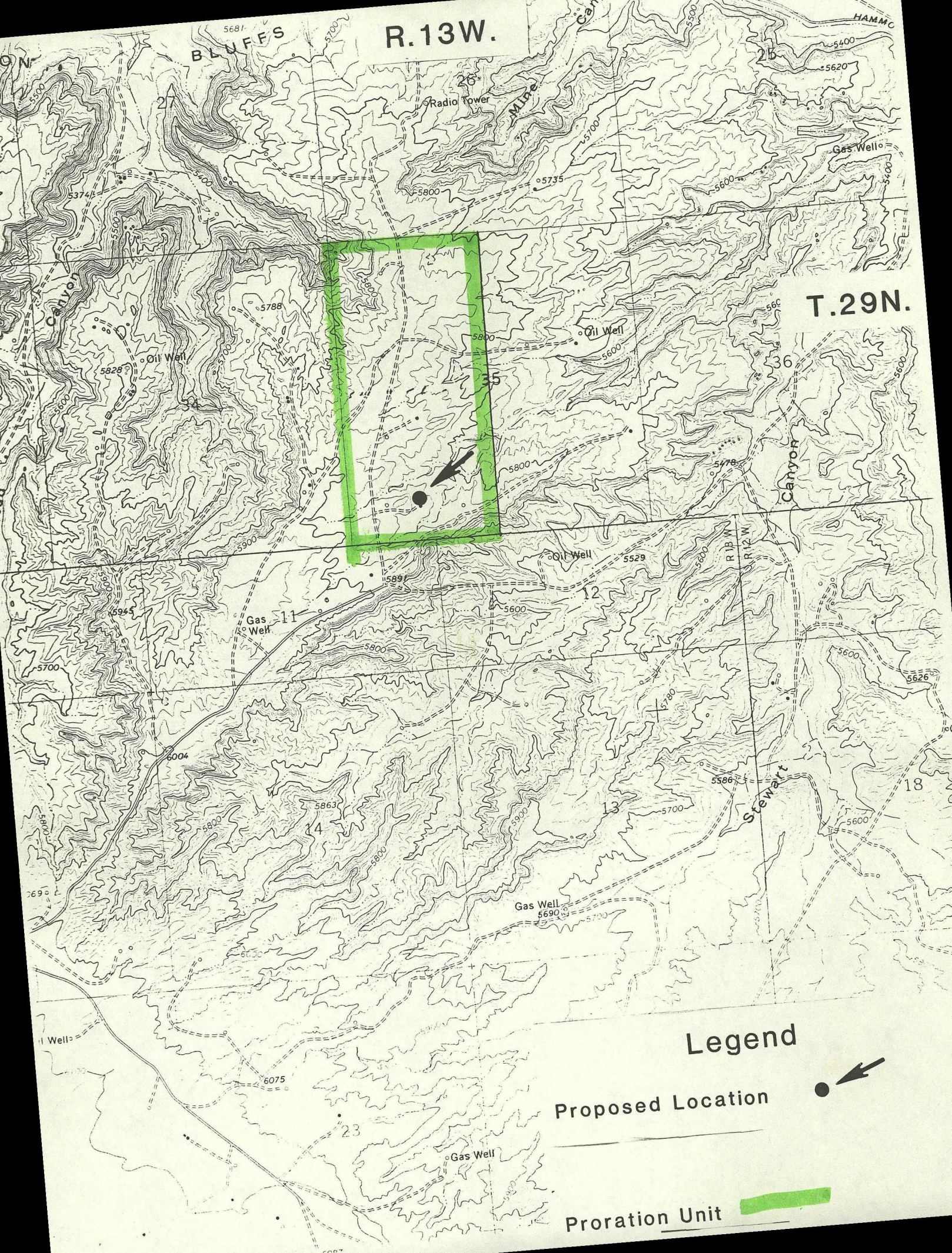
B-B'



C-C'




BHP PETROLEUM (AMERICAS) INC.
GALLEGOS CANYON UNIT #396
720'FSL & 1155'FWL
Sec.35, T29N, R13W
San Juan Co., N.M.
Water Tank
Oil Well
PLANT RD
DUSTIN RD
Bluffview Sch
ECHO DITCH
RIVER
Drill Hole
HAMMOND
MAIN CANAL
Radio Tower
Canyon
Well
14
13
18
23
19
30
26
36
12
R13W
R12W


R.13W.
T.29N.
BLUFFS
Radio Tower
Oil Well
Gas Well
Canyon
Stewart
Legend
Proposed Location
Proration Unit