

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

## APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

## 1a. TYPE OF WORK

DRILL ☒ *Re-entry* DEEPEN ☐ PLUG BACK ☐

## b. TYPE OF WELL

OIL WELL ☐ GAS WELL ☐ OTHER ☒ *Disposal Well* SINGLE ZONE ☒ MULTIPLE ZONE ☐

## 2. NAME OF OPERATOR

Energy Reserves Group, Inc.

## 3. ADDRESS OF OPERATOR

P.O. Box 3280, Casper, Wyoming 82602

## 4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)

At surface

1910 FSL, 745 FEL, Sec. 15-T28N-R12W

At proposed prod. zone

(NE SE)

## 14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE\*

6 miles SE of Farmington

## 15. DISTANCE FROM PROPOSED\*

LOCATION TO NEAREST  
PROPERTY OR LEASE LINE, FT.  
(Also to nearest drlg. unit line, if any)

Unitized

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

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

5668' RDB

23. ~~EXISTING~~ CASING AND CEMENTING PROGRAM

Existing

## 22. APPROX. DATE WORK WILL START\*

When approval is received

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12-1/4"	8-5/8"	24#	262'	150 sx
7-7/8"	4-1/2"	10.5#	5,679'	1600 sx

ERG is proposing to re-enter the subject well for use as a water disposal well. It is planned to dispose of produced Pictured Cliffs water into the Mesaverde zone. We intend to follow the procedure described below to attain this result:

- 1) Clean and level location and install pulling unit anchors.
- 2) Remove P & A marker.
- 3) MIRU SU.
- 4) Install BOP.
- 5) Run 3-7/8" bit & 4-1/2" csg. scraper and drill cmt plugs and clean out to 4200'.
- 6) Run GR/CBL from PBDT to 2500'.
- 7) Cement squeeze across Mesaverde if necessary and pressure test casing.
- 8) Perforate Mesaverde w/2 JSPF @ 3797'-3830', 3860'-3900' and 3980'-4030'.
- 9) Acidize perms down tbg and pkr w/6000 gals 15% HCl.
- 10) Swab back load fluid.
- 11) TOOH and lay down work string.
- 12) TIH w/2-3/8" tbg and pkr to 3740'.
- 13) Fill annulus w/corrosion inhibitor and bactericide.
- 14) Place on injection

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 depth. Give blowout preventer program, if any.

24.

SIGNED

*Curtis J. MacIntyre*

TITLE

Production Engineer

DATE

2-21-80

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

APPROVED BY

APPROVED

TITLE

DATE

APR 18 1980

DISTRICT ENGINEER

\*See Instructions On Reverse Side

AMOCG

approval does not include  
clearance to begin salt  
water disposal operations

## 5. LEASE DESIGNATION AND SERIAL NO.

SF-078106

## 6. IF INDIAN, ALLOTTEE OR TRIBE NAME

Federal

## 7. UNIT AGREEMENT NAME

Gallegos Canyon Unit

## 8. FARM OR LEASE NAME

## 9. WELL NO.

260

## 10. FIELD AND POOL, OR WILDCAT

Pinion Gallup

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

NE SE Sec. 15-T28N-R12W

## 12. COUNTY OR PARISH

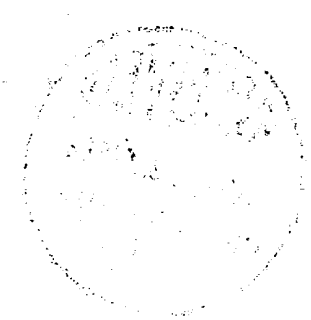
San Juan

## 13. STATE

New Mexico

1900

1901



WELL LOCATION AND DEDICATION PLAN  
 WELL LOCATION AND DEDICATION PLAN

As shown on map to this well location and dedication plan

UNITIZATION  
 13 NORTH

UNITIZATION  
 13 NORTH

UNITIZATION  
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UNITIZATION  
 13 NORTH

UNITIZATION  
 13 NORTH

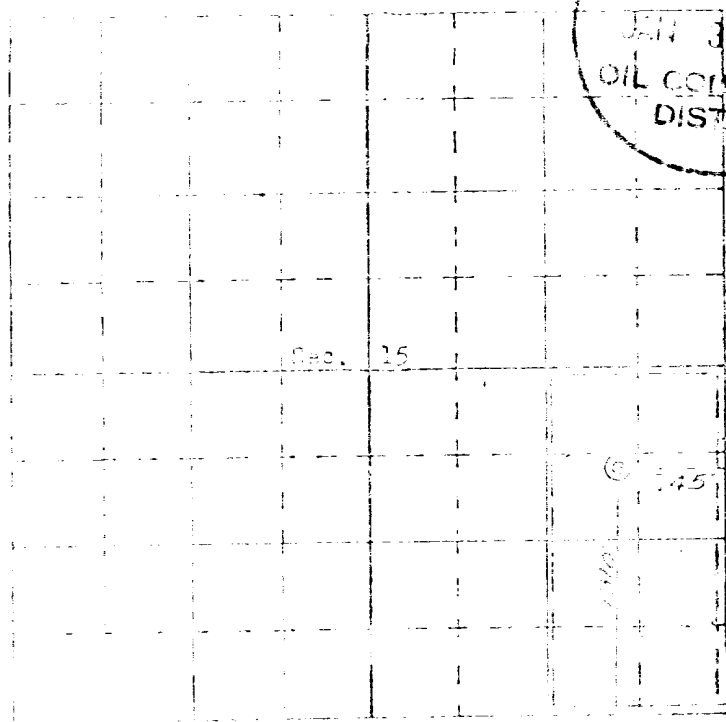
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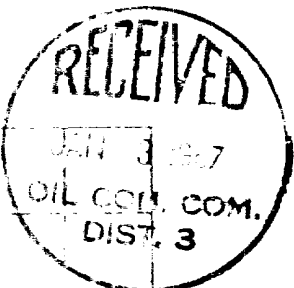
UNITIZATION  
 13 NORTH

UNITIZATION  
 13 NORTH



Scale 1 inch = 1 mile

THE PAN AMERICAN PETROLEUM COMPANY, FARMINGTON, N.M.



CERTIFICATION

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

Name  
 G. W. Eaton, Jr.  
 Position  
 Area Engineer  
 Company  
 PAN AMERICAN PETROLEUM CORPORATION  
 Date  
 January 18, 1967

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

James P. Hines  
 1/18/67  
 Certificate No.

Supplemental to Form 9-331C

1. The geologic name of the surface formation.

Nacimient

2. The estimated tops of important geologic markers.

Pictured Cliffs	1520'
Mesa Verde	3050'

3. The estimated depths at which anticipated water, oil, gas, or other mineral-bearing formations are expected to be encountered.

All potential water, oil and gas zones are behind pipe.

4. The proposed casing program, including the size, grade, and weight-per-foot of each string and whether new or used.

The well is already cased as described on the application for permit to drill.

5. The lessee's or operator's minimum specifications for pressure control equipment which is to be used, a schematic diagram thereof showing sizes, pressure ratings (or API series), and the testing procedures and testing frequency.

10" 900 series shaeffer BOP w/2" rams. It will be tested to 500 psi prior to when drilling commences.

6. The type and characteristics of the proposed circulating medium or mediums to be employed for rotary drilling and the quantities and types of mud and weighting material to be maintained.

Water will be used as a circulating fluid.

7. The auxiliary equipment to be used, such as (1) kelly cocks, (2) floats at the bit, (3) monitoring equipment on the mud system, (4) a sub on the floor with a full opening valve to be stabbed into drill pipe when the kelly is not in the string.

A sub on the floor with a full opening valve to be stabbed into the drill pipe will be used when the kelly is not in the string.

8. The testing, logging, fracing, and coring programs to be followed with provision made for required flexibility.  
A GR/CBL will be run to determine the cement bonding across the proposed injection zone. If the bond is adequate the zone will be perfed and acidized. If the bond is inadequate, the zone will be cement squeezed prior to perfinf and acidizing.

9. Any anticipated abnormal pressures or temperatures expected to be encountered or potential hazards such as hydrogen sulfide gas, along with plans for mitigating such hazards.

No abnormal pressures or temperatures are expected.

10. The anticipated starting date and duration of the operations.

May,1980 starting date. Duration of operations will be 1-2-weeks.

MULTI-POINT SURFACE USE PLAN

1. EXISTING ROADS

The well is approximately 6½ miles East and 4 miles South of Farmington, New Mexico. See attached topo map for access to location.

2. PLANNED ACCESS ROADS

No new access roads will be required.

3. LOCATION OF EXISTING WELLS

See attachments

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES

- A. (1) None anticipated
- (2) A skid mounted injection pump and engine within a building and two 400 bbl tanks will be required.
- (3) N.A.
- (4) N.A.
- (5) N.A.
- (6) None are installed at the present time.
- B. All facilities will be within the disturbed area. A small pit (20' x 20') may be required for emergency water storage. The pit will be fenced w/sheep wire to protect livestock and wildlife.
- C. After the well is drilled, the reserve pit will be fenced and allowed to dry up. As soon as it is dry, it will be filled and the area restored to its original contour. All trash and debris will be removed.

5. LOCATION AND TYPE OF WATER SUPPLY

Water will be hauled by truck, probably from the water disposal facility in the Gallegos Canyon Unit.

6. SOURCE OF CONSTRUCTION MATERIALS

None Anticipated.

7. METHODS FOR HANDLING WASTE DISPOSAL

- (1 & 2) All cuttings and drilling fluids will be contained in the reserve pit.
- (3) Produced fluids, if any, will be contained in portable tanks, unless it is good water which will be directed into the pit and allowed to evaporate or soak into the ground.
- (4) A portable toilet will be used during drilling and completion operations.
- (5) All trash will be buried in a small trash pit along side of the reserves pit.
- (6) See item 4,C

8. ANCILLARY FACILITIES

None required.

9. WELL SITE LAYOUT

- (1) See attachment
- (2) See attachment
- (3) See attachment
- (4) It is not planned to line any pits.

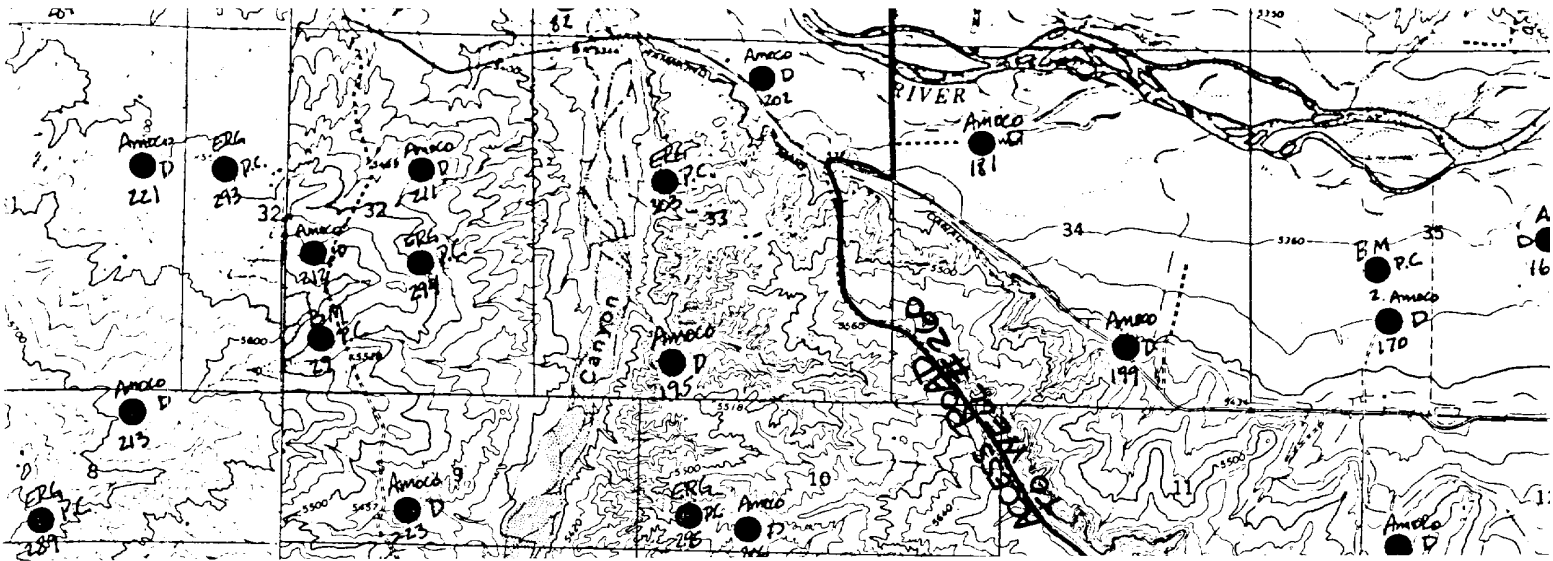
10. PLANS FOR RESTORATION OF SURFACE

Upon completion of the well, the reserve pit will be fenced and allowed to dry. Any accumulation of oil will be skimmed off the pit and trucked to a disposal site.

The disturbed area will be recontoured to its original contour and reseeded as per BLM's recommendations. It is planned to commence rehabilitation as soon as the pit has dried and weather permits.

11. OTHER INFORMATION

The area is generally high desert type country with high erosion potential. Most areas are deeply eroded with gullies and washes. Vegetation consists of pinion and juniper trees with sage and other small scrub bushes, cactus, and assorted native grasses. Surface ownership is public lands under Administration of the Bureau of Land Management. There are no continuously flowing streams in the area. The San Juan River is the nearest water. There are no occupied dwellings within one mile of the well site. An Archaeological Inspection will be scheduled.



### CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions which presently exist; that the statements made in 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 \_\_\_\_\_

Jack Frith  
and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

3/5/80  
Date

Curtis J. Mac Intyre - Prod. Eng.  
Name and Title

Energy Reserves Group proposes to dispose of produced Pictured Cliffs water in the subsurface in well number 260 at the Gallegos Canyon Unit into the Mesa Verde zone and supplies the following information according to the requirements of NTL-2B.

1. The designated name and number of the proposed disposal well and its location in feet and direction from the nearest section lines of an established survey. The applicable Federal or Indian oil and gas lease number or other permit and/or the ownership of the surface and minerals if other than Federal or Indian.

Gallegos Canyon Unit Well Number 260  
1910' FSL, 745 FEL, Sec. 15-T28N-R12W  
San Juan County, New Mexico  
Federal Lease Number

2. The daily quantity and sources of the produced water and water analysis which includes total dissolved solids, PH and the concentration of chlorides and sulfides.

Quantity of water will be app. 500 BPD.  
The source of the water is the Pictured Cliffs.  
A water analysis is attached.

3. The injection formation and interval.

Mesa Verde 3,797' - 4,030'

4. The quality of the fluids in the injection interval, i.e. total dissolved solids.

An analysis is attached.

5. The depth and areal extent of all usable water aquifers in the area.

There is an aquifer at a depth of approximately 100'  
that extends throughout the field that is the deepest fresh  
water aquifer in the area.

6. The size, weight, grade and casing points of all casing strings, the size hole drilled to accomodate each string, the amount and type of cement including additives used in cementing each string, and the top of the cement behind each casing string. In addition, bond logs may be required in certain instances.

A wellbore diagram showing the data is attached.

7. The total and plugged back depth of the well.

T.D. 5,680' The well is presently plugged and abandoned



8. The present or proposed method of completing the well for injection including the type and size of tubing and packer to be utilized, the setting depth of the packer, anticipated injection pressure and information concerning any corrosion inhibitor fluid which is to be placed in the tubing-casing annulus.

The proposed method of completion is shown on the APD.  
The anticipated pressure is 500 psi.

9. Plans for monitoring the system to assure that injection is confined to the injection interval and measures to be taken should it be necessary to shut-in the disposal system.

The tubing - casing annulus will be pressured to approximately 200 psi. Any change in pressure due to a packer or casing failure will be noted at the surface. In the event communication occurs, the producing wells feeding the injection well will be shut in until remedial action has been taken.

# san juan testing laboratory, inc.

909 WEST APACHE • P. O. BOX 2079 • FARMINGTON, NEW MEXICO

PHONE:

327-9944

Date October 6, 1976

Report to Energy Reserves Group, Inc.  
Requested by T.C. Durham Sampled by Energy Reserves Group Personnel  
Project GCU #123 Location Farmington, New Mexico  
Source of Material Geological Formations Association, with GCU #123 - Pictured Cliffs

Lab No. 22419 Water Analysis for Petroleum Engineering

## TEST RESULTS

### WATER ANALYSIS FOR PETROLEUM ENGINEERING

#### Constituent:

Total Solids	52,745ppm or 5.3% Salt Solu.
PH	6.8
Sp. Gravity	1.043 @ 72°F
Resistivity	0.113 ohms/meter @ 72°F
Conductivity	88,472 Micromhos/cm.
Organic Sulfides Present	

#### Constituents:

<u>Cations</u>	<u>Meq/L</u>	<u>ppm</u>
Sodium	831	19,113
Calcium	48	960
Magnesium	24	287
Iron	neg.	1**
Barium	0	0

#### Hypothetical Combinations

<u>Constituent</u>	<u>ppm</u>
Sodium Chloride	48,580
Calcium Chloride	2,657
Magnesium Chloride	585
Magnesium Bicarbonate	918

#### Anions

Chloride	890	31,500
Bicarbonate	13	780
Sulphate	neg.	4
Carbonate	0	0
Hydroxide	0	0

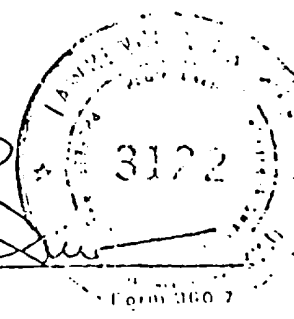
\*\* In addition, a trace of iron hydroxide was present as a brown sediment.

Copies to Energy Reserves Group, Inc. (2)  
Box 3280 Casper, Wyoming  
Energy Reserves Group, Inc. (1)  
Box 977 Farmington, New Mexico

TEST NO. 20030

Certified by:

*[Signature]* *[Signature]* *[Signature]*





**BAROID DIVISION**  
 NL Industries, Inc.  
 P.O. Box 1675 Houston, Texas 77001

# WATER ANALYSIS TEST REPORT

## BAROID TREATING CHEMICALS

COMPANY <b>Energy Reserves</b>				SHEET NUMBER	
FIELD <b>BASIN DAKOTA</b>				DATE <b>JUN 28 1977</b>	
LEASE OR UNIT <b>King Gas Comm.</b>		WELL(S) NAME OR NO. <b>#1</b>		COUNTY OR PARISH <b>SAN JUAN</b>	
				STATE <b>N MEXICO</b>	
DEPTH, FT.		BHT, F		WATER SOURCE (FORMATION) <b>MESAVERDE - CLIFFHOUSE</b>	
SAMPLE SOURCE		TEMP, F		WATER, BBL/DAY	
				OIL, BBL/DAY	
TYPE OF OIL		API GRAVITY <b>0</b>		TYPE OF WATER	
				<input checked="" type="checkbox"/> PRODUCED WATER <input type="checkbox"/> INJECTION WATER <input type="checkbox"/> OTHER	

### WATER ANALYSIS PATTERN

(NUMBER BESIDE OR SYMBOL INDICATES mg/l \* SCALE UNIT)

Na <sup>+</sup> 20	15	10	5	0	5	10	15	20 Cl <sup>-</sup>
Ca <sup>++</sup>								HCO <sub>3</sub> <sup>-</sup>
Mg <sup>++</sup>								SO <sub>4</sub> <sup>=</sup>
Fe <sup>+++</sup>								CO <sub>3</sub> <sup>=</sup>

### DISSOLVED SOLIDS

#### CATIONS

Total Hardness  
 Sodium, Na<sup>+</sup> (calc.)  
 Calcium, Ca<sup>++</sup>  
 Magnesium, Mg<sup>++</sup>  
 Iron (Total), Fe<sup>+++</sup>

me/l \*

mg/l \*

#### ANIONS

Chloride, Cl<sup>-</sup>  
 Sulfate, SO<sub>4</sub><sup>=</sup>  
 Carbonate, CO<sub>3</sub><sup>=</sup>  
 Bicarbonate, HCO<sub>3</sub><sup>-</sup>  
 Hydroxyl, OH<sup>-</sup>  
 Sulfide, S<sup>=</sup>  
 Phosphate - Meta, PO<sub>3</sub><sup>=</sup>  
 Phosphate - Ortho, PO<sub>4</sub><sup>=</sup>

### DISSOLVED GASES

Hydrogen Sulfide, H<sub>2</sub>S  
 Carbon Dioxide, CO<sub>2</sub>  
 Oxygen, O<sub>2</sub>

### PHYSICAL PROPERTIES

pH **8.4**  
 Eh (Redox Potential) \_\_\_\_\_ MV  
 Specific Gravity \_\_\_\_\_  
 Turbidity, JTU Units \_\_\_\_\_  
 Total Dissolved Solids (Calc.) \_\_\_\_\_ mg/l \*  
 Stability Index @ \_\_\_\_\_ F \_\_\_\_\_  
 @ \_\_\_\_\_ F \_\_\_\_\_  
 CaSO<sub>4</sub> Solubility @ \_\_\_\_\_ F \_\_\_\_\_ mg/l \*  
 @ \_\_\_\_\_ F \_\_\_\_\_ mg/l \*  
 Max. CaSO<sub>4</sub> Possible (Calc.) \_\_\_\_\_ mg/l \*  
 Max. BaSO<sub>4</sub> Possible (Calc.) \_\_\_\_\_ mg/l \*  
 Residual Hydrocarbons \_\_\_\_\_ ppm (Vol/Vol)

### SUSPENDED SOLIDS (QUALITATIVE)

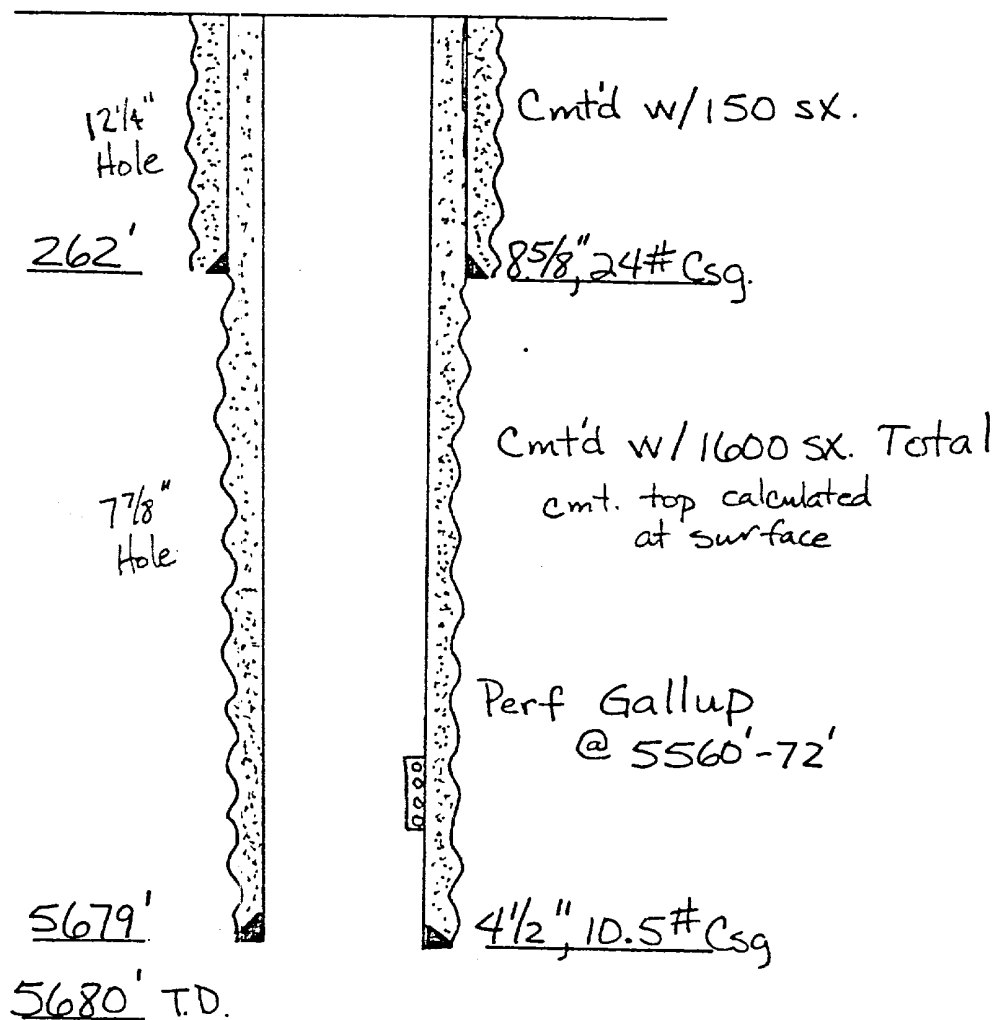
Iron Sulfide ☐ Iron Oxide ☐ Calcium Carbonate ☐ Acid Insoluble ☐

### REMARKS AND RECOMMENDATIONS:

\* NOTE: me/l and mg/l are commonly used interchangeably for epm and ppm respectively. Where epm and ppm are used, corrections should be made for specific gravity.

BTC ENGINEER <b>Max Woolery</b>	DIST. NO.	ADDRESS <b>Farmington, NM</b>	OFFICE PHONE <b>375-5701</b>	HOME PHONE
TESTED BY <b>Woolery</b>	DATE <b>6-10-77</b>	DISTRIBUTION <input type="checkbox"/> CUSTOMER <input type="checkbox"/> AREA OR <input type="checkbox"/> DISTRICT OFFICE <input type="checkbox"/> BTC ENGINEER OR <input type="checkbox"/> BTC LAB <input type="checkbox"/> BTC SALES SUPERVISOR		

AmOCO Gallegos Canyon Unit Well No. 260  
NE SE Sec 15-T28N-R12W  
San Juan County, New Mexico  
Pinion Gallup



Plugged w/ 20 SX @ 5504',  
15 SX @ 4340',  
15 SX @ 3168',  
20 SX @ 2532',  
20 SX @ 1714',  
20 SX @ 264' to surface