STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

March 5, 1965

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, N. M.

Dear Mr. Porter:

Reference is made to the application of Guyer Oil Company which seeks approval to increase the number of injection wells authorized for the Many Rocks - Gallup Pressure Maintenance Project No. 4. It is noted that in each of the injection wells they propose to inject down casing without tubing and packer. This includes a well (Navajo 3X-27) which was approved under Order R-2700 for injection down tubing under a packer.

Prior to the hearing on Case 3036, which resulted in Order R-2700, I discussed this project with particular reference to the injection wells with Mr. Curtis J. Little. The principle part of our discussion pertained to the detailed geology and the construction of the individual wells. I stated, during our discussion and at the hearing, that I objected to the injection of water into well 3X-27 unless injection was through tubing under a packer. Nothing has been presented by Guyer Oil Company that would tend to change my mind with respect to this well. Furthermore, nothing has been presented by the Guyer Oil Company with respect to other wells through which they seek to inject that would convince me that the injected fluids would be completely controlled by their plan until such time as the injection wells are adequately plugged and abandoned. For these reasons, I object to the granting of the application.

Yours truly,

Frank E. Irby

Frank E. Irby
Chief, Water Rights Div.

FEI/ma
cc-Core Laboratories, Inc.

H. M. SHEARIN
MANAGER, DOMESTIC OPERATIONS
W. P. SCHULTZ
MANAGER, FOREIGN OPERATIONS
JAMES L. MOORE
ASSISTANT MANAGER
I. F. ROEBUCK, JR.
ASSISTANT MANAGER

CORE LABORATORIES, INC.
BOX 10185, DALLAS 7, TEXAS · CABLE: CORELAB
Engineering & Consulting Department

March 12, 1965 64-523.1

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Re: Expansion of Many Rocks-Gallup
Pressure Maintenance Project No. 4
Case No. 3036, Order No. R-2700

Dear Mr. Porter:

This letter is submitted in support of our letter of February 26, 1965 and in an attempt to answer the objections raised in the March 5, 1965 letter from Mr. Frank E. Irby, Chief, Water Rights Division of the State Engineer's Office. Reference is made to those letters.

It is our interpretation of Mr. Irby's letter that he objects to our request to inject water down the casing of the proposed injection wells rather than to the expansion of the number of injection wells.

In support of our request to inject water down the casing, we respectfully submit the following:

1. Drilling records indicate that the wells were drilled with air and that they "dusted" from the surface to the oil productive Gallup sand. This would indicate that no water productive sands were encountered, and that none are susceptible to damage in the event of a casing leak.

2. The projected life of the water injection operation is from seven to ten years. The injection water is only moderately corrosive and it will be monitored and controlled with chemicals, if necessary. An independent water analyst has concluded that bare steel pipe could withstand corrosion over the life of this project.

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Drawer 1857
Roswell, New Mexico 88201

March 16, 1965

Core Laboratories, Inc.
P. O. Box 223
Midland, Texas

Attention: T. C. Carlson

Gentlemen:

Your February 26 application in behalf of Guyer Oil Company, a copy of which was furnished this office, requests administrative approval by the New Mexico Oil Conservation Commission to increase the number of injection wells authorized by Commission Order No. R-2700 which established the Many Rocks-Gallup Pressure Maintenance Project No. 4. Said Commission Order delineated the project area and approved three injection wells to be located in the NW¼NW¼ and SW¼SE¼ sec. 27 and NW¼SE¼ sec. 28, T. 32 N., R. 17 W., San Juan County, New Mexico. By the present application, it is requested that Guyer Oil Company be allowed to convert to water input the Nos. 1-A-27 and 6-27 wells in the SW¼SW¼ and NW¼SW¼, respectively, T. 32 N., R. 17 W., and also that the applicant be allowed to inject water down the casing of the five wells.

The project area embraces the NW¼, S½, T. 27 and E½E½ sec. 28, T. 32 N., R. 17 W., all of which are lands covered by Navajo tribal lease No. 14-20-603-5012. A review of our records indicates that neither Guyer or the previous operator, Curtis J. Little, have made application to or been authorized by this office or our Farmington District Office to conduct secondary recovery operations on the lease. This office has approved several water flood operations on a lease basis in the immediate vicinity of your project.

Please file an application with District Engineer Philip T. McGrath, P. O. Box 959, Farmington, New Mexico, requesting that Guyer Oil Company be authorized to conduct secondary recovery operations on Navajo tribal lease No. 14-20-603-5012. After the project is approved, drilling operations and well conversions must have the prior approval of the Farmington District Engineer. As work on the flood program progresses, form 9-329-A, "Lessees Monthly Report of Operations," should reflect any change in well status and the commencement and/or

cc:
Cupes Oil Company
2120 First National Bank Building
Denver 2, Colorado

Washington

H.M.O.O.M.H.

completion of additional wells as producers or injectors. Form 9-329-A should show the monthly and cumulative injection volumes and average injection pressure for each injection well. Said form should also show the oil and water production for each producing well. State of New Mexico form C-120 may be submitted in lieu of form 9-329-A. A monthly progress report for the flood project must be filed in duplicate with the District Engineer at Farmington, the first such report to be submitted the first of the month following approval of this project by our Farmington office.

Sincerely yours,

JOHN A. ANDERSON
Regional Oil and Gas Supervisor

cc:
Guyer Oil Company
2320 First National Bank Building
Denver 2, Colorado

Farmington

N.M.O.C.C.

H. M. SHEARIN
MANAGER, DOMESTIC OPERATIONS
W. P. SCHULTZ
MANAGER, FOREIGN OPERATIONS
JAMES L. MOORE
ASSISTANT MANAGER
I. F. ROEBUCK, JR.
ASSISTANT MANAGER

CORE LABORATORIES, INC.
BOX 10185, DALLAS 7, TEXAS · CABLE: CORELAB

Engineering & Consulting Department

March 17, 1965

REPLY TO
SUITE 209 GULF BUILDING
BOX 223
MIDLAND, TEXAS

24-523.1

Mr. Frank E. Irby, Chief, Water Rights Div.
State Engineers Office
P. O. Box 1079
Santa Fe, New Mexico

Dear Mr. Irby:

As a result of his meeting with you in Santa Fe yesterday, Mr. Curtis Little has asked us to supply you with some additional information in support of our February 26, 1965 application to expand the Many Rocks Pressure Maintenance Project No. 4.

Enclosed are copies of the water sample analyses of the injection water to be used in this project. You may note that the water is relatively fresh and it is our understanding that the Navajo Tribe is planning to ask Guyer Oil Company to supply a small amount of the water for watering stock.

Concerning the 3-27-X well, our records indicate that 5", 11 1/2#, 8 rd casing was set in the well and that no waters were encountered in the 275 feet of Point Lookout sandstone that was encountered at the top of the hole. The well was drilled with air and it dusted to total depth. Should a leak occur and go undetected in spite of daily pressure and rate inspections, there are no fluids in the sandstone to become contaminated. The sandstone would merely become charged with a reasonably fresh water that would probably discharge at the outcrop which is about 750 feet west of the well. We are of the opinion that no harm could be done to any formation by a casing leak since there are no water bearing sands behind this casing.

It is hoped that this additional information will be sufficient to answer the questions asked Mr. Little. If not, please contact Mr. Little, or Core Laboratories, Inc. directly in Dallas.

Very truly yours,

CORE LABORATORIES, INC.

T. C. Carlson

T. C. Carlson

TCC:ms
Enc.

cc: Mr. A. L. Porter
Mr. Curtis J. Little
Mr. Joe E. Guyer

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

March 23, 1965

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

Reference is made to the application of Guyer Oil Company which seeks approval to increase the number of injection wells authorized for the Many Rocks-Gallup Pressure Maintenance Project No. 4. It is noted that in each of the injection wells they propose to inject down casing without tubing and packer. This includes a well (Navajo 3X-27) which was approved under Order R-2700 for injection down tubing under a packer.

I wrote you a letter concerning this application on March 5, 1965 and Mr. T. C. Carlson of Core Laboratories, Inc., wroteyou a letter on March 12, 1965 concerning this same application. Following receipt of a copy of Mr. Carlson's letter to you, Mr. Curtis Little, former operator of this project, called at my office to discuss the matter with me and requested an expression of what additional data would be required before I could withdraw my objection to the proposed change requested by Core Laboratories. After his discussion with me, Mr. Little discussed the matter with Core Laboratories and they have written me under date of March 17th making certain statements and enclosing various analyses prepared by them. The letter of March 17th and the enclosed analyses are indicative of their intent to inject fluids of contaminating nature down the casing into well 3X-27 without giving any factual data as to how the formations above the producing zone will be protected.

Mr. Little called me this morning and discussed the letter sent me on March 17, 1965. I stated my opinion to Mr. Little that Mr. Carlson was endeavoring to give a snow job. Statements in his letter cannot possibly, under the greatest stretch of

imagination, be supported by the analyses which were attached thereto.

My objections to the granting of this application set forth in my letter of March 5, 1965 addressed to you are my standing objections to this application.

It is my understanding, from a second telephone conversation today with Mr. Little, that it is now the intention of Core Laboratories to amend their application by modifying the method of injection into the 3 wells which are the subject of the application. As soon as I have received a copy of the amended application, I will carefully review it and advise both you and Core Laboratories, Inc., of my views concerning their plan.

Very truly yours,

S. E. Reynolds
State Engineer

By: Frank E. Irby
Frank E. Irby
Chief
Water Rights Div.

FEI/ma
cc-T. C. Carlson

H. M. SHEARIN
MANAGER, DOMESTIC OPERATIONS
W. P. SCHULTZ
MANAGER, FOREIGN OPERATIONS
JAMES L. MOORE
ASSISTANT MANAGER
I. F. ROEBUCK, JR.
ASSISTANT MANAGER

CORE LABORATORIES, INC.
BOX 10185, DALLAS 7, TEXAS · CABLE: CORELAB

Engineering & Consulting Department

March 24, 1965

64-523.1

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr.

Re: Expansion of Many Rocks-Gallup
Pressure Maintenance Project No. 4
Case No. 3036, Order No. R-2700

Gentlemen:

Please refer to our application for expansion of the subject project dated February 26, 1965 and our subsequent supporting letter of March 12, 1965. It is requested that this application be held in suspense and that no action be taken by the Commission until Guyer Oil Company has had an opportunity to submit an amended application.

Very truly yours,

GUYER OIL COMPANY

BY: CORE LABORATORIES, INC.

T. C. Carlson
Engineer for Applicant

TCC/dpl

cc: Mr. Frank E. Irby
Mr. Joe E. Guyer

H. M. SHEARIN
MANAGER, DOMESTIC OPERATIONS
W. P. SCHULTZ
MANAGER, FOREIGN OPERATIONS
JAMES L. MOORE
ASSISTANT MANAGER
I. F. ROEBUCK, JR.
ASSISTANT MANAGER

CORE LABORATORIES, INC.
BOX 10185, DALLAS 7, TEXAS · CABLE: CORELAB

Engineering & Consulting Department

April 27, 1965 64-523.1

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr.

Re: Expansion of Many Rocks-Gallup
Pressure Maintenance Project No. 4
Case No. 3036, Order No. R-2700
--- Amended Application ---

Gentlemen:

By the above referenced Order No. 2700 the New Mexico Oil Conservation Commission authorized the Many Rocks-Gallup Pressure Maintenance Project No. 4, San Juan County, New Mexico, giving approval for water injection into Guyer Oil Company-Navajo Wells 3-27-X, 11-27 and 4-28. The attached Exhibit A presents a plat showing the area of Project No. 4 and the approved water injection wells.

On February 26, 1965, an application was filed requesting authority to expand the number of injection wells in the Project by administrative approval. This letter amends and supersedes the February 26 application.

Guyer Oil Company, operator of Project No. 4, hereby requests administrative approval to expand the number of water injection wells from three to five, the new water injection wells being Wells 1A-27 and 6-27. Exhibit A indicates these wells. These wells are completed only in the Gallup sand. They are required as injection wells in order that sufficient injection capacity will be available to balance reservoir voidage and maintain pressure.

Further, Guyer Oil Company requests administrative approval to inject water down the casing of Wells 1A-27 and 6-27. In this regard, no changes are sought in the operating plan for the three wells approved by Order No. 2700. In support of this request, the following Exhibits are respectfully submitted:

Exhibit B - Schematic Cross Section

Exhibit B presents schematically the general geology of the interval from the surface through the Gallup sand. A cross section through Wells 1A-27, 6-27, and 10-27 shows that the two proposed injection wells encounter the Mancos shale from the surface to the top of the Gallup sand. The type log at the left of the Exhibit illustrates the Spontaneous Potential and Resistivity characteristics of the formation showing it to be shale until the Gallup is reached. There are no sand, sandstone or limestone formations behind the casing of Wells 1A-27 and 6-27 from the surface to the Gallup sand.

Exhibit C - Log of Oil or Gas Well - USGS Form 9-330

It is reported by the operator who developed the property that all wells on the lease were drilled with air, and all wells "dusted" from the surface to the Gallup sand. This fact was reported to the United States Department of Interior Geological Survey on their form 9-330 along with the driller's log of formations encountered. One of these reports for Well 6-27 constitutes Exhibit C. It is submitted as evidence of the fact that no water-bearing formations exist between the surface and the Gallup sand in Well 6-27, and by inference, in Well 1A-27. At the time of preparing this application, the report form 9-330 was not available on Well 1A-27.

Exhibits D and E - Schematic Diagram of Water Injection Wells 1A-27 and 6-27

In accordance with Rule 701-B, schematic diagrams of the proposed injection wells are presented in Exhibits D and E. The operator plans to observe wellhead pressures and water injection rates daily on each injection well throughout the life of the project.

Exhibits F and G - Formation Density Logs for Water Injection Wells 1A-27 and 6-27

Electric or radioactivity surveys for the proposed injection wells are available only for a short interval on both sides of the Gallup sand.

Exhibit H - Independent Consultant's Report on Design Criteria for Maintenance of Water Quality - Many Rocks Field

Injection water for Project No. 4 will be obtained from the Entrada formation at a depth of from 3,400 to 3,500 feet in the Texas-Pacific Oil Company 1-B well located in Section 28, T32N, R17W. The location is indicated on

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

May 7, 1965

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

Reference is made to the amended application of Guyer Oil Company which seeks expansion of the Many Rocks-Gallup Pressure Maintenance Project No. 4, which was authorized under Order R-2700 and which was submitted by Core Laboratories, Inc., on April 27, 1965.

Referring to Exhibits D & E, it is not clear as to whether the annulus outside the 4½ inch O. D. casing will be open or closed, nor is there an indication as to whether a gage will be provided for in the event the annulus is closed. It is my thought that if a leak occurs in the casing, the annulus would be a very good source of indication soon after the leak developed. The observation of well head pressures and water injection rates would also be good indications but not necessarily conclusive. The letter of transmittal states: "The operator plans to observe well head pressures and water injection rates daily on each injection well throughout the life of the project." This langugage is not a definite statement that the observations will be made.

This office offers no objection to the granting of the subject application under the following conditions of approval:

1. The operator shall make observations of well head pressures and water injection rates and pressure or fluid levels in the annulus outside the 4½ inch O. D. casing of each injection well throughout the life of the project at intervals of time not exceeding 7 days.

2. Actual corrosion rate shall be monitored at reasonably frequent intervals.

3. The water shall be handled under air-free conditions at all times which may be accomplished by adopting

Recommendations 2, 3 and 4 of the Recommendations contained on Page 6 of Exhibit H.

4. The measures of water quality control set forth on Pages 8 and 9 of Exhibit H be adopted and particular attention be given to Items 1 and 3.

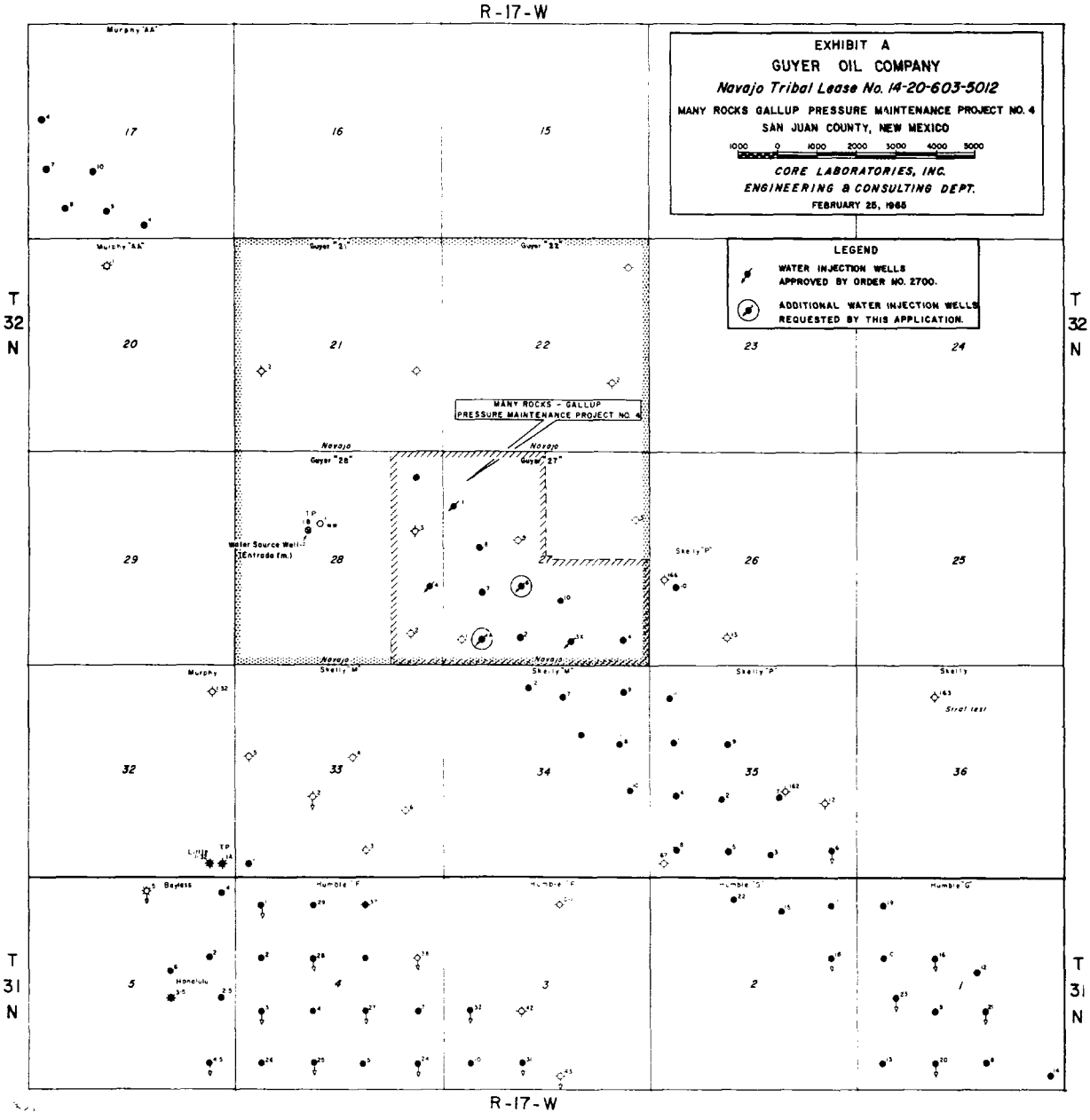
All data accumulated as a result of these provisions shall be available to the New Mexico State Engineer on demand.

Yours very truly,

S. E. Reynolds
State Engineer

By: Frank E. Irby
Frank E. Irby
Chief
Water Rights Div.

FEI/ma
cc-Core Lab. Inc.


R-17-W
EXHIBIT A
GUYER OIL COMPANY
Navajo Tribal Lease No. 14-20-603-5012
MANY ROCKS GALLUP PRESSURE MAINTENANCE PROJECT NO. 4
SAN JUAN COUNTY, NEW MEXICO
1000 0 1000 2000 3000 4000 5000
CORE LABORATORIES, INC.
ENGINEERING & CONSULTING DEPT.
FEBRUARY 25, 1965
LEGEND
WATER INJECTION WELLS APPROVED BY ORDER NO. 2700.
ADDITIONAL WATER INJECTION WELLS REQUESTED BY THIS APPLICATION.
T 32 N
T 31 N
MANY ROCKS - GALLUP PRESSURE MAINTENANCE PROJECT NO. 4
Navajo
Guyer "21"
Guyer "22"
Guyer "26"
Guyer "27"
Water Source Well (Entrada fm.)
Skelly "P"
Skelly "M"
Murphy
Skelly
Strat test
Bayless
Humble "F"
Humble "S"
Humble "G"
Honolulu
17
16
15
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23
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29
28
27
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25
32
33
34
35
36
5
4
3
2
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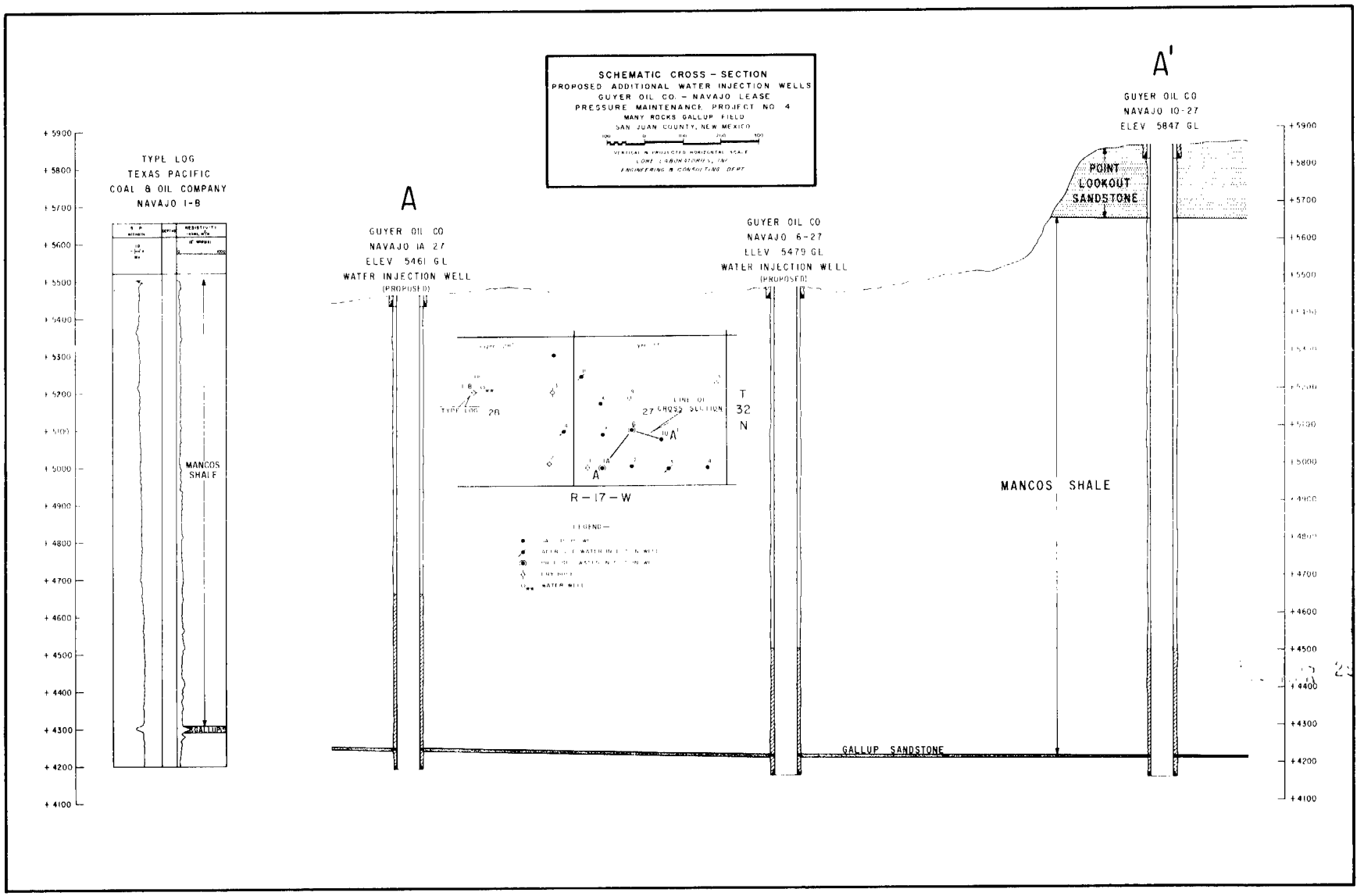
SCHEMATIC CROSS - SECTION
PROPOSED ADDITIONAL WATER INJECTION WELLS
GUYER OIL CO. - NAVAJO LEASE
PRESSURE MAINTENANCE PROJECT NO 4
MANY ROCKS GALLUP FIELD
SAN JUAN COUNTY, NEW MEXICO
TYPE LOG
TEXAS PACIFIC
COAL & OIL COMPANY
NAVAJO 1-B
MANCOS SHALE
GALLUP
A
GUYER OIL CO
NAVAJO 1A 27
ELEV 5461 GL
WATER INJECTION WELL
(PROPOSED)
GUYER OIL CO
NAVAJO 6-27
ELEV 5479 GL
WATER INJECTION WELL
(PROPOSED)
A'
GUYER OIL CO
NAVAJO 10-27
ELEV 5847 GL
POINT LOOKOUT SANDSTONE
MANCOS SHALE
GALLUP SANDSTONE
T 32 N
R-17-W
LINE OF CROSS SECTION
TYPE LOG
WATER WELL
+5900
+5800
+5700
+5600
+5500
+5400
+5300
+5200
+5100
+5000
+4900
+4800
+4700
+4600
+4500
+4400
+4300
+4200
+4100

EXHIBIT B

Form 9-330

Budget Bureau No. 42-R355.4.
Approval expires 12-31-60.

U. S. Land Office .....

Serial Number .....

Lease or Permit to Prospect .....

LOCATE WELL CORRECTLY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

Company ..... Address .....

Lessor or Tract ..... Field ..... State .....

Well No. ..... Sec. ..... T. ..... R. ..... Meridian ..... County .....

Location ..... ft. {N. / S.} of ..... Line and ..... ft. {E. / W.} of ..... Line of ..... Elevation ..... (Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed .....

Date ..... Title .....

The summary on this page is for the condition of the well at above date.

Commenced drilling ....., 19..... Finished drilling ....., 19.....

OIL OR GAS SANDS OR ZONES

(*Denote gas by G*)

No. 1, from ..... to ..... No. 4, from ..... to .....

No. 2, from ..... to ..... No. 5, from ..... to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

No. 1, from ..... to ..... No. 3, from ..... to .....

No. 2, from ..... to ..... No. 4, from ..... to .....

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose

EXHIBIT C
Page 1 of 3

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

DATES

....., 19..... Put to producing ....., 19.....

The production for the first 24 hours was ..... barrels of fluid of which .....% was oil; .....% emulsion; .....% water; and .....% sediment. Gravity, °Bé. .....

If gas well, cu. ft. per 24 hours ..... Gallons gasoline per 1,000 cu. ft. of gas .....

Rock pressure, lbs. per sq. in. .....

EMPLOYEES

....., Driller ....., Driller

....., Driller ....., Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION

EXHIBIT C

Page 2 of 3

PROPOSED WATER INJECTION WELL
GUYER OIL COMPANY
NAVAJO NO. 1A-27
MANY ROCKS GALLUP POOL, SEC. 27, T32N, R17W
SAN JUAN COUNTY, NEW MEXICO

16—43004-2 U. S. GOVERNMENT PRINTING OFFICE

HISTORY OF OIL OR GAS WELL

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give its size and location. If shots were dynamited, give date, size, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

EXHIBIT C
Page 3 of 3

PROPOSED WATER INJECTION WELL
GUYER OIL COMPANY
NAVAJO NO. 1A-27
MANY ROCKS GALLUP POOL, SEC. 27, T32N, R17W
SAN JUAN COUNTY, NEW MEXICO

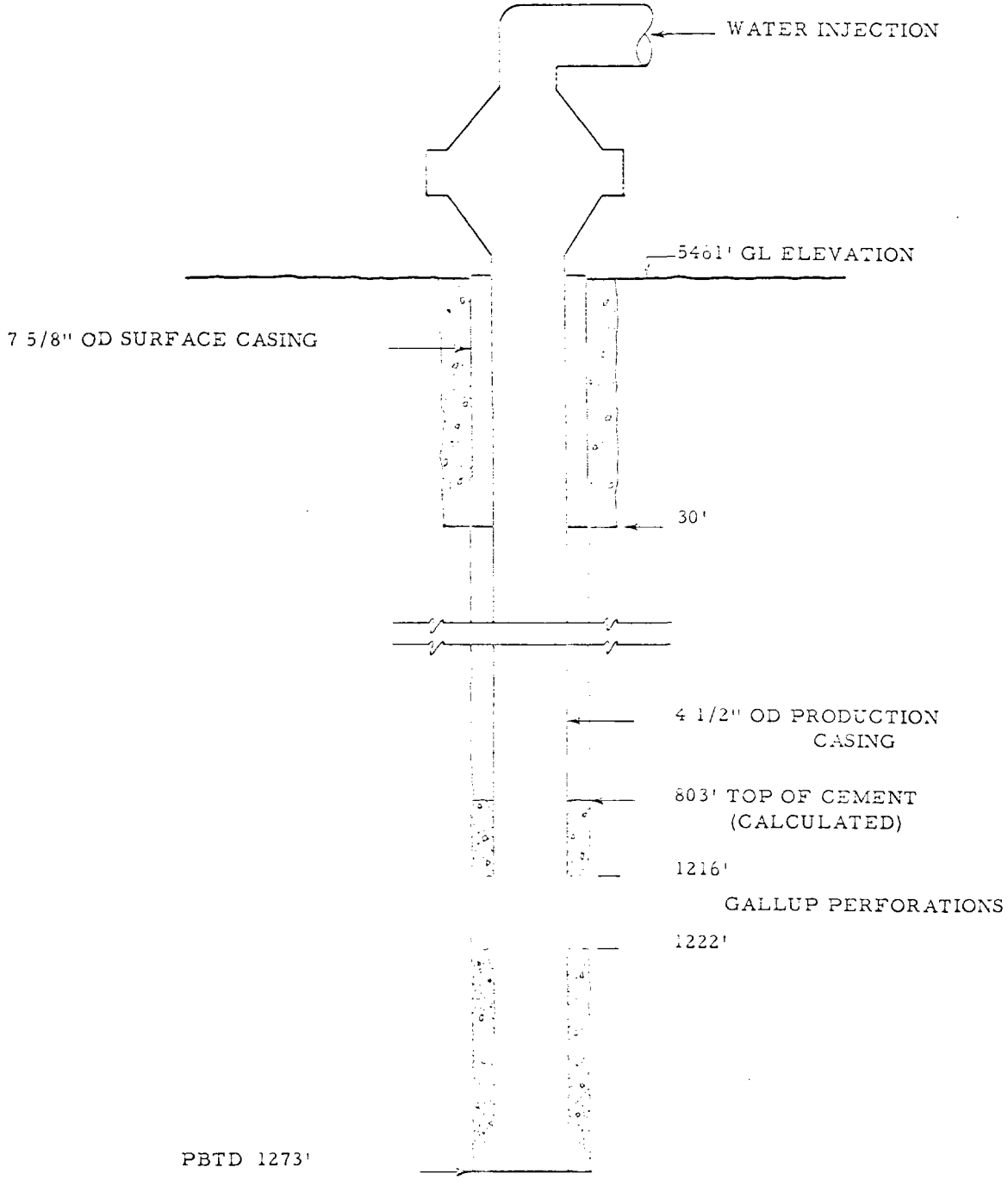

EXHIBIT D
Page 1 of 1

PROPOSED WATER INJECTION WELL
GUYER OIL COMPANY
NAVAJO NO. 6-27
MANY ROCKS GALLUP POOL, SEC. 27, T32N, R17W
SAN JUAN COUNTY, NEW MEXICO

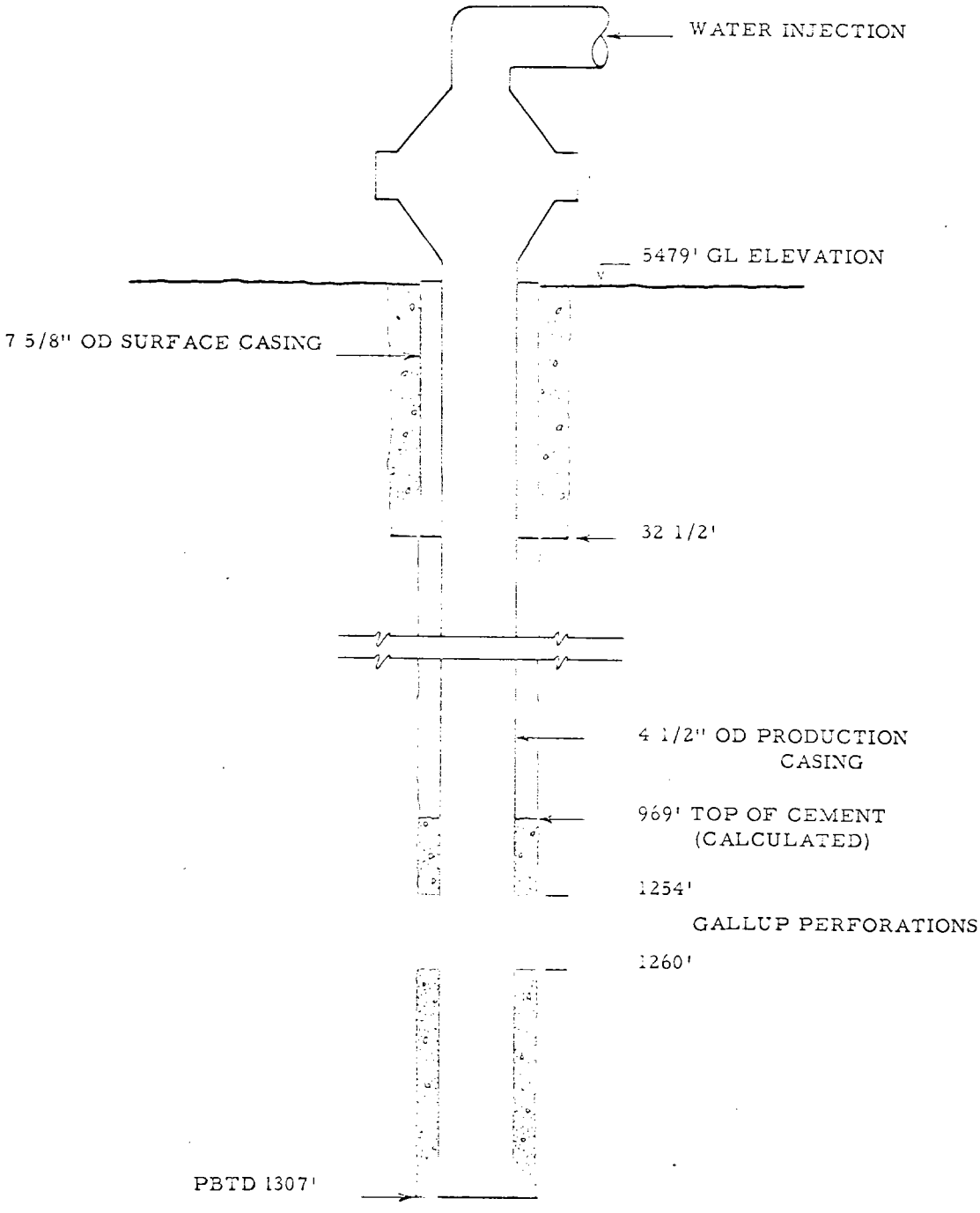

EXHIBIT E
Page 1 of 1