STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

August 10, 1993

Phillips Petroleum Company
4001 Penbrook
Odessa, TX 79762

Attention: D.R. Weir

RE: Injection Pressure Increase M.E. Hale Unit Well Nos. 12 & 13, Lea County, New Mexico

Dear Mr. Weir:

Reference is made to your request dated July 22, 1993 to increase the surface injection pressure on the above-referenced wells. This request is based on step rate tests conducted on these wells between June 17 and 21, 1993. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following wells:

Well and Location	**Maximum Injection Surface Pressure**
M.E. Hale Well No. 12 1260' FSL - 2630' FEL Unit O, Section 35, Township 17 South, Range 34 East	2200 PSIG
M.E. Hale Well No. 13 1360' FSL - 1210' FEL Unit P, Section 35, Township 17 South, Range 34 East	2200 PSIG
Both wells located in Lea County, New Mexico.	

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,

William J. LeMay
Director

WJL/BES/amg

cc: Oil Conservation Division - Hobbs
D. Catanach
File: PMX-170

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

7-29-92

CONSERVATION DIVISION
RECEIVED
'92 JUL 31 PM 2 27

BRUCE KING
GOVERNOR

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88241-1980
(505) 393-6161

RELEASE 8-13-92

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RE: Proposed:
MC _____
DHC _____
NSL _____
NSP _____
SWD _____
WFX _____
PMX X

Gentlemen:

I have examined the application for the:

Phillips Petroleum Co. M. E. Hale #12-O 35-17-34
Operator Lease & Well No. Unit S-T-R

and my recommendations are as follows:

OK

Yours very truly,

Jerry Sexton
Supervisor, District 1

/ed

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

'92 JU 24 AM 8 53

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☒ Pressure Maintenance ☐ Disposal ☐ Storage
Application qualifies for administrative approval? ☒ yes ☐ no

II. Operator: PHILLIPS PETROLEUM COMPANY

Address: 4001 Penbrook St., Odessa, Texas 79762

Contact party: L. M. Sanders Phone: 915/368-1488

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? ☒ yes ☐ no
If yes, give the Division order number authorizing the project R-7103.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: L. M. Sanders Title Supervisor, Regulatory Affairs

Signature: L. M. Sanders Date: 7/27/92

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal.

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

AFFIDAVIT OF PUBLICATION

State of New Mexico,
County of Lea.

I, Kathi Bearden

of the Hobbs Daily News-Sun, a daily newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published once a week in the regular and entire issue of said paper, and not a supplement thereof for a period

of

One weeks.
Beginning with the issue dated

July 12, 1992
and ending with the issue dated

July 12, 1992

Kathi Bearden
General Manager
Sworn and subscribed to before

me this day of

, 19

Notary Public.

My Commission expires

Aug. 5, 1995
(Seal)

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.

LEGAL NOTICE
July 12, 1992

Notice is hereby given of the application of Phillips Petroleum Company, 4001 Penbrook Street, Odessa, Texas 79762, Attn. L. M. Sanders, (915) 368-1488, to the Oil Conservation Division, New Mexico Energy and Mineral Department, for approval of the following injection wells authorization for the purpose of secondary recovery:

Well Name: M. E. Hale No. 12
Location: 1980' FSL & & 2630' FEL, Section 35, T-17-S, R-34-E, Lea County New Mexico
Well Name: M. E. Hale No. 13
Location: 1340' FSL & 1330' FEL, Section 35, T-17-S, R-34-E, Lea County, New Mexico

The injection formation is Grayburg & San Andres at a depth of 4284 - 4708 below the surface of the ground. Expected maximum injection rate is 3000 bbls water per day per well and expected maximum injection pressure is 2400 pounds per square inc.

Interested parties must file objections or requests for hearing with the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico 87501 within fifteen (15) days.

Received

JUL 27 1992

P.B.R. Regulatory Sec

HALE 12
INJECTION APPLICATION

III. WELL DATA

A. Name, Location, Downhole Data

(1) Lease Name: M. E. Hale, Well No. 12

Location: 1260' FSL and 2630' FEL, Section 35, T-17-S, R-34-E, Lea County, New Mexico

(2) Casing: Surface: 10-3/4", 40.5#/foot, H-40, ST&C set at 1570' in 14-3/4" hole. Cemented with 1100 sx Class "C" with 2% $CaCl_2$. Cement circulated.

Production: 7", 26#/foot, K-55, ST&C set at 4800' in 9-1/2" hole, 7" Lynes external casing packer at 1638' and Howco DV tool at 1630'. Cement, stage 1: 1400 sx lite, with 10% Diocele D, 12# salt, 3# gilsonite, 1/4# flocele followed by 400 sx Class C with 6# salt and 3# gilsonite. Cement circulated through DV tool, stage 2: 200 sacks lite with 10% Diocele D, 12# salt, 3# gilsonite and 1/4# flocele followed by 100 sx Class C neat. Cement circulated on both stages.

(3) Injection Tubing: 2-3/8" 4.7#/foot J-55 IPC with TK-70 set @ 4300'

(4) Injection Packer: 7" X 2-3/8" Elder "Lok-Set" style packer with on-off tool set @ 4300'

B. Reservoir Data

(1) Injection Formation: Grayburg/San Andres
Pool Name: Vacuum

(2) Injection Interval: Perforations 4356'-4700'

(3) Original Well Intent: San Andres Producer

(4) Other Perforated Intervals: None

(5) Productive Zones:
Next Higher: Queen 3700'
Next Lower: Glorieta 6000'

VII. PROPOSED INJECTION DATA

(1)	Injection Rate:	Average - 2500 BWPD Maximum - to be determined by step rate test
(2)	Injection System:	Closed
(3)	Injection Pressure:	Average - 1900 psig Maximum - 100 psig below fracture pressure as determined by step rate test
(4)	Injection Fluid:	Produced water from Phillips' Hale and Mable leases, and fresh water make up from Ogalaga supply wells. Attached is a chemical analysis of the produced water taken at the Hale tank battery, and an analysis of a 50/50 produced/fresh water mixture.

IX. PROPOSED STIMULATION

Based on results of injectivity test and survey, the well may be acidized with 15-20% HCl as deemed necessary.

WELL SERVICE APPROVAL - NON AFE
PHILLIPS PETROLEUM COMPANY--PERMIAN BASIN REGION

RKB @ 4027 '
GL @ 4015 '
RKB-GL 12 '

Category Code 0 Date June 17, 1992
Area North Subarea Buckeye
Lease & Well No. M. E. Hale No. 12
Legal Description 1260' FSL & 2630' FEL, Sec. 35, T-17-S, R-34-E
Lea County State: New Mexico
Field Vacuum Grayburg-San Andres
Status: 75 BOPD 650 BWPD MCFD
Tbg. 2 3/8" 4.7#/ft J-55 IPC set at 4300'
Other Elder "Lok-set style" packer set at 4300'
Downhole Equip:
Date Drilled: 4/83
Hole/Casing Condition Squzd Csg leak at 1648'- 8/83 (Tight @ 1648'-4/90)
Last Stimulation: 8/83-A-18675 gals 15% HCl, 7/90-A-10000 gals 20% HCl
Workover Proposal:

Well Condition: Convert to water injector
Wellhead Description: (Include connection that BOP will bolt to)

14-3/4" Hole
TOC @ Surf

10-3/4" OD
@ 1570'

9-1/2" Hole
TOC @ Surface

DV pkr assembly @ 1630'
Squzd DV tool w/50 sx to 2500# OK

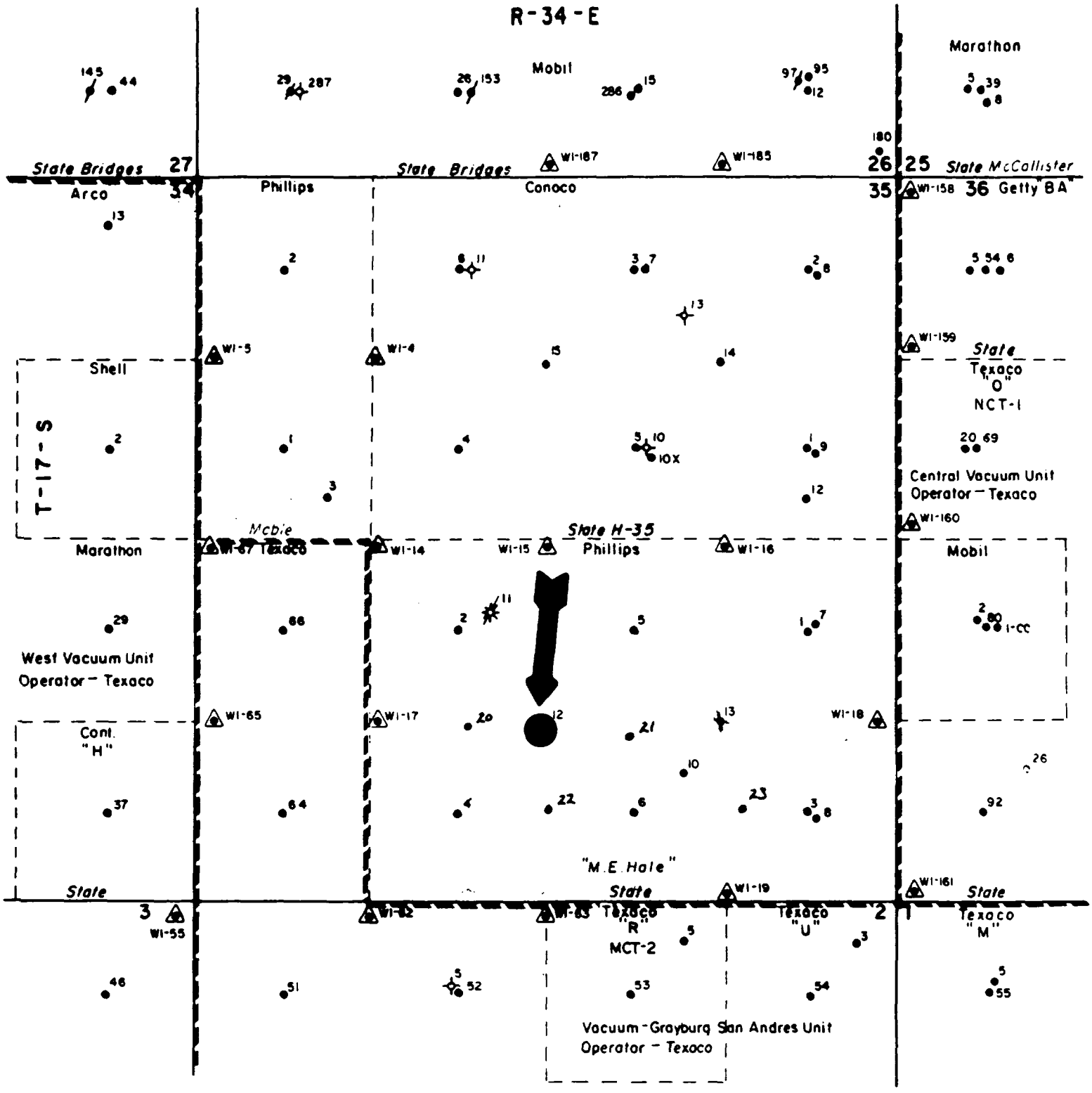
2-3/8" 4.7#/ft J-55 IPC tubing set @ 4300"
7" Elder "Lok-set style" Packer @ 4300'

San Andres Perfs

1 spf	4356'-4438'	82'
	4457'-4462'	5'
	4488'-4495'	7'
	4514'-4524'	10'
	4561'-4593'	32'
	4596'-4602'	48'
	4602'-4644'	
	4680'-4700'	20'
		204 holes

7" @ 4800'
26# K-55
TOC @ 4800'

TD @ 4800'
PBTD @ 4736'



PHILLIPS PETROLEUM COMPANY

HALE-MABLE VACUUM G-SA

PRESSURE MAINTENANCE PROJECT

SECTION 35, T-17-S, R-34-E

VACUUM GRAYBURG-SAN ANDRES FIELD

LEA COUNTY, NEW MEXICO

SCALE 1" = 1000'

HALE 13
INJECTION APPLICATION

III. WELL DATA

A. Name, Location, Downhole Data

(1) Lease Name: M. E. Hale, Well No. 13

Location: 1360' FSL and 1210' FEL, Section 35, T-17-S, R-34-E, Lea County, New Mexico

(2) Casing: Surface: 10-3/4", 40.5#/foot, H-40, ST&C set @ 1570' in 14-3/4" hole. Cemented with 1100 sacks of Class C with 2% $CaCl_2$. Cement circulated.

Production: 7", 26#/foot, K-55, ST&C set at 4829' in 9-1/2" hole, 7" Lynes external casing packer at 1590', and Howco DV tool at 1583'. Cement, stage 1: 1125 sx TLW, with 10% Diocele D, 10# salt, 1/4# flocele, 3# gilsonite followed by 400 sx Class C with 6# salt and 3# gilsonite. Stage 2: 165 sacks TLW with 10% Diocele D, 10# salt, 1/4# flocele, 3# gilsonite and 100 sx Class C neat. Cement circulated on both stages.

(3) Injection Tubing: 2-3/8" 4.7#/foot J-55 IPC with TK-70 set @ 4300'

(4) Injection Packer: 7" X 2-3/8" Elder "Lok-Set" style packer with on-off tool set @ 4300'

B. Reservoir Data

(1) Injection Formation: Grayburg/San Andres
Pool Name: Vacuum

(2) Injection Interval: Perforations 4367'-4690'

(3) Original Well Intent: San Andres Producer

(4) Other Perforated Intervals: None

(5) Productive Zones:
Next Higher: Queen 3700'
Next Lower: Glorieta 6000'

VII. PROPOSED INJECTION DATA

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IX. PROPOSED STIMULATION

Based on results of injectivity test and survey, the well may be acidized with 15-20% HCl as deemed necessary.

RESV:KMABE:hale13

WELL SERVICE APPROVAL - NON AFE

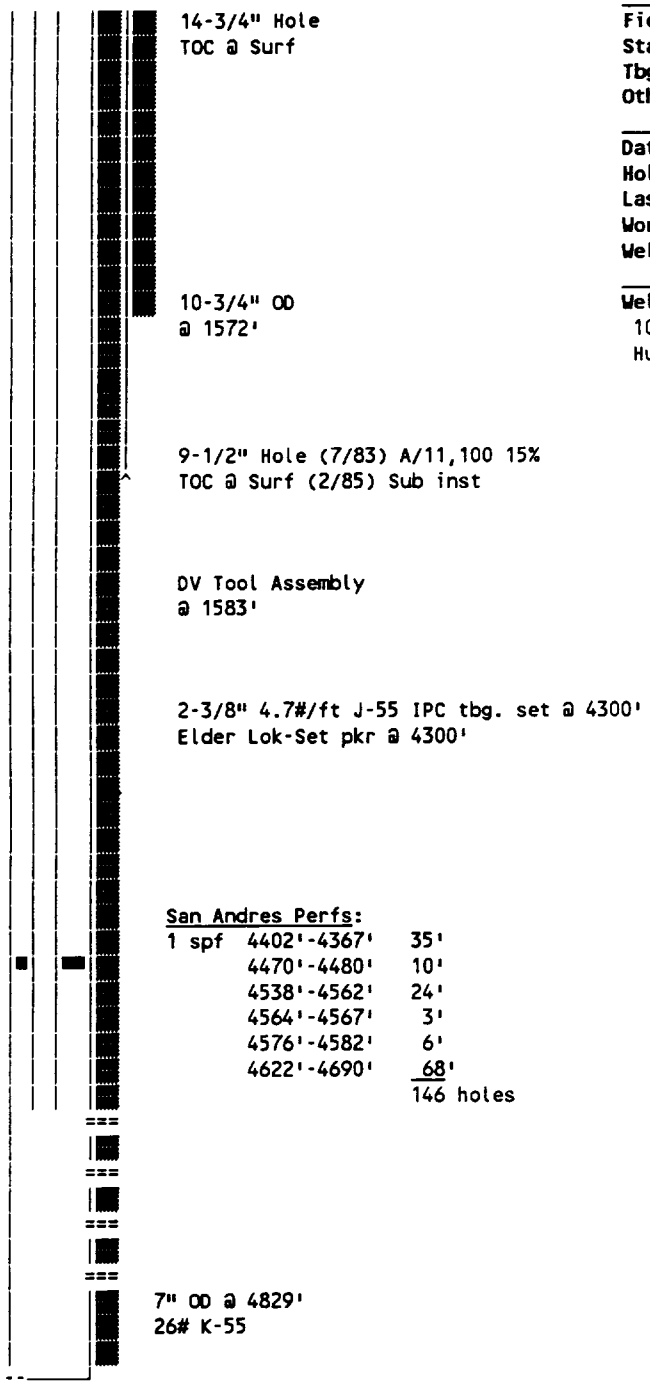
PHILLIPS PETROLEUM COMPANY--PERMIAN BASIN REGION

RKB @ 4022 '
GL @ 4011 '
RKB-GL 11 '

Category Code 0 Date June 17, 1992
Area North Subarea Buckeye
Lease & Well No. M. E. Hale No. 13
Legal Description 1360' FSL & 1210' FEL, Sec. 35, T-17-S, R-34-E
Lea County State: New Mexico
Field Vacuum Grayburg-San Andres
Status: 30 BOPD 475 BWPD MCFD
Tbg. 2-3/8" 4.7#/ft J-55 IPC set @ 4300'
Other Elder "Lok-set style" Packer @ 4300'

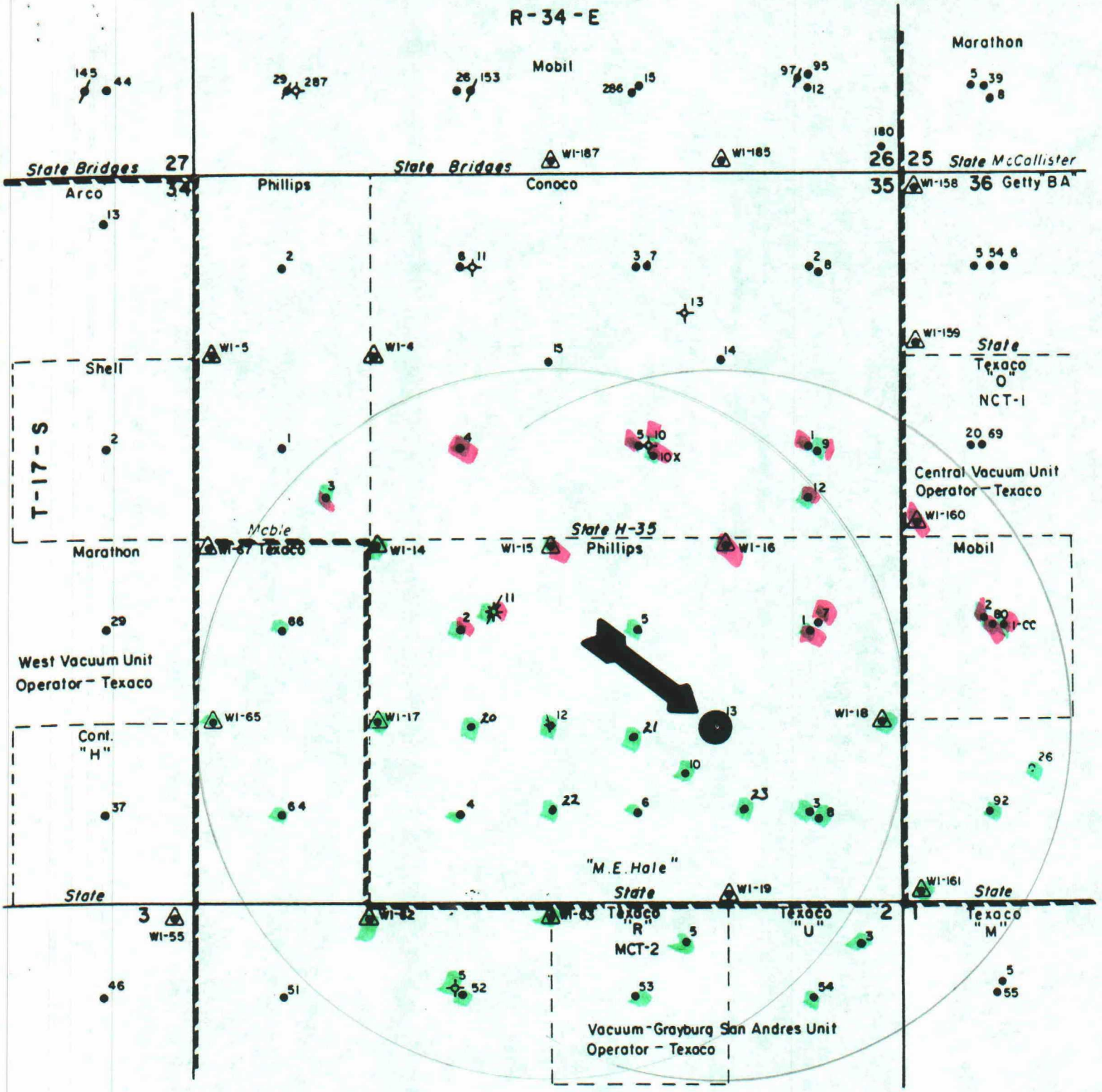
Date Drilled: 7/83
Hole/Casing Condition
Last Stimulation: 7/83-A-18800 15% HCl
Workover Proposal:
Well Condition: Rod Pump 30 BOPD, 475 BWPD

Wellhead Description: (Include connection that BOP will bolt to)
10-3/4" CB-2000 psi, Huber, Type CJ w/ 7" x 2-7/8" -2000 psi, Type A7S Huber, Tubing Head



TD @ 4830'
PBTD @ 4795'

File name h:\WELLFILE\BUCKEYE\HALE\SKETCH\13



PHILLIPS PETROLEUM COMPANY

HALE-MABLE VACUUM G-SA

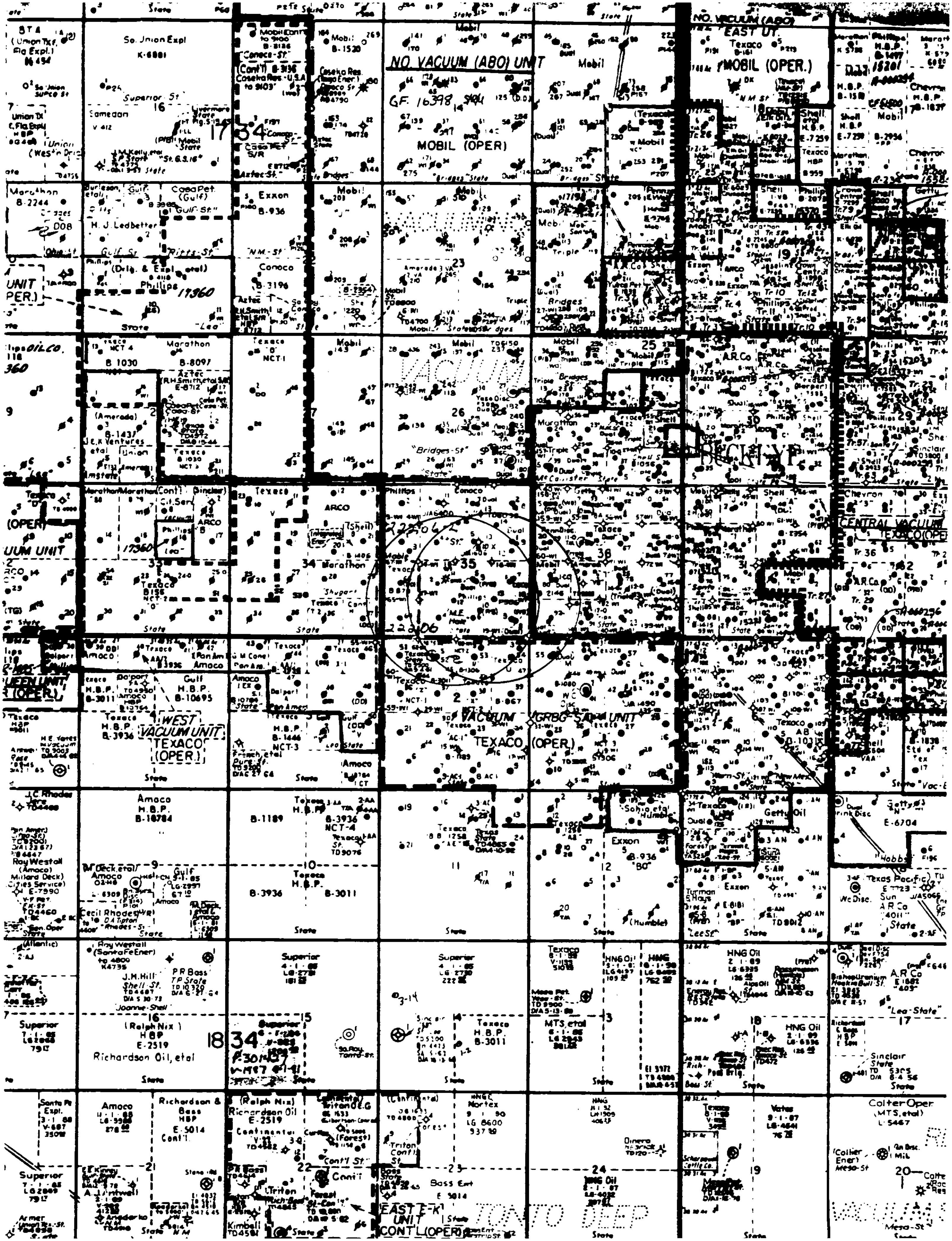
PRESSURE MAINTENANCE PROJECT

SECTION 35, T-17-S, R-34-E

VACUUM GRAYBURG-SAN ANDRES FIELD

LEA COUNTY, NEW MEXICO

SCALE 1" = 1000'


NO. VACUUM (ABO) UNIT
MOBIL (OPER)
NO. VACUUM (ABO) EAST UT.
MOBIL (OPER.)
So. Union Expl
Superior St.
VACUUM
Bridges State
Conoco
Phillips
Marathon
Exxon
Texaco
ARCO
Mobil
Shell
Getty
Chevron
BUCKEYE
CENTRAL VACUUM
TEXACO (OPER.)
WEST VACUUM UNIT
TEXACO (OPER.)
VACUUM (GRBG SA) UNIT
TEXACO (OPER.)
Amoco
Gulf
Sohio, etal
Getty Oil
Superior
Richardson Oil, etal
HNG Oil
Sinclair State
Colter Oper.
Richardson & Bass
Bass Ent
EAST E-K UNIT
CONT'L (OPER)
TONTO DEEP
State

UNICHEM INTERNATIONAL

Home Office 707 N. Leech, P.O. Box 1499 / Hobbs, NM 88240 / Ph. 505/393-7751, Fax 505/393-6754

June 10, 1992

Mr. Danny Williamson
Phillips Petroleum Co.
West Star Route - Lea Plant
Lovington, NM 88260

Dear Mr. Williamson:

Enclosed please find our water analyses and compatibility reports on the samples submitted June 8, 1992, from the Hale lease.

If you have any questions or require further information, please contact us.

Sincerely,

Sharon Wright
Laboratory Technician

SW/ar

cc: Jay Brown
Pat Culpepper
Scott Malone
Spencer Oden
Joe Hay

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM COMPANY
Date : 06-10-1992
Location: HALE - IPD (on 06-08-1992)

	Sample 1
Specific Gravity:	1.079
Total Dissolved Solids:	110813
pH:	7.10
IONIC STRENGTH:	1.991

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	120	2400
Magnesium	(Mg^{+2})	16.0	194
Sodium	(Na^{+1})	1750	40200
Iron (total)	(Fe^{+2})	0.021	0.600
Barium	(Ba^{+2})	0.006	0.390
Manganese	(Mn^{+2})	0.006	0.170
ANIONS:			
Bicarbonate	(HCO_3^{-1})	12.8	781
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	67.1	3230
Chloride	(Cl^{-1})	1810	64000

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	0.70	-15
100°F	38°C	1.3	-15
120°F	49°C	1.6	-15
140°F	60°C	2.0	-15
160°F	71°C	2.4	-11
180°F	82°C	2.8	-11

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM COMPANY
Date : 06-10-1992
Location: HALE - WSW #1 (on 06-08-1992)

	Sample 1
Specific Gravity:	1.001
Total Dissolved Solids:	1678
pH:	7.20
IONIC STRENGTH:	0.038

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	3.80	76.0
Magnesium	(Mg^{+2})	12.2	148
Sodium	(Na^{+1})	13.6	312
Iron (total)	(Fe^{+2})	0.018	0.500
Barium	(Ba^{+2})	0.003	0.240
Manganese	(Mn^{+2})	0.002	0.050
ANIONS:			
Bicarbonate	(HCO_3^{-1})	3.20	195
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	0.972	46.7
Chloride	(Cl^{-1})	25.4	900

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	-0.25	-18
100°F	38°C	0.34	-18
120°F	49°C	0.65	-18
140°F	60°C	1.0	-18
160°F	71°C	1.4	-18
180°F	82°C	1.8	-18

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM COMPANY
Date : 06-10-1992
Location: HALE - WSW #1 & IPD COMPATIBILITY (on 06-08-1992)

	Sample 1
Specific Gravity:	1.060
Total Dissolved Solids:	83529
pH:	7.13
IONIC STRENGTH:	1.503

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	90.9	1820
Magnesium	(Mg^{+2})	15.0	183
Sodium	(Na^{+1})	1320	30200
Iron (total)	(Fe^{+2})	0.021	0.575
Barium	(Ba^{+2})	0.005	0.352
Manganese	(Mn^{+2})	0.005	0.140
ANIONS:			
Bicarbonate	(HCO_3^{-1})	10.4	634
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	50.6	2430
Chloride	(Cl^{-1})	1360	48200
DISSOLVED GASES			
Carbon Dioxide	(CO_2)		0
Hydrogen Sulfide	(H_2S)		0
Oxygen	(O_2)		0

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	0.48	-29
100°F	38°C	1.1	-29
120°F	49°C	1.4	-29
140°F	60°C	1.7	-29
160°F	71°C	2.1	-25
180°F	82°C	2.6	-25

Comments:
COMPATIBILITY = 75% HALE IPD & 25% WSW #1

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM COMPANY
Date : 06-10-1992
Location: HALE - WSW #1 & IPD COMPATIBILITY (on 06-08-1992)

	Sample 1
Specific Gravity:	1.021
Total Dissolved Solids:	28962
pH:	7.18
IONIC STRENGTH:	0.526

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	32.8	657
Magnesium	(Mg^{+2})	13.1	160
Sodium	(Na^{+1})	447	10300
Iron (total)	(Fe^{+2})	0.019	0.525
Barium	(Ba^{+2})	0.004	0.278
Manganese	(Mn^{+2})	0.003	0.080
ANIONS:			
Bicarbonate	(HCO_3^{-1})	5.60	342
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	17.5	841
Chloride	(Cl^{-1})	470	16700
DISSOLVED GASES			
Carbon Dioxide	(CO_2)		0
Hydrogen Sulfide	(H_2S)		0
Oxygen	(O_2)		0

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	-0.03	-41
100°F	38°C	0.56	-41
120°F	49°C	0.87	-41
140°F	60°C	1.2	-41
160°F	71°C	1.6	-37
180°F	82°C	2.1	-37

Comments:
COMPATIBILITY = 25% HALE IPD & 75% WSW #1

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM COMPANY
Date : 06-10-1992
Location: HALE - WSW #1 & IPD COMPATIBILITY (on 06-08-1992)

	Sample 1
Specific Gravity:	1.071
Total Dissolved Solids:	99900
pH:	7.11
IONIC STRENGTH:	1.795

CATIONS:		me/liter	mg/liter
Calcium	(Ca^{+2})	108	2170
Magnesium	(Mg^{+2})	15.6	190
Sodium	(Na^{+1})	1580	36200
Iron (total)	(Fe^{+2})	0.021	0.590
Barium	(Ba^{+2})	0.005	0.375
Manganese	(Mn^{+2})	0.006	0.158
ANIONS:			
Bicarbonate	(HCO_3^{-1})	11.8	722
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	60.5	2910
Chloride	(Cl^{-1})	1630	57700
DISSOLVED GASES			
Carbon Dioxide	(CO_2)		0
Hydrogen Sulfide	(H_2S)		0
Oxygen	(O_2)		0

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	0.60	-21
100°F	38°C	1.2	-21
120°F	49°C	1.5	-21
140°F	60°C	1.9	-21
160°F	71°C	2.3	-17
180°F	82°C	2.7	-17

Comments:
COMPATIBILITY = 90% HALE IPD & 10% WSW #1

Unichem International

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM COMPANY
Date : 06-10-1992
Location: HALE - WSW #1 & IPD COMPATIBILITY (on 06-08-1992)

	Sample 1
Specific Gravity:	1.040
Total Dissolved Solids:	56246
pH:	7.15
IONIC STRENGTH:	1.014

		me/liter	mg/liter
CATIONS:			
Calcium	(Ca^{+2})	61.9	1240
Magnesium	(Mg^{+2})	14.1	171
Sodium	(Na^{+1})	881	20300
Iron (total)	(Fe^{+2})	0.020	0.550
Barium	(Ba^{+2})	0.005	0.315
Manganese	(Mn^{+2})	0.004	0.110
ANIONS:			
Bicarbonate	(HCO_3^{-1})	8.00	488
Carbonate	(CO_3^{-2})	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO_4^{-2})	34.1	1640
Chloride	(Cl^{-1})	915	32500
DISSOLVED GASES			
Carbon Dioxide	(CO_2)		0
Hydrogen Sulfide	(H_2S)		0
Oxygen	(O_2)		0

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86°F	30°C	0.16	-39
100°F	38°C	0.75	-39
120°F	49°C	1.1	-39
140°F	60°C	1.4	-39
160°F	71°C	1.8	-35
180°F	82°C	2.2	-35

Comments:
COMPATIBILITY = 50% HALE IPD & 50% WSW #1

ATTACHMENT NO. 5
Notification

I hereby certify that a complete copy of this application was sent by certified mail to the below listed persons on July 27, 1992.

Signed: L. M. Sanders
Name: L. M. Sanders
Title: Supervisor, Regulatory Affairs
Date: July 27, 1992

Offset Operator:

Conoco Inc.
10 Desta Dr., Ste. 100W
Midland, Texas 79705

Texaco Expl. & Prod., Inc.
Box 730
205 E. Bender
Hobbs, NM 88240

Surface Owner:

Commissioner of Public Lands
New Mexico State Land Office
P. O. Box 1148
Santa Fe, NM 87504-1148