1R - 279

REPORTS

DATE:

1990

VACUUM FIELD WATERFLOW COMMITTEE

1989 TECHNICAL REPORT

and

1990 CONTINGENCY PLAN

Injection Project Operators:

ARCO OIL AND GAS COMPANY

MOBIL PRODUCING TEXAS AND NEW MEXICO

PHILLIPS PETROLEUM COMPANY

TEXACO, INC.

TABLE OF CONTENTS

LIST OF ATTACHMENTS

VACUUM FIELD WATERFLOW COMMITTEE

In accordance with the 1989 Contingency Plan for Subsurface Environment Protection, the Vacuum Field Waterflow Technical Committee has monitored all active and accessible Vacuum Field fresh water wells during the past year. It is the Committee's intention to continue the data collection as outlined in the 1990 Contingency Plan.

As outlined in the Contingency Plan, corrective actions were taken during the third quarter surrounding Texaco's CVU WSW #3 due to an increase in chloride content. The area of fresh water contamination has been defined, the source identified and the flow eliminated. Extraction wells are planned to pump out the contaminated water.

No significant pressure changes were noted in the five Salado monitor wells. Future monitoring will utilize the Mobil and two Texaco wells since ARCO's Hale State #1 and Texaco's CVU #1 were plugged and abandoned during the third quarter.

The surveys conducted by each operator on Vacuum Field injection wells are summarized in the table below. Other surveys conducted are so noted in the individual company summaries. Also listed are the 1989 wells drilled in the Vacuum area.

Operator	Wells Examined	Falloffs	Surveys Inj. Profiles	Step-Rate Tests	Wells Drilled
ARCO	0	-	-	-	0
Mobil	87	4	23	60	2
Phillips	9	9	0	0	6
Texaco	6	0	6	0	2
TOTALS	102	13	29	60	10

The map prior to the Attachments section highlights the above drilling activity and details casing point information, particularly Rustler leak-off test data. Those wells with casing set in the Rustler were drilled out (10+ feet) and pressured until fluid leak-off or to a predetermined surface pressure limit as a means of quantifying the anhydrite's integrity. The waterflows encountered are also noted.

ARCO OIL AND GAS COMPANY

ARCO's involvement in addressing the Vacuum waterflow situation is primarily as a nonoperating working interest owner. However, ARCO does operate the State Vacuum Unit, a small 800 acre waterflood on the western edge of the field. During 1989, ARCO has injected only produced water at the State Vacuum Unit and injection pressure has only been about 100 psi. ARCO has operated a monitor well, the Cole Darden Hale State #1, on the State Vacuum Unit since 1977. This monitor well was plugged in August, 1989 due to mechanical problems. ARCO also had operated the Sinclair Vacuum salt water disposal well, located on the southern edge of the field. It was also plugged in August, 1989.

ARCO Oil and Gas Company fully supports the work of the Vacuum Field Waterflow Committees in their effort to monitor and preserve the water quality in the Ogallala aquifer.

MOBIL PRODUCING TEXAS AND NEW MEXICO

Mobil has been an active member of the Vacuum Field Waterflow Committee since 1977. To continue the preservation of the Ogallala Aquifer water quality, tests were conducted in five technical categories during 1989 to monitor the condition of the salt section waterflow. These tests include injection profiles and temperature surveys, pressure fall-offs, step-rate tests, fresh water sampling, and salt section pressure monitor wells.

Injection profile logs were run on twenty-one Abo injectors and two San Andres injectors. Temperature surveys 1000' above the packer showed no waterflows behind the casing. Packer leakage tests also proved negative. No significant amounts of water loss below the injection zone were noted.

Pressure fall-off tests were performed on four San Andres injectors. The purpose of these tests is to check for high wellbore storage that might indicate a large fracture system. The pressure recording equipment used was unable to sample faster than fifteen second intervals and the test results were inconclusive. Mobil Engineering has set aside this test method due to the lack of definitive results.

Step-rate tests were conducted on sixty Abo injection wells. Each test indicated that the surface injection pressures are at least 200 psi below the formation parting pressure. Thus, out of zone injection is not suspected in these wells.

At the end of each quarter, twelve active water supply wells on Mobil acreage were sampled for chloride content. To date, the recorded chloride levels do not indicate any fresh water contamination. A year-end analysis was also run to look for any other contaminants. These tests did not indicate any hydrocarbon or other chemical intrusion.

Bridges State #6, located in Section 23, T-17-S, R-34-E, is the Mobil salt section monitor well. During 1989, the tubing pressure averaged 850 psi and the casing pressure averaged 0 psi.

During 1989, Mobil continued a program to temporarily abandon idle wellbores on the Bridges State lease. The purpose of this program is to protect the casing from corrosion and possible fluid migration while maintaining the wellbore for future use. The year began with thirty-two idle wellbores on the lease. During 1989, thirteen wells were temporarily abandoned and five were plugged and abandoned. Four additional wells are awaiting P&A permits.

Mobil presented a plan in 1987 to reduce the water injection in the Bridges State San Andres Waterflood to a volume no greater than the volume of produced water. A disposal permit for the State Sec 27 #2 well has been granted and easements have been applied for. This well has sufficient capacity to dispose of the produced water volume presented in the 1987 plan. Equipment is on order for the ten mile water transfer line and facility construction is expected to begin in February, 1990.

PHILLIPS PETROLEUM COMPANY

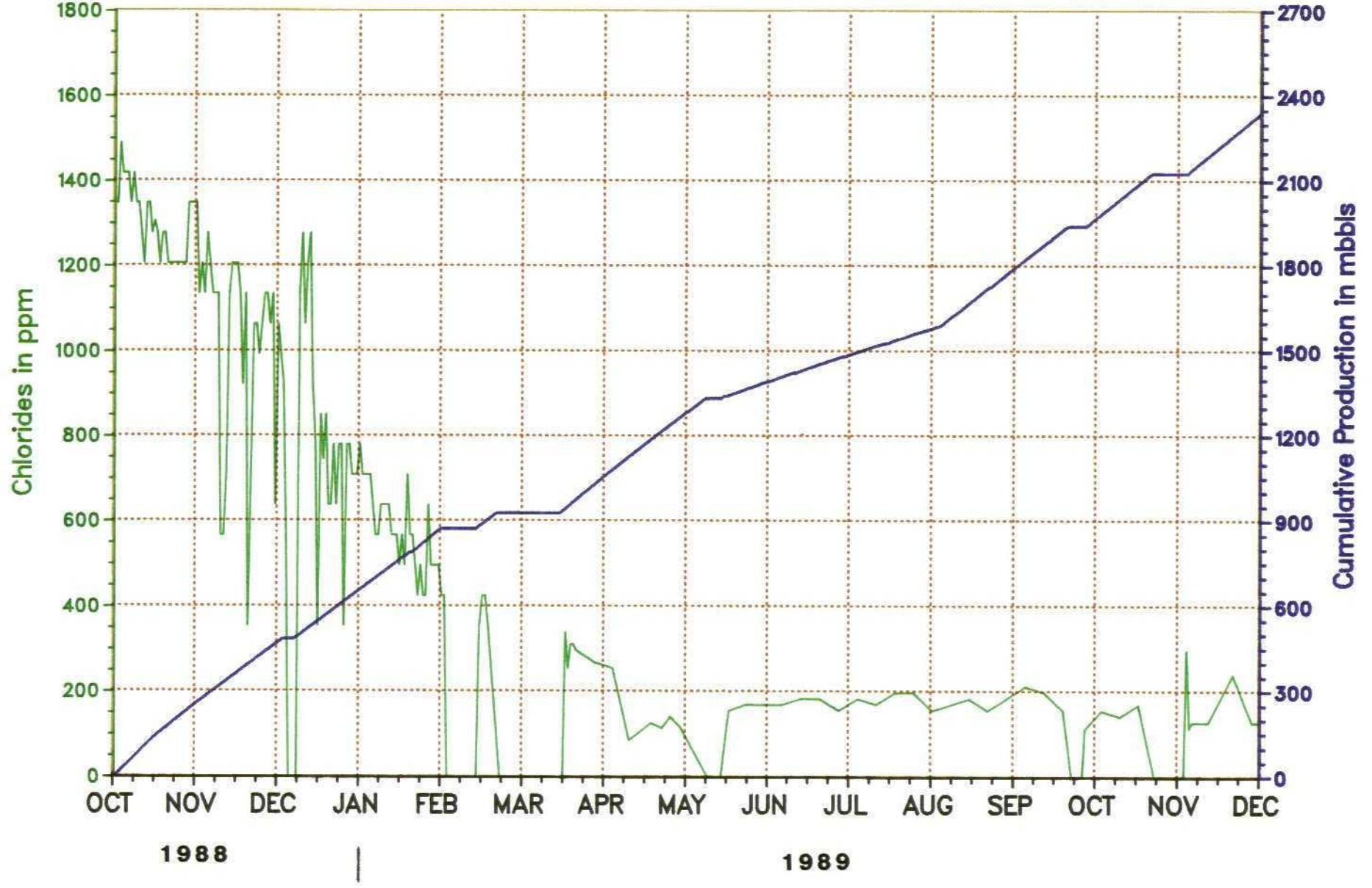
Phillips actively supports the monitoring of our East Vacuum Grayburg/San Andres Unit, Vacuum Abo Unit, Hale and Mable Lease injection wells to preserve the water quality in the Ogallala aquifer. Phillips has seen no material changes in the identified fresh water well chlorides and will continue its current testing and operation practices.

Phillips continued its Vacuum area drilling during the 1989 year with the addition of six new wells. Four of these wells were Vacuum (Grayburg/San Andres) producers; the remaining two wells were Vacuum (Glorieta) producers. In all cases, no Salado waterflows were encountered and the Rustler leak-off tests exceeded the 2000 psi surface pressure limit.

Other tests run on Vacuum Field injection wells included nine pressure falloffs to quantify the storage volumes present. The five EVGSAU tests used both surface and bottomhole data recorders; the four Hale and Mable tests were wellhead pressure only.

The Southwest Public Service Ogallala Well No. 28, located within the boundary of the East Vacuum Unit, showed increased chlorides during the 3rd quarter of 1988. Continued efforts throughout 1989 have reduced the chlorides constantly, since May 1989, to below 200 ppm. To date, a total of 2.4 million barrels water has been pumped from SPS No. 28 and utilized in the EVGSAU injection system. There was no indication the increased chlorides resulted from lower horizon fluid migration.

Southwestern Public Service Company Well No. 28
Vacuum Field Area – Lea County New Mexico



TEXACO, INC.

Texaco remained actively involved in the Vacuum Field Waterflow Committee during 1989 in order to insure the integrity of the fresh water aquifer is maintained. To this end, Texaco continued the monitoring of 26 fresh water wells and ran six injection well profiles in the Vacuum Field area during the past year.

There were no significant changes in the water analyses this year except in the Central Vacuum Unit Water Supply Well No. 3 which is located in Section 6, T-18-S, R-35-E. The abnormal chloride content was discovered in the third quarter and the contingency plan was initiated. Texaco drilled 23 test wells and discovered that Vacuum Grayburg San Andres Unit Well No. 58 (Section 1, T-18-S, R-34-E, Unit A) was the source of contamination. Surveys were run on the well and it was determined that there was a waterflow between the surface and production casing and that the salt water was entering the Ogallala Aquifer via a hole in the surface pipe at 59'. At this writing, Texaco is taking the necessary measures to correct the problem.

The injection surveys did not indicate that any water was channeling upwards behind the casing. Packer leakage tests confirmed that there were no problems.

Texaco plugged and abandoned the Central Vacuum Unit Monitor Well No. 1 during 1989.

LEA

17S-34E

17S-35E

18S-34E

18S-35E

MOBIL BRIDGES STATE

PHILLIPS EAST VACUUM (GRAYBURG/SAN ANDRES)

TEXACO CENTRAL VACUUM

ARCO STATE VACUUM

TEXACO WEST VACUUM

TEXACO

(GRAYBURG/SAN ANDRES)

UNIT

2400

2500

2600

2300

2200

2100

1639# BHP

1622# BHP

2686# BHP

2700# BHP

2842# BHP

2810# BHP

1778'/1600 BPH

2766# BHP

2820# BHP

1814# BHP

2900'/2000 BPH

SCALE 1:24000 UNITS FEET NEW MEXICO PROJECTION ZONE 1
CLARKE 1866 SPHEROID .500 KM. GRID

Mobil 8b/12/04

0.00 2000.00 FEET

PRELIMINARY TOP RUSTLER

LAST 5 DIGITS OF API # POSTED ABOVE WELL SYMBOL

RUSTLER STRUCTURE VALUES POSTED BELOW WELL SYMBOL

LEGEND

- OIL & GAS COMP.
- GAS WELL
- DRY HOLE
- OIL WELL
- WATER INJECTION WELL
- JUNKED AND ABANDONED
- UNKNOWN

INDEX

- ▲ 1989 DRILL WELLS WITH NO LEAK-OFF TEST RUN
- ● 1989 DRILL WELLS WITH RUSTLER LEAK-OFF TEST RUN (MAXIMUM BOTTOM HOLE PRESSURE TEST INDICATED)
- ■ 1989 DRILL WELLS WITH WATER FLOWS (DEPTH AND VOLUMES INDICATED)

VACUUM FIELD WATERFLOW

GEOLOGICAL-GEOPHYSICAL COMMITTEE

VACUUM FIELD AREA
Lea County, New Mexico

PRELIMINARY TOP RUSTLER
C.I. : 20'

12/89

L-MD-17266

ATTACHMENT NO. 1

VACUUM FIELD
LEA COUNTY, NEW MEXICO

CONTINGENCY PLAN FOR SUBSURFACE ENVIRONMENT PROTECTION

PREFACE

The water injection project operators in the Vacuum Field plan to monitor the integrity of the Ogallala formation water to protect the subsurface environment of the field from possible degradation caused by pressured water in the Salado formation. This monitoring program should promptly identify subsurface problems.

Geological investigations, as well as NMOCD regulated well completion techniques, give evidence that there is minimal likelihood of contamination of the Ogallala formation by the water in the Salado. However, in the unlikely event that the pressured water escapes from the Salado formation, the plan also lays out active steps to confine the problem area, to identify and rectify the cause, and to restore the area.

VACUUM FIELD
LEA COUNTY, NEW MEXICO

CONTINGENCY PLAN FOR SUBSURFACE ENVIRONMENT PROTECTION

I. MONITOR

A. Sample and analyze all active and accessible fresh water wells quarterly. (Attachment No. 5 is a field plat showing the approximate location of these wells.)

(Attachment No. 2 is 1989 fresh water well chloride data.)

1. Wells will be produced prior to sampling to insure a representative sample is obtained.

2. Analysis will be performed by an independent lab or chemical company.

B. Conduct quarterly surface pressure checks of monitor wells completed in the Salado Section (Attachment No. 3).

C. Report drilling activity quarterly, specifically as to the existence or nonexistence of waterflows and their shut-in surface pressure. Rustler leak-off test data will also be reported (Attachment No. 4).

D. Submit all data to the Technical Committee for compilation and comparison. A quarterly report will be sent to the OCD Director, the Hobbs District Supervisor of the OCD and the Management Committee members.

VACUUM FIELD
LEA COUNTY, NEW MEXICO

CONTINGENCY PLAN FOR SUBSURFACE ENVIRONMENT PROTECTION

II. ACTION

If a fresh water sample shows an abnormal increase in chlorides, the following actions are to be taken:

A. Notify OCD and all Field Project Operators.

B. Begin producing contaminated water at maximum rate and retest for verification.

C. Sample and shut in all uncontaminated offset fresh water wells; obtain shut-in fluid level.

D. Reduce surface fluid injection pressures on all injection wells within a half-mile radius to 0 psi.

E. Begin testing the areal extent of the contamination and searching for the source.

Options available:

1. Perforate existing nearby wellbores opposite Ogallala.

2. Drill test wells.

F. Identify source and repair or eliminate.

G. Deplete area of contaminated water:

1. Produce to surface with following disposal options:

a. Existing disposal wells and systems.

b. Current injection projects.

c. Perforate existing wellbores in the lower San Andres for additional disposal capacity.

2. Subsurface depletion and disposal by simultaneous completions in common wellbores of the Ogallala, Santa Rosa, Dewey Lake and/or Salado with the lower San Andres disposal zone.

H. Increase fresh water well sampling frequency in and around the contaminated area.

VACUUM FIELD INJECTION PROJECT OPERATORS

TELEPHONE LIST

ARCO	OFFICE	HOME
1. S. D. Smith	505-392-3551	505-392-1175
2. J. A. Nicholson	915-688-5324	915-686-1809
3. H. W. Johnson	915-688-5411	915-685-4151
MOBIL		
1. D. R. Werley	505-393-3315	505-392-8287
2. R. P. Pratt	915-524-1500	
3. L. Bohot	915-688-2000	
PHILLIPS		
1. D. T. Thorp	505-397-5595	505-397-1662
2. D. J. Fisher	505-397-5539	505-397-2420
3. P. D. Appel	915-367-1204	915-699-6508
TEXACO		
1. P. W. Minchew	505-393-4031	505-392-5703
2. J. A. Head	505-393-7191	505-392-2961
3. R. S. Pool	505-393-7191	505-392-4642

Fresh Water Wells
Location
Vacuum Field
Lea County, New Mexico 1990

I.D.	WELL DESCRIPTION	APPROXIMATE WELL LOCATION
1.	Texaco VGSAU Supply Well #1	1380' FNL & 1980' FEL Sec02-18S-34E
2.	*Texaco VGSAU Supply Well #2	1120' FNL & 1520' FEL Sec02-18S-34E
3.	*Texaco VGSAU Supply Well #3	1100' FNL & 210' FWL Sec01-18S-34E
4.	Texaco VGSAU Supply Well #4	700' FSL & 1500' FWL Sec02-18S-34E
5.	Texaco CVU Supply Well #1 (redrill)	236' FSL & 325' FWL Sec30-17S-35E
6.	Texaco CVU Supply Well #2	330' FNL & 1980' FWL Sec06-18S-35E
7.	Texaco CVU Supply Well #3	10' FNL & 160' FWL Sec06-18S-35E
8.	Texaco Buckeye Office Well	330' FNL & 1980' FEL Sec01-18S-34E
9.	Texaco Gas Plant Water Well	500' FSL & 1900' FEL Sec36-17S-34E
10.	Buckeye Store Water Well	800' FSL & 300' FEL Sec25-17S-34E
11.	*Forklift Ent. Buckeye Station	940' FNL & 380' FWL Sec30-17S-35E
12.	Ranch Windmill	1980' FNL & 2180' FEL Sec06-18S-35E
13.	Ranch Windmill	200' FNL & 2640' FWL Sec12-18S-34E
14.	N.M. Potash Corp. Well #1	1320' FSL & 1520' FWL Sec36-17S-34E
15.	N.M. Potash Corp. Well #5	660' FSL & 1680' FEL Sec34-17S-34E
16.	*N.M. Potash Corp. Well #6	2400' FNL & 1550' FWL Sec27-17S-34E
17.	N.M. Potash Corp. Well #7	660' FSL & 2180' FWL Sec22-17S-34E
18.	N.M. Potash Corp. Well #8	1320' FSL & 400' FWL Sec31-17S-35E
19.	Amax Water Well	2500' FNL & 1150' FEL Sec28-17S-34E
20.	Western AG Minerals Well #1	660' FSL & 700' FWL Sec21-17S-34E
21.	Western AG Minerals Well #4	1980' FSL & 300' FEL Sec21-17S-34E
22.	Western AG Minerals Well #5	1700' FNL & 2300' FWL Sec22-17S-34E
23.	Western AG Minerals Well #6	2550' FSL & 1220' FWL Sec22-17S-34E
24.	Western AG Minerals Well #7	400' FSL & 2400' FEL Sec21-17S-34E
25.	*Natl. Potash Water Well #7	1650' FSL & 2600' FWL Sec09-18S-35E
26.	*Natl. Potash Water Well #2	550' FSL & 2050' FEL Sec11-18S-34E
27.	Ranch Windmill 'A'	2550' FSL & 1250' FEL Sec15-17S-34E
28.	Western AG Minerals Well #9	200' FNL & 330' FEL Sec22-17S-34E
29.	NVAU #100	2000' FSL & 2100' FEL Sec14-17S-34E
30.	NVAU #101	10' FSL & 330' FWL Sec11-17S-34E
31.	BS #179	700' FSL & 1320' FEL Sec14-17S-34E
32.	BS #94	2550' FNL & 2550' FEL Sec14-17S-34E
33.	Ranch Windmill North	300' FSL & 1600' FEL Sec22-17S-34E
34.	Amax #7	800' FNL & 1850' FEL Sec27-17S-34E
35.	Amax #6	900' FNL & 450' FWL Sec26-17S-34E
36.	Mobil Office Water Well	700' FNL & 2640' FWL Sec25-17S-34E
37.	N.M. Potash Water Well #9	300' FSL & 330' FEL Sec27-17S-34E
38.	*No Name, No Pump	450' FNL & 2250' FEL Sec24-17S-34E
39.	Ranch Windmill 'M'	660' FSL & 2100' FWL Sec07-17S-35E
40.	*No Name, No Pump	600' FSL & 2300' FEL Sec23-17S-34E
41.	*Ranch Windmill	2310' FSL & 760' FWL Sec32-17S-35E
42.	*Ranch Well	2310' FSL & 560' FWL Sec32-17S-35E
43.	*Ranch Well	1090' FNL & 1650' FWL Sec32-17S-34E
44.	*Ranch Well	890' FSL & 990' FWL Sec32-17S-34E

45.	Lee Plant Supply Well #1	75' FSL & 2425' FEL Sec30-17S-35E
46.	*Lee Plant Supply Well #2	75' FSL & 1930' FEL Sec30-17S-35E
47.	Lee Plant Supply Well #3	825' FNL & 2310' FEL Sec31-17S-35E
48.	*Lee Plant Supply Well #4	1280' FNL & 1320' FWL Sec31-17S-35E
49.	*Lee Plant Monitor Well #1	260' FSL & 1668' FEL Sec30-17S-35E
50.	*Lee Plant Monitor Well #2	75' FSL & 1426' FEL Sec30-17S-35E
51.	*Lee Plant Monitor Well #3	79' FNL & 1542' FEL Sec31-17S-35E
52.	*Lee Plant Monitor Well #4	53' FNL & 1647' FEL Sec31-17S-35E
53.	Hale Mable Supply Well #SO-1	150' FSL & 2065' FWL Sec31-16S-35E
54.	Hale Mable Supply Well #SO-2	2240' FSL & 2180' FEL Sec35-17S-34E
55.	*Ranch Windmill	1100' FNL & 1400' FWL Sec33-17S-35E
56.	*Ranch Windmill	450' FSL & 1550' FWL Sec23-17S-35E
57.	EVGSAU Supply Well #2721-SO4	550' FSL & 1850' FWL Sec27-17S-35E
58.	*EVGSAU Supply Well #2941-SO5	1900' FSL & 1900' FWL Sec29-17S-35E
59.	EVGSAU Supply Well #3366-SO6	2100' FNL & 550' FWL Sec33-17S-35E
60.	EVGSAU Supply Well #3202-SO7	600' FSL & 1650' FEL Sec32-17S-35E
61.	EVGSAU Supply Well #2060-SO1	1886' FSL & 2083' FEL Sec20-17S-35E
62.	EVGSAU Supply Well #2865-SO2	1900' FNL & 600' FWL Sec28-17S-35E
63.	*Mobil Supply Well #SO8	300' FNL & 1900' FEL Sec05-18S-35E
64.	*Mobil Supply Well #S09	2300' FNL & 700' FEL Sec24-17S-34E
65.	Ranch Windmill	2300' FNL & 1300' FEL Sec22-17S-35E
66.	*Ranch Windmill	1980' FNL & 660' FEL Sec21-17S-35E
67.	Ranch Windmill	300' FSL & 2100' FWL Sec18-17S-35E
68.	*Water Well	2100' FNL & 660' FWL Sec20-17S-35E
69.	Chevron Doghouse	500' FNL & 660' FWL Sec32-17S-35E
70.	*Exxon Doghouse	500' FNL & 2400' FEL Sec32-17S-35E
71.	Ranch Windmill	2640' FNL & 2640' FWL Sec16-18S-35E
72.	State Observation Well #1	850' FNL & 475' FEL Sec33-17S-35E
73.	State Observation Well #4	860' FSL & 1550' FWL Sec35-17S-35E
74.	State Observation Well #5	1300' FSL & 840' FWL Sec34-17S-35E
75.	SW Public Service Well #26	1950' FSL & 185' FEL Sec34-17S-35E
76.	SW Public Service Well #27	2000' FSL & 2625' FEL Sec34-17S-35E
77.	SW Public Service Well #28	2055' FSL & 100' FEL Sec33-17S-35E
78.	Phillips Monitor Well #2	Unit I Sec33-17S-35E
79.	Phillips Monitor Well #4A	Unit L Sec34-17S-35E

*Inactive Well

ATTACHMENT NO. 2

Fresh Water Wells
Chloride Content
Vacuum Field
Lea County, New Mexico — December, 1989

I.D.	WELL DESCRIPTION	1989 CHLORIDE CONTENT IN PPM 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
1.	Texaco VGSAU Supply Well #1		196	213	270
2.	*Texaco VGSAU Supply Well #2				
3.	*Texaco VGSAU Supply Well #3				
4.	Texaco VGSAU Supply Well #4	320	44	35	36
5.	Texaco CVU Supply Well #1	840	544		404
6.	Texaco CVU Supply Well #2	200	192	99	32
7.	Texaco CVU Supply Well #3	360	114	1598	2000
8.	Texaco Buckeye Office Well	166	122	124	108
9.	Texaco Gas Plant Water Well	400	116	102	112
10.	Buckeye Store Water Well	72	52	38	36
11.	*Forklift Ent. Buckeye Station				
12.	Ranch Windmill	84		34	40
13.	Ranch Windmill	66	36	37	32
14.	N.M. Potash Corp. Well #1	136		101	108
15.	N.M. Potash Corp. Well #5	92	88	78	88
16.	*N.M. Potash Corp. Well #6				
17.	N.M. Potash Corp. Well #7	58	48	55	42
18.	N.M. Potash Corp. Well #8	312	286	277	290
19.	Amax Water Well	120	100	72	
20.	Western AG Minerals Well #1	82	78	62	76
21.	Western AG Minerals Well #4	58	42	37	40
22.	Western AG Minerals Well #5	90		27	88
23.	Western AG Minerals Well #6		48		48
24.	Western AG Minerals Well #7	70			34
25.	*Natl. Potash Water Well #7				
26.	*Natl. Potash Water Well #2				
27.	Ranch Windmill 'A'	40	40	60	80
28.	Western AG Minerals Well #9	66	68	70	110
29.	NVAU #100	164	166	180	230
30.	NVAU #101	144	140	140	180
31.	Bridges State #179	54	44	60	90
32.	Bridges State #94	84	88	85	190
33.	Ranch Windmill North	40	38	40	130
34.	Amax #7	60	58	70	120
35.	Amax #6	60	62	60	90
36.	Mobil Office Water Well	50	50	60	110
37.	N.M. Potash Water Well #9	40	44	49	90
38.	*No Name, No Pump				
39.	Ranch Windmill 'M'	40	36	40	28
40.	*No Name, No Pump				
41.	*Ranch Windmill				
42.	*Ranch Well				
43.	*Ranch Well				
44.	*Ranch Well				

45.	Lee Plant Supply Well #1	62	30	60	60
46.	*Lee Plant Supply Well #2				
47.	Lee Plant Supply Well #3	200	206	168	200
48.	*Lee Plant Supply Well #4				
49.	*Lee Plant Monitor Well #1				
50.	*Lee Plant Monitor Well #2				
51.	*Lee Plant Monitor Well #3				
52.	*Lee Plant Monitor Well #4				
53.	Hale Mable Supply Well #SO-1	44	22	34	34
54.	Hale Mable Supply Well #SO-2	80	47	66	72
55.	*Ranch Windmill				
56.	*Ranch Windmill				
57.	EVGSAU Supply Well #2721-SO4	64	32	60	52
58.	*EVGSAU Supply Well #2941-SO5				
59.	EVGSAU Supply Well #3366-SO6	76	58	64	74
60.	EVGSAU Supply Well #3202-SO7	60	30	64	44
61.	EVGSAU Supply Well #2060-SO1	60	46	44	40
62.	EVGSAU Supply Well #2865-SO2	64	56	60	44
63.	*Mobil Supply Well #SO8				
64.	*Mobil Supply Well #SO9				
65.	Ranch Windmill	44	38	48	
66.	*Ranch Windmill				
67.	Ranch Windmill	42	24		36
68.	*Water Well				
69.	Chevron Doghouse	28	8	20	30
70.	*Exxon Doghouse				
71.	Ranch Windmill	18	20	11	14
72.	State Observation Well #1	57	57		
73.	State Observation Well #4				
74.	State Observation Well #5	71	28		
75.	SW Public Service Well #26	25	26	36	
76.	SW Public Service Well #27	31	31	37	
77.	SW Public Service Well #28	269	184	199	128
78.	Phillips Monitor Well #2	220		1420	753
79.	Phillips Monitor Well #4A	103		142	128

*Inactive Well

Salado Monitor Wells
Vacuum Field Area
Lea County, New Mexico

December, 1989

OPERATOR	WELL NAME	WELL LOCATION	1989 SURFACE PRESSURE IN PSIG 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
ARCO	Cole Darden Hale State #1	660' FNL, 660' FEL 31-17-34	200	400	P&A	-
Mobil	Bridges State #6	1980' FSL, 660' FWL 26-17-34	820	850	855	860
Texaco	Central Vacuum Unit Monitor Well #1	960' FNL, 284' FWL 6-18-35	850	850	P&A	-
	Central Vacuum Unit Well #91	660' FSL, 1980' FWL 36-17-34	940	940	940	875
	State "P" Well #1	1980' FSL, 1980' FEL 7-18-35	0	0	0	0

ATTACHMENT NO. 3

Drilling Activity
Vacuum Field
Lea County, New Mexico

December, 1989

OPERATOR	WELL NAME	WELL LOCATION	1989 RUSTLER LEAK-OFF TEST RESULTS SURFACE PRES(PSI)	BOTTOM HOLE PRES(PSI)	CASING DEPTH(FT)	ACTUAL TEST TO LEAKOFF
ARCO	-	-	-	-	-	
Mobil	State Sec 17 Com No. 3	2034' FSL & 2064' FWL Sec 17-17S-35E	-	-	-	
	State Sec 22 Com No. 1	1980' FSL & 660' FEL Sec 22-17S-35E	-	-	-	
Phillips	M. E. Hale No. 20	1225' FSL & 2000' FWL Sec 35-17S-34E	2000	2842	1610	NO
	M. E. Hale No. 21	1194' FSL & 2040' FEL Sec 35-17S-34E	2000	2810	1547	NO
	M. E. Hale No. 22	650' FSL & 2630' FWL Sec 35-17S-34E	2000	2766	1608	NO
	M. E. Hale No. 23	620' FSL & 1250' FEL Sec 35-17S-34E	2000	2820	1567	NO
	Santa Fe No. 131	1655' FNL & 990' FWL Sec 33-17S-35E	2000	2686	1586	NO
	Santa Fe No. 132	330' FNL & 990' FWL Sec 33-17S-35E	2000	2700	1618	NO
Texaco	New Mexico State 'BA' No. 11	660' FNL & 990' FWL Sec 36-17S-34E	1000	1639	1555	NO
	New Mexico State 'BA' No. 12	990'FNL & 2308' FEL Sec 36-17S-34E	1000	1622	1550	NO
	New Mexico State 'O' No. 29	990' FSL & 2310' FWL Sec 36-17S-34E	1000	1814	1571	NO

ATTACHMENT NO. 4

R-33-E R-34-E R-35-E

T-17-S T-17-S

T-18-S T-18-S

YATES
NORTH VACUUM UNIT

MOBIL
NORTH VACUUM ABO EAST UNIT

MOBIL
BRIDGES STATE

MOBIL
NORTH VACUUM ABO UNIT

TEXACO
NORTH VACUUM ABO WEST UNIT

TEXACO
CENTRAL VACUUM UNIT

PHILLIPS
EAST VACUUM GB/SA UNIT

ARCO
STATE VACUUM UNIT

TEXACO
WEST VACUUM UNIT

TEXACO
VACUUM GB/SA UNIT

PHILLIPS
VACUUM ABO UNIT

HALE-M 1
WINDMILL
NVAU 10
BS 94
NVAU 100
BS 878
WSTERN 8
NO NAME
WSTERN 5
WSTERN 6
WSTERN 4
WSTERN 1
WSTERN 7
NMPC 7
WINDMILL
NO NAME
MOBIL 9
WTR WELL
WINDMILL
WINDMILL
EVGSAU 1
WINDMILL
AMAX 7
AMAX 8
AMAX
NMPC 6
MOBIL OP
FORKLIFT
EVGSAU 2
EVGSAU 5
EVGSAU 4
NMPC 5
BUCKEYE
TX CVU 1
LEE 3
LEE 4
CHEVRON
EXXON
WINDMILL
EVGSAU 6
RANCH WL
RANCH WL
HALE-M 2
NMPC 1
NMPC 8
TX PLANT
TX OFFICE
TX CVU 2
RANCH WL
EVGSAU 7
MOBIL 8
SW 3
SW 4
SPS 27
SPS 28
NMPC
VGSAU 1
VGSAU 3
WINDMILL
VGSAU 4
WINDMILL
NATL P 2
NATL P 7
WINDMILL

VACUUM FIELD
WATERFLOW COMMITTEE
LEA COUNTY, NEW MEXICO

FRESH WATER WELL LOCATIONS

SCALE 1 INCH = 4000'

KEY
ACTIVE
INACTIVE

ATTACHMENT NO. 6

1990

VACUUM FIELD WATERFLOW
MANAGEMENT COMMITTEE

ARCO Oil & Gas Company
Mr. H. W. Johnson
P. O. Box 1610
Midland, Texas 79702

Mobil Producing Texas and New Mexico
Mr. Guy Miller
P. O. Box 633
Midland, Texas 79702

Phillips Petroleum Company
Mr. Bill Mueller
4001 Penbrook
Odessa, Texas 79762

Texaco, Inc.
Mr. James Head
P. O. Box 730
Hobbs, New Mexico 88240

ATTACHMENT NO. 7

1990

VACUUM FIELD WATERFLOW
TECHNICAL COMMITTEE

ARCO Oil and Gas Company
Mr. David Newell
P. O. Box 1610
Midland, Texas 79702

Mobil Producing Texas and New Mexico
Ms. Donna G. Elwood
P. O. Box 633
Midland, Texas 79702

Mobil Exploration and Producing U.S.
Mr. Mark Moshell
P. O. Box 633
Midland, Texas 79702

Phillips Petroleum Company
Ms. Susan Courtright
4001 Penbrook
Odessa, Texas 79762

Texaco Inc.
Mr. Russell Pool
P. O. Box 730
Hobbs, New Mexico 88240

Texaco Inc.
Mr. David Demel
P. O. Box 730
Hobbs, New Mexico 88240

Texaco Inc.
HRC (Brian Park)
Mr. George Kokolis
P. O. Box 770070
Houston, Texas 77215-0070

ATTACHMENT NO. 8

1990

VACUUM FIELD WATERFLOW
GEOLOGICAL-GEOPHYSICAL COMMITTEE

ARCO Oil and Gas Company
Mr. Tim Verseput
P. O. Box 1610
Midland, Texas 79702

Mobil Producing Texas and New Mexico
Mr. Dan Burnham
P. O. Box 633
Midland, Texas 79702

Phillips Petroleum Company
Mr. David White
4001 Penbrook
Odessa, Texas 79762

Texaco Inc.
Ms. Julie Gibbs
P. O. Box 3109
Midland, Texas 79702