1R - 160

REPORTS

DATE:

1/9/1978

APPENDIX

LOCATION PLAT AND USGS TOPO MAP

RESULTS OF SURVEY

GENERAL STATISTICS OF SURVEY

WELL NUMBERING SYSTEM

DAILY FIELD REPORTS

WATER ANALYSIS

DRILLERS LOGS

MAPS --------Water Contamination Map
Post Mesozic - Triassic Redbed Map
Water Level Map

PAUL HAMILTON WATER CONTAMINATION STUDY

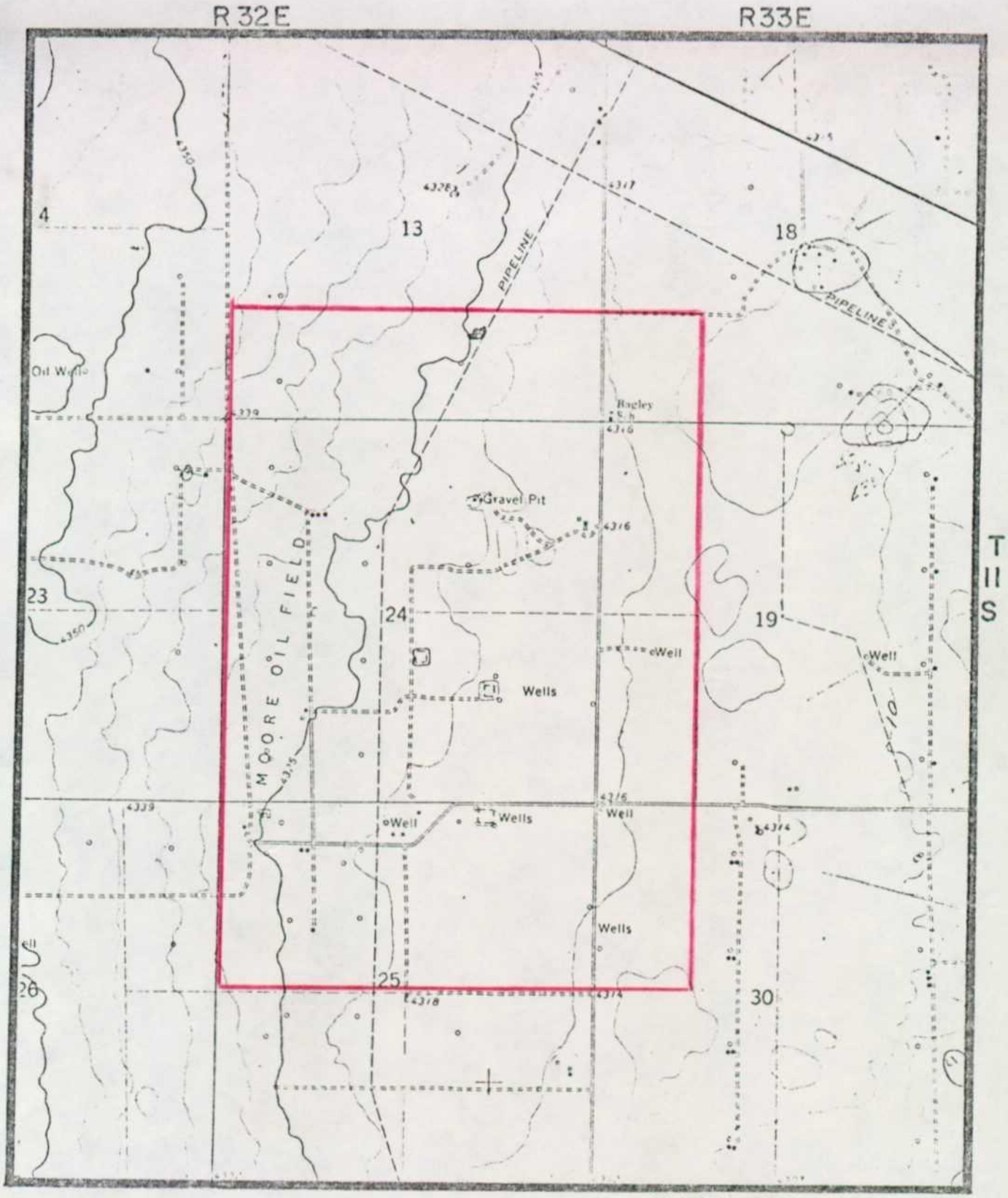
MOORE DEVONIAN POOL

NEW MEXICO OIL CONSERVATION COMMISSION

Box 1980
Hobbs, New Mexico 88240

John W. Runyan, Geologist
NMOCC in cooperation with
The State Engineers, Roswell, NM

January 9, 1978



U.S.G.S TOPO. MAP

PAUL HAMILTON WATER
CONTAMINATION STUDY

— Area of study.

PAUL HAMILTON WATER CONTAMINATION STUDY

Mr. Paul Hamilton first called this office in August, 1977, and talked with the District Supervisor about the apparent water contamination of two of his water wells.

A casing leak survey was run in the Moore-Devonian Pool on September 20 and 21, 1977, by a Commission Field Inspector. The survey covered all wells in the Moore Pool; eight Texaco wells, two Samedan wells and five Amerada Hess wells. No casing leaks were found in the fifteen wells tested. A tracer survey, "injection profile" was run on Texaco SWD Well #3 on December 12, 1977, and the log shows that all injected water is going into the disposal zone at this time.

Water test well drilling was begun on November 2, 1977, and was completed on December 30, 1977, with a total of 13 test wells being drilled. All test well locations were selected on the basis of the following information: Redbed map, surface topographical map, direction of water movement in area, chloride analysis on existing water wells in area, and on the chloride analysis of water from the test wells as they were drilled.

A representative from the State Engineer's office and Oil Conservation Commission personnel were present at the drilling of the test wells, and they jointly selected the locations. The chloride analysis was done in the field by Commission personnel. The State Engineers furnished the water analysis on existing water wells in the area, as well as the Redbed and water level maps. The Commission furnished the chloride map.

The results/information obtained are shown on the maps in this report, as well as field notes and water analysis enclosed.

The results of test well information indicates that the chloride contamination on the Paul Hamilton Farm began at Texaco's SWD Well #3, located in Unit D, of Section 24, Township 11 South, Range 32 East. The chloride map shows test well #12 (closest to SWD #2) has a chloride content of 11,615 ppm, while test well #8 has a higher chloride content of 19,170 ppm, indicating the well is not leaking now and that a chloride slug is moving east and southeast away from the SWD well. The contamination has moved through the Ogallala formation into Section 25 an approximate distance of one mile. The front of the contamination is approximately 3/4 of a mile wide and extends into Section 25, T11S, R32E, and Section 19 and 30, T11S, R33E.

Respectfully submitted,

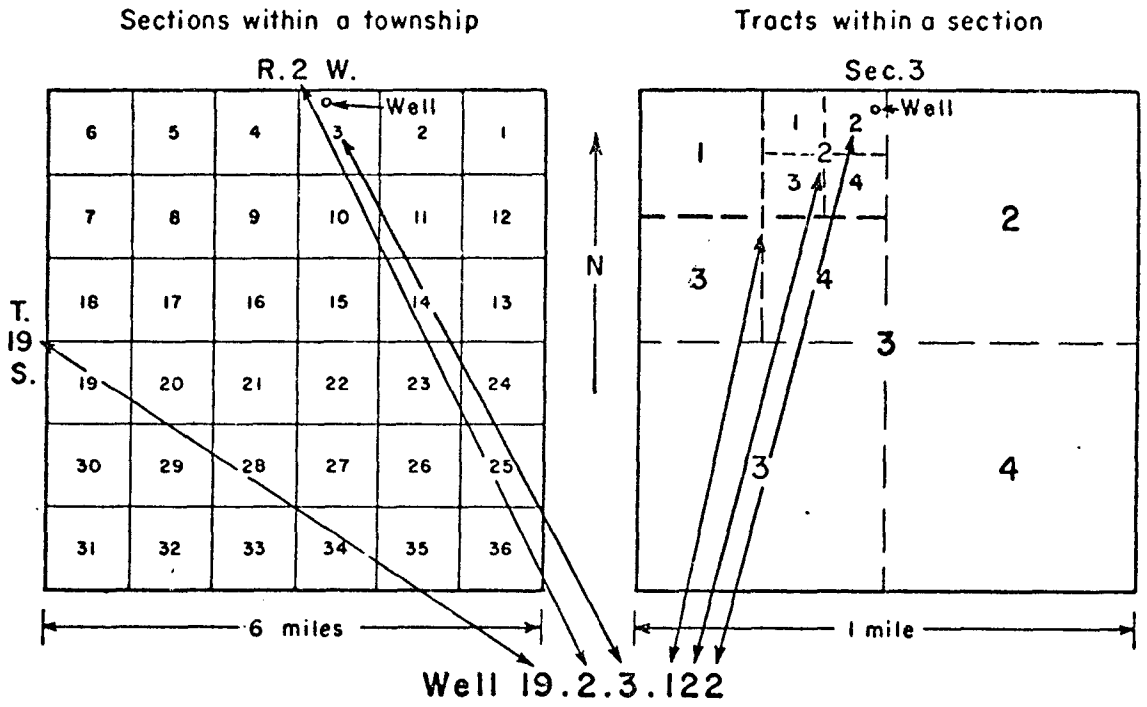
John W. Runyan

John W. Runyan
Geologist
New Mexico Oil Conservation Commission
Hobbs, New Mexico
January 9, 1978

HAMILTON WATER CONTAMINATION STUDY

Chloride analysis on water wells in area of Hamilton Study, by State Engineers November--December 1977

Caprock Club	11.33.18.33333	32 ppm Cl
Unknown	11.32.25.41111	68 ppm Cl
Unknown	11.32.25.44444	42 ppm Cl
Hamilton	11.32.24.411333	258 ppm Cl
Hilborn	11.33.30.11111	120 ppm Cl
Manly	11.32.24.333212	60 ppm Cl
Unknown	11.32.24.242212	70 ppm Cl
Moore #1	11.32.25.112132	510 ppm Cl
Moore #2	11.32.25.111242	530 ppm Cl
Texaco (WW)	11.32.25.1222311	50 ppm Cl
Hamilton	11.32.25.212122	150 ppm Cl
Hamilton	11.32.24.412224	1286 ppm Cl
Hamilton	11.32.24.42444	693 ppm Cl
Graham	11.33.18.41143	80 ppm Cl



.-- System of numbering wells in New Mexico.

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 11-3-77 Miles 141

Time of Departure 9:30a.m. Time of Return 3:45 p.m.

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

John W. Runyan

INSPECTION	OPERATION	FACILITY	HOURS	QUARTER HOURS
W	0	0	6	1

Went to Moore Devonian Pool, Sec. 24,T11S,R32E, to run water samples and to witness the re-entry of old water well. Hamilton water contamination study.

Drilling water sample (50 ml sample = 71.0 x 1.9) 134.9 ppm chlorides

Test well #1 location 11.32.24.11222
chlorides = 134.9 ppm (50 ml sample = 71.0 x 1.9)

Test Well #2
Re-entry of old water well located due south of Texaco's SWD Well #2
Chlorides = (5 ml sample = 710.0 x 1.3) = 923.0 ppm *
Sample diluted with drilling water, should be much higher in chlorides.

not all Chlorides values match those on chloride map for the - resection test well

TYPE INSPECTION PERFORMED

H = Housekeeping
W = Water Contamination
D = Drilling Operation
T = Well Test
P = Plugging
C = Plugging Cleanup
M = Mishap or Spill
O = Other

NATURE OF LEASE OR OPERATION INSPECTED

I = Injection
S = SWD
U = Underground Storage
O = Other

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
S = SWD
U. = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 11-28-77 Miles --

Time of Departure 1:00 p.m. Time of Return 7 p.m.

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

John W. Runyan

INSPECTION	OPERATION	FACILITY	HOURS	QUARTER HOURS
W	O	O	6	-

Went to Moore Devonian Pool in Sec. 24, T11S,R32E, to witness the drilling of water test wells to determine source of salt water contamination under Mr. Hamilton's land.

Test Well #4
Triassic red bed top 105'
TD 112' Chlorides = 355 ppm
(25 ml sample = 142.0 x 2.5)

Driller had to rig up 2" casing with 1" tubing in order to get water samples from test holes. Holes cave in immediately on completion.

Rode with Eddy Seay, teaching Eddy to take water samples from test wells and to analyze the samples in the field.

TYPE INSPECTION PERFORMED

H = Housekeeping
W = Water Contamination
D = Drilling Operation
T = Well Test
P = Plugging
C = Plugging Cleanup
M = Mishap or Spill
O = Other

NATURE OF LEASE OR OPERATION INSPECTED

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S = SWD
U = Underground Storage
O = Other

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
S = SWD
U. = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 11-29-77 Miles --

Time of Departure 8 a.m. Time of Return 6:15 p.m.

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited, and any action taken.

John W. Runyan

INSPECTION	OPERATION	FACILITY	HOURS	QUARTER HOURS
W	0	0	10	1

Went to Moore Devonian Pool, sec. 24, T11S, R32E, with Eddy Seay, to witness the drilling of water test well, to determine source of contamination on Mr. Hamilton's land.

Test Well #5
Triassic red bed top 116'
TD 120' Chlorides 225 ppm
(25 ml sample = 142.0 x 1.5)

Mr. Jim Wright with State Engineers, Roswell, was also present.

TYPE INSPECTION PERFORMED

H = Housekeeping
W = Water Contamination
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T = Well Test
P = Plugging
C = Plugging Cleanup
M = Mishap or Spill
O = Other

NATURE OF LEASE OR OPERATION INSPECTED

I = Injection
S = SWD
U = Underground Storage
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NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
S = SWD
U. = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 11-30-77 Miles --

Time of Departure 8 a.m. Time of Return 6 p.m.

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

John W. Runyan

INSPECTION	OPERATION	FACILITY	HOURS	QUARTER HOURS	
W	O	O	10	--	Went to Moore Devonian Pool, Sec.24,T11S,R32E, with Eddy Seay, to witness the drilling of water test well, to determine source of water contamination on Mr. Hamilton's land. Test Well #6 Top triassic red beds 120' TD 123' Chlorides = 539.6 ppm (25 ml sample = 142 x 4.8) Mr. Jim Wright with the State Engineers was also present.

TYPE INSPECTION PERFORMED

H = Housekeeping
W = Water Contamination
D = Drilling Operation
T = Well Test
P = Plugging
C = Plugging Cleanup
M = Mishap or Spill
O = Other

NATURE OF LEASE OR OPERATION INSPECTED

I = Injection
S = SWD
U = Underground Storage
O = Other

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
S = SWD
U. = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 12-1-77 Miles -- District I

Time of Departure 8 a.m. Time of Return 6:45 Car No. ____

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature John W. Runyan

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	O	O	10	3

Went to Moore Devonian Pool, Section 24, T11S, R32E, with Eddie Seay to witness drilling of water test wells on Hamilton water contamination study.

Test well #6 -- tried to circulate out water sample after letting well set all night. Well had caved in -- no water in hole.

Test Well #7 -- Top Triassic redbeds 115'
TD 118'
Chlorides 197.6 ppm

The use of casing and tubing in hole is the only way we can get water samples. The holes fall in as soon as drilling is completed.

Test well #6 location 11.32.24.233313
Test well #7 location 11.32.24.141323

TYPE INSPECTION PERFORMED

H = Housekeeping
W = Water Contamination
D = Drilling Operation
T = Well Test
P = Plugging
C = Plugging Cleanup
M = Mishap or Spill
O = Other

INSPECTION CLASSIFICATION

U = Underground Injection Control - Any inspection of or related to injection project, facility, or well or resulting from injection into any well. (SWD, 2ndry injection and production wells, water flows or pressure tests, surface injection equipment, plugging, etc.)

O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
S = SWD
U = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

File Copy

Name EDDIE SEAY Date 12-1-77 Miles 229 District I

Time of Departure 7 a.m. Time of Return 4 p.m. Car No. 331

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature Eddie Seay

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	0	0	9	-

To west Tatum to re-enter Test Well #6 to try and catch sample.
No water. Rigged down and drilled test well #7 in 23-11-32.
Top Redbed 115 feet
TD 118 feet
Sample 156.2 ppm

Mr. Paul Hamilton Farm

TYPE INSPECTION PERFORMED

H = Housekeeping
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C = Plugging Cleanup
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INSPECTION CLASSIFICATION

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O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
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U = Underground Storage
P = Production
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NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 12-2-77 Miles 145 District I

Time of Departure 7:00 a.m. Time of Return 7:15 p.m. Car No. 4972

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature John W. Runyan

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	O	O	12	1

Went to the Moore Devonian Pool in Section 24, T11S, R32E, to witness the drilling of water test wells on Hamilton water contamination study.

Test Well #8
Top Triassic redbed at 117'
T.D. 120' no cretaceous present
Sample #1 Chlorides 15,308 ppm
Sample #2 Chlorides 19,170 ppm

We have found main stream of contamination 783' due east of Texaco's SWD Well #2 and 690' due south of fence. Also took sample of injected water.

Re-ran sample #2 (in office) -- 19,170 ppm
Injection water = 26,980 ppm

Also ran water sample from Agua, Inc. SWD well #C-2 in Sec. 22,T22S,R37E, Chlorides = 53,960 ppm.

TYPE INSPECTION PERFORMED
H = Housekeeping
W = Water Contamination
D = Drilling Operation
T = Well Test
P = Plugging
C = Plugging Cleanup
M = Mishap or Spill
O = Other

INSPECTION CLASSIFICATION
U = Underground Injection Control - Any inspection of or related to injection project, facility, or well or resulting from injection into any well. (SWD, 2ndry injection and production wells, water flows or pressure tests, surface injection equipment, plugging, etc.)
O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED
I = Injection
S = SWD
U = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Name EDDIE SEAY Date 12-5-77 Miles 231 District 1

Time of Departure 7 a.m. Time of Return 4 p.m. Car No. 331

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature Eddie Seay

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	0	0	9	-

To West Tatum to drill and run chloride sample of test water well #9 in 23-11-32.
Top of red bed 128 ft
TD 130 ft
Circulated sample -- 170.2 ppm
TD sample -- 85.2 ppm

Run chloride sample of irrigation well at house -- 156.2 ppm

Run chloride sample of irrigation well south of test well #3 -- 1150.2 ppm

TYPE INSPECTION PERFORMED

H = Housekeeping
W = Water Contamination
D = Drilling Operation
T = Well Test
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C = Plugging Cleanup
M = Mishap or Spill
O = Other

INSPECTION CLASSIFICATION

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O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
S = SWD
U = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name EDDIE SEAY Date 12-6-77 Miles 231 District I

Time of Departure 7 a.m. Time of Return 4 p.m. Car No. 331

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature Eddie Seay

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	0	0	9	-

To west Tatum to drill test well #10 in 23-11-32
Drilled to top of red bed 117 ft
TD. 120 feet
Circulated sample -- 12780 ppm
final sample -- 14555 ppm
High contamination area

TYPE INSPECTION PERFORMED

H = Housekeeping
W = Water Contamination
D = Drilling Operation
T = Well Test
P = Plugging
C = Plugging Cleanup
M = Mishap or Spill
O = Other

INSPECTION CLASSIFICATION

U = Underground Injection Control - Any inspection of or related to injection project, facility, or well or resulting from injection into any well. (SWD, 2ndry injection and production wells, water flows or pressure tests, surface injection equipment, plugging, etc.)

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NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
S = SWD
U = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name EDDIE SEAY Date 12-7-77 Miles 244 District I

Time of Departure 7 a.m. Time of Return 4 p.m. Car No. 331

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature Eddie Seay

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	O	O	9	-

To west Tatum to drill and run chloride test on water test well #11 in 23-11-32 located 150 feet east of Amerada Well #1 C.W. Robinson

Top of red bed -- 118 feet
TD -- 120 feet
Sample -- 142 ppm

TYPE INSPECTION PERFORMED

H = Housekeeping
W = Water Contamination
D = Drilling Operation
T = Well Test
P = Plugging
C = Plugging Cleanup
M = Mishap or Spill
O = Other

INSPECTION CLASSIFICATION

U = Underground Injection Control - Any inspection of or related to injection project, facility, or well or resulting from injection into any well. (SWD, 2ndry injection and production wells, water flows or pressure tests, surface injection equipment, plugging, etc.)

O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
S = SWD
U = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 12-28-77 Miles 144 District I

Time of Departure 8 a.m. Time of Return 4 p.m. Car No. 4972

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature John W. Runyan

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	O	O	8	O

Went to Moore Devonian Pool in Section 24, T11S, R32E, to witness the drilling of water test well #12 in Hamilton Water Contamination study.

Water well driller, Mr. Elmer Sumruld, was late in getting his equipment up to Moore Pool from Lovington.
We only drilled first 60' of test well #12 due to late start.

Well #12 is located 240' east and 15' north of true line from Texaco SWD well #2.

TYPE INSPECTION PERFORMED

H = Housekeeping
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M = Mishap or Spill
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INSPECTION CLASSIFICATION

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O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
S = SWD
U = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 12-29-77 Miles 138 District I

Time of Departure 8 a.m. Time of Return 3:45 p.m. Car No. 4972

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature John W. Runyan

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	O	O	7	3

Went to Moore Devonian Pool in Section 24, T11S, R32E, to witness the drilling of water test well #12 in Hamilton Water Contamination Study.

Completed water test well #12
Top redbed 107'
TD 110'
Chlorides 11,615 ppm
No cretaceous encountered in the above test well.

Will drill test well #13 tomorrow.

TYPE INSPECTION PERFORMED

H = Housekeeping
W = Water Contamination
D = Drilling Operation
T = Well Test
P = Plugging
C = Plugging Cleanup
M = Mishap or Spill
O = Other

INSPECTION CLASSIFICATION

U = Underground Injection Control - Any inspection of or related to injection project, facility, or well or resulting from injection into any well. (SWD, 2ndry injection and production wells, water flows or pressure tests, surface injection equipment, plugging, etc.)

O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
S = SWD
U = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 12-30-77 Miles 135 District I

Time of Departure 7:30 a.m. Time of Return 3:45 p.m. Car No. 4972

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature John W. Runyan

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	0	0	7	1

Went to Moore Devonian Pool in Section 24, T11S, R32E, to witness the drilling of water test well #13 in Hamilton Water contamination Study.

Completed water test well #13
Top cretaceous washin 137'
Tod redbed 166'
TD 170'

Blew test hole for 30 minutes
Chlorides 71.0 ppm.

This completes the water test well drilling on the Hamilton water contamination study. The information obtained from the 13 test wells drilled strongly indicates that Texaco's SWD Well #2 is the cause of the water contamination problem on the Paul Hamilton Farm.

Mr. Moore asked that we drill 4 test wells at his house to see if we can find the source of his water contamination problem. Will start Wednesday Jan. 4, 1978.

TYPE INSPECTION PERFORMED

H = Housekeeping
W = Water Contamination
D = Drilling Operation
T = Well Test
P = Plugging
C = Plugging Cleanup
M = Mishap or Spill
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INSPECTION CLASSIFICATION

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O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

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NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. _____

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit B, Section 25, T 11 S - R 32 E 11.32.25.2121122

Drilling water from irrigation well -- tank

Type Well: Irrigation Depth: _____ feet.

Well Use: Farming

Sample Number: #1 Date Taken: 11-3-77

Specific Conductance: _____ m/ɾ

Total dissolved Solids: _____ PPM.

Chlorides: 134.9 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 11-3-77 By: John W. Runyan
N.M.O.C.C.

Remarks: _____

50 ml sample = 71.0 x 1.9 = 134.9

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. _____

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit B, Section 25, T 11 S - R 32 E 11.32.25.2121122

Drilling water from irrigation tank

Type Well: Irrigation Depth: _____ feet.

Well Use: Farming

Sample Number: #2 Date Taken: 12-5-77

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 156.2 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 12-5-77 By: N.M.O.C.C. Eddie Seay

Remarks:

25 ml sample = 142.0 x 1.1 = 156.2 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. _____

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit I, Section 24, T 11 S - R 32 E 11.32.24.412224

Type Well: Irrigation well Depth: ____ feet.

Well Use: Farming

Sample Number: #2 * Date Taken: 12-5-77 (Eddie Seay)

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 1150.2 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 12-5-77 By: _____
N.M.O.C.C. Eddie Seay

Remarks:

5 ml sample = 142.0 x 8.1 = 1150.2 ppm

* State Engineers had sampled this well at 1286 ppm in November 1977

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: TEXACO INC. Well No. _____

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit M, Section 13, T 11 S - R 32 E Lea County

Sample taken from injection pump

Type Wakk: Battery storage Depth: _____ feet.

Wakk Use: Injection water - SWD

Sample Number: #1 Date Taken: 12-2-77 (JWR)

Specific Conductance: _____ m/ɾ

Total dissolved Solids: _____ PPM.

Chlorides: 26,980 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 12-2-77 By: _____
N.M.O.C.C. John W. Runyan

Remarks: _____

5 ml sample = 710.0 x 38.0 = 26,980

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #1

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit D, Section 24, T 11 S - R 32 E 11.32.24.111222

Type Well: Water test well Depth: 128 feet.

Well Use:

Sample Number: #1 Date Taken: 11-3-77

Specific Conductance: m/

Total dissolved Solids: PPM.

Chlorides: 134.9 PPM.

Sulfates: PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

:

Date Analized: 11-3-77 By:

N.M.O.C.C. John W. Runayn

Remarks:

(50 ml sample = 71.0 x 1.9)

Note: State Engineers got 130 ppm when they sampled TW #1

Top Redbed 126 feet, TD 128 feet

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #2

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit D, Section 24, T 11 S - R 32 E 11.32.24.11322

Re-entry into existing well

Type Well: Water test well Depth: 107 feet.

Well Use:

Sample Number: #1 -- OCC Date Taken: 11-3-77

Specific Conductance: _____ m/n

Total dissolved Solids: _____ PPM.

Chlorides: 923.0 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 11-3-77 By: N.M.O.C.C. John W. Runyan

Remarks:

5 ml sample = 710.0 x 1.3 = 923.0

Sample diluted with drilling water

An earlier sample taken by State Engineers was 1040 ppm Cl

Top Redbed ?== TD 107 feet

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #3

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit F, Section 24, T 11 S - R 32 E 11.32.24.1423132

Type Well: Water test well Depth: 109 feet.

Well Use:

Sample Number: #1 Date Taken: 11-4-77

State Engineers

Specific Conductance: m/

Total dissolved Solids: PPM.

Chlorides: 355 PPM.

Sulfates: PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

:

Date Analized: By: STATE ENGINEERS
N.M.O.C.C.

Remarks:

Sample on this well was not run by NMOCC, State Engineers took sample and analyzed same. JWR.

Top Redbed 107' TD 109'

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #4

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit L, Section 24, T 11 S - R 32 E 11 32 24 134444

Type Well: Water test well Depth: 107 feet.

Well Use:

Sample Number: #1 Date Taken: 11-28-77 JWR

Specific Conductance: _____ m/ɔ

Total dissolved Solids: _____ PPM.

Chlorides: 85.2 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 11-28-77 By: N.M.O.C.C. Eddie Seay

Remarks:

25 ml sample = 142.0 x .6 = 85.2 ppm

Top Redbed = 101 feet TD 107 feet

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: Hamilton Well No. TW #5

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit B, Section 24, T 11 S - R 32 E 11.32.24.213331

Type Well: Water Test Well Depth: 120 feet.

Well Use:

Sample Number: #1 Date Taken: 11-29-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 440 * PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 11-29-77 By: N.M.O.C.C. Eddie Seay

Remarks:

Note: The above chloride value is no good -- circulation sample -- well collapsed before a good sample could be obtained.

Top Redbed 116' TD 120'

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #6

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit G, Section 24, T 11 S - R 32 E 11.32.24.233313

Type Well: Water test well Depth: 123 feet.

Well Use:

Sample Number: #1 Date Taken: 11-30-77 JWR

Specific Conductance: _____ m/ɔ

Total dissolved Solids: _____ PPM.

Chlorides: 539.6 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 11-20-77 By: N.M.O.C.C. Eddie Seay

Remarks:

25 ml sample = 142.0 x 4.8 = 539.6 ppm

Top Redbed 120 feet TD 123 feet

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #7

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit F, Section 24, T 11 S - R 32 E 11.32.24.141323

Type Well: Water Test Well Depth: 118 feet.

Well Use:

Sample Number: #1 Date Taken: 12-1-77 JWR

Specific Conductance: _____ m/n

Total dissolved Solids: _____ PPM.

Chlorides: 197.6 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 12-1-77 By: N.M.O.C.C. Eddie Seay

Remarks:
25 ml sample = 142.0 x 1.4 = 197.6 ppm)

Top Red Bed 115' TD 118'

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #8

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit C, Section 24, T 11 S - R 32 E 11.32.24.123212

Type Well: Water Test Well Depth: 117 feet.

Well Use:

Sample Number: #2 Date Taken: 12-2-77 JWR

Specific Conductance: _____ m/ℓ

Total dissolved Solids: _____ PPM.

Chlorides: 19,170 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 12-3-77 By: N.M.O.C.C. John W. Runyan

Remarks:

5 ml Sample = 710.0 x 27.0 = 19,170 ppm

Note: Sample #1 was taken before well had stabilized = 15,307 ppm

Top Red Bed 117' TD 120'

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #9

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit B, Section 24, T 11 S - R 32 E 11.32.24.213421

Type Well: Water test well Depth: 130 feet.

Well Use:

Sample Number: #1 Date Taken: 12-5-77 Eddie Seay

Specific Conductance: _____ m/ɔ.

Total dissolved Solids: _____ PPM.

Chlorides: 85.2 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 12-5-77 By: N.M.O.C.C. Eddie Seay

Remarks:

25 ml sample = 142 x .6 = 85.2 ppm

Top Redbed 128' TD 130 feet

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #10

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit F, Section 24, T 11 S - R 32 E 11.32.24.14221

Type Well: Water Test well Depth: 120 feet.

Well Use:

Sample Number: #1 Date Taken: 12-6-77 Eddie Seay

Specific Conductance: _____ m/ɾ

Total dissolved Solids: _____ PPM.

Chlorides: 14,555 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 12-6-77 By: N.M.O.C.C. Eddie Seay

Remarks:

5 ml Sample = 710.0 x 20.5 = 14,555

Top Redbed 117' TD 120'

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #11

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit A, Section 23, T 11 S - R 32 E 11.32.23.224211

Type Well: Water test well Depth: 120 feet.

Well Use:

Sample Number: Date Taken: 12-7-77 Eddie Seay

Specific Conductance: m/ohm

Total dissolved Solids: PPM.

Chlorides: 142.0 PPM.

Sulfates: PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

:

Date Analized: 12-7-77 By: N.M.O.C.C. Eddie Seay

Remarks:

25 ml sample =142.0 x 1.0 = 142.0 ppm

Top Redbed 118' TD 120'

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #12

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit D, Section 24, T 11 S - R 32 E 11.32.24.112344

Type Well: Water Test Well Depth: 110 feet.

Well Use:

Sample Number: #1 Date Taken: 12-29-77 JWR

Specific Conductance: _____ m/ohm

Total dissolved Solids: _____ PPM.

Chlorides: 11,615 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 12-29-77 By: N.M.O.C.C. John W. Runyan

Remarks:

Top Redbed 107

5 ml sample = 710.0 factor 16.4 = 11,615 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: HAMILTON Well No. TW #13

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit D, Section 24, T 11 S - R 32 E 11.32.24.112212

Type Well: Water test well Depth: (170) 120 feet.

Well Use:

Sample Number: #1 Date Taken: 12-30-77 JWR

Specific Conductance: _____ m/ℓ

Total dissolved Solids: _____ PPM.

Chlorides: 71.0 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 12-30-77 By: N.M.O.C.C. John W. Runyan

Remarks:

Top cretaceous washin 137 feet

Top Redbed 166 feet

25 ml sample = 142 x .05 = 71.0 ppm

Paul Hamilton Water Study

Hole # 5

0	21	caliche
21	73	tight sand
73	111	sand W/sandstone
111	116	clay & gravel
116	120	red clay

Hole # 6

0	1	surface
1	19	caliche
19	32	sand
32	78	tight sand
78	82	sandstone
82	93	sand & gravel
93	112	yellow clay,sandy clay & gravel
112	122	various colors of sandy clay
122	125	red clay

Hole # 7

0	2	surface
2	20	caliche
20	80	sand,sandstone, sandy clay
80	91	sand
91	107	yellow clay W/sandstone stringers
107	115	red,grey,blue sandy clay
115	118	red clay

Hole # 8

0	1	surface
1	23	caliche
23	78	sand & sandstone layers
78	96	sand
96	110	sand & gravel
110	117	colored gravel
117	120	red bed clay

Hole # 9

0	26	caliche
26	70	sand,sandstone,sandy clay
70	111	sand,sand & gravel
111	122	colored gravel
122	128	grey clay & gravel
128	130	red clay

Hole # 10

0	1	surface
1	23	caliche
23	76	sand & sandstone layers
76	113	sand, sand& gravel W/sandy clay
113	117	colored gravel W/clay stringers
117	120	red clay

Hole # 11

0	3	surface
3	24	caliche
24	67	sandstone & sand
67	72	sand
72	109	sand & gravel
109	111	colored gravel
111	118	grey sandy clay
118	120	red clay

SUMRULD DRILLING SERVICE
606 West Avenue I
LOVINGTON, NEW MEXICO 88260

Paul Hamilton Water Study

Hole # 1

0 - 1 surface soil
1 - 21 caliche
21 - 80 sand, sandstone, sandy clay layers
80 - 92 sand
92 - 117 sandy clay
117 - 119 gravel
119 - 126 grey & white sandy clay
126 - 128 red bed

2

Open old water well-(33 - 105) drill 2 ft. clay

3

0 - 1 surface
1 - 20 caliche
20 - 64 sand & sandstone
64 - 77 sandstone with stringers of sandy clay
77 - 99 sand
99 - 101 gravel
101 - 107 yellow clay, grey clay
107 - 109 red bed

4

0 - 2 surface
2 - 29 caliche
29 - 70 sand & sandstone
70 - 78 sand
78 - 92 sandstone with layers of sandy clay
92 - 101 sandy clay with stringers of sandstone and a few gravel.
101 - 107 red bed

SUMRULD DRILLING SERVICE
606 West Avenue I
LOVINGTON, NEW MEXICO 88260

R 32 E

R 33 E

T 11 S

14 | 13 | 18

23 | 24 | 19

26 | 25 | 30

Amerada 2

Amerada 3

Amerada 1

Texaco 5

Pit

TEXACO SWD 1

P.S.A.

Texas Gulf 1

Tip 1

33333 WW 32

TW 1 130

TW 13 71.0

Texaco SWD 3

TW 12 11,615

TW 8 19,170

TW 2 11322 Cl. = 10340

TW 11 142

TW 9 85

TW 5 *

TW 10 14,555

24222 WW 70

ABD Pit

TW 7 198

TW 3 355

Amerada 2

Texaco 2

Texaco 1

Penrose

TW 6 539

TW 4 85

WW 412224 Cl. = 1286

McClellan 1

McClellan 1Y

Texaco 2

Texaco 2

WW 411333 Cl. = 258

Beal 1

WW 42444 Cl. = 693

333212 WW 60

Amerada 1 B

Texaco 1

Boren 1

WW 111242 530

WW 112132 510

Texaco 3

WW 211113 184

WW 212122 Cl. = 124

122231 WW 50

WW 111111 120

Texaco 1

Texaco 1

Texaco 1

ABD Pit

Texaco 2

Magnolia

Roberts 1

WW 24222 Cl. = 86

Samadan 1

Samadan 2

Ring 1

Roberts 1

WW 41111 68

Texaco 3

Texaco 2

Texaco 1

Roberts 1

Texaco SWD P.S.A.

Roberts 1

44444 WW 42

a good water sample could not be obtained from this well

152

100

TW 1 130

TW 13 71.0

TW 12 11,615

TW 8 19,170

TW 2 11322 Cl. = 10340

TW 11 142

TW 9 85

TW 5 *

TW 10 14,555

TW 7 198

TW 3 355

TW 6 539

TW 4 85

WW 412224 Cl. = 1286

WW 411333 Cl. = 258

WW 42444 Cl. = 693

WW 212122 Cl. = 124

WW 24222 Cl. = 86

18000 16000 14000 12000 10000 8000 6000 4000 2000 1000 500 200 100

PAUL HAMILTON WATER CONTAMINATION STUDY

MOORE DEVONIAN POOL

MAP SCALE: 1 inch = 500 feet

LEGEND:

- △ — WATER TEST WELL.
- ◎ — WATER WELL.
- ▭ — HOUSE.
- ● — OIL WELL.
- ⌀ — TEMP. ABD. OIL WELL.
- ⊹ — P&A OIL WELL.
- ⬡ — SWD WELL.
- ⊕ — P&A SWD WELL.
- — OPEN BATTERY PIT.
- — ABD. (COVERED) BATT. PIT.

CHLORIDE MAP

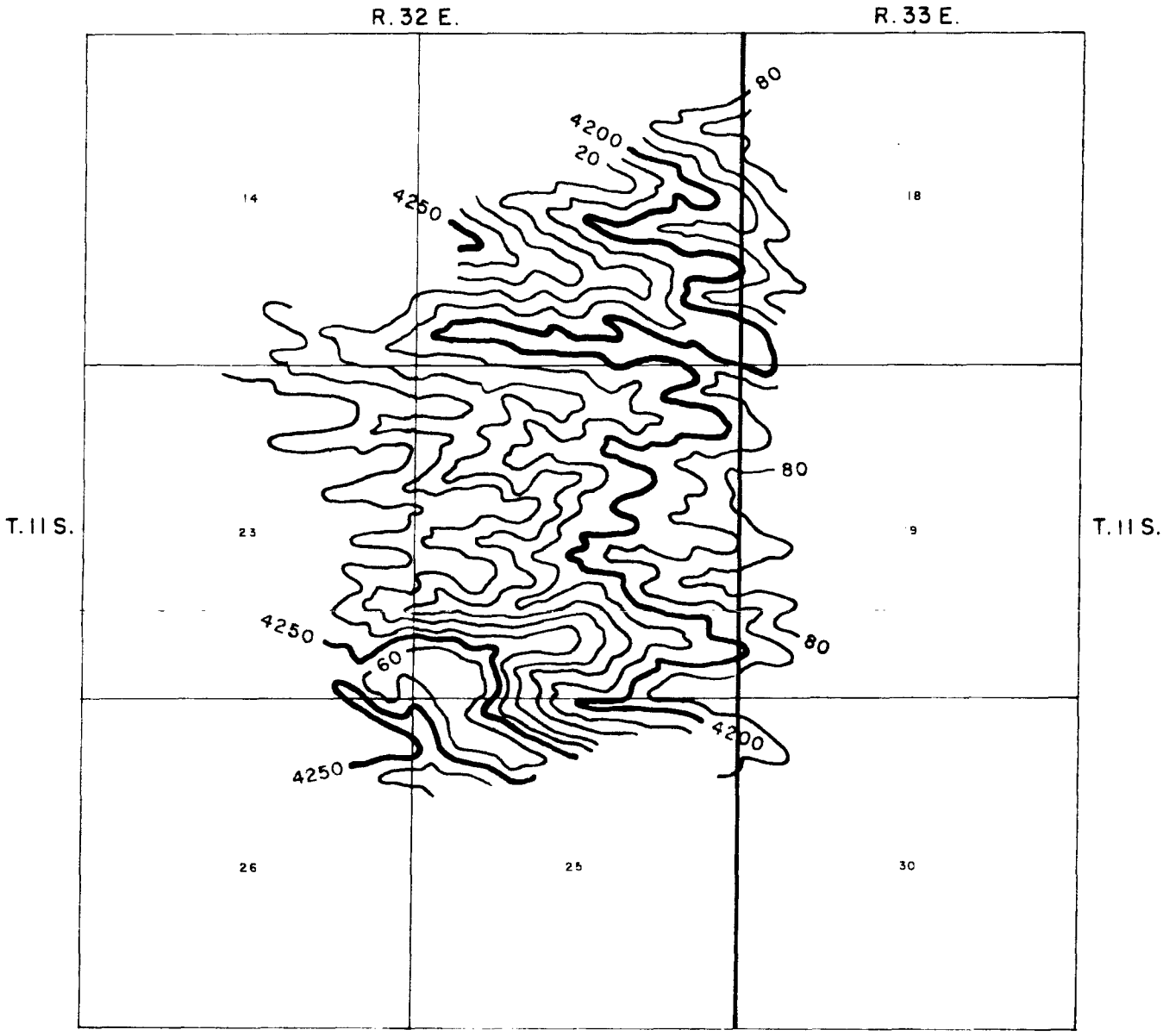
CONTOUR INTERVAL - 2000 PPM*

*Unless otherwise noted.

NEW MEXICO OIL CONSERVATION COMMISSION
HOBBS, NEW MEXICO

JOHN W. RUNYAN — Geologist

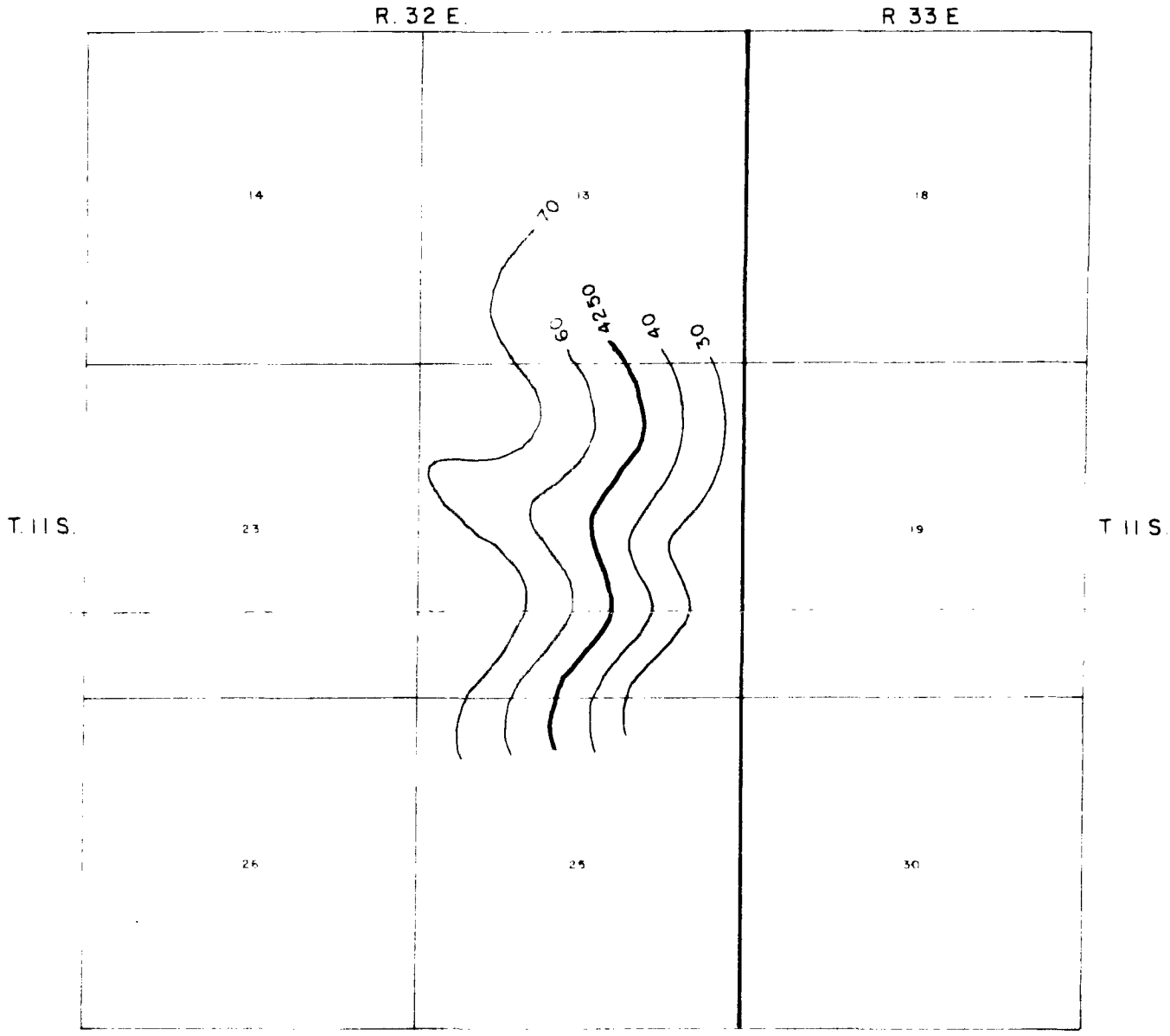
January 5, 1978



Altitude and Configuration of Base of Post Mesozic Sediments in vicinity of Section 24, T. 11 S. R. 32 E. N.M.P.M.

NEW MEXICO STATE ENGINEER OFFICE

S. E. GALLOWAY, ENGINEER, DECEMBER 1977



Altitude and Configuration of Water Table in vicinity of Section 24, T. 11 S. R. 32 E. N.M.P.M. - 1977.