

MERIDIAN OIL

File - SWD - 337

August 26, 1988

Mr. David Catanach
NMOCD
P.O. Box 2088
Santa Fe, NM 87501

Cedar Hill SWD #1
ORDER SWD - 337

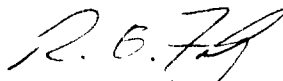
Dear Mr. Catanach:

In maintaining compliance with Rule 701(B) order SWD - 337 enclosed are water analysis reports of fluid samples obtained from the Morrison and Entrada formations.

Three representative water samples were obtained from each zone independently by method of swabbing through tubing. No fluid was injected into the zones prior to swabbing and fresh water was present in the casing during perforating operations.

Two non-affiliated testing labs analyzed the same samples recovered from each of the two intervals.

Sincerely yours,


R. E. Fraley

REF/dj



API WATER ANALYSIS REPORT FORM

Company MERIDIAN OIL COMPANY		Sample No. 3	Date Sampled 7/11/88
Field	Legal Description	County or Parish	State
Lease or Unit Lease #1111 BLD #1	Well BLD #1	Depth	Water, B/D Black bottom water
Type of Water (Produced, Supply, etc.)	Sampling Point	Sampled By M. M. M.	

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	4423	210.4
Calcium, Ca	313	15.6
Magnesium, Mg	34	4.4
Barium, Ba		

OTHER PROPERTIES

pH
Specific Gravity, 60/60 F. 1.006
Resistivity (ohm-meters) 1.30
Conductivity

4.35
1.006
1.30
μmho

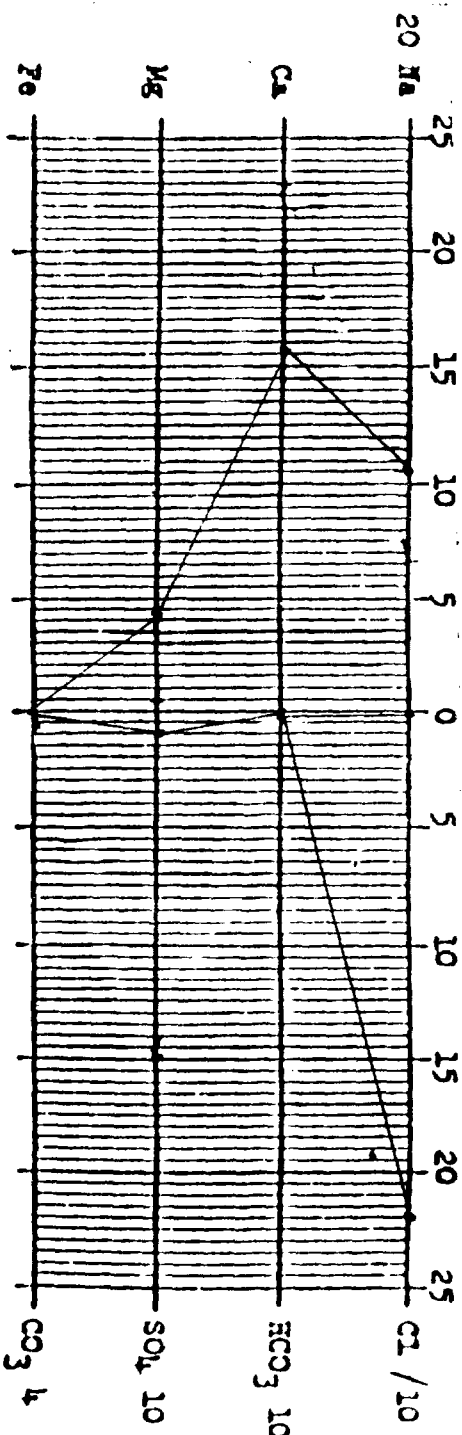
Total Dissolved Solids (calc.) 13,500

Iron, Fe (total)
Sulfide, as H₂S 2069

REMARKS & RECOMMENDATIONS:

ANIONS
Chloride, Cl
Sulfate, SO₄
Carbonate, CO₃
Bicarbonate, HCO₃

7610
4478
0
37
220.0
18.0
0.6





API WATER ANALYSIS REPORT FORM

Company MERIDIAN OIL COMPANY		Sample No. #2	Date Sampled 7/11/88
Field	Legal Description	County or Parish	State
Lease or Unit Lease #111 S.W.D. #1	Well #1	Depth	Formation Bluff Sandstone
Type of Water (Produced, Supply, etc.)		Sampling Point	Water, B/D Sampled By M. McNamee

DISSOLVED SOLIDS

CATIONS

Sodium, Na (calc.)	mg/l	me/l
Calcium, Ca	409.7	178.9
Magnesium, Mg	44.1	22.2
Barium, Ba	0.1	0.0

OTHER PROPERTIES

PH
Specific Gravity: 60/60 F. 71.0 F.
Resistivity (ohm-meters) _____
Conductivity _____

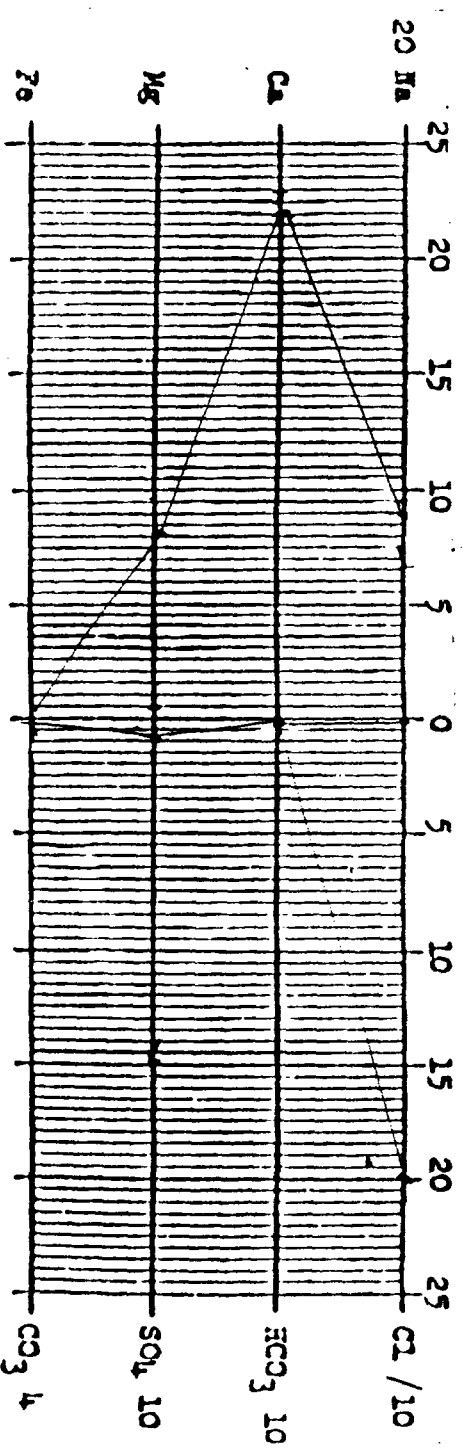
Total Dissolved Solids (calc.)
122.200

ANIONS

Chloride, Cl	71.00	280.0
Sulfate, SO ₄	40.5	8.5
Carbonate, CO ₃	0	0.0
Bicarbonate, HCO ₃	20	0.0

Iron, Fe (total) _____
Sulfide, as H₂S _____

REMARKS & RECOMMENDATIONS:



Scale: cm



API WATER ANALYSIS REPORT FORM

Company	MERIDIAN OIL COMPANY	Sample No.	#1	Date Sampled	7/11/88
Field		Legal Description		County or Parish	State
Lease or Unit	Well #1	Depth		Formation	Water, B/D
Type of Water (Produced, Supply, etc.)		Sampling Point			Sampled By

DISSOLVED SOLIDS

CATIONS

Sodium, Na (calc.)	mg/l	me/l
Calcium, Ca	40.86	178.4
Magnesium, Mg	4.1	22.0
Barium, Ba	3.7	3.0

OTHER PROPERTIES

pH
Specific Gravity, 60/60 F. 71.2
Resistivity (ohm-meters) 71.2
Conductivity

4.43
1.026
1.40
µmho

Total Dissolved Solids (calc.) 12,000

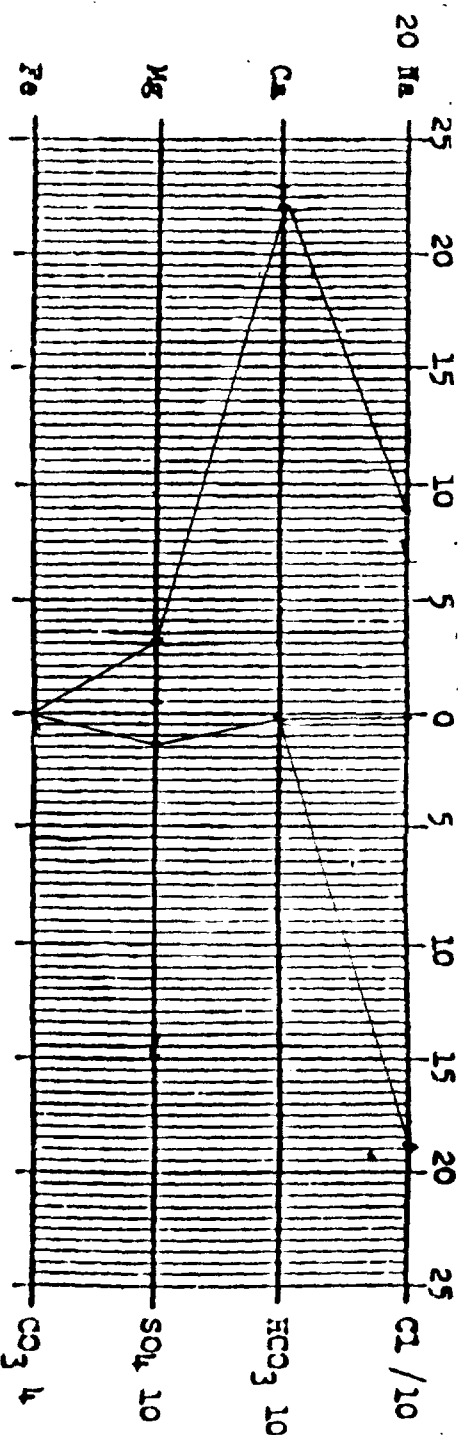
ANIONS

Chloride, Cl	674.5	190.0
Sulfate, SO ₄	41.3	18.76
Carbonate, CO ₃	0	0.07
Bicarbonate, HCO ₃	41	0.07

Iron, Fe (total)
Sulfide, as H₂S

meq

REMARKS & RECOMMENDATIONS:
2505-617





API WATER ANALYSIS REPORT FORM

Company MERIDIAN OIL COMPANY		Sample No. # 2		Date Sampled	
Field	Legal Description	County or Parish		State	
Lease or Unit Packer Hill B/D #1	Well B/D #1	Depth	Formation Lithada	Water, B/D	
Type of Water (Produced, Supply, etc.)				Sampling Point	Sampled By M. M. M.

DISSOLVED SOLIDS

CATIONS

	mg/l	me/l
Sodium, Na (calc.)	6211	271.2
Calcium, Ca	24	1.2
Magnesium, Mg	12	0.8
Barium, Ba		

OTHER PROPERTIES
pH
Specific Gravity, 60/60 F.
Resistivity (ohm-meters) 71 F.
Conductivity

8.08
1.006
1.40
µmho

Total Dissolved Solids (calc.) 14,400

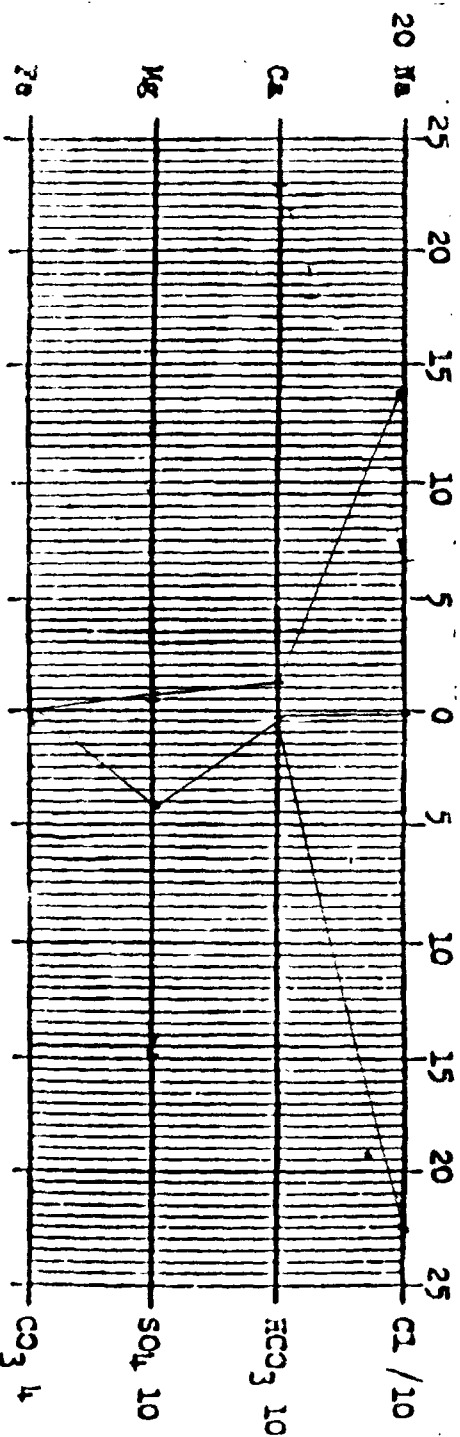
ANIONS

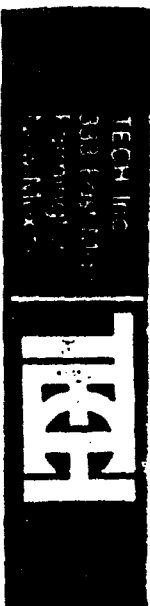
Chloride, Cl	7988	225.0
Sulfate, SO ₄	2000	41.7
Carbonate, CO ₃	0	0
Bicarbonate, HCO ₃	347	6.5

Iron, Fe (total)
Sulfide, as H₂S

mg
mg

REMARKS & RECOMMENDATIONS:





API WATER ANALYSIS REPORT FORM

Company MERIDIAN OIL COMPANY		Sample No. #3		Date Sampled	
Field	Legal Description	County or Parish		State	
Lease or Unit Miller Well SW 1/4	Well SW 1/4	Depth	Formation Chalk	Water, B/D	
Type of Water (Produced, Supply, etc.)			Sampling Point	Sampled By M. Moore	

DISSOLVED SOLIDS

CATIONS

Sodium, Na (calc.)	mg/l	me/l
Calcium, Ca	60.91	304.0
Magnesium, Mg	2.4	1.30
Barium, Ba	2.0	1.60

OTHER PROPERTIES
pH
Specific Gravity, 60/60 F.
Resistivity, (ohm-meters)
Conductivity

7.51
1.004
1.34
µmho

Total Dissolved Solids (calc.)

13.400

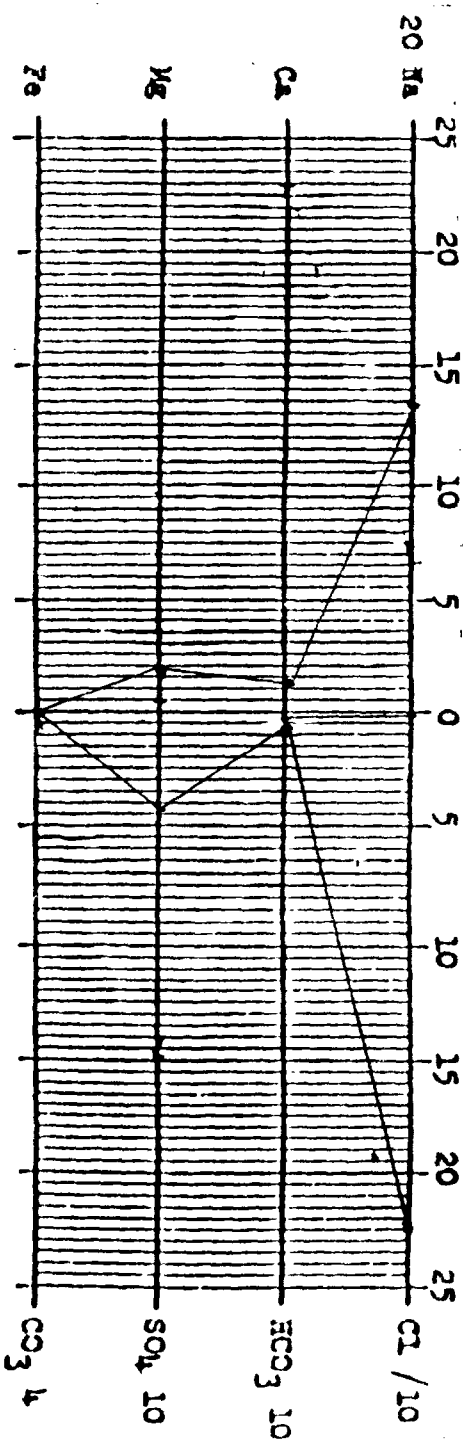
ANIONS

Chloride, Cl	78.10	220.0
Sulfate, SO ₄	20.30	42.4
Carbonate, CO ₃	0	0
Bicarbonate, HCO ₃	3.97	4.5

Iron, Fe (total)
Sulfide, as H₂S

20.8
20.8

REMARKS & RECOMMENDATIONS:





API WATER ANALYSIS REPORT FORM

Company MERIDIAN OIL COMPANY		Sample No. #1		Date Sampled	
Field	Legal Description	County or Parish		State	
Lease or Unit Cedar Hill S/D	Well #1	Depth	Formation Muskogee	Water, B/D	
Type of Water (Produced, Supply, etc.)			Sampling Point	Sampled By M. M. M. M.	

DISSOLVED SOLIDS

CATIONS

Sodium, Na (calc.)
Calcium, Ca
Magnesium, Mg
Barium, Ba

mg/l

62.46

2.9

1.3

me/l

292.7

1.2

1.2

OTHER PROPERTIES

pH
Specific Gravity, 60/60 F. 71° F.
Resistivity (ohm-meters)
Conductivity

8.37

1.004

1.32

μmho

Total Dissolved Solids (calc.)

144.60

ANIONS

Chloride, Cl
Sulfate, SO₄
Carbonate, CO₃
Bicarbonate, HCO₃

76.33

14.00

4.50

3.34

215.0

39.0

13.0

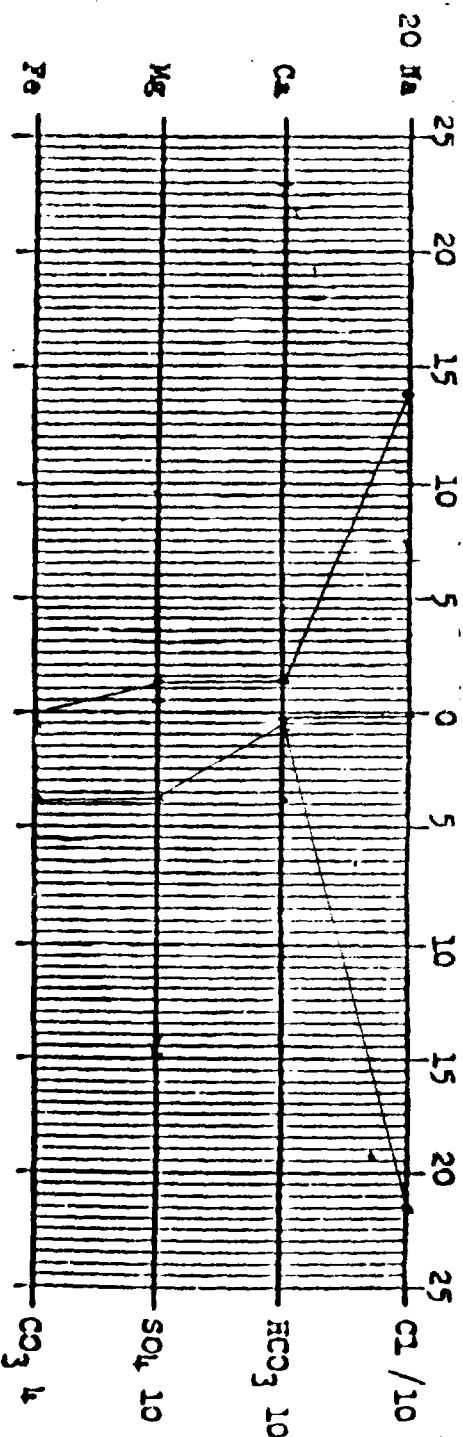
3.3

Iron, Fe (total)
Sulfide, as H₂S

neg

REMARKS & RECOMMENDATIONS:

2503-1615





2198 East Bloomfield Highway
Farmington, New Mexico 87401
Phone (505) 327-7281

SMITH ENERGY SERVICES a division of Allied Products
WATER ANALYSIS

Jul. 11, 1988

Page 1

MERIDIAN OIL INC.
MARK MANSON
Date Sampled: 07-09-88
Well: CEDAR HILL SWD #1

Formation: BLUFF/SUMMERVILLE
Legals: SEC. 29, T30N, R10W
County: SAN JUAN, N.M.
Report No.: 1

Specific Gravity:	1.010	pH:	
Chloride:	6,800.0 mg/l	Calcium:	593 mg/l
Bicarbonate:	61 mg/l	Magnesium:	29 mg/l
Sulfate:	400 mg/l	Total Iron:	mg/l
Sulfide:	mg/l	Sodium:	2,997 mg/l
Total Hardness:	1,600 mg/l	Total Diss Solids:	12,380 mg/l
Potassium:	1,500 mg/l		
Resistivity:	.78 Ohm Meters at 60 Degrees F		

Sample Source: SAMPLED WHILE SWABBING.

Remarks: SAMPLE APPEARS TO BE FORMATION WATER.

Your water report was prepared by: MIKE CONREY



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Farmington, New Mexico 87401
Phone (505) 327-7281

SMITH ENERGY SERVICES a division of Allied Products
WATER ANALYSIS

Jul. 11, 1988

Page 1

MERIDIAN OIL INC.
MARK MANSON
Date Sampled: 07-09-88
Well: CEDAR HILL SWD #1

Formation: BLUFF/SUMMERVILLE
Legals: SEC. 29, T30N, R10W
County: SAN JUAN
Report No.: 2

Specific Gravity:	1.012	pH:	
Chloride:	7,100.0 mg/l	Calcium:	529 mg/l
Bicarbonate:	61 mg/l	Magnesium:	38 mg/l
Sulfate:	400 mg/l	Total Iron:	mg/l
Sulfide:	mg/l	Sodium:	3,250 mg/l
Total Hardness:	1,480 mg/l	Total Diss Solids:	12,878 mg/l
Potassium:	1,500 mg/l		
Resistivity:	.68 Ohm Meters at 60 Degrees F		

Sample Source: SAMPLED WHILE SWABBING, SAMPLE #2

Remarks: SAMPLE APPEARS TO BE FORMATION WATER.

Your water report was prepared by: MIKE CONREY



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SMITH ENERGY SERVICES a division of Allied Products
WATER ANALYSIS

Jul. 11, 1988

Page 1

MERIDIAN OIL INC.
MARK MANSON
Date Sampled: 07-09-88
Well: CEDAR HILL SWD #1

Formation: BLUFF/SUMMERVILLE
Legals: SEC. 29, T30N, R10W
County: SAN JUAN, N.M.
Report No.: 3

Specific Gravity:	1.010	pH:	
Chloride:	7,400.0 mg/l	Calcium:	453 mg/l
Bicarbonate:	397 mg/l	Magnesium:	75 mg/l
Sulfate:	400 mg/l	Total Iron:	mg/l
Sulfide:	mg/l	Sodium:	3,590 mg/l
Total Hardness:	1,440 mg/l	Total Diss Solids:	13,815 mg/l
Potassium:	1,500 mg/l		
Resistivity:	.62 Ohm Meters at 60 Degrees F		

Sample Source: SAMPLED WHILE SWABBING, SAMPLE #3

Remarks: SAMPLE APPEARS TO BE FORMATION WATER

Your water report was prepared by: MIKE CONREY



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SMITH ENERGY SERVICES a division of Allied Products
WATER ANALYSIS

Jul. 7, 1988

Page 1

MERIDIAN OIL INC.
MARK MANSON
Date Sampled: 07-07-88
Well: CEDAR HILL SWD #1

Formation: ENTRADA
Legals: SEC29,T32N,R10W
County: SAN JUAN, N.M.
Report No.: 1

Specific Gravity:	1.005	pH:	9.0
Chloride:	7,100.0 mg/l	Calcium:	52 mg/l
Bicarbonate:	244 mg/l	Magnesium:	10 mg/l
Sulfate:	900 mg/l	Total Iron:	mg/l
Sulfide:	mg/l	Sodium:	3,869 mg/l
Total Hardness:	170 mg/l	Total Diss Solids:	14,175 mg/l
Potassium:	2,000 mg/l		
Resistivity:	.57 Ohm Meters at 60 Degrees F		

Sample Source: 65 BBLS SWABBED

Remarks:

Your water report was prepared by: MIKE CONREY



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Farmington, New Mexico 87401
Phone (505) 327-7281

SMITH ENERGY SERVICES a division of Allied Products
WATER ANALYSIS

Jul. 7, 1988

Page 1

MERIDIAN OIL INC.
MARK MANSON
Date Sampled: 07-07-88
Well: CEDAR HILL SWD #1

Formation: ENTRADA
Legals: SEC 29,T32N,R10W
County: SAN JUAN,N.M.
Report No.: 2

Specific Gravity:	1.005	pH:	9.0
Chloride:	7,500.0 mg/l	Calcium:	44 mg/l
Bicarbonate:	549 mg/l	Magnesium:	15 mg/l
Sulfate:	900 mg/l	Total Iron:	mg/l
Sulfide:	mg/l	Sodium:	4,244 mg/l
Total Hardness:	170 mg/l	Total Diss Solids:	15,252 mg/l
Potassium:	2,000 mg/l		
Resistivity:	.57 Ohm Meters at 60 Degrees F		

Sample Source: 68 BBLS SWABBED, AFTER 2 HOURS SHUT IN

Remarks:

POTASSIUM IS GREATER THAN 2000. 2000MG/L IS THE HIGH END
OF THE STRIP TEST.

Your water report was prepared by: MIKE CONREY



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SMITH ENERGY SERVICES a division of Allied Products
WATER ANALYSIS

Jul. 7, 1988

Page 1

MERIDIAN OIL INC.
MARK MANSON
Date Sampled: 07-07-88
Well: CEDAR HILL SWD #1

Formation: ENTRADA
Legals: SEC 29, T32N, R10W
County: SAN JUAN, N.M.
Report No.: 3

Specific Gravity:	1.005	pH:	9.0
Chloride:	7,800.0 mg/l	Calcium:	52 mg/l
Bicarbonate:	488 mg/l	Magnesium:	17 mg/l
Sulfate:	900 mg/l	Total Iron:	mg/l
Sulfide:	mg/l	Sodium:	4,400 mg/l
Total Hardness:	200 mg/l	Total Diss Solids:	15,657 mg/l
Potassium:	2,000 mg/l		
Resistivity:	.55 Ohm Meters at 60 Degrees F		

Sample Source: 68 BBLS SWABBED, AFTER 5 HOURS SHUT IN.

Remarks: SAMPLE APPEARS TO BE ENTRADA FORMATION WATER.
POTASSIUM IS 2000+

Your water report was prepared by: MIKE CONREY