

APPENDIX C

Tables I - IV

Appendix C

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1. **Table I** - Table I lists all water supply wells within a 2 mile radius of the Jillson SWD #1 and all available information associated with these wells.

Table I, Appendix C
Water Supply Wells

LOCATION	DEPTH	AQUIFER	STATUS
swse08, T24N, R03W	300'	San Jose	Used
*nwnw20, T24N, R03W	50'	Aluvial	Unknown
*swsw01, T24N, R04W	>650'	San Jose/Alluvial	Unknown
*nenw06, T24N, R03W	>650'	San Jose/Alluvial	Unknown
*nsws31, T25N, R03W	>650'	San Jose/Alluvial	Unknown
*swsw32, T25N, R03W	>650'	San Jose/Alluvial	Unknown
*swsw33, T25N, R03W	550'	San Jose	Used

* These water supply wells fall outside the exempted area plus the 1/4 mi boundary. They fall within the 2 mile radius of surface owner notification.

2. **Table II** - Table II lists all artificial penetrations of the Entrada formation within a 1 1/4 radius of the Jillson Federal SWD #1 and all information associated with this penetration.

Table II, Appendix C
Artificial Penetrations

Well	Location	Status	Depth	Plug Back Depths
W. O. Hughes #6	Unit J, Sec 8, T24N-R03W	P&A	8700'	7601'

3. **Table III** - The below table lists water analysis results of samples retrieved from the Entrada formation during the completion of the Jillson Federal SWD #1. Also listed are New Mexico Water Quality Control Commission regulations, section 3-103, standards for ground water of 10,000 mg/L TDS concentration or less. Ground water must meet the regulations listed to meet human health, domestic water supply, and irrigation use standards.

Table III, Appendix C
Water Analysis
Entrada Formation - Jillson Federal SWD #1

Analysis	Measured Quantity		Regulation Standards*	
1. pH	7.39			
2. Specific Gravity	1.0086			
3. Resistivity	0.1481			
4. Total Dissolved Solids	6,916.00	mg/L	1000.00	mg/L
5. Total Petroleum Hydrocarbons	12.40	mg/L	n/a	
6. Aromatic Volatile Organics				
Benzene	470.00	ug/L	0.01	mg/L
Toluene	424.00	ug/L	0.75	mg/L
Ethyl benzene	101.00	ug/L	0.75	mg/L
m,p-Xylene	281.00	ug/L		mg/L
o-Xylene	514.00	ug/L		mg/L
Total Xylene	795.00	ug/L	0.62	mg/L
7. General Analysis				
Total Chloride	160.00	mg/L	250.00	mg/L
Total Sulfate	1758.00	mg/L	600.00	mg/L
8. Silver Analysis	<0.01	mg/L	0.05	mg/L
9. Cadmium Analysis	0.03	mg/L	0.01	mg/L
10. Copper Analysis	0.10	mg/L	1.00	mg/L
11. Nickel Analysis	0.30	mg/L	0.20	mg/L
12. Iron Analysis	43.00	mg/L	1.00	mg/L
13. Chromium Analysis	<0.01	mg/L	0.05	mg/L
14. Lead Analysis	0.30	mg/L	0.05	mg/L
15. Zinc Analysis	1.46	mg/L	10.00	mg/L
16. Mercury Analysis	<.002	mg/L	0.002	mg/L
17. Arsenic Analysis	<0.01	mg/L	0.10	mg/L

4. **Table IV** - Table IV lists analysis results of typical water which will be injected into the Jillson Federal SWD #1. Injection fluids will include only those material suitable for a Class II well under the Underground Injection Control Program. Sample analyses of example Class II fluids with corresponding formation are included.

Table IV, Appendix C
Example Injection Fluid Water Analyses

Well Name	Location	Formation	Date Sampled	TDS mg/L
Starr #1	Sec 06, T26N, R8W	Fruitland Coal	2/1/94	32,800
Canyon Largo Unit #144	Sec 17, T25N, R6W	Pictured Cliffs	2/25/94	28,400
Klein #16	Sec 33, T26N, R06W	Chacra	9/7/94	19,700
Canyon Largo Unit #388	Sec 03, T25N, R06W	Mesaverde	8/8/94	11,100
Klein #28E	Sec 33, T26N, R06W	Gallup	n/a	19,002
Canyon Largo Unit Com #295	Sec 04, T25N, R06W	Dakota	4/27/94	12,800



1115 Farmington Avenue - Farmington, NM 87401
(505) 325-1085

Lab Number:

W94-026

Standard A.P.I. Water Analysis Report

Company: MERIDIAN OIL INC.

Date Collected: 2/1/94; 13:30

Sample ID: STARR #1

Date Received: 2/1/94

Formation: Fruitland Coal

Date Analyzed: 2/2/94

Location: SEC. 6-T26N-R8W

County: San Juan State: New Mexico

Collected By: Rick Gerard

Analyst: Sheila F./Linda S. *Sheila*

Remarks:

Attention: Mike Pippin

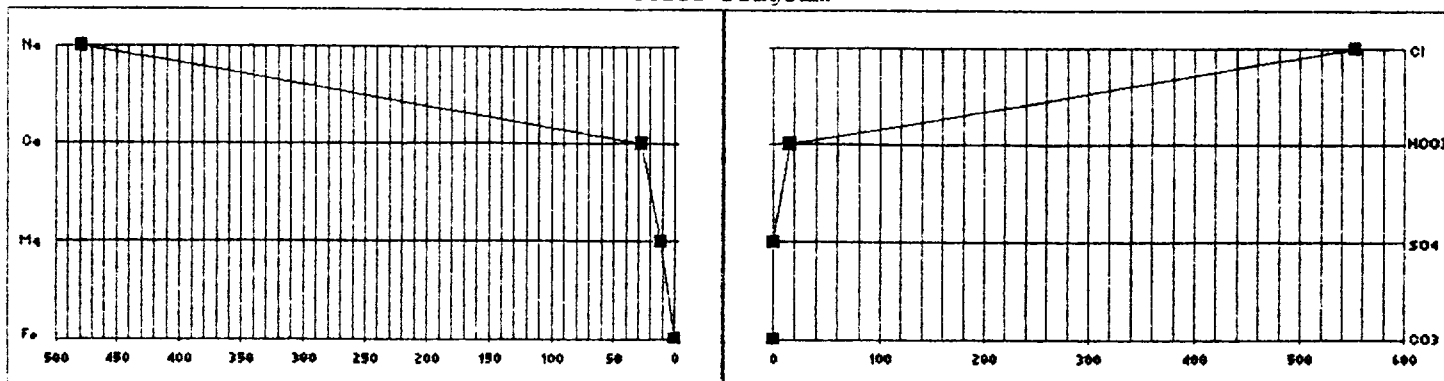
PARAMETER	as ION	Comment	PARAMETER	as ION	Comment
Sodium, Na	11,000 mg/l		Chloride, Cl	19,600 mg/l	
Potassium, K	75 mg/l		Sulfate, SO4	<1 mg/l	
Calcium, Ca	545 mg/l		Hydroxide, OH	0 mg/l	
Magnesium, Mg	140 mg/l		Carbonate, CO3	0 mg/l	
Iron, Fe (Total)		NOT RUN	Bicarbonate, HCO3	920 mg/l	
Sulfide		NOT RUN	Resistivity	0.208 ohm-m	
pH	7.5 units		Conductivity	48,000 uS/cm	
Total Dissolved Solids	32,900 mg/l			(@25 Degrees C)	
			Specific Gravity	1.025	
				(@60 Degrees F)	

Remarks:

Anion/Cation:

109%

Stiff Diagram



Scale: Meq/L



1115 Farmington Avenue - Farmington, NM 87401
(505) 325-1085

Lab Number:

W94-050

Standard A.P.I. Water Analysis Report

Company: MERIDIAN OIL INC.

Date Collected: 2/25/94

Sample ID: CANYON LARGO 144

Date Received: 2/28/94

Formation: Pictured Cliffs

Date Analyzed: 2/28/3/01/94

Location: D-17-25-6

County: Rio Arriba State: New Mexico

Collected By: Joe Golding

Analyst: Linda Spencer *Linda*

Remarks:

Attention: Lary Byars

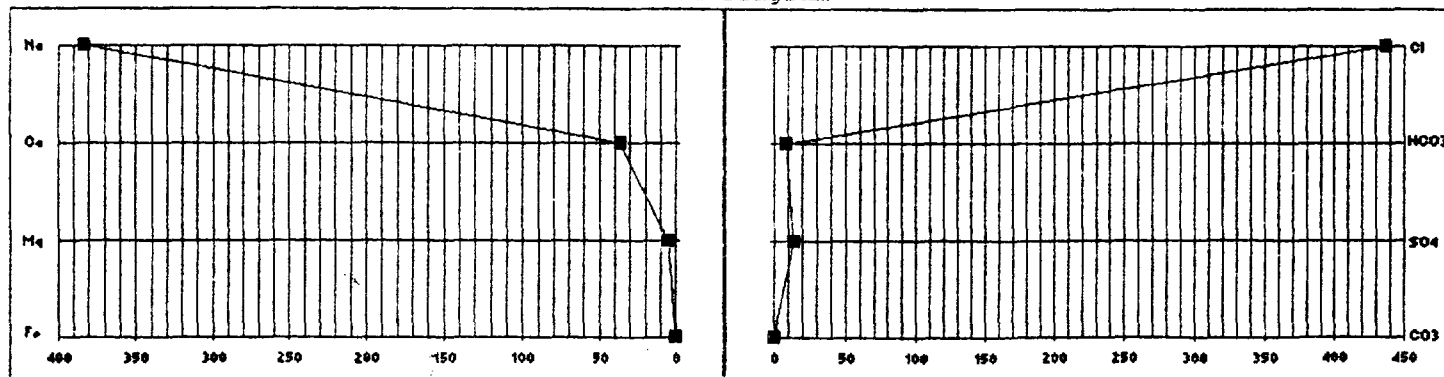
PARAMETER	as ION	Comment	PARAMETER	as ION	Comment
Sodium, Na	8,800 mg/l		Chloride, Cl	15,500 mg/l	
Potassium, K	1,700 mg/l		Sulfate, SO ₄	660 mg/l	
Calcium, Ca	740 mg/l		Hydroxide, OH	0 mg/l	
Magnesium, Mg	60 mg/l		Carbonate, CO ₃	0 mg/l	
Iron, Fe (Total)		NOT RUN	Bicarbonate, HCO ₃	500 mg/l	
Sulfide		NOT RUN	Resistivity	0.24 ohm-m	
pH	6.9 units		Conductivity	41,300 uS/cm	
Total Dissolved Solids	28,400 mg/l			(@25 Degrees C)	
			Specific Gravity	1.022	
				(@60 Degrees F)	

Remarks:

Anion/Cation:

98%

Stiff Diagram



Scale: Meq/L



1115 Farmington Avenue - Farmington, NM 87401
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Lab Number:

W94-273

Standard A.P.I. Water Analysis Report

Company: MERIDIAN OIL INC

Date Collected: 9/7/94; 11:00

Sample ID: KLEIN #16

Date Received: 9/8/94

Formation: Chacra

Date Analyzed: 9/8-9/94

Location: 026N006W33 K

County:

State:

Collected By: J. Mooring

Analyst:

Linda S./Bill S.

Bill

Remarks:

Attention: Lary Byars

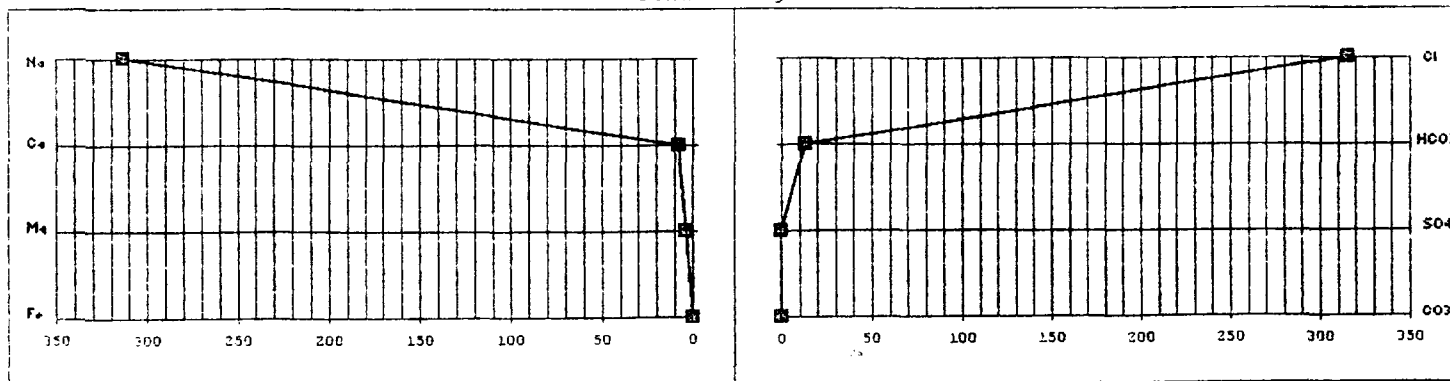
PARAMETER	as ION	Comment	PARAMETER	as ION	Comment
Sodium, Na	7,200 mg/l		Chloride, Cl	11,200 mg/l	
Potassium, K	38 mg/l		Sulfate, SO ₄	<25 mg/l	
Calcium, Ca	160 mg/l		Hydroxide, OH	0 mg/l	
Magnesium, Mg	42 mg/l		Carbonate, CO ₃	0 mg/l	
Iron, Fe (total)		NOT RUN	Bicarbonate, HCO ₃	800 mg/l	
Sulfide		NOT RUN	Resistivity	0.32 ohm-m	
pH	7.4 units		Conductivity	31,000 uS/cm	
Total Dissolved Solids	19,700 mg/l		Specific Gravity	1.017	
				(@25 Degrees C)	
				(@60 Degrees F)	

Remarks: Magnetic particles present. Slightly frothy, slightly opaque after filtering.

Anion/Cation:

1018

Stiff Diagram





1115 Farmington Avenue - Farmington, NM 87401
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Lab Number:

W94-231

Standard A.P.I. Water Analysis Report

Company: MERIDIAN OIL INC.

Date Collected: 8/8/94; 11:00

Sample ID: CLU 388

Date Received: 8/9/94

Formation: Mesaverde

Date Analyzed: 8/9-10/94

Location: 025N006W03 K

County: State:

Collected By: MOI

Analyst: Sheila F./Linda S. *Leila*

Remarks:

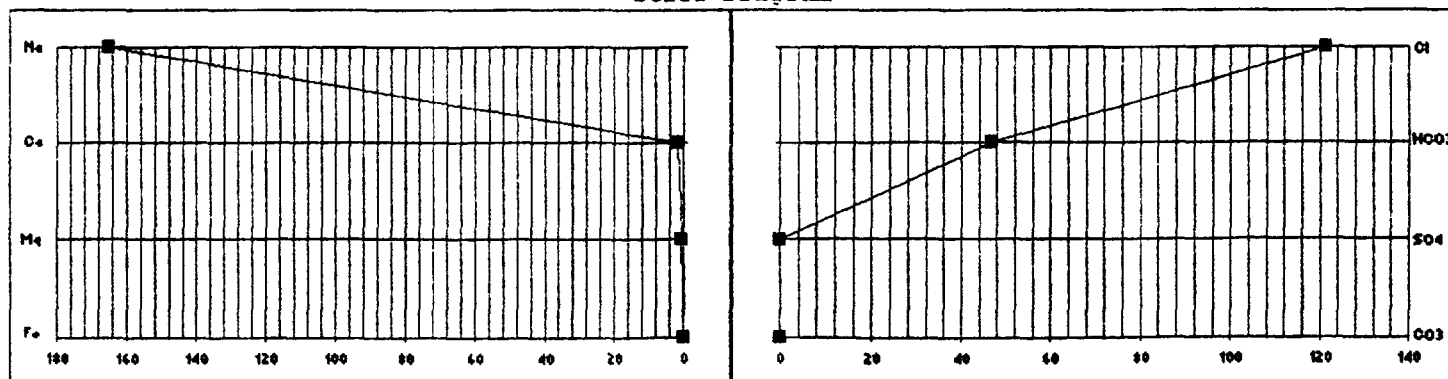
Attention: Lary Byars

PARAMETER	as ION	Comment	PARAMETER	as ION	Comment
Sodium, Na	3,900 mg/l		Chloride, Cl	4,300 mg/l	
Potassium, K	26 mg/l		Sulfate, SO ₄	<2 mg/l	
Calcium, Ca	30 mg/l		Hydroxide, OH	0 mg/l	
Magnesium, Mg	7 mg/l		Carbonate, CO ₃	0 mg/l	
Iron, Fe (total)		NOT RUN	Bicarbonate, HCO ₃	2,850 mg/l	
Sulfide		NOT RUN	Resistivity	0.60 ohm-m	
pH	8.0 units		Conductivity	16,700 uS/cm	
Total Dissolved Solids	11,100 mg/l			(@25 Degrees C)	
			Specific Gravity	1.010	
				(@60 Degrees F)	

Remarks:

Anion/Cation: 100%

Stiff Diagram



Scale: Meq/L



The Western Company of North America

3250 South Side River Road
Farmington, New Mexico 87401
Phone (505)327-6222
Fax (505)327-5766

API WATER ANALYSIS

Company *Meridian Oil*

W.C.N.A. Sample No.

Date Sampled

Field

Legal Description *26 N 06 W S3*

County or Parish

State

Lease or Unit *Klein*

Well # *28F*

Depth

Formation
Gallup

Water, B/D

Type of Water (Produced, Supply, ect.) *Produced H₂O* Sampling Point

Sampled By

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na + Potassium, K (calc)	3417	149
Calcium, Ca	285	14
Magnesium, Mg (calc)	176	15
Barium, Ba		

OTHER PROPERTIES

pH	6.04
Specific Gravity, 60/60 F	1.016
Total Hardness	710
Resistivity (cm-meter)	95 .88

ANIONS

Chloride, Cl	5495	155
Sulfate, SO ₄	175	4
Carbonate, CO ₃		
Bicarbonate, HCO ₃	9455	155
Hydroxide, OH		

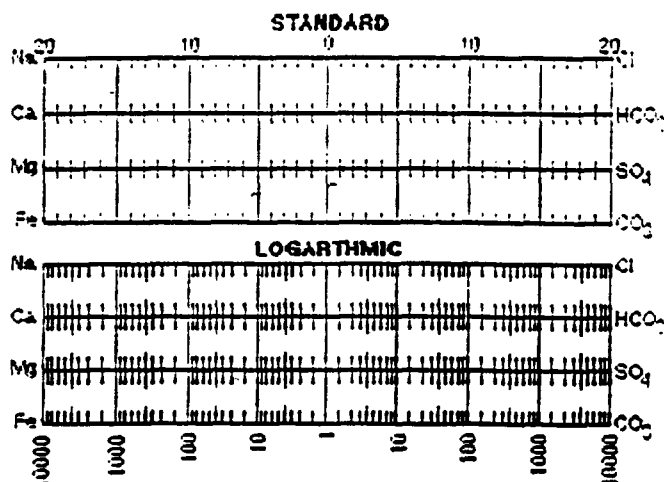
Total Dissolved Solids (calc.) *19002*

Iron, Fe²⁺ + Fe³⁺ (total)

Sulfide, as H₂S

Remarks & Recommendations:

WATER PATTERNS-me/l



Analyst:

Date Analyzed:

D. H. H.

4-7-94

Please refer any questions to:
Loren Diebe, District Engineer
Thank you.



1115 Farmington Avenue - Farmington, NM 87401
(505) 325-1085

Lab Number:

W94-107

Standard A.P.I. Water Analysis Report

Company: MERIDIAN OIL INC.

Date Collected: 4/27/94

Sample ID: CLU 295

Date Received: 4/27/94

Formation: Dakota

Date Analyzed: 4/28-29/94

Location: 025N006W04 A

County: State:

Collected By:

Analyst: Sheila F./Linda S. *Salco*

Remarks:

Attention: Lary Byars

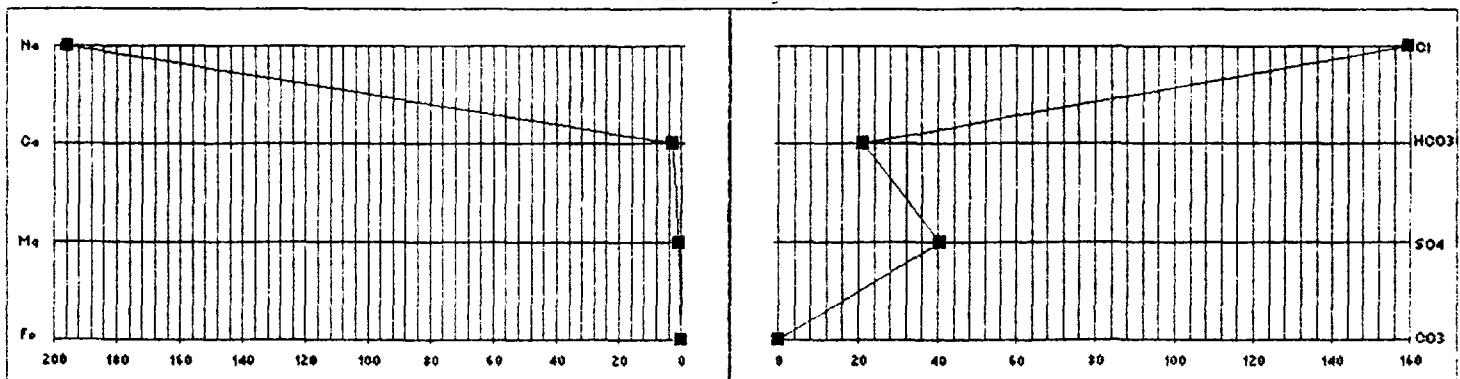
PARAMETER	as ION	Comment	PARAMETER	as ION	Comment
Sodium, Na	4,500 mg/l		Chloride, Cl	5,650 mg/l	
Potassium, K	60 mg/l		Sulfate, SO ₄	1,950 mg/l	
Calcium, Ca	60 mg/l		Hydroxide, OH	0 mg/l	
Magnesium, Mg	10 mg/l		Carbonate, CO ₃	0 mg/l	
Iron, Fe (Total)		NOT RUN	Bicarbonate, HCO ₃	1,280 mg/l	
Sulfide		NOT RUN	Resistivity	0.51 ohm-m	
pH	7.9 units		Conductivity	19,750 uS/cm	
Total Dissolved Solids	12,800 mg/l			(@25 Degrees C)	
			Specific Gravity	1.012	
				(@60 Degrees F)	

Remarks: Sample had organic odor.

Anion/Cation:

110%

Stiff Diagram



Scale: Meq/L