

3R - 267

**GENERAL
CORRESPONDENCE**

YEAR(S):

1991

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Just the FAX...

From: Inter-Mountain Labs
2506 W. Main Street
Farmington, NM 87401

FAX: (800)828-1412
Tele: (800)828-1409

To:

Dave Boyer

Pages:

5

Message:

Corrected reports & reports
on resuns. Call me Monday
& there is anything else
I can do.

Wanda

Rechecked the original
alkalinity & that's right.
Verified calculations.

CLIENT: NMOCD
ID: L1213IN11W
SITE: Lawson #1
LAB NO: F6238

DATE REPORTED: 08/09/91
DATE RECEIVED: 05/21/91
DATE COLLECTED: 05/21/91

Lab pH (s.u.).....	9.13
Lab conductivity, umhos/cm.....	16100
Lab resistivity, ohm-m.....	0.623
Total dissolved solids (180), mg/l..	11000
Total dissolved solids (calc), mg/l.	11200
Total alkalinity as CaCO ₃ , mg/l.....	32.4
Total hardness as CaCO ₃ , mg/l.....	954
Sodium absorption ratio.....	53.3

	mg/l	meq/l
Bicarbonate as HCO ₃	29.9	0.49
Carbonate as CO ₃	4.8	0.16
Chloride.....	4320	122
Sulfate.....	2670	55.7
Calcium.....	372	18.6
Magnesium.....	6.37	0.52
Potassium.....	6.09	0.16
Sodium.....	3790	165
Major cations.....		184
Major anions.....		178
Cation/anion difference.....		1.56 %

Wanda Orso
Water Lab Manager

CLIENT: NMOCD
ID: L1213IN11W
SITE: Lawson #1
LAB NO: F6238

DATE REPORTED: 08/09/91
DATE RECEIVED: 05/21/91
DATE COLLECTED: 05/21/91

Lab pH (s.u.).....	7.59
Lab conductivity, umhos/cm.....	16100
Lab resistivity, ohm-m.....	0.623
Total dissolved solids (180), mg/l..	11000
Total dissolved solids (calc), mg/l.	11300
Total alkalinity as CaCO ₃ , mg/l.....	24
Total hardness as CaCO ₃ , mg/l.....	1010
Sodium absorption ratio.....	51.8

	mg/l	meq/l
Bicarbonate as HCO ₃	29.3	0.48
Carbonate as CO ₃	0	0
Chloride.....	4330	122
Sulfate.....	2740	57
Calcium.....	356	17.8
Magnesium.....	29.3	2.41
Potassium.....	6.09	0.16
Sodium.....	3790	165
Major cations.....		185
Major anions.....		180
Cation/anion difference.....		1.47 %

This report reflects TH, Ca, Cl, SO₄, and Alkalinity reruns on 08-08-91.

Wanda Orso
Water Lab Manager

CLIENT: NMOCD
ID: 0900
SITE: M12-31N-11W
LAB NO: F6254

DATE REPORTED: 08/09/91
DATE RECEIVED: 05/22/91
DATE COLLECTED: 05/22/91

Lab pH (s.u.).....	9.32
Lab conductivity, umhos/cm.....	14600
Lab resistivity, ohm-m.....	0.686
Total dissolved solids (180), mg/l..	12700
Total dissolved solids (calc), mg/l.	12500
Total alkalinity as CaCO ₃ , mg/l.....	34.1
Total hardness as CaCO ₃ , mg/l.....	1090
Sodium absorption ratio.....	47.2

	mg/l	meq/l
Bicarbonate as HCO ₃	6.71	0.11
Carbonate as CO ₃	17.1	0.57
Chloride.....	628	17.7
Sulfate.....	7860	164
Calcium.....	434	21.6
Magnesium.....	1.74	0.14
Potassium.....	6.38	0.16
Sodium.....	3580	156
Major cations.....		178
Major anions.....		182
Cation/anion difference.....		1.24 %

Wanda Orso
Water Lab Manager

CLIENT: NMOCD
ID: 0900
SITE: M12-31N-11W
LAB NO: F6254

DATE REPORTED: 08/09/91
DATE RECEIVED: 05/22/91
DATE COLLECTED: 05/22/91

Lab pH (s.u.).....	7.61
Lab conductivity, umhos/cm.....	14600
Lab resistivity, ohm-m.....	0.686
Total dissolved solids (180), mg/l..	12700
Total dissolved solids (calc), mg/l.	12600
Total alkalinity as CaCO ₃ , mg/l.....	37.1
Total hardness as CaCO ₃ , mg/l.....	1040
Sodium absorption ratio.....	48.3

	mg/l	meq/l
Bicarbonate as HCO ₃	45.1	0.74
Carbonate as CO ₃	0	0
Chloride.....	628	17.7
Sulfate.....	8010	167
Calcium.....	354	17.7
Magnesium.....	37.7	3.1
Potassium.....	6.38	0.16
Sodium.....	3580	156
Major cations.....		177
Major anions.....		185
Cation/anion difference.....		2.41 %

This report reflects TH, Ca, Cl, SO₄, and Alkalinity reruns on 08-08-91.

Wanda Orso
Water Lab Manager

OIL CONSERVATION DIVISION
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OIL CONSERVATION DIVISION

'91 AUG 15 AM 8 53

LABORATORY SAMPLE RECORD

[illegible]

Disclaimer: Original Assessment Instrument; Copy to Commission 8.000 Page



2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCD
ID: WM Gilkey
SITE: 563 RD 2105
LAB NO: F6643

DATE REPORTED: 07/31/91
DATE RECEIVED: 07/11/91
DATE COLLECTED: 07/10/91

Lab pH (s.u.).....	7.70
Lab conductivity, umhos/cm.....	710
Lab resistivity, ohm-m.....	14.1
Total dissolved solids (180), mg/l..	436
Total dissolved solids (calc), mg/l.	430
Total alkalinity as CaCO ₃ , mg/l.....	271
Total hardness as CaCO ₃ , mg/l.....	331
Sodium absorption ratio.....	0.639
Fluoride, mg/l.....	0.59

	mg/l	meq/l
Bicarbonate as HCO ₃	330	5.41
Carbonate as CO ₃	0	0
Chloride.....	20.8	0.59
Sulfate.....	94.9	1.98
Calcium.....	107	5.34
Magnesium.....	15.5	1.28
Potassium.....	3.21	0.08
Sodium.....	26.7	1.16
Major cations.....		7.86
Major anions.....		7.98
Cation/anion difference.....		0.75 %


Wanda Orso
Water Lab Manager

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AUG 13 1991

iml
Inter-Mountain
Laboratories, Inc.

OIL CONSERVATION DIV.
SANTA FE

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

VOLATILE AROMATIC HYDROCARBONS

Client: Oil Conservation Div.
Sample ID: 563 RD 2105
Laboratory Number: 6642
Analysis Requested: BTEX
Sample Matrix: Water
Condition: cool & intact

Report Date: 07-24-91
Date Sampled: 07-10-91
Date Received: 07-11-91
Date Analyzed: 07-19-91
Preservative: None

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
-----	-----	-----
Benzene	1.6	1
Toluene	1.3	1
Ethylbenzene	ND	1
p,m-Xylene	ND	1
o-Xylene	ND	1

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	-----	-----
	Trifluorotoluene	100.9 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Tony Tistano
Analyst

Jack M. King Jr.
Review



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AUG 13 1991

OIL CONSERVATION
SANTA FE

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

Case Narrative

On July 11, 1991 a sample set consisting of two samples was received by Inter-Mountain Laboratories - Farmington, NM. Enclosed is a copy of the chain of custody indicating the analytical parameters for which analysis was requested.

It is the policy of this laboratory to employ, whenever possible, analytical methods which have been approved by regulatory agencies. The methods which we use are referenced in SW-846, "Test Methods for Evaluating Solid Waste", USEPA, 1986; "Chemical Analysis of Water and Waste", USEPA, 1978; and other references as applicable. All reports in this package have the analytical methods and the references footnoted.

A Hewlett-Packard Gas Chromatograph was used for the analysis which determined the presence of target BTEX compounds in sample number 563 RD 2105.

Please feel free to call if you have any questions.

Tony Tristano

Tony Tristano
Senior Analytical Chemist



STATE OF NEW MEXICO
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

FAX TRANSMITTAL SHEET, DATE: 7-8-91

TO: DAVID BOYER

FROM: Ernie Busch

FAX: 505-334-6170

COMMENTS: STATKCO'S
DAVE, Compare Meridian's
analysis w/ Iull's. I found a before 24 hours
and after 24 hours so that makes it a lot
better. (2)

NO. OF PAGES INCLUDING COVER: 8

CHARGES: _____. REMIT TO LETTERHEAD
ADDRESS.

Q *se*

MERIDIAN OIL

June 4, 1991

Mr. Ernie Busch
District Geologist
State of New Mexico
Oil Conservation Division
1000 Rio Brazos Road
Aztec, NM 87410

RECEIVED
JUN 6 1991
OIL CON. DIV.
DIST. 3

RE: KIFFEN CANYON WASH AREA
LAWSON #1 & #3
SEC. 12, T31N, R11W
SAN JUAN COUNTY, NEW MEXICO

Dear Mr. Busch:

Attached you will find the following regarding the above captioned wells:

1. Wellbore diagrams showing the top of cement (either calculated or from temperature survey).
2. Water analyses taken on May 15, 1991, when the wells were bradenhead tested.
3. Water analyses taken on May 21, 1991, during the latter stages of 24-hour flow tests of both wells. (You will note that these analyses are considerably different from the first samples).

Ernie, we realize that both these wells will require some attention. Our engineering department is actively involved in remedying the situation.

Please advise if you have any questions or need any additional information.

Sincerely,

J.B. Fraser

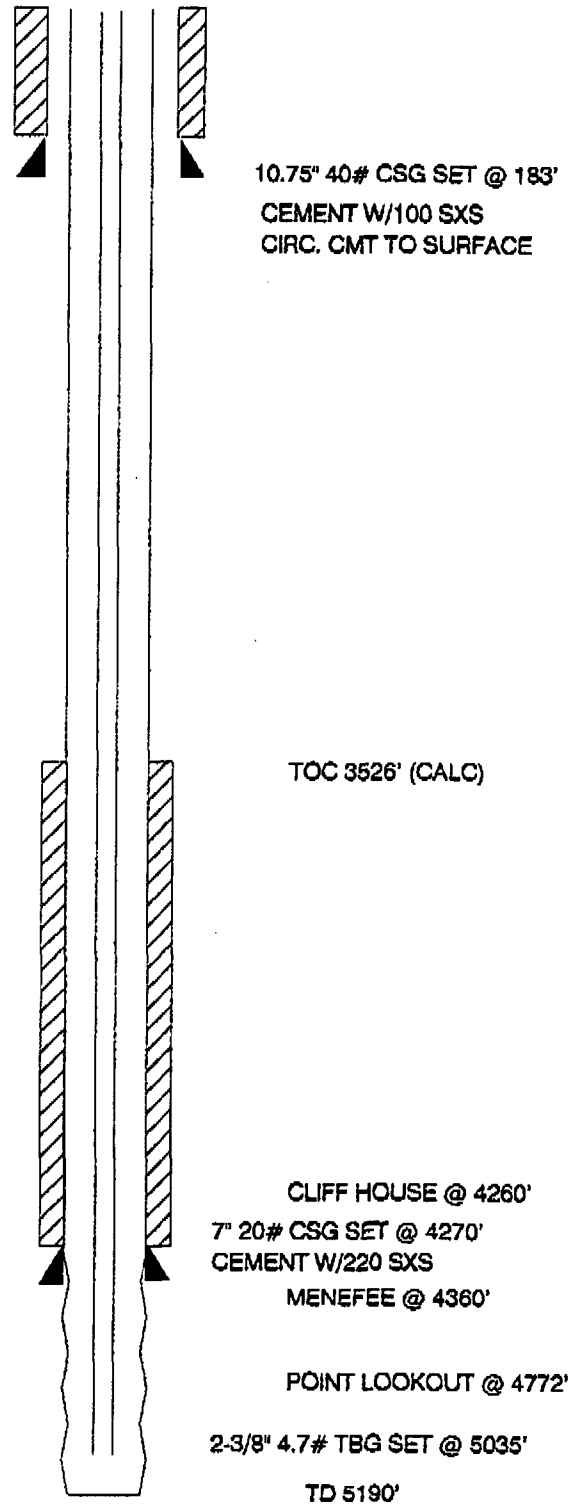
J. B. Fraser
Production Superintendent

JBF/cr

Enclosure

xc: W/O Attachments
L. Jones
L. Nation
G. Dunn

LAWSON #1 MV
WELLBORE DIAGRAM



STRICKCO
Water Analysis Laboratories
FARMINGTON, NEW MEXICO 87401

File WA/0451/91

Company MERIDIAN OIL INC. Well Name Lawson #1 Sample No. One

Formation Mesa Verde Depth N/A Sampled From Bradenhead

Location Sec. 12, T31N-R11W Field N/A County San Juan State N.M.

Date Sampled 5/15/91 Date Analyzed 5/16/91 Engineer WDS

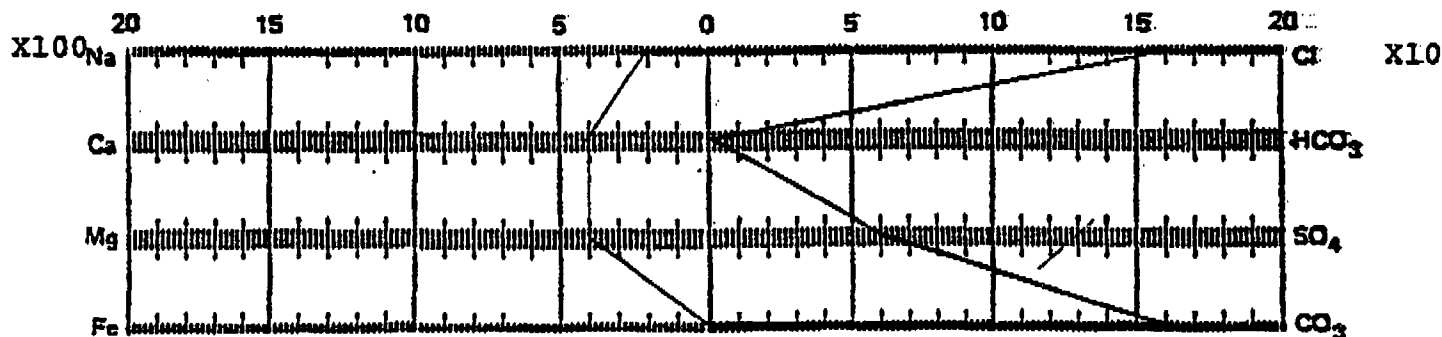
NOTE: The pH & hydroxyl ion indicate a caustic chemical contamination.
This is not a typical Mesa Verde water.

Total Dissolved Solids 11,915 mg/L Calculate Sp. Gr. 1.008 @ 72 °F.

Resistivity 0.58 ohm-meters @ 72 °F. Measured pH 13.10 @ 72 °F. Measured

Constituents	meq/L	mg/L	Constituents	meq/L	mg/L
Sodium	<u>206.4</u>	<u>4,745</u>	Chloride	<u>162.2</u>	<u>5,751</u>
Calcium	<u>4.0</u>	<u>80</u>	Bicarbonate	<u>-0-</u>	<u>-0-</u>
Magnesium	<u>4.0</u>	<u>49</u>	Sulfate	<u>6.2</u>	<u>300</u> (Grav.)
Iron	<u>-0-</u>	<u>-0-</u>	Carbonate	<u>16.0</u>	<u>480</u>
Hydrogen Sulfide	<u>Absent</u>		Hydroxide	<u>30.0</u>	<u>510</u>

Scale: meq/L



All analyses except iron determination performed on a filtered sample.

STRICKCO
Water Analysis Laboratories
FARMINGTON, NEW MEXICO 87401

File WA/0458/91

Company MERIDIAN OIL INC. Well Name Lawson #1 Sample No. One
Formation Mesa Verde Depth N/A Sampled From After 24 hrs.-Bradenhe
Location Sec. 12, 31N-11W Field N/A County San Juan State N.M.
Date Sampled 5/21/91 Date Analyzed 5/22/91 Engineer WDS

Total Dissolved Solids 8,486 mg/L Calculated

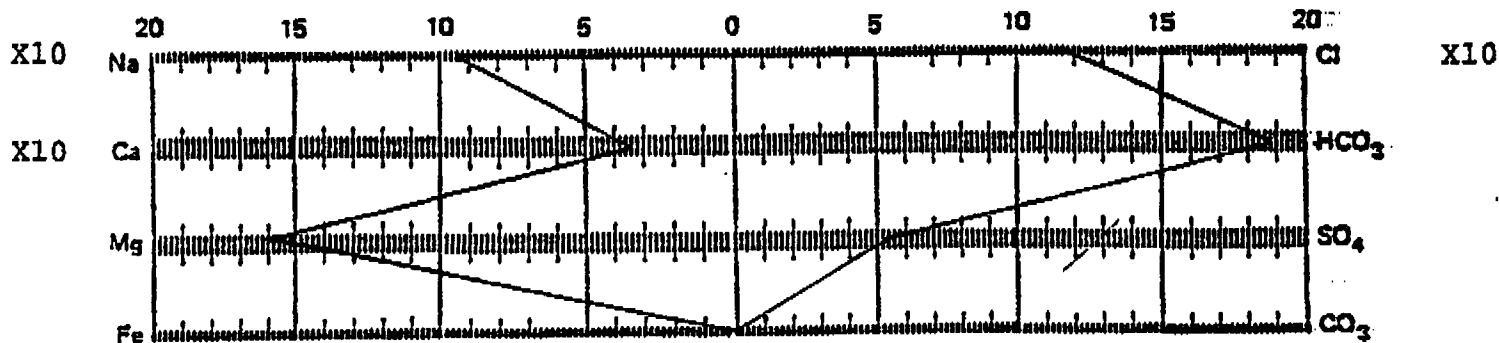
Sp. Gr. 1.005 @ 70 °F.

Resistivity 0.72 ohm-meters @ 70 °F. Measured

pH 6.84 @ 70 °F. Measured

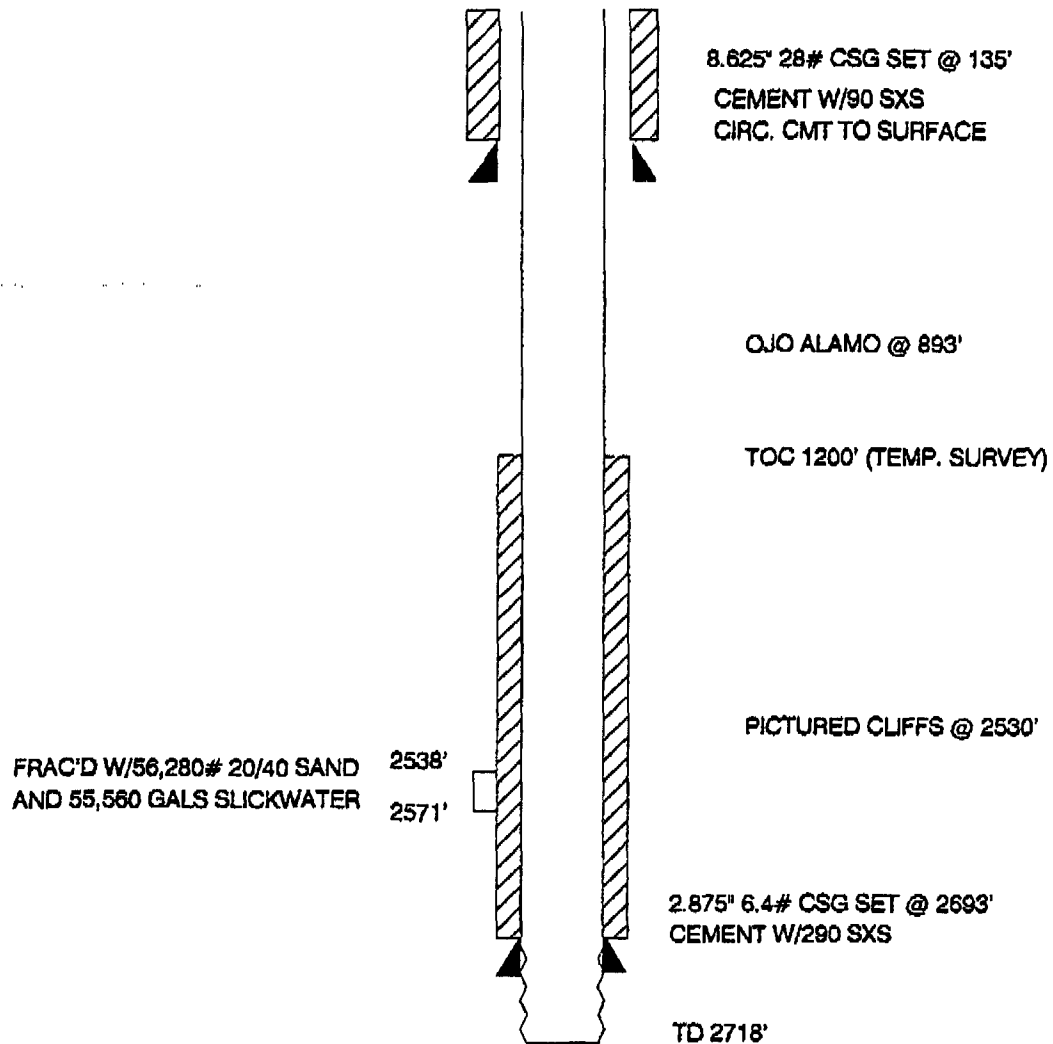
Constituents	meq/L	mg/L	Constituents	meq/L	mg/L
Sodium	<u>92.5</u>	<u>2,127</u>	Chloride	<u>116.2</u>	<u>4,118</u>
Calcium	<u>31.9</u>	<u>640</u>	Bicarbonate	<u>18.8</u>	<u>1,147</u>
Magnesium	<u>16.0</u>	<u>194</u>	Sulfate	<u>5.4</u>	<u>260</u> (Grav.)
Iron	<u>-0-</u>	<u>-0-</u>	Carbonate	<u>-0-</u>	<u>-0-</u>
Hydrogen Sulfide	<u>Absent</u>		Hydroxide	<u>-0-</u>	<u>-0-</u>

Scale: meq/L



All analyses except iron determination performed on a filtered sample.

LAWSON #3 PC
WELLBORE DIAGRAM



STRICKCO
Water Analysis Laboratories
 FARMINGTON, NEW MEXICO 87401

File WA/0452/91

Company MERIDIAN OIL INC. Well Name Lawson #3 Sample No. One

Formation Pictured Cliffs Depth N/A Sampled From Bradenhead

Location Sec. 12, T31N-R11W Field N/A County San Juan State N.M.

Date Sampled 5/15/91 Date Analyzed 5/16/91 Engineer WDS

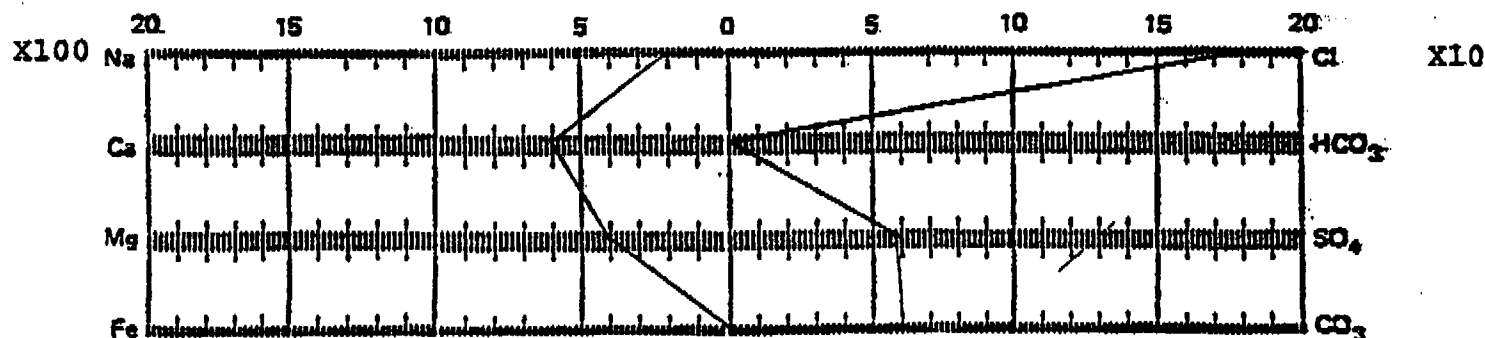
NOTE: The pH & hydroxyl ion are too high & indicate a caustic chemical contamination. This is not a typical Pictured Cliff water.

Total Dissolved Solids 12,405 mg/L Calculated Sp. Gr. 1.008 @ 72 °F.

Resistivity 0.52 ohm-meters @ 72 °F. Measured pH 12.94 @ 72 °F. Measured

Constituents	meq/L	mg/L	Constituents	meq/L	mg/L
Sodium	<u>212.1</u>	<u>4,876</u>	Chloride	<u>180.3</u>	<u>6,390</u>
Calcium	<u>6.0</u>	<u>120</u>	Bicarbonate	<u>-0-</u>	<u>-0-</u>
Magnesium	<u>4.0</u>	<u>49</u>	Sulfate	<u>5.8</u>	<u>280</u> (Grav.)
Iron	<u>-0-</u>	<u>-0-</u>	Carbonate	<u>6.0</u>	<u>180</u>
Hydrogen Sulfide	<u>Absent</u>		Hydroxide	<u>30.0</u>	<u>510</u>

Scale: meq/L



All analyses except iron determination performed on a filtered sample.

STRICKCO
Water Analysis Laboratories
 FARMINGTON, NEW MEXICO 87401

File WA/0469/91

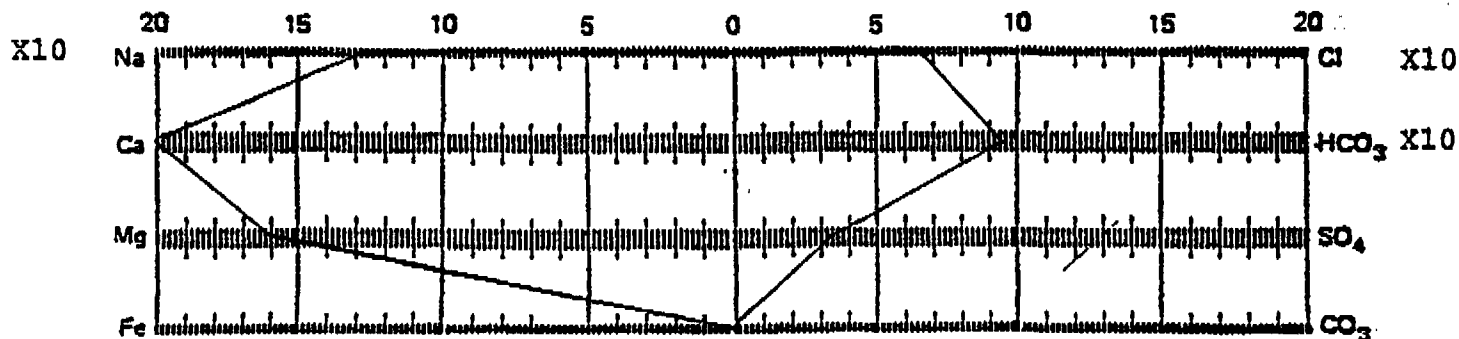
Company MERIDIAN OIL INC. Well Name Lawson #3 (Slim Hole) Sample No. One
 Formation Pictured Cliffs Depth N/A Sampled From Braden Head
 Location Sec. 12, T31N-R11W Field N/A County San Juan State N.M.
 Date Sampled 5/21/91 Date Analyzed 5/23/91 Engineer WDS

Total Dissolved Solids 11,750 mg/L CalculatedSp. Gr. 1.007 @ 68 °F.Resistivity 0.83 ohm-meters @ 68 °F. MeasuredpH 7.08 @ 68 °F. Measured

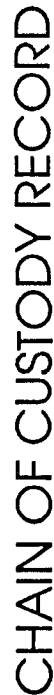
Constituents	meq/L	mg/L
Sodium	<u>126.8</u>	<u>2,915</u>
Calcium	<u>20.0</u>	<u>400</u>
Magnesium	<u>16.0</u>	<u>194</u>
Iron	<u>-0-</u>	<u>-0-</u>
Hydrogen Sulfide	<u>Absent</u>	

Constituents	meq/L	mg/L
Chloride	<u>64.5</u>	<u>2,286</u>
Bicarbonate	<u>95.0</u>	<u>5,795</u>
Sulfate	<u>3.3</u>	<u>160</u> (Grav.)
Carbonate	<u>-0-</u>	<u>-0-</u>
Hydroxide	<u>-0-</u>	<u>-0-</u>

Scale: meq/L



All analyses except iron determination performed on a filtered sample.

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OIL CONSERVATION DIVISION
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'91 JUL 1 AM 11 06

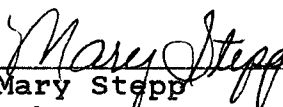
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCD
ID: L1213IN11W
SITE: Lawson #1
LAB NO: F6238

DATE REPORTED: 06/28/91
DATE RECEIVED: 05/21/91
DATE COLLECTED: 05/21/91

Lab pH (s.u.).....	9.13
Lab conductivity, umhos/cm.....	16100
Lab resistivity, ohm-m.....	0.623
Total dissolved solids (180), mg/l..	11000
Total dissolved solids (calc), mg/l.	11200
Total alkalinity as CaCO ₃ , mg/l.....	32.4
Total hardness as CaCO ₃ , mg/l.....	954
Sodium absorption ratio.....	53.3

	mg/l	meq/l
Bicarbonate as HCO ₃	39.7	0.65
Carbonate as CO ₃	0	0
Chloride.....	4320	122
Sulfate.....	2670	55.7
Calcium.....	372	18.6
Magnesium.....	6.37	0.52
Potassium.....	6.09	0.16
Sodium.....	3790	165
Major cations.....		184
Major anions.....		178
Cation/anion difference.....		1.56 %


Mary Stepp
Lab Manager

OIL CONSERVATION DIVISION
RECEIVED

3304 Longmire
College Station, Texas 77845

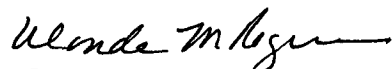
'91 JUL 1 AM 11 06

Case Narrative

On 05-22-91 two sample sets consisting of one sample each was received by Inter-Mountain Laboratories - College Station, TX. Enclosed are copies of the chains of custody indicating the analytical parameters for which analyses were requested.

It is the policy of this laboratory to employ, whenever possible, analytical methods which have been approved by regulatory agencies. The methods which we use are referenced in SW-846, "Test Methods for Evaluating Solid Waste", USEPA, 1986; "Chemical Analysis of Water and Waste", USEPA, 1978; and other references as applicable. All reports in this package have the analytical methods and the references footnoted.

Quality Assurance reports have been included in this package. These reports can be identified by the notation in the upper left hand corner of the report. Please feel free to call if you have any questions. Thank You.



Ulonda M. Rogers
Project Manager

OIL CONSERVATION DIVISION
RECEIVED

'91 JUL 1 AM 11 06

VOLATILE AROMATIC HYDROCARBONS

Client:	NMOCD	Report Date:	05-29-91
Sample ID:	Lawson #1	Date Sampled:	05-21-91
Laboratory Number:	C3076	Date Received:	05-22-91
Analysis Requested:	BTEX	Date Analyzed:	05-28-91
Sample Matrix:	Water	Preservative:	HCl
Condition:	Cool, Intact		

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	0.7	0.4
Toluene	ND	0.4
Ethylbenzene	ND	0.4
p,m-Xylene	1.4	0.4
o-Xylene	ND	0.4

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Toluene-d8	96.7 %
	4-Bromofluorobenzene	93.6 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Ulonda M. Rogers
Analyst

Charles Ball
Review

OIL CONSERVATION DIVISION
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'91 JUL 1 AM 11 06

**** QUALITY ASSURANCE REPORT**
MATRIX DUPLICATE - VOLATILE AROMATIC HYDROCARBONSLaboratory Number: C3076DUP
Analysis: BTEX
Sample Matrix: Water
Condition: IntactDate Sampled: 05-21-91
Date Analyzed: 05-28-91
Preservative: HCl

Parameter	Sample Result (ug/L)	Duplicate Result (ug/L)	Percent Difference
Benzene	0.7	0.6	1.8
Toluene	ND	ND	N/A
Ethylbenzene	ND	ND	N/A

QA ACCEPTANCE CRITERIA: Administrative control limit set at
20% difference.

SURROGATE RECOVERY:	Parameter	% Recovery
	Toluene-d8	94.8
	4-Bromofluorobenzene	90.5

Method: Method 8020, Aromatic Volatile Organics, SW-846, USEPA
(Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Wanda M. Rogers
AnalystCharles B. Ball
Review



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab IML Contract No. _____

OCD Sample No. 9105220845

Collection Date	Collection Time	Collected by —Person/Agency	
<u>5/22/91</u>	<u>0845</u>	<u>E. BUSCH-OCD</u>	OCD

SITE INFORMATION

Sample location LAWSW #3 A-12-31N-11W

Collection Site Description BRADENHEAD

Township, Range, Section, Tract:

31N+ 11W+ 12 AP

SEND ENVIRONMENTAL BUREAU
FINAL NM OIL CONSERVATION DIVISION
REPORT PO Box 2088
TO Santa Fe, NM 87504-2088

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted: 2

- ☐ NF: Whole sample (Non-filtered)
☐ F: Filtered in field with 0.45 μ membrane filter
☐ PF: Pre-filtered w/45 μ membrane filter

- ☐ NA: No acid added
☒ A: HCL
☐ A: 2ml H₂SO₄/L added
☐ A: 5ml conc. HNO₃ added
☐ A: 4ml fuming HNO₃ added

FIELD COMMENTS:

SAMPLING CONDITIONS

- ☐ Bailed ☐ Pump
☐ Dipped ☒ Tap

pH(00400)

8

Water Temp. (00010)

15.8°C

Water level

Discharge

Sample type

Conductivity (Uncorrected)

Conductivity at 25°C

13500 μ mho

4 mho

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☐ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☒ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☐ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☐ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab IML Contract No. _____

OCD Sample No. 9105220900

Collection Date	Collection Time	Collected by —Person/Agency
<u>5/24/09</u>	<u>0900</u>	<u>E. Busch-OCD</u>

/OCD

SITE INFORMATION

Sample location LAWSON #3 M-12-31N-11W

Collection Site Description

Township, Range, Section, Tract:

SEND
FINAL
REPORT
TO ↓
ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted: 1

- ☒ NF: Whole sample (Non-filtered)
☐ F: Filtered in field with 0.45 μ m membrane filter
☐ PF: Pre-filtered w/45 μ m membrane filter

- ☒ NA: No acid added
☐ A: 5ml conc. HNO₃ added
☒ A: HCL
☐ A: 4ml fuming HNO₃ added
☐ A: 2ml H₂SO₄/L added

FIELD COMMENTS:

SAMPLING CONDITIONS

Water level

- ☐ Bailed ☐ Pump
☐ Dipped ☒ Tap

Discharge

Sample type

pH(00400)

8

Conductivity (Uncorrected)

13500

μ mho

Water Temp. (00010)

15.8°C

Conductivity at 25° C

μ mho

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☐ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☒ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☐ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

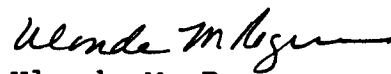
'91 JUL 1 AM 11 06

Case Narrative

On 05-22-91 two sample sets consisting of one sample each was received by Inter-Mountain Laboratories - College Station, TX. Enclosed are copies of the chains of custody indicating the analytical parameters for which analyses were requested.

It is the policy of this laboratory to employ, whenever possible, analytical methods which have been approved by regulatory agencies. The methods which we use are referenced in SW-846, "Test Methods for Evaluating Solid Waste", USEPA, 1986; "Chemical Analysis of Water and Waste", USEPA, 1978; and other references as applicable. All reports in this package have the analytical methods and the references footnoted.

Quality Assurance reports have been included in this package. These reports can be identified by the notation in the upper left hand corner of the report. Please feel free to call if you have any questions. Thank You.


Ulonda M. Rogers
Project Manager



OIL CONSERVATION DIVISION
RECEIVED

'91 JUL 1 AM 11 06

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCD
ID: 0900
SITE: M12-31N-11W
LAB NO: F6254

DATE REPORTED: 06/27/91
DATE RECEIVED: 05/22/91
DATE COLLECTED: 05/22/91

Lab pH (s.u.).....	9.32
Lab conductivity, umhos/cm.....	14600
Lab resistivity, ohm-m.....	0.686
Total dissolved solids (180), mg/l..	12700
Total dissolved solids (calc), mg/l.	12500
Total alkalinity as CaCO ₃ , mg/l.....	34.1
Total hardness as CaCO ₃ , mg/l.....	1090
Sodium absorption ratio.....	47.2

	mg/l	meq/l
Bicarbonate as HCO ₃	41.5	0.68
Carbonate as CO ₃	0	0
Chloride.....	628	17.7
Sulfate.....	7860	164
Calcium.....	434	21.6
Magnesium.....	1.74	0.14
Potassium.....	6.38	0.16
Sodium.....	3580	156
Major cations.....		178
Major anions.....		182
Cation/anion difference.....		1.24 %

Mary Stepp

Mary Stepp
Lab Manager

OIL CONSERVATION DIVISION
RECEIVED

'91 JUL 1 AM 11 06

VOLATILE AROMATIC HYDROCARBONS

Client:	NMOCD	Report Date:	05-29-91
Sample ID:	Lawson #3	Date Sampled:	05-21-91
Laboratory Number:	C3082	Date Received:	05-22-91
Analysis Requested:	BTEX	Date Analyzed:	05-28-91
Sample Matrix:	Water	Preservative:	HCl
Condition:	Cool, Intact		

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	0.4	0.4
Ethylbenzene	ND	0.4
p,m-Xylene	ND	0.4
o-Xylene	ND	0.4

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Toluene-d8	96.1 %
	4-Bromofluorobenzene	92.0 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Wanda M. Rye
Analyst

Charles Ballch
Review

OIL CONSERVATION DIVISION
RECEIVED

'91 JUL 1 AM 11 06

**** QUALITY ASSURANCE REPORT
MATRIX SPIKE - VOLATILE AROMATIC HYDROCARBONS**

Laboratory Number: C3082SPK
Analysis: BTEX
Sample Matrix: Water
Condition: Cool, Intact

Date Sampled: 05-22-91
Date Analyzed: 05-28-91
Preservative: HCl

Parameter	Spike Added (ug/L)	Sample Result (ug/L)	Spiked Sample Result (ug/L)	Percent Recovery
Benzene	20.0	ND	18.8	94.0
Toluene	20.0	0.4	21.7	106.5
Ethylbenzene	20.0	ND	19.6	98.0

QA ACCEPTANCE CRITERIA:	Parameter	Acceptance Range (%)
	Benzene	39 - 150
	Toluene	46 - 148
	Ethylbenzene	32 - 160

SURROGATE RECOVERY:	Parameter	% Recovery
	Toluene-d8	96.4
	4-Bromofluorobenzene	91.8

Method: Method 8020, Aromatic Volatile Organics, SW-846, USEPA
(Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Wanda M. Lyle
Analyst

Charles B. Ball
Review

OIL CONSERVATION DIVISION
RECEIVED

3304 Longmire
College Station, Texas 77845

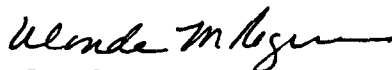
'91 JUL 1 AM 11 06

Case Narrative

On 05-22-91 two sample sets consisting of one sample each was received by Inter-Mountain Laboratories - College Station, TX. Enclosed are copies of the chains of custody indicating the analytical parameters for which analyses were requested.

It is the policy of this laboratory to employ, whenever possible, analytical methods which have been approved by regulatory agencies. The methods which we use are referenced in SW-846, "Test Methods for Evaluating Solid Waste", USEPA, 1986; "Chemical Analysis of Water and Waste", USEPA, 1978; and other references as applicable. All reports in this package have the analytical methods and the references footnoted.

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Ulonda M. Rogers
Project Manager

OIL CONSERVATION DIVISION

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Dissemination: Original Assessment Statement; Copy in Confidentiality Policy Page



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RECEIVED

'91 JUL 1 AM 11 06

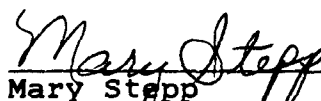
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCD
ID: 0900
SITE: M12-31N-11W
LAB NO: F6254

DATE REPORTED: 06/27/91
DATE RECEIVED: 05/22/91
DATE COLLECTED: 05/22/91

Lab pH (s.u.).....	9.32
Lab conductivity, umhos/cm.....	14600
Lab resistivity, ohm-m.....	0.686
Total dissolved solids (180), mg/l..	12700
Total dissolved solids (calc), mg/l.	12500
Total alkalinity as CaCO ₃ , mg/l.....	34.1
Total hardness as CaCO ₃ , mg/l.....	1090
Sodium absorption ratio.....	47.2

	mg/l	meq/l
Bicarbonate as HCO ₃	41.5	0.68
Carbonate as CO ₃	0	0
Chloride.....	628	17.7
Sulfate.....	7860	164
Calcium.....	434	21.6
Magnesium.....	1.74	0.14
Potassium.....	6.38	0.16
Sodium.....	3580	156
Major cations.....		178
Major anions.....		182
Cation/anion difference.....		1.24 %


Mary Stepp
Lab Manager

OIL CONSERVATION DIVISION
RECEIVED

'91 JUL 1 AM 11 06

VOLATILE AROMATIC HYDROCARBONS

Client:	NMOCD	Report Date:	05-29-91
Sample ID:	Lawson #3	Date Sampled:	05-21-91
Laboratory Number:	C3082	Date Received:	05-22-91
Analysis Requested:	BTEX	Date Analyzed:	05-28-91
Sample Matrix:	Water	Preservative:	HCl
Condition:	Cool, Intact		

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.4
Toluene	0.4	0.4
Ethylbenzene	ND	0.4
p,m-Xylene	ND	0.4
o-Xylene	ND	0.4

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Toluene-d8	96.1 %
	4-Bromofluorobenzene	92.0 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Wanda M. Lynn
Analyst

Charles Ballek
Review

OIL CONSERVATION DIVISION
RECEIVED

'91 JUL 1 AM 11 06

**** QUALITY ASSURANCE REPORT
MATRIX SPIKE - VOLATILE AROMATIC HYDROCARBONS**Laboratory Number: C3082SPK
Analysis: BTEX
Sample Matrix: Water
Condition: Cool, IntactDate Sampled: 05-22-91
Date Analyzed: 05-28-91
Preservative: HCl

Parameter	Spike Added (ug/L)	Sample Result (ug/L)	Spiked Sample Result (ug/L)	Percent Recovery
Benzene	20.0	ND	18.8	94.0
Toluene	20.0	0.4	21.7	106.5
Ethylbenzene	20.0	ND	19.6	98.0

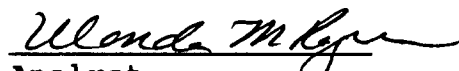
QA ACCEPTANCE CRITERIA:	Parameter	Acceptance Range (%)
	Benzene	39 - 150
	Toluene	46 - 148
	Ethylbenzene	32 - 160

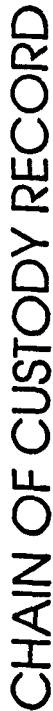
SURROGATE RECOVERY:	Parameter	% Recovery
	Toluene-d8	96.4
	4-Bromofluorobenzene	91.8

Method: Method 8020, Aromatic Volatile Organics, SW-846, USEPA
(Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:


Analyst
Review



CHAIN OF CUSTODY RECORD

[illegible]



OIL CONSERVATION DIVISION
RECEIVED

'91 JUL 1 AM 11 06

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCB
ID: L1213IN11W
SITE: Lawson #1
LAB NO: F6238

DATE REPORTED: 06/28/91
DATE RECEIVED: 05/21/91
DATE COLLECTED: 05/21/91

Lab pH (s.u.).....	9.13
Lab conductivity, umhos/cm.....	16100
Lab resistivity, ohm-m.....	0.623
Total dissolved solids (180), mg/l..	11000
Total dissolved solids (calc), mg/l.	11200
Total alkalinity as CaCO ₃ , mg/l.....	32.4
Total hardness as CaCO ₃ , mg/l.....	954
Sodium absorption ratio.....	53.3

	mg/l	meq/l
Bicarbonate as HCO ₃	39.7	0.65
Carbonate as CO ₃	0	0
Chloride.....	4320	122
Sulfate.....	2670	55.7
Calcium.....	372	18.6
Magnesium.....	6.37	0.52
Potassium.....	6.09	0.16
Sodium.....	3790	165
Major cations.....		184
Major anions.....		178
Cation/anion difference.....		1.56 %


Mary Stepp
Lab Manager

OIL CONSERVATION DIVISION
RECEIVED

'91 JUL 1 AM 11 06

VOLATILE AROMATIC HYDROCARBONS

Client:	NMOCD	Report Date:	05-29-91
Sample ID:	Lawson #1	Date Sampled:	05-21-91
Laboratory Number:	C3076	Date Received:	05-22-91
Analysis Requested:	BTEX	Date Analyzed:	05-28-91
Sample Matrix:	Water	Preservative:	HCl
Condition:	Cool, Intact		

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	0.7	0.4
Toluene	ND	0.4
Ethylbenzene	ND	0.4
p,m-Xylene	1.4	0.4
o-Xylene	ND	0.4

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Toluene-d8	96.7 %
	4-Bromofluorobenzene	93.6 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Ulonda M. Rogers
Analyst

Charles B. Baker
Review

OIL CONSERVATION DIVISION
RECEIVED

'91 JUL 1 AM 11 06

**** QUALITY ASSURANCE REPORT**
MATRIX DUPLICATE - VOLATILE AROMATIC HYDROCARBONSLaboratory Number: C3076DUP
Analysis: BTEX
Sample Matrix: Water
Condition: IntactDate Sampled: 05-21-91
Date Analyzed: 05-28-91
Preservative: HCl

Parameter	Sample Result (ug/L)	Duplicate Result (ug/L)	Percent Difference
Benzene	0.7	0.6	1.8
Toluene	ND	ND	N/A
Ethylbenzene	ND	ND	N/A

QA ACCEPTANCE CRITERIA: Administrative control limit set at
20% difference.

SURROGATE RECOVERY:	Parameter	% Recovery
	Toluene-d8	94.8
	4-Bromofluorobenzene	90.5

Method: Method 8020, Aromatic Volatile Organics, SW-846, USEPA
(Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

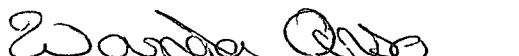
Wanda M. Rogers
AnalystCharles B. Ball
Review

OIL CONSERVATION DIVISION
RECEIVED

CLIENT: NMOCD '91 AUG 12 AM 9 49 DATE REPORTED: 08/09/91
ID: L1213IN11W
SITE: Lawson #1 DATE RECEIVED: 05/21/91
LAB NO: F6238 DATE COLLECTED: 05/21/91

Lab pH (s.u.)..... 9.13
Lab conductivity, umhos/cm..... 16100
Lab resistivity, ohm-m..... 0.623
Total dissolved solids (180), mg/l.. 11000
Total dissolved solids (calc), mg/l. 11200
Total alkalinity as CaCO₃, mg/l..... 32.4
Total hardness as CaCO₃, mg/l..... 954
Sodium absorption ratio..... 53.3

	mg/l	meq/l
Bicarbonate as HCO ₃	29.9	0.49
Carbonate as CO ₃	4.8	0.16
Chloride.....	4320	122
Sulfate.....	2670	55.7
Calcium.....	372	18.6
Magnesium.....	6.37	0.52
Potassium.....	6.09	0.16
Sodium.....	3790	165
Major cations.....		184
Major anions.....		178
Cation/anion difference.....		1.56 %



Wanda Orso
Water Lab Manager

RECEIVED

AUG 12 1991

OIL CONSERVATION DIV.
SANTA FE

CLIENT: NMOCD
ID: L1213IN11W
SITE: Lawson #1
LAB NO: F6238

DATE REPORTED: 08/09/91
DATE RECEIVED: 05/21/91
DATE COLLECTED: 05/21/91

Lab pH (s.u.).....	7.59
Lab conductivity, umhos/cm.....	16100
Lab resistivity, ohm-m.....	0.623
Total dissolved solids (180), mg/l..	11000
Total dissolved solids (calc), mg/l.	11300
Total alkalinity as CaCO ₃ , mg/l.....	24
Total hardness as CaCO ₃ , mg/l.....	1010
Sodium absorption ratio.....	51.8

	mg/l	meq/l
Bicarbonate as HCO ₃	29.3	0.48
Carbonate as CO ₃	0	0
Chloride.....	4330	122
Sulfate.....	2740	57
Calcium.....	356	17.8
Magnesium.....	29.3	2.41
Potassium.....	6.09	0.16
Sodium.....	3790	165
Major cations.....		185
Major anions.....		180
Cation/anion difference.....		1.47 %

This report reflects TH, Ca, Cl, SO₄, and Alkalinity reruns on 08-08-91.



Wanda Orso
Water Lab Manager

RECEIVED

AUG 12 1991

OIL CONSERVATION DIV.
SANTA FE

CLIENT: NMOCD
ID: 0900
SITE: M12-31N-11W
LAB NO: F6254

DATE REPORTED: 08/09/91
DATE RECEIVED: 05/22/91
DATE COLLECTED: 05/22/91

Lab pH (s.u.)..... 9.32
Lab conductivity, umhos/cm..... 14600
Lab resistivity, ohm-m..... 0.686
Total dissolved solids (180), mg/l.. 12700
Total dissolved solids (calc), mg/l. 12500
Total alkalinity as CaCO₃, mg/l..... 34.1
Total hardness as CaCO₃, mg/l..... 1090
Sodium absorption ratio..... 47.2

	mg/l	meq/l
Bicarbonate as HCO ₃	6.71	0.11
Carbonate as CO ₃	17.1	0.57
Chloride.....	628	17.7
Sulfate.....	7860	164
Calcium.....	434	21.6
Magnesium.....	1.74	0.14
Potassium.....	6.38	0.16
Sodium.....	3580	156
Major cations.....		178
Major anions.....		182
Cation/anion difference.....		1.24 %



Wanda Orso
Water Lab Manager

RECEIVED

AUG 12 1991

OIL CONSERVATION DIV.
SANTA FE

CLIENT: NMOCD
ID: 0900
SITE: M12-31N-11W
LAB NO: F6254

DATE REPORTED: 08/09/91
DATE RECEIVED: 05/22/91
DATE COLLECTED: 05/22/91

Lab pH (s.u.).....	7.61
Lab conductivity, umhos/cm.....	14600
Lab resistivity, ohm-m.....	0.686
Total dissolved solids (180), mg/l..	12700
Total dissolved solids (calc), mg/l.	12600
Total alkalinity as CaCO ₃ , mg/l.....	37.1
Total hardness as CaCO ₃ , mg/l.....	1040
Sodium absorption ratio.....	48.3

	mg/l	meq/l
Bicarbonate as HCO ₃	45.1	0.74
Carbonate as CO ₃	0	0
Chloride.....	628	17.7
Sulfate.....	8010	167
Calcium.....	354	17.7
Magnesium.....	37.7	3.1
Potassium.....	6.38	0.16
Sodium.....	3580	156
Major cations.....		177
Major anions.....		185
Cation/anion difference.....		2.41 %

This report reflects TH, Ca, Cl, SO₄, and Alkalinity reruns on 08-08-91.


Wanda Orso
Water Lab Manager

RECEIVED
AUG 12 1991
OIL CONSERVATION DIV.
SANTA FE

Anions

meq

Cations

200 160 120 80 40 0 40 80 120 160 200

Na+K Cl
Ca HCO3
Mg SO4
Fe CO3

910710 GILKEY

890802 D. ISRAEL

901219 CEDAR HILL SWD

910521 LAWSON #1

910522 LAWSON #3

Drawn: August 9, 1991
By: David G. Boyer

WELL ID : Comparison Graphs
Cedar Hill-Kiffen Canyon

NEW MEXICO OIL CONSERVATION DIVISION

Figure : 1

Anions

meq

Cations

200 160 120 80 40 0 40 80 120 160 200

Na+K Cl
Ca HCO3
Mg SO4

910710 GILKEY

890802 D. ISRAEL

901219 CEDAR HILL SWD

910521 LAWSON #1

910522 LAWSON #3

Drawn: August 9, 1991
By: David G. Boyer

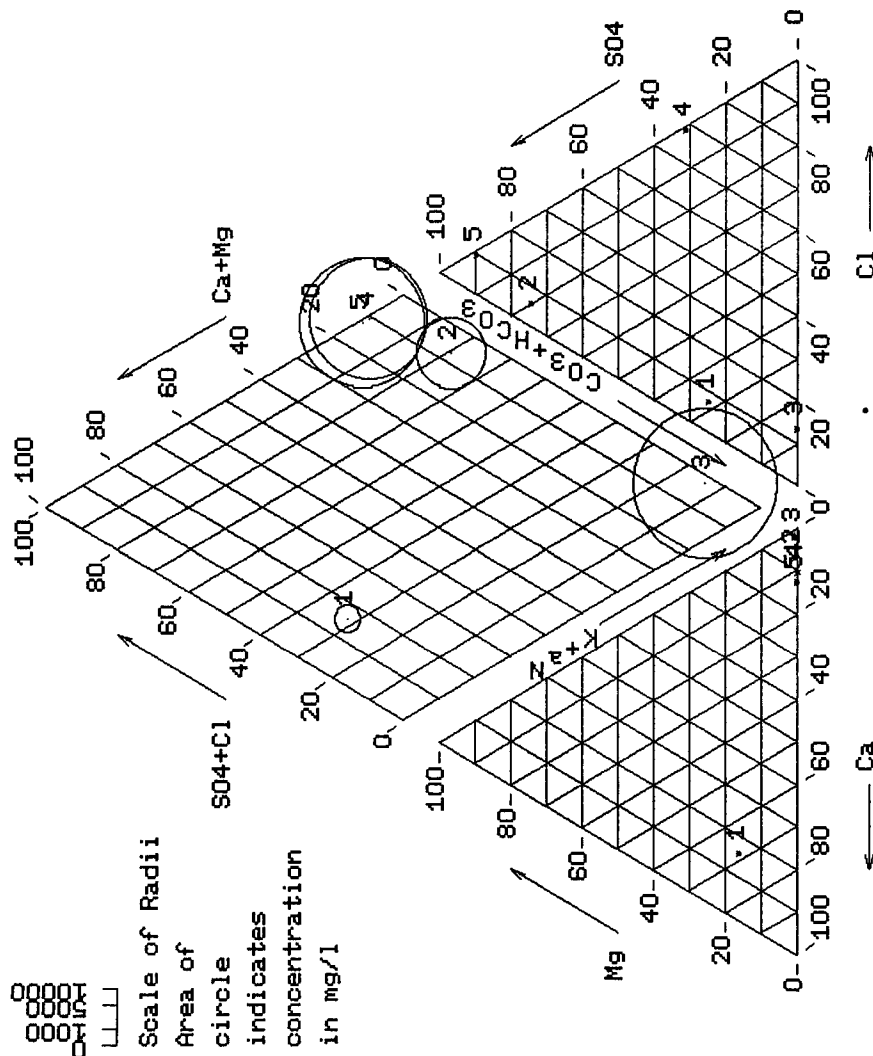
WELL ID : Comparison Graphs
Cedar Hill-Kiffen Canyon

NEW MEXICO OIL CONSERVATION DIVISION

Figure : 1

Date Zone Well I.D.
YYMMDD

1	910710	1,3,5	GILKEY
2	890802	2,4,7	D. ISRAEL
3	901219	2,3,8	CEDAR HILL S
4	910521	2,4,7	LAWSON #1
5	910522	2,4,7	LAWSON #3



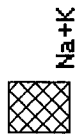
WELL ID : Comparison Graphs
Cedar Hill-Kiffen Canyon

Drawn: August 9, 1991
By: David G. Boyer

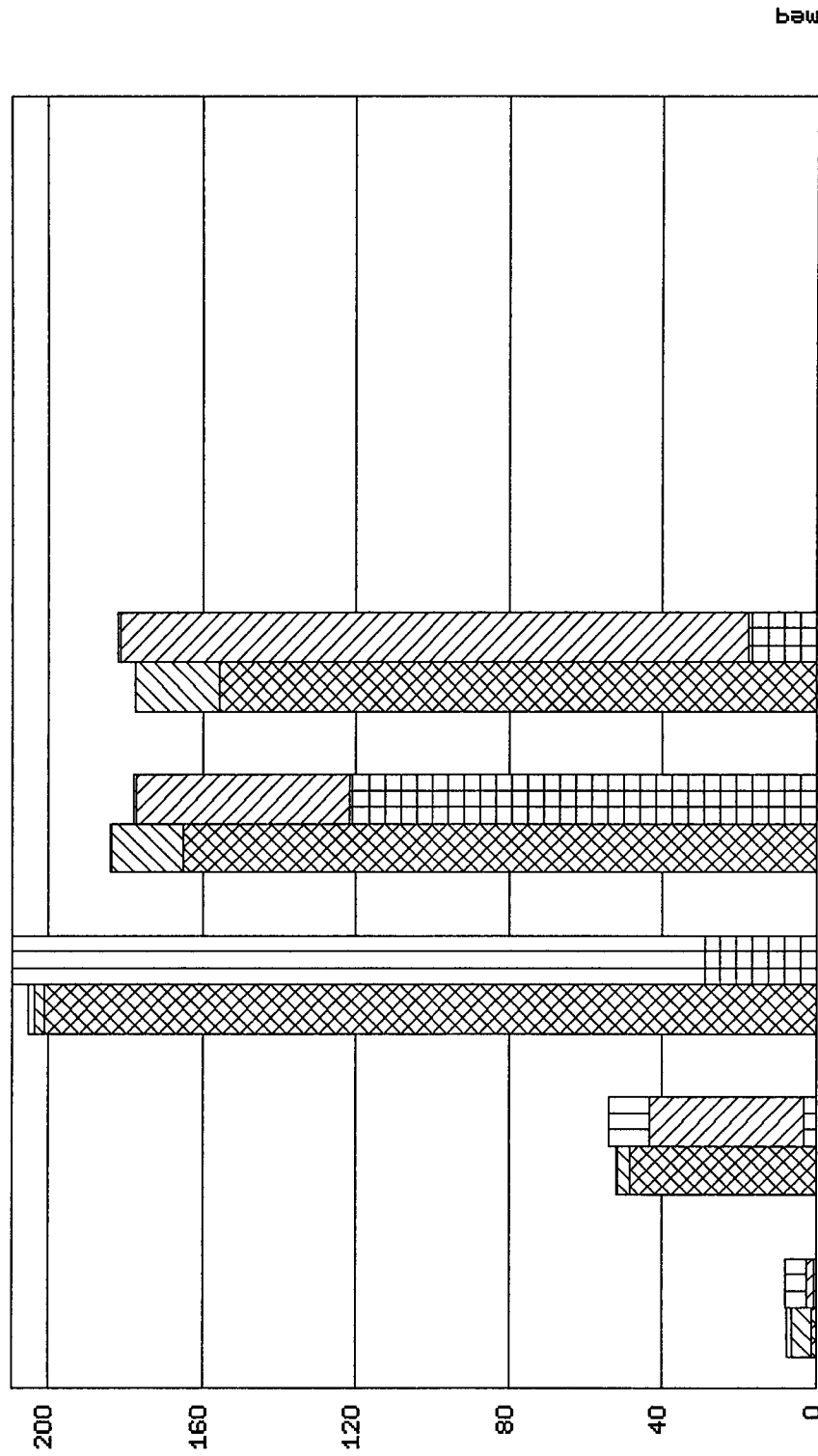
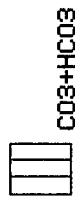
NEW MEXICO OIL CONSERVATION DIVISION

Figure : 2

Cations



Anions



910710 890802 901219 910521
GILKEY D. ISRAEL CEDAR HILL EMBOSON #1 LAWSON #3

WELL ID : Comparison Graphs
Cedar Hill-Kiffen Canyon

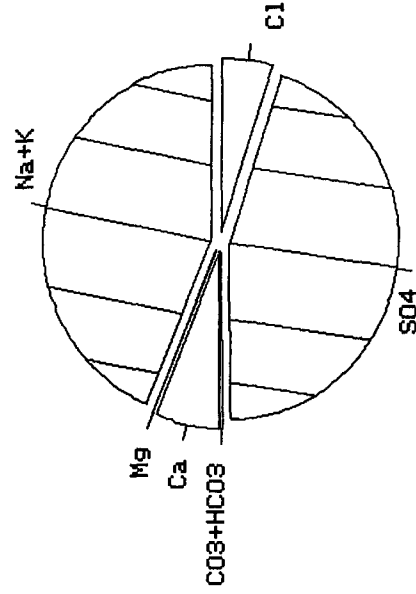
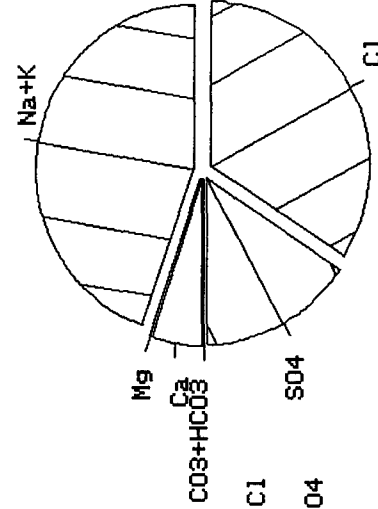
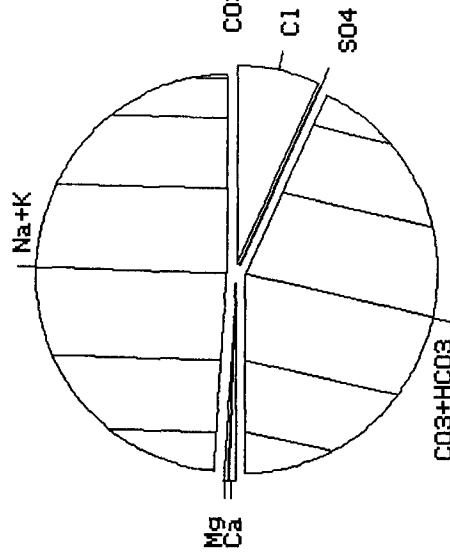
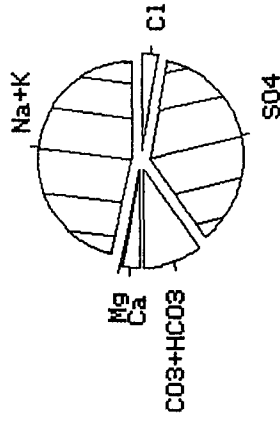
Drawn: August 9, 1991
By: David G. Boyer

NEW MEXICO OIL CONSERVATION DIVISION

Figure : 3

Scale of Radii
Area of
circle
indicates
concentration
in mg/l

0 1000 5000 10000



WELL ID : Comparison Graphs
Cedar Hill-Kiffen Canyon

Drawn: August 9, 1991
By: David G. Boyer

NEW MEXICO OIL CONSERVATION DIVISION



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab JML Contract No. _____

OCD Sample No. 91051706RP

Collection Date	Collection Time	Collected by—Person/Agency	
5/17/91	0600	DOYLE CASTLE APPRAHOE	/OCD

SITE INFORMATION

Sample location M-35-32N-11W HORTON #1R

Collection Site Description SAMPLE WAS TAKEN BY DRILLING CREW WHEN THEY ENCOUNTERED A GAS FLOW AT 1300' WHILE DRILLING THE HORTON #1R

Township, Range, Section, Tract:

SEND ENVIRONMENTAL BUREAU
FINAL NM OIL CONSERVATION DIVISION
REPORT PO Box 2088
TO Santa Fe, NM 87504-2088

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted:

- ☒ NF: Whole sample (Non-filtered)
☐ F: Filtered in field with 0.45 μ membrane filter
☐ PF: Pre-filtered w/45 μ membrane filter

- ☒ NA: No acid added
☐ A: HCL
☐ A: 2ml H₂SO₄/L added
☐ A: 5ml conc. HNO₃ added
☐ A: 4ml fuming HNO₃ added

SAMPLING CONDITIONS	Water level
	Discharge
	Sample type
	Conductivity (Uncorrected)
☐ Bailed ☐ Pump ☒ Dipped ☐ Tap	Conductivity at 25° C
pH(00400) <u>9</u>	
Water Temp. (00010) <u>22°C</u>	

FIELD COMMENTS:

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☐ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☐ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☒ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	



OIL CONSERVATION DIVISION
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'91 JUN 24 AM 11 56

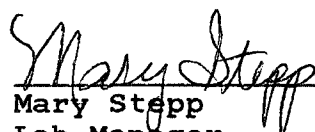
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCD
ID: Horton1R
SITE: M-35-32N-11W
LAB NO: F6234

DATE REPORTED: 06/19/91
DATE RECEIVED: 05/17/91
DATE COLLECTED: 05/17/91

Lab pH (s.u.).....	7.27
Lab conductivity, umhos/cm.....	17300
Lab resistivity, ohm-m.....	0.578
Total dissolved solids (180), mg/l..	11400
Total dissolved solids (calc), mg/l.	11300
Total alkalinity as CaCO ₃ , mg/l.....	79.9
Total hardness as CaCO ₃ , mg/l.....	1840
Sodium absorption ratio.....	34.1

	mg/l	meq/l
Bicarbonate as HCO ₃	97.6	1.6
Carbonate as CO ₃	0	0
Chloride.....	5030	142
Sulfate.....	2120	44.1
Calcium.....	720	35.9
Magnesium.....	9.89	0.81
Potassium.....	10.6	0.27
Sodium.....	3360	146
Major cations.....		183
Major anions.....		188
Cation/anion difference.....		1.24 %


Mary Stepp
Lab Manager

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

LABORATORY SAMPLE RECORD

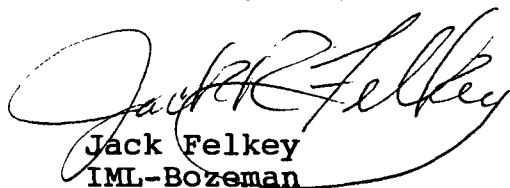
Disbursement: Original Assignment Statement; Copy to Construction Field File

CASE NARRATIVE

On May 13, 1991, one water sample was received at Inter-Mountain Labs - Bozeman, Montana for analysis. The chain of custody form indicated a request for analysis of BTEX parameters by Method 8020.

The water sample (F6204) was found to contain no targeted analytes above method detection limits.

Limits of detection for each instrument/analysis are determined by sample matrix effects, instrument performance under standard conditions, and dilution requirements to maintain chromatography output within calibration ranges.


Jack Felkey
IML-Bozeman

OCD745

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OIL CONSERVATION DIV.
SANTA FE

CLIENT: NMOCD
ID: Head
SITE: Kiffen Wash
LAB NO: F6204

DATE REPORTED: 06/04/91
DATE RECEIVED: 05/08/91
DATE COLLECTED: 05/08/91

Lab pH (s.u.).....	7.57
Lab conductivity, umhos/cm.....	3590
Lab resistivity, ohm-m.....	2.79
Total dissolved solids (180), mg/l..	3420
Total dissolved solids (calc), mg/l.	3260
Total alkalinity as CaCO ₃ , mg/l.....	119
Total hardness as CaCO ₃ , mg/l.....	1660
Sodium absorption ratio.....	3.65

	mg/l	meq/l
Bicarbonate as HCO ₃	145	2.37
Carbonate as CO ₃	0	0
Chloride.....	56.8	1.6
Sulfate.....	2180	45.4
Calcium.....	527	26.3
Magnesium.....	83.1	6.84
Potassium.....	3.1	0.08
Sodium.....	341	14.8
Major cations.....		48
Major anions.....		49.3
Cation/anion difference.....		1.34 %

Mary Stepp

Mary Stepp
Lab Manager

*Kiffen Wash - Above Contamination
Location: T32N, R11W, 28.32*

RJB

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OIL CONSERVATION DIV.
SANTA FE

BETX
AROMATIC VOLATILE ORGANICS

Client:	OCD	Date Reported:	05/17/91
Sample ID:	Head of Kiffen	Date Sampled:	05/09/91
Project ID:	Head of Kiffen	Date Received:	05/13/91
Laboratory ID:	B91745 (F6204)	Date Analyzed:	05/16/91
Matrix:	Aqueous	Injection Vol:	5 ml
Preservative:	Cool		
Condition:	Good		

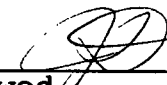
<u>Parameter</u>	<u>Analytical Result</u>	<u>Detection Limit</u>	<u>Units</u>
Benzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
(M) & (P) Xylene	ND	1.0	ug/L
(O) Xylene	ND	1.0	ug/L

ND - Parameter not detected at given detection level.

Comments:Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, Vol. IB, United States Environmental Protection Agency, November 1986.

Analysis Method: Gas Chromatograph / Purge and Trap / PID


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JUN 07 1991

OIL CONSERVATION DIV.
SANTA FE

BETX
AROMATIC VOLATILE ORGANICS

Client:	OCD	Date Reported:	05/17/91
Sample ID:	Travel blank	Date Sampled:	05/09/91
Project ID:	Head of Kiffen	Date Received:	05/13/91
Laboratory ID:	B91745 (F6204)	Date Analyzed:	05/16/91
Matrix:	Aqueous	Injection Vol:	5 ml
Preservative:	Cool		
Condition:	Good		

Parameter -----	Analytical Result -----	Detection Limit -----	Units -----
Benzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
(M) & (P) Xylene	ND	1.0	ug/L
(O) Xylene	ND	1.0	ug/L

ND - Parameter not detected at given detection level.

Comments:

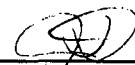
Reference:

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, Vol. IB, United States Environmental Protection Agency, November 1986.

Analysis Method: Gas Chromatograph / Purge and Trap / PID


Analyst

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OIL CONSERVATION DIV.
SANTA FE

**PURGEABLE AROMATICS
MATRIX SPIKE SUMMARY**

FILE:	600SR602		
Client:	OCD		
Sample ID:	Matrix Spike	Report Date:	05/17/91
Laboratory ID:	B91600MS	Date Sampled:	N/A
Sample Matrix:	Aqueous	Date Received:	04/29/91
Preservative:	Cool	Date Analyzed:	04/30/91
Condition:	Good		

Based on PID Response Factors

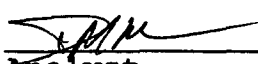
Parameter	Sample Recovery	Matrix Recovery	Spike Recovery	Spike Amount	Percent Recovery
Benzene	0.50	10.10	9.60	10.00	96 %
Toluene	0.50	9.25	8.75	10.00	88 %
Chlorobenzene	0.00	17.85	17.85	20.00	89 %
Ethylbenzene	0.20	8.15	7.95	10.00	80 %
1,3-Dichlorobenzene	0.32	17.40	17.08	20.00	85 %
1,4-Dichlorobenzene	0.57	17.95	17.38	20.00	87 %
1,2-Dichlorobenzene	0.25	27.10	26.85	20.00	134 %

All unidentified values are in total mass units of nanograms.

ND - Parameter not detected at method detection limit.

Comments:Reference:

Method 602, Purgeable Aromatics, Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, Environmental Protection Agency, Federal Register, 40 CFR 136, Appendix A, October 1984.


Analyst**RECEIVED**

JUN 07 1991

OIL CONSERVATION DIV.
SANTA FE
Reviewed



STATE OF NEW MEXICO
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT - IN DIVISION
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

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'91 MAY 9 AM 8 47
1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

May 3, 1991

Mr. Buddy Shaw
Amoco Production Company
S.J. Operations center
200 S. Amoco Court
Farmington, NM. 87401

Re: Kiffen Canyon Wash Gas Seep

Dear Buddy:

The wells on the attached list are in a sixteen section area that surrounds a significant gas seep that starts in P-34-32N-11W and trends southeasterly into A-3-31N-11W along Kiffen Canyon Wash. You are to determine which wells have had or do have casing leaks, by performing bradenhead and intermediate casing valve tests. All of these tests must be witnessed by this office. Provide a list of cathodic protection wells and note the depths and casing, if known, and any occurrence of gas and or water flow. In addition review cement records to determine tops of all wells. In the absence of a temperature or cement bond log, calculate the top of cement using 75% fillup. Note any unusual well production behavior such as an anomalous drop in production, etc.

Submit the requested information and a schedule of testing to this office by June 1, 1991.

Sincerely,


Ernie Busch, District Geologist

xc: Farmington Resource Area
Operator File



K. 55 Gen Canyon

May 2, 1981

Windy, warm, partly
cloudy, dusty

Spring water from base
of 75' embankment
sandy unconsolidated
sediment.

Spring water has grassy
summerset ~~seen~~ in
sediment. Gas and
discolored sands at
site of bubbles. Strong
H₂S odor, white salts
on surface (and in
entire wash). No sheen or
oil

9105021415

Bubbling Springs

Surface & lower from
bench to array bottom
16"-18" deep.

Sample for VOA(2), S/A, H₂O
pH 7

9105021432

Sample from dug hole
8-10' from embankment
Face 15' from bench
end.

VOA only (2) S/A

Gas
wells

Sample Turbid, black,
reduced organic
matter, coals and
grains.

Cottonwood
Tree

Gas
Sample
Site 1432

Hole #1

Secondary
flow
Bench 6"-8"
Sample point
flow

Gas Sample Site #2

Sample from dug hole
9105021503

VOA only

First Water Seeps

9105021610

VOA(2), C/A

pH = 7

Seeps from box of 15 Embarked

H₂S odor, Gas bubbles

in seep. Sample from

dug hole near end

of seeps. Some oily

scum, iron staining,

black organic staining

Kissen Canyon Bore hole

30' up from Road crossing

No water at 5 feet

Dark, black, moist fine grained

sand, some clay at 4 feet

Slight odor - Musty, NO H₂C

odor.

Horton Springs - Upper Hole

Sample from springs below cottonwood

9105021735

Sample for VOA(2) C/A and

pH 6.5 above gas well

Gas bubbles from seeps

Lower hole

9105031740

Sample for VOA(1)

Field Blank

9105031620

Sample from water, ~~from~~

Carried from Septa Fe

VOA(2)

CHAIN OF CUSTODY RECORD

FILE COPY

Client/Project Name		Project Location		ANALYSES / PARAMETERS	
OC8 - K. Fien Canyon				✓	
Sampler: (Signature) <i>[Signature]</i>		Chain of Custody Tape No.		Remarks	
Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers
Pulling Sp. Surface	9/25/02	1415	C2964	H ₂ O	3
" / 1. Dug Hole	"	1432	C2965		1
Gas Site # 2 Hole	"	1505	C2966		1
First Water Sep	"	1610	C2967		2
Field Blank	"	1620	C2968		1
Holensprinkle Upper	"	1735	C2969		2
" / Lower	"	1740	C2970		1
OIL CONSERVATION DIVISION RECEIVED 91 MAR 26 PM 2 12					
Relinquished by: (Signature) <i>[Signature]</i>		Date	Time	Received by: (Signature) <i>[Signature]</i>	Date
		5-3-91	1500		5-3-91
Relinquished by: (Signature) <i>[Signature]</i>		Date	Time	Received by: (Signature)	Date
		5-3-91	1540		
Relinquished by: (Signature) <i>[Signature]</i>		Date	Time	Received by laboratory: (Signature)	Date
					5-6-91
Inter-Mountain Laboratories, Inc.					

☐ 1633 Terra Avenue Sheridan, Wyoming 82801 Telephone (307) 672-8945
☒ 1714 Phillips Circle Gillette, Wyoming 82716 Telephone (307) 682-8945
☒ 2506 West Main Street Farmington, NM 87401 Telephone (505) 326-4737
☐ 910 Technology Blvd. Suite B Bozeman, Montana 59715 Telephone (406) 586-8450
☐ Route 3, Box 256 College Station, TX 77845 Telephone (409) 776-8945
☐ 3304 Longmire Drive College Station, TX 77845 Telephone (409) 774-4999

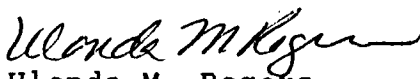
01094

Case Narrative

On 05-06-91 one sample set consisting of seven samples was received by Inter-Mountain Laboratories - College Station, TX. The sample set was identified as Kiffen Canyon. Enclosed is a copy of the chain of custody indicating the analytical parameters for which analyses were performed.

It is the policy of this laboratory to employ analytical methods which have been approved by regulatory agencies whenever possible. The analytical methods which we employ are referenced in SW-846, "Test Methods for Evaluating Solid Waste", USEPA, 1986; "Chemical Analysis of Water and Waste", USEPA, 1978; and other references as applicable. All reports in this package have the analytical methods and the references footnoted.

Quality Assurance reports have been included in this package. These reports can be identified by the notation in the upper left hand corner of the report. Please feel free to call if you have any questions. Thank you.


Ulonda M. Rogers
Project Manager

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SANTA FE



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'91 JUL 1 AM 11 06

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCD
ID: Surface
SITE: Bubbling Springs
LAB NO: F6190

DATE REPORTED: 06/27/91
DATE RECEIVED: 05/03/91
DATE COLLECTED: 05/02/91

Lab pH (s.u.).....	8.25
Lab conductivity, umhos/cm.....	5480
Lab resistivity, ohm-m.....	1.82
Total dissolved solids (180), mg/l..	4720
Total dissolved solids (calc), mg/l.	4660
Total alkalinity as CaCO ₃ , mg/l.....	222
Total hardness as CaCO ₃ , mg/l.....	1260
Sodium absorption ratio.....	12.1

	mg/l	meq/l
Bicarbonate as HCO ₃	271	4.44
Carbonate as CO ₃	0	0
Chloride.....	87.2	2.46
Sulfate.....	2950	61.6
Calcium.....	477	23.8
Magnesium.....	17.9	1.47
Potassium.....	2.7	0.07
Sodium.....	989	43
Major cations.....		68.3
Major anions.....		68.4
Cation/anion difference.....		0.08 %

Trace metals by AA (dissolved concentration), mg/l

	Analytical Result:	Detection Limit:
Arsenic (As).....	0.123	<0.005
Mercury (Hg).....	ND	<0.001
Selenium (Se).....	ND	<0.005



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2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

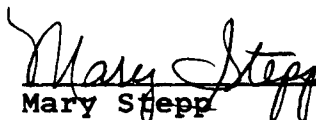
CLIENT: NMOCD
ID: Surface
SITE: Bubbling Springs
LAB NO: F6190

DATE REPORTED: 06/27/91
DATE RECEIVED: 05/03/91
DATE COLLECTED: 05/02/91

Trace metals by ICAP (total concentration), mg/l

	Analytical Result:	Detection Limit:
Silver (Ag).....	ND	<0.01
Aluminum (Al).....	0.2	<0.1
Arsenic (As).....	0.136	<0.005
Boron (B).....	0.35	<0.01
Barium (Ba).....	ND	<0.5
Beryllium (Be).....	ND	<0.005
Calcium (Ca).....	199	<0.005
Cadmium (Cd).....	ND	<0.005
Cobalt (Co).....	ND	<0.02
Chromium (Cr).....	ND	<0.02
Copper (Cu).....	0.01	<0.01
Iron (Fe).....	0.38	<0.05
Manganese (Mn).....	1.92	<0.02
Molybdenum (Mo).....	ND	<0.02
Magnesium (Mg).....	49.9	<0.5
Sodium (Na).....	953	<0.01
Nickel (Ni).....	ND	<0.01
Lead (Pb).....	ND	<0.1
Antimony (Sb).....	ND	<0.05
Selenium (Se).....	ND	<0.005
Silicon (Si).....	4.50	<0.02
Thallium (Tl).....	ND	<0.1
Vanadium (V).....	ND	<0.05
Zinc (Zn).....	0.02	<0.01
Potassium (K).....	1.2	<1.0

ND - Analyte "not detected" at the stated detection limit.


Mary Stepp
Lab Manager



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab LML Contract No. _____

OCD Sample No. 9105021415

Collection Date	Collection Time	Collected by —Person/Agency	OCD
<u>910502</u>	<u>1415</u>	<u>Bogor</u>	
SITE INFORMATION			
Sample location <u>K. Ken Canyon - Bubbling Springs Sand Fall Flow</u>			
Collection Site Description			
			Township, Range, Section, Tract:
			<u>31 N+1 1 W+0 3+2 2 1</u>

SEND
FINAL
REPORT
TO ↓

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted: 3

- ☒ NF: Whole sample (Non-filtered)
☐ F: Filtered in field with 0.45 μ membrane filter
☐ PF: Pre-filtered w/45 μ membrane filter

- ☒ NA: No acid added
☐ A: HCL
☐ A: 2ml H₂SO₄/L added

- See Note
☒ A: 5ml conc. HNO₃ added
☐ A: 4ml fuming HNO₃ added
1 Ice, H₂O, HCl₂

FIELD COMMENTS:

Heavy metal sample acidify at Lab

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☐ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☒ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☒ 031	Se	7740
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☒ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☒ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☒ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

VOLATILE AROMATIC HYDROCARBONS

Client: NMOCD
Project Name: Kiffen Canyon
Sample ID: Bubbling Spring Surface
Laboratory Number: C2964(6190)
Analysis Requested: BTEX
Sample Matrix: Water
Condition: Ambient, Intact

Report Date: 05-15-91
Date Sampled: 05-02-91
Date Received: 05-06-91
Date Analyzed: 05-13-91
Preservative: HgCl2

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	109	2
Toluene	ND	2
Ethylbenzene	ND	2
p,m-Xylene	ND	2
o-Xylene	ND	2

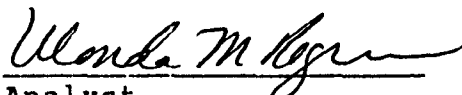
SURROGATE RECOVERIES:

Parameter	Percent Recovery
Toluene-d8	89.2 %
4-Bromofluorobenzene	80.7 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:


Analyst


Review

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SANTA FE



OIL CONSERVATION DIVISION
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'91 JUL 1 AM 11 06

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCD
ID: Surface
SITE: Bubbling Springs
LAB NO: F6190

DATE REPORTED: 06/27/91
DATE RECEIVED: 05/03/91
DATE COLLECTED: 05/02/91

Lab pH (s.u.).....	8.25
Lab conductivity, umhos/cm.....	5480
Lab resistivity, ohm-m.....	1.82
Total dissolved solids (180), mg/l..	4720
Total dissolved solids (calc), mg/l.	4660
Total alkalinity as CaCO ₃ , mg/l.....	222
Total hardness as CaCO ₃ , mg/l.....	1260
Sodium absorption ratio.....	12.1

	mg/l	meq/l
Bicarbonate as HCO ₃	271	4.44
Carbonate as CO ₃	0	0
Chloride.....	87.2	2.46
Sulfate.....	2950	61.6
Calcium.....	477	23.8
Magnesium.....	17.9	1.47
Potassium.....	2.7	0.07
Sodium.....	989	43
Major cations.....		68.3
Major anions.....		68.4
Cation/anion difference.....		0.08 %

Trace metals by AA (dissolved concentration), mg/l

	Analytical Result:	Detection Limit:
Arsenic (As).....	0.123	<0.005
Mercury (Hg).....	ND	<0.001
Selenium (Se).....	ND	<0.005



OIL CONSERVATION DIVISION
RECEIVED

'91 JUL 1 AM 11 06

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCD
ID: Surface
SITE: Bubbling Springs
LAB NO: F6190

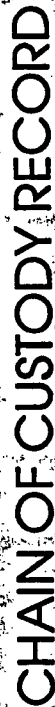
DATE REPORTED: 06/27/91
DATE RECEIVED: 05/03/91
DATE COLLECTED: 05/02/91

Trace metals by ICAP (total concentration), mg/l

	Analytical Result:	Detection Limit:
Silver (Ag).....	ND	<0.01
Aluminum (Al).....	0.2	<0.1
Arsenic (As).....	0.136	<0.005
Boron (B).....	0.35	<0.01
Barium (Ba).....	ND	<0.5
Beryllium (Be).....	ND	<0.005
Calcium (Ca).....	199	<0.005
Cadmium (Cd).....	ND	<0.005
Cobalt (Co).....	ND	<0.02
Chromium (Cr).....	ND	<0.02
Copper (Cu).....	0.01	<0.01
Iron (Fe).....	0.38	<0.05
Manganese (Mn).....	1.92	<0.02
Molybdenum (Mo).....	ND	<0.02
Magnesium (Mg).....	49.9	<0.5
Sodium (Na).....	953	<0.01
Nickel (Ni).....	ND	<0.01
Lead (Pb).....	ND	<0.1
Antimony (Sb).....	ND	<0.05
Selenium (Se).....	ND	<0.005
Silicon (Si).....	4.50	<0.02
Thallium (Tl).....	ND	<0.1
Vanadium (V).....	ND	<0.05
Zinc (Zn).....	0.02	<0.01
Potassium (K).....	1.2	<1.0

ND - Analyte "not detected" at the stated detection limit.


Mary Stepp
Lab Manager



CHAIN OF CUSTODY RECORD

Inter-Mountain Laboratories, Inc.

00205

**3304 Longmire Drive
College Station, TX 77845
Telephone (409) 774-4999**

**Route 3, Box 256
College Station, TX 77845
Telephone (409) 776-8945**

**910 Technology Blvd. Suite B
Bozeman, Montana 59715
Telephone (406) 586-8450**

**2506 West Main Street
Farmington, NM 87401
Telephone (505) 326-4737**

**1714 Phillips Circle
Gillette, Wyoming 82716
Telephone (307) 682-8945**

1633 Terra Avenue
Sheridan, Wyoming 82801
Telephone (307) 672-8945



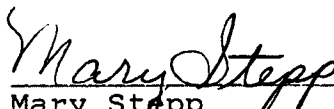
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: EMNRD - OCD
ID: Wash
SITE: Kiffen Canyon
LAB NO: F6121

DATE REPORTED: 04/30/91
DATE RECEIVED: 04/19/91
DATE COLLECTED: 04/19/91

Lab pH (s.u.).....	8.20
Lab conductivity, umhos/cm.....	5000
Lab resistivity, ohm-m.....	2
Total dissolved solids (180), mg/l..	4710
Total dissolved solids (calc), mg/l.	4590
Total alkalinity as CaCO ₃ , mg/l.....	536
Total hardness as CaCO ₃ , mg/l.....	1200
Sodium absorption ratio.....	12.6

	mg/l	meq/l
Bicarbonate as HCO ₃	653	10.7
Carbonate as CO ₃	0	0
Chloride.....	78.6	2.22
Sulfate.....	2730	56.8
Calcium.....	435	21.7
Magnesium.....	26.9	2.22
Potassium.....	2.76	0.07
Sodium.....	1000	43.5
Major cations.....		67.5
Major anions.....		69.8
Cation/anion difference.....		1.66 %



Mary Stepp
Lab Manager

April 26, 1991

EMNRD/OCD

Dear Sir:

On 04-22-91 one sample set consisting of one sample was received by Inter-Mountain Laboratories - College Station, TX. The sample was identified as Kiffen Canyon. Enclosed is a copy of the chain of custody indicating the analytical parameters for which analyses were performed.

It is the policy of this laboratory to employ analytical methods which have been approved by regulatory agencies whenever possible. The analytical methods which we employ are referenced in SW-846, "Test Methods for Evaluating Solid Waste", USEPA, 1986; "Chemical Analysis of Water and Waste", USEPA, 1978; and other references as applicable. All reports in this package have the analytical methods and the references footnoted.

Quality Assurance reports have been included in this package. These reports can be identified by the notation in the upper left hand corner of the report. Please feel free to call if you have any questions. Thank you.

Sincerely,



Ulonda M. Rogers
Project Manager

VOLATILE AROMATIC HYDROCARBONS

Client: EMNRD/OCD Report Date: 04-25-91
Sample ID: Kiffen Canyon Date Sampled: 04-19-91
Laboratory Number: C2877 (F6121) Date Received: 04-22-91
Analysis Requested: BTEX Date Analyzed: 04-23-91
Sample Matrix: Water Preservative: None
Condition: Ambient, Intact

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	51.0	0.2
Toluene	ND	0.2
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.2
o-Xylene	ND	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Fluorobenzene	98.7 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Ulonda M Rogers
Analyst

Jack H. May Jr.
Review

**** QUALITY ASSURANCE REPORT
MATRIX SPIKE - VOLATILE AROMATIC HYDROCARBONS**

Laboratory Number: C2875
Analysis: BTEX
Sample Matrix: Water
Condition: Cool, Intact

Date Sampled: 04-18-91
Date Analyzed: 04-23-91
Preservative: Acid

Parameter	Spike Added (ug/L)	Sample Result (ug/L)	Spiked Sample Result (ug/L)	Percent Recovery
Benzene	20.0	ND	19.2	96.0
Toluene	20.0	ND	20.2	101.0
Ethylbenzene	20.0	ND	17.8	89.0

QA ACCEPTANCE CRITERIA:	Parameter	Acceptance Range (%)
	Benzene	39 - 150
	Toluene	46 - 148
	Ethylbenzene	32 - 160

SURROGATE RECOVERY:	Parameter	% Recovery
	Fluorobenzene	96.1

Method: Method 8020, Aromatic Volatile Organics, SW-846, USEPA
(Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Ulonda M. Roger
Analyst

Joseph M. May Jr.
Review

**** QUALITY ASSURANCE REPORT**
MATRIX SPIKE DUPLICATE - VOLATILE AROMATIC HYDROCARBONS

Laboratory Number: C2875
Analysis: BTEX
Sample Matrix: Water
Condition: Cool, Intact

Date Sampled: 04-18-91
Date Analyzed: 04-24-91
Preservative: Acid

Parameter	Sample Spike Recovery (%)	Duplicate Spike Recovery (%)	Percent Difference
Benzene	96.0	94.7	0.3
Toluene	101.0	97.8	0.8
Ethylbenzene	89.0	85.1	1.1

QA ACCEPTANCE CRITERIA:

Parameter	Acceptance Range (%)
Benzene	39 - 150
Toluene	46 - 148
Ethylbenzene	32 - 160

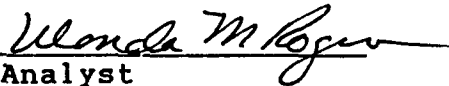
SURROGATE RECOVERY:

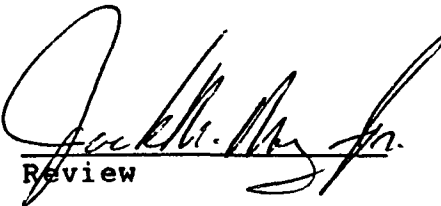
Parameter	Duplicate % Recovery
Fluorobenzene	93.1

Method: Method 8020, Aromatic Volatile Organics, SW-846, USEPA
(Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:


Analyst


Review



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab Im2 Contract No. _____

OCD Sample No. 9105021432

Collection Date	Collection Time	Collected by—Person/Agency	
910510	1432	Boyer	OCD

SITE INFORMATION

Sample location Kiffen Canyon - Bubbling Springs Nighole

Collection Site Description

Township, Range, Section, Tract:

13 | 1 | N+1 | 1 | W+0 | 3+2 | 2 | 1

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NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted: 1

- ☒ NF: Whole sample (Non-filtered)
☐ F: Filtered in field with 0.45 μ m membrane filter
☐ PF: Pre-filtered w/45 μ m membrane filter

- ☒ NA: No acid added
☐ A: HCL
☐ A: 2ml H₂SO₄/L added
☐ A: 5ml conc. HNO₃ added
☐ A: 4ml fuming HNO₃ added
☒ Ice, HgCl₂

FIELD COMMENTS:

SAMPLING CONDITIONS	Water level
	Discharge
	Sample type
	Conductivity (Uncorrected)
	Conductivity at 25° C
☐ Bailed ☐ Pump ☐ Dipped ☐ Tap	
pH(00400)	
Water Temp. (00010)	

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☒ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☐ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☐ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

VOLATILE AROMATIC HYDROCARBONS

Client: NMOCD
Project Name: Kiffen Canyon
Sample ID: Bubbling Spring Dug Hole
Laboratory Number: C2965
Analysis Requested: BTEX
Sample Matrix: Water
Condition: Ambient, Intact

Report Date: 05-15-91
Date Sampled: 05-02-91
Date Received: 05-06-91
Date Analyzed: 05-13-91
Preservative: HgCl₂

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	90.8	2
Toluene	ND	2
Ethylbenzene	ND	2
p,m-Xylene	ND	2
o-Xylene	ND	2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Fluorobenzene	97.1 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Wendy M. Logan
Analyst

Jessica Nandorvec
Review

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SANTA FE



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ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab JML Contract No. _____

OCD Sample No. 9105021505

Collection Date	Collection Time	Collected by — Person/Agency	
9/1/05	1505	Boyer	OCD

SITE INFORMATION

Sample location K. & Sen Canyon - Gas Site #2 Hole

Collection Site Description

Township, Range, Section, Tract:

13 | 1 | N+1 | 1 | W+0 | 3+2 | 2 | 1

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SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted: 1

- ☒ NF: Whole sample (Non-filtered)
☐ F: Filtered in field with 0.45 μ membrane filter
☐ PF: Pre-filtered w/45 μ membrane filter

- ☒ NA: No acid added
☐ A: HCL
☐ A: 2ml H₂SO₄/L added
☐ A: 5ml conc. HNO₃ added
☐ A: 4ml fuming HNO₃ added
Ice, HgCl₂

FIELD COMMENTS:

SAMPLING CONDITIONS	Water level
	Discharge
	Sample type
	Conductivity (Uncorrected) _____ mho
	Conductivity at 25° C _____ mho
☐ Bailed ☐ Pump ☐ Dipped ☐ Tap	
pH(00400)	
Water Temp. (00010)	

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☒ 001	<u>VOA</u>	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☐ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☐ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

VOLATILE AROMATIC HYDROCARBONS

Client:	IML-F NMOCD	Report Date:	05-15-91
Project Name:	Kiffen Canyon		
Sample ID:	Gas Site #2 Hole	Date Sampled:	05-02-91
Laboratory Number:	C2966	Date Received:	05-06-91
Analysis Requested:	BTEX	Date Analyzed:	05-13-91
Sample Matrix:	Water	Preservative:	HgCl2
Condition:	Ambient, Intact		

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	360	2
Toluene	ND	2
Ethylbenzene	ND	2
p,m-Xylene	ND	2
o-Xylene	ND	2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Toluene-d8	90.6 %
	4-Bromofluorobenzene	84.3 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Wanda M. Lopez
Analyst

Jessica W. Anderson
Review

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OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab IML Contract No. _____

OCD Sample No. 9105021610

Collection Date	Collection Time	Collected by — Person/Agency
9/10/02	1610	Boyer
SITE INFORMATION		
Sample location <u>Kiffen Canyon - First Water Seeps</u>		
Collection Site Description		
		Township, Range, Section, Tract:
		<u>132N+11W+34+4134</u>

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SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted: 2

- ☒ NF: Whole sample (Non-filtered)
☐ F: Filtered in field with 0.45 μ m membrane filter
☐ PF: Pre-filtered w/45 μ m membrane filter

- ☒ NA: No acid added
☐ A: HCL
☐ A: 2ml H₂SO₄/L added
☒ A: 5ml conc. HNO₃ added
☐ A: 4ml fuming HNO₃ added
1 ☒ ICAP, Hg, Cd

FIELD COMMENTS:

SAMPLING CONDITIONS	Water level
	Discharge
	Sample type
	Conductivity (Uncorrected)
pH(00400)	
Water Temp. (00010)	Conductivity at 25° C

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☒ 001	<u>VOA</u>	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☐ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☒ 033	<u>CATIONS/ANIONS</u>	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N-SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

VOLATILE AROMATIC HYDROCARBONS

Client:	NMOCD	Report Date:	05-15-91
Project Name:	Kiffen Canyon		
Sample ID:	First Water Seep	Date Sampled:	05-02-91
Laboratory Number:	C2967 (6193)	Date Received:	05-06-91
Analysis Requested:	BTEX	Date Analyzed:	05-14-91
Sample Matrix:	Water	Preservative:	HgCl2
Condition:	Ambient, Intact		

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	1.0	0.2
Toluene	ND	0.2
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.2
o-Xylene	ND	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Fluorobenzene	97.0 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Wanda M. Reger
Analyst

Jessica Wardrover
Review

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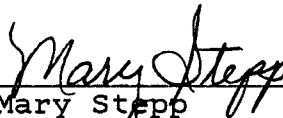
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCD
ID: 1610
SITE: First water seep
LAB NO: F6193

DATE REPORTED: 06/04/91
DATE RECEIVED: 05/03/91
DATE COLLECTED: 05/02/91

Lab pH (s.u.).....	8.34
Lab conductivity, umhos/cm.....	6050
Lab resistivity, ohm-m.....	1.65
Total dissolved solids (180), mg/l..	5320
Total dissolved solids (calc), mg/l.	5120
Total alkalinity as CaCO ₃ , mg/l.....	274
Total hardness as CaCO ₃ , mg/l.....	1240
Sodium absorption ratio.....	13.9

	mg/l	meq/l
Bicarbonate as HCO ₃	335	5.49
Carbonate as CO ₃	0	0
Chloride.....	71	2
Sulfate.....	3270	68.1
Calcium.....	466	23.2
Magnesium.....	19	1.56
Potassium.....	3.91	0.1
Sodium.....	1120	48.9
Major cations.....		73.8
Major anions.....		75.6
Cation/anion difference.....		1.19 %


Mary Stepp
Lab Manager

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STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab IML Contract No. _____

OCD Sample No. 9105021620

Collection Date	Collection Time	Collected by—Person/Agency
<u>9/10/02</u>	<u>1620</u>	<u>Boyer</u>
SITE INFORMATION		
Sample location <u>Field Blank</u>		
Collection Site Description		
		Township, Range, Section, Tract:

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NM OIL CONSERVATION DIVISION
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SAMPLING CONDITIONS		Water level	
☐ Bailed ☐ Pump ☐ Dipped ☐ Tap		Discharge	
pH(00400)		Sample type	
Water Temp. (00010)		Conductivity (Uncorrected) _____ mho	
		Conductivity at 25° C _____ mho	
SAMPLE FIELD TREATMENT — Check proper boxes			
No. of samples submitted: <u>1</u>			
☒ NF: Whole sample (Non-filtered) ☐ F: Filtered in field with 0.45 μ membrane filter ☐ PF: Pre-filtered w/45 μ membrane filter			
☒ NA: No acid added ☐ A: 5ml conc. HNO ₃ added ☐ A: HCL ☐ A: 4ml fuming HNO ₃ added ☐ A: 2ml H ₂ SO ₄ /L added <u>X Ice H₂Cl₂</u>			
FIELD COMMENTS:			

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☒ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☐ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☐ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

VOLATILE AROMATIC HYDROCARBONS

Client:	NMOCD	Report Date:	05-15-91
Project Name:	Kiffen Canyon		
Sample ID:	Field Blank	Date Sampled:	05-02-91
Laboratory Number:	C2968 (6194)	Date Received:	05-06-91
Analysis Requested:	BTEX	Date Analyzed:	05-14-91
Sample Matrix:	Water	Preservative:	HgCl2
Condition:	Ambient, Intact		

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	ND	0.2
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.2
o-Xylene	ND	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Fluorobenzene	102.9 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Ulonde M. Lyle
Analyst

Jessica Vandrovec
Review

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SANTA FE



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab IML Contract No. _____

OCD Sample No. 9105021735

Collection Date	Collection Time	Collected by — Person/Agency	OCD
<u>9/10/02</u>	<u>1735</u>	<u>Boyer</u>	
SITE INFORMATION			
Sample location <u>Kissen Canyon Horton Spring - Upper Hole</u>			
Collection Site Description			
			Township, Range, Section, Tract:
			<u>132 N+11 W+3 S+3 T2</u>

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TO Santa Fe, NM 87504-2088

SAMPLING CONDITIONS		SAMPLE FIELD TREATMENT — Check proper boxes	
☐ Bailed ☐ Pump ☐ Dipped ☐ Tap	Water level	No. of samples submitted: <u>2</u>	
	Discharge	☒ NF: Whole sample (Non-filtered) ☐ F: Filtered in field with 0.45 μ m membrane filter ☐ PF: Pre-filtered w/45 μ m membrane filter	
pH(00400)	Sample type	☒ NA: No acid added ☐ A: 5ml conc. HNO ₃ added ☐ A: HCL ☐ A: 4ml fuming HNO ₃ added ☐ A: 2ml H ₂ SO ₄ /L added ☒ Ice, HgCl ₂	
Water Temp. (00010)	Conductivity (Uncorrected) <u>11</u> mho	FIELD COMMENTS:	
	Conductivity at 25° C <u>11</u> mho		

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☒ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☐ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☒ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N-SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

VOLATILE AROMATIC HYDROCARBONS

Client:	NMOCD	Report Date:	05-15-91
Project Name:	Kiffen Canyon		
Sample ID:	Horton Spring Upper	Date Sampled:	05-02-91
Laboratory Number:	C2969 (6195)	Date Received:	05-06-91
Analysis Requested:	BTEX	Date Analyzed:	05-14-91
Sample Matrix:	Water	Preservative:	HgCl2
Condition:	Ambient, Intact		

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.2
Toluene	ND	0.2
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.2
o-Xylene	ND	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Toluene-d8	98.7 %
	4-Bromofluorobenzene	90.7 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Ulanda M Logan
Analyst

Jessica Vandrovec
Review

RECEIVED

MAY 28 1991

OIL CONSERVATION DIV.
SANTA FE

**** QUALITY ASSURANCE REPORT
MATRIX SPIKE - VOLATILE AROMATIC HYDROCARBONS**

Laboratory Number: C2969 Date Sampled: 05-02-91
Analysis: BTEX Date Analyzed: 05-14-91
Sample Matrix: Water Preservative: HgCl2
Condition: Ambient, Intact

Parameter	Spike Added (ug/L)	Sample Result (ug/L)	Spiked Sample Result (ug/L)	Percent Recovery
Benzene	20.0	ND	20.0	100.0
Toluene	20.0	ND	19.3	96.5
Ethylbenzene	20.0	ND	19.2	96.0

QA ACCEPTANCE CRITERIA:	Parameter	Acceptance Range (%)
	Benzene	39 - 150
	Toluene	46 - 148
	Ethylbenzene	32 - 160

SURROGATE RECOVERY:	Parameter	% Recovery
	Toluene-d8	98.4
	4-Bromofluorobenzene	90.4

Method: Method 8020, Aromatic Volatile Organics, SW-846, USEPA
(Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Ulonde M. Lopez
Analyst

Jessica Nardone
Review

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MAY 28 1991

OIL CONSERVATION DIV.
SANTA FE

**** QUALITY ASSURANCE REPORT
MATRIX SPIKE DUPLICATE - VOLATILE AROMATIC HYDROCARBONS**

Laboratory Number: C2969SPKDUP
Analysis: BTEX
Sample Matrix: ~~Soil~~ MB
Condition: Ambient, Intact

Date Sampled: 05-02-91
Date Analyzed: 05-14-91
Preservative: HgCl2

Parameter	Sample Spike Recovery (%)	Duplicate Spike Recovery (%)	Percent Difference
Benzene	100.0	94.7	5.3
Toluene	96.5	84.3	12.6
Ethylbenzene	96.0	89.2	7.1

QA ACCEPTANCE CRITERIA:	Parameter	Acceptance Range (%)
	Benzene	39 - 150
	Toluene	46 - 148
	Ethylbenzene	32 - 160

SURROGATE RECOVERY:	Parameter	Duplicate % Recovery
	Fluorobenzene	107.0

Method: Method 8020, Aromatic Volatile Organics, SW-846, USEPA
(Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Wanda M. Rogers
Analyst

Jessica Wardrope
Review



2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCD
ID: Upper
SITE: Horton Spring
LAB NO: F6195

DATE REPORTED: 06/04/91
DATE RECEIVED: 05/03/91
DATE COLLECTED: 05/02/91

Lab pH (s.u.).....	8.22
Lab conductivity, umhos/cm.....	6720
Lab resistivity, ohm-m.....	1.49
Total dissolved solids (180), mg/l..	5850
Total dissolved solids (calc), mg/l.	5730
Total alkalinity as CaCO ₃ , mg/l.....	140
Total hardness as CaCO ₃ , mg/l.....	1430
Sodium absorption ratio.....	14.1

	mg/l	meq/l
Bicarbonate as HCO ₃	171	2.8
Carbonate as CO ₃	0	0
Chloride.....	211	5.95
Sulfate.....	3680	76.6
Calcium.....	454	22.6
Magnesium.....	73.7	6.06
Potassium.....	5.03	0.13
Sodium.....	1230	53.3
Major cations.....		82.1
Major anions.....		85.4
Cation/anion difference.....		1.96 %


Mary Stepp
Lab Manager

RECEIVED

JUN 07 1991

OIL CONSERVATION DIV.
SANTA FE



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab IML Contract No. _____

OCD Sample No. 9105021740

Collection Date	Collection Time	Collected by —Person/Agency	OCD
<u>9/10/02</u>	<u>1740</u>	<u>Boyer</u>	

SITE INFORMATION

Sample location Kissen Canyon - Horton Spring - Lower Hole

Collection Site Description

Township, Range, Section, Tract:

13|21N+11|W+3|5+31|E

SEND
FINAL
REPORT
TO ↓

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted: 1

- ☒ NF: Whole sample (Non-filtered)
☐ F: Filtered in field with 0.45 μ membrane filter
☐ PF: Pre-filtered w/45 μ membrane filter

- ☒ NA: No acid added
☐ A: HCL
☐ A: 2ml H₂SO₄/L added
☐ A: 5ml conc. HNO₃ added
☐ A: 4ml fuming HNO₃ added
Ice kg Chz

FIELD COMMENTS:

SAMPLING CONDITIONS

Water level

- ☐ Bailed ☐ Pump
☐ Dipped ☐ Tap

Discharge

Sample type

pH(00400)

Conductivity (Uncorrected)

Water Temp. (00010)

Conductivity at 25° C

mho

mho

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☒ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	71
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	74
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	74
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	77
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☐ 032	ICAP	60
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☐ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

VOLATILE AROMATIC HYDROCARBONS

Client:	NMOCD	Report Date:	05-15-91
Project Name:	Kiffen Canyon		
Sample ID:	Horton Spring Lower	Date Sampled:	05-02-91
Laboratory Number:	C2970 (6196)	Date Received:	05-06-91
Analysis Requested:	BTEX	Date Analyzed:	05-14-91
Sample Matrix:	Water	Preservative:	HgCl2
Condition:	Ambient, Intact		

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	0.5	0.2
Toluene	0.3	0.2
Ethylbenzene	0.2	0.2
p,m-Xylene	ND	0.2
o-Xylene	ND	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Toluene-d8	96.3 %
	4-Bromofluorobenzene	88.1 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Ulonda M. Kagan
Analyst

Jessica Vandrovec
Review

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MAY 28 1991

OIL CONSERVATION DIV.
SANTA FE

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

LABORATORY SAMPLE RECORD

PROJ. NO.	PROJECT NAME	NO. OF CONTAINERS	REMARKS
9001	9001		
9002	9002		
9003	9003		
9004	9004		
9005	9005		
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9007	9007		
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Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION

700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106

Organic Chemistry Section - Telephone: (505) 841-2570

SLD No.

OR91-1643-C

Date

Received: 5-3-91

Request ID No. 012072-C

2 User Code #: 70320	3 Request ID No.:	4 Priority Code #: 3	5 Facility Name: Kissen Canyon	6 County: San Juan	7 City:	8 State: NM
9 Sample Location: Field BLANK						
10 Collected By: David RIVIER On: 9/10/91 At: 11:20 hrs. First Last Date: (YY/MM/DD) Time: 24 hr. clock 3:00 pm - 1500 hrs.						
11 Codes: Submitter WSS # Organization			12 Latitude (DDMMSS) Longitude (DDMMSS) 2 Digit ID (if needed)			
13 Report To: David G. Boyer			14 Phone #: (505) 827-5812			
Address: New Mexico Oil Conservation Division			15 Sampling Information:			
P. O. Box 2088			☐ - Grab ☐ - Composite (Composite Time Period)			
City, State Zip: Santa Fe, New Mexico 87504-2088			☐ - Compliance ☐ - Flow Proportioned			
			☒ - Check ☐ - Equal Aliquot			
			☐ - Monitoring ☐ - Sample Split w/Permittee			
			☐ - Special ☐ - Chain of Custody			
16 Field Data: pH: , Conductivity: umhos @ °C, Temperature: °C, Chlorine Residual: mg/l, Flow:						
17 Sample Source: ☐ - Stream ☐ - Well; Depth: ☐ - Lake ☐ - Spring ☐ - Drain ☐ - Distribution ☐ - Pool ☐ - Point-of-Entry ☐ - WWTP ☒ - Other: Field Blank				18 Field Notes/ Sample #: Sample from water, carried from Santa Fe		
19 Sample Type: ☒ - Water, ☐ - Soil, ☐ - Food, ☐ - Wastewater, ☐ - Other				20 Preservation: ☐ - NP No Preservation; Sample stored at room temperature ☒ - P-ice Sample stored in an ice bath (Not Frozen) ☐ - P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual ☐ - P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml) ☒ - Other HgCl2		
This form accompanies a single sample consisting of: 2 - septum vial(s) (volume = 40 ml) - glass jugs (volume =) (volume =)						

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.

Volatile Screens:

- ☐ - (753) Aliphatic Headspace (1-5 Carbons)
☒ - (754) Aromatic & Halogenated Purgeables (EPA 601 & 602)
☐ - (765) Mass Spectrometer Purgeables (EPA 624)
☐ - (766) SDWA Total Trihalomethanes (EPA 501.1)
☐ - (774) SDWA VOC's I [8 Regulated +] (EPA 502.2)
☐ - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)

Other Specific Compounds or Classes:

- ☐ - ()
☐ - ()
☐ - ()

Semivolatile Screens:

- ☐ - (763) Acid Extractables
☐ - (751) Aliphatic Hydrocarbons
☐ - (755) Base/Neutral Extractables (EPA 625)
☐ - (756) Base/Neutral/Acid Extractables (EPA 8270)
☐ - (758) Herbicides, Chlorophenoxy Acid
☐ - (759) Herbicides, Triazines
☐ - (760) Organochlorine Pesticides
☐ - (761) Organophosphate Pesticides
☐ - (767) Polychlorinated Biphenyls (PCB's)
☐ - (764) Polynuclear Aromatic Hydrocarbons
☐ - (762) SDWA Pesticides & Herbicides

Remarks:

91 JUN 28 PM 12 13

OIL CONSERVATION DIVISION

NOI SAID NO LAYESNOO 710

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

ORGANIC CHEMISTRY SECTION [505]-841-2570

June 19, 1991

Request
ID No. 012072**ANALYTICAL REPORT**
SLD Accession No. OR-91-1643Distribution☐ User 70320
☒ Submitter 260
☒ SLD FilesTo: David Boyer
NM Oil Conserv. Div.
State Land Office Bldg.
P.O. Box 2088
Santa Fe, NM 87504-2088From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: A water, purgeable sample submitted to this laboratory on May 3, 1991

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 2-May-91	By: Boy ...	Field Blank
At: 16:20 hrs.	In/Near: San Juan County	

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable [EPA-601/2] Screen {754}

Parameter	Value	Note	MDL	Units
Chloroform	16.10		1.00	ppb
Bromodichloromethane	2.50		1.00	ppb
Toluene	0.00	T	1.00	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;
T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.Evidentiary Seals: Not Sealed ☒; Intact: No ☐, Yes ☐ & Broken By: _____ Date: _____Laboratory Remarks:

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: NM SCIENTIFIC LABORATORY DIVISION	Contract: N/A
Lab Code: N/A Case No.: N/A	SAS No.: N/A SDG No.: N/A
Matrix: (soil/water) Water	Lab Sample ID: OR-91-1643
Sample wt/vol: 5.0 (g/mL) mL	Lab File ID: _____
Level: (low/med) Low	Date Received: 5/3/91
% Moisture: not dec. N/A dec. N/A	Date Extracted: N/A
Extraction: (SepF/Cont/Sonc) N/A	Date Analyzed: 5/10/91
GPC Cleanup: (Y/N) No pH: _____	Dilution Factor: 1
	CONCENTRATION UNITS:
	(ug/L or ug/Kg): _____ ug/L

(Continued on page 2.)

91 JUN 28 42 NNC 16.
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OIL CONSERVATION DIVISION

ANALYTICAL REPORT
 SLD Accession No. OR-91-1643
 Continuation, Page 2 of 4

This sample was analyzed for the following compounds
 using EPA Methods 601 & 602

CAS NO.	COMPOUND	CONC.	QUALIFIER
67-64-1	Acetone	5.0	U
71-43-2	Benzene	1.0	U
108-86-1	Bromobenzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	2.5	
75-25-2	Bromoform	1.0	U
78-93-3	2-Butanone (MEK)	5.0	U
104-51-8	n-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
1634-04-4	tert-Butyl methyl ether (MTBE)	5.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
67-66-3	Chloroform	16.1	
95-49-8	2-Chlorotoluene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
74-95-3	Dibromomethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
142-28-9	1,3-Dichloropropane	1.0	U
590-20-7	2,2-Dichloropropane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
1006-01-5	cis-1,3-Dichloropropene	1.0	U
1006-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U
98-82-8	Isopropylbenzene	1.0	U
99-87-6	4-Isopropyltoluene	1.0	U

(Continued on page 3.)

ANALYTICAL REPORT
 SLD Accession No. OR-91-1643
 Continuation, Page 3 of 4

75-09-2	Methylene chloride	5.0	U
90-12-0	1-Methylnaphthalene	1.0	U
91-57-6	2-Methylnaphthalene	1.0	U
91-20-3	Naphthalene	1.0	U
103-65-1	Propylbenzene	1.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
109-99-9	Tetrahydrofuran (THF)	5.0	U
108-88-3	Toluene	0.6	J
87-61-5	1,2,3-Trichlorobenzene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	1.0	U
95-47-6	o-Xylene	1.0	U
N/A	p- & m-Xylene	1.0	U

Qualifier Definitions:

- B - Indicates compound was detected in the Lab Blank as well as in the sample.
- D - Indicates value taken from a secondary (diluted) sample analysis.
- E - Indicates compound concentration exceeded the range of the standard curve.
- J - Indicates an estimated value for tentatively identified compounds, or for compounds detected and identified but present at a concentration less than the quantitation limit.
- N - Indicates that more than one peak was used for quantitation.
- U - Indicates compound was analyzed for, but not detected above the concentration listed (Quantitation Limit).

QUALITY CONTROL SUMMARY FOR VOLATILES SCREEN

METHOD BLANK: A laboratory method blank was analyzed along with this sample to assure the absence of interfering contaminants

(Continued on page 4.)

ANALYTICAL REPORT
SLD Accession No. OR-91-1643
Continuation, Page 4 of 4

from lab reagents, instruments, or the general laboratory environment. Unless listed below, no contaminants were detected in this blank above the reported detection limit.

COMPOUND DETECTED	CONCENTRATION (PPB)
No Compounds Detected	

SURROGATE RECOVERIES:

SURROGATE	CONCENTRATION	% RECOVERY
Fluorobenzene	25.0 ppb	84.56
2-Bromo-1-chloropropane	15.0 ppb	99.3

SPIKE RECOVERY: The % recoveries for compounds in the batch spike were from 80% to 120% with the exception of the compounds listed below:

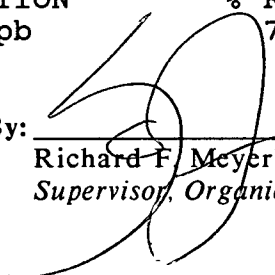
COMPOUND	CONCENTRATION	% RECOVERY
Trichloroethene	25. ppb	79.4

Analyst:


Gary C. Eden

Analyst, Organic Chemistry

Reviewed By:


Richard F. Meyerhein

06/18/91

Supervisor, Organic Chemistry Section

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION

SLD No.

0891-1642-C

700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106

Organic Chemistry Section - Telephone: (505) 841-2570

Date

Received: 5-3-91

Request ID No. 012071-C

2 User Code #: 703210	3 Request ID No.:	4 Priority Code #: 3	5 Facility Name: Kissen Canyon	6 County: San Juan	7 City:	8 State: NM
9 Sample Location: FIRST WATER SEEPS						
10 Collected By: David BOYER		On: 9/105/02		At: 116110 hrs.		
11 Codes:		12 Latitude (DDMMSS)				
Submitter WSS # Organization		Longitude (DDMMSS) 2 Digit ID (if needed)				
13 Report To: David G. Boyer		14 Phone #: (505) 827-5812				
Address: New Mexico Oil Conservation Division		15 Sampling Information:				
P. O. Box 2088		☐ - Grab ☐ - Composite (Composite Time Period)				
City, State Zip: Santa Fe, New Mexico 87504-2088		☐ - Compliance ☐ - Flow Proportioned				
		☐ - Check ☐ - Equal Aliquot				
		☐ - Monitoring ☐ - Sample Split w/Permittee				
		☒ - Special ☐ - Chain of Custody				
16 Field Data: pH: 7, Conductivity: umhos @ °C, Temperature: °C, Chlorine Residual: mg/l, Flow:						
17 Sample Source:				18 Field Notes/ Sample #:		
☐ - Stream ☐ - Well; Depth:				Dug hole at base of		
☐ - Lake ☒ - Spring				15 FT Embankment		
☐ - Drain ☐ - Distribution				H ₂ S odor, gassy		
☐ - Pool ☐ - Point-of-Entry						
☐ - WWTP ☐ - Other:						
19 Sample Type: ☒ - Water, ☐ - Soil, ☐ - Food,				20 Preservation:		
☐ - Wastewater, ☐ - Other				☐ - NP No Preservation; Sample stored at room temperature		
This form accompanies a single sample consisting of:				☒ - P-ice Sample stored in an ice bath (Not Frozen)		
2 - septum vial(s) (volume = 40ml)				☐ - P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual		
- glass jugs (volume =)				☐ - P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)		
(volume =)				☒ - Other P-HCL		
21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.						
Volatile Screens:						
☐ - (753) Aliphatic Headspace (1-5 Carbons)						
☒ - (754) Aromatic & Halogenated Purgeables (EPA 601 & 602)						
☐ - (765) Mass Spectrometer Purgeables (EPA 624)						
☐ - (766) SDWA Total Trihalomethanes (EPA 501.1)						
☐ - (774) SDWA VOC's I [8 Regulated +] (EPA 502.2)						
☐ - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)						
Other Specific Compounds or Classes:						
☐ - ()						
☐ - ()						
☐ - ()						
Semivolatile Screens:						
☐ - (763) Acid Extractables						
☐ - (751) Aliphatic Hydrocarbons						
☐ - (755) Base/Neutral Extractables (EPA 625)						
☐ - (756) Base/Neutral/Acid Extractables (EPA 8270)						
☐ - (758) Herbicides, Chlorophenoxy Acid						
☐ - (759) Herbicides, Triazines						
☐ - (760) Organochlorine Pesticides						
☐ - (761) Organophosphate Pesticides						
☐ - (767) Polychlorinated Biphenyls (PCB's)						
☐ - (764) Polynuclear Aromatic Hydrocarbons						
☐ - (762) SDWA Pesticides & Herbicides						
Remarks:						
CT 21 WD 82 NM 16.						
RECEIVED						
OIL CONSERVATION DIVISION						

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

ORGANIC CHEMISTRY SECTION [505]-841-2570

June 19, 1991

Request
ID No. 012071ANALYTICAL REPORT
SLD Accession No. OR-91-1642

Distribution

☐ User 70320
☒ Submitter 260
☒ SLD FilesTo: David Boyer
NM Oil Conserv. Div.
State Land Office Bldg.
P.O. Box 2088
Santa Fe, NM 87504-2088From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: A water, purgeable sample submitted to this laboratory on May 3, 1991

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 2-May-91	By: Boy ...	First Water Seeps
At: 16:10 hrs.	In/Near: San Juan County	

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable [EPA-601/2] Screen (754)

Parameter	Value	Note	MDL	Units
Halogenated Volatiles (42)	0.00	N	1.00	ppb
Benzene	1.40		1.00	ppb
1,3,5-Trimethylbenzene	0.00	T	1.00	ppb
1,2,4-Trimethylbenzene	0.00	T	1.00	ppb
Naphthalene	1.20		1.00	ppb
2-Methylnaphthalene	1.10		1.00	ppb
1-Methylnaphthalene	1.10		1.00	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;

T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Evidentiary Seals: Not Sealed ☒; Intact: No ☐, Yes ☐ & Broken By: _____ Date: _____

Laboratory Remarks:

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: NM SCIENTIFIC LABORATORY DIVISION	Contract: N/A
Lab Code: N/A Case No.: N/A	SAS No.: N/A SDG No.: N/A
Matrix: (soil/water) Water	Lab Sample ID: OR-91-1642
Sample wt/vol: 5.0 (g/mL) mL	Lab File ID: _____
Level: (low/med) Low	Date Received: 5/3/91
% Moisture: not dec. N/A dec. N/A	Date Extracted: N/A
Extraction: (SepF/Cont/Sonc) N/A	Date Analyzed: 5/10/91
GPC Cleanup: (Y/N) No pH: _____	Dilution Factor: 1

(Continued on page 2.)

ANALYTICAL REPORT
SLD Accession No. OR-91-1642
Continuation, Page 2 of 4

CONCENTRATION UNITS:

(ug/L or ug/Kg) : _____ ug/L

This sample was analyzed for the following compounds
using EPA Methods 601 & 602

CAS NO.	COMPOUND	CONC.	QUALIFIER
67-64-1	Acetone	5.0	U
71-43-2	Benzene	1.4	
108-86-1	Bromobenzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
78-93-3	2-Butanone (MEK)	5.0	U
104-51-8	n-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
1634-04-4	tert-Butyl methyl ether (MTBE)	5.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
67-66-3	Chloroform	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
74-95-3	Dibromomethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
142-28-9	1,3-Dichloropropane	1.0	U
590-20-7	2,2-Dichloropropane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
1006-01-5	cis-1,3-Dichloropropene	1.0	U
1006-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U

(Continued on page 3.)

87-68-3	Hexachlorobutadiene	1.0	U
98-82-8	Isopropylbenzene	1.0	U
99-87-6	4-Isopropyltoluene	1.0	U
75-09-2	Methylene chloride	5.0	U
90-12-0	1-Methylnaphthalene	1.1	
91-57-6	2-Methylnaphthalene	1.1	
91-20-3	Naphthalene	1.2	
103-65-1	Propylbenzene	1.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
109-99-9	Tetrahydrofuran (THF)	5.0	U
108-88-3	Toluene	1.0	U
87-61-5	1,2,3-Trichlorobenzene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
95-63-6	1,2,4-Trimethylbenzene	0.9	J
108-67-8	1,3,5-Trimethylbenzene	0.6	J
75-01-4	Vinyl chloride	1.0	U
95-47-6	o-Xylene	1.0	U
N/A	p- & m-Xylene	1.0	U

Qualifier Definitions:

- B - Indicates compound was detected in the Lab Blank as well as in the sample.
- D - Indicates value taken from a secondary (diluted) sample analysis.
- E - Indicates compound concentration exceeded the range of the standard curve.
- J - Indicates an estimated value for tentatively identified compounds, or for compounds detected and identified but present at a concentration less than the quantitation limit.
- N - Indicates that more than one peak was used for quantitation.
- U - Indicates compound was analyzed for, but not detected above the concentration listed (Quantitation Limit).

QUALITY CONTROL SUMMARY FOR VOLATILES SCREEN

(Continued on page 4.)

ANALYTICAL REPORT
SLD Accession No. OR-91-1642
Continuation, Page 4 of 4

METHOD BLANK: A laboratory method blank was analyzed along with this sample to assure the absence of interfering contaminants from lab reagents, instruments, or the general laboratory environment. Unless listed below, no contaminants were detected in this blank above the reported detection limit.

COMPOUND DETECTED	CONCENTRATION (PPB)
No Compounds Detected	

SURROGATE RECOVERIES:

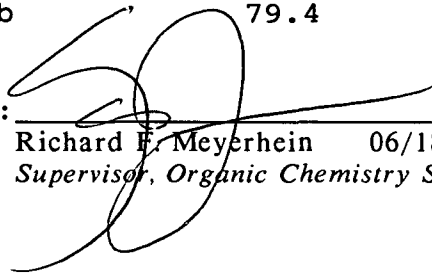
SURROGATE	CONCENTRATION	% RECOVERY
Fluorobenzene	25.0 ppb	105.2
2-Bromo-1-chloropropane	15.0 ppb	123.2

SPIKE RECOVERY: The % recoveries for compounds in the batch spike were from 80% to 120% with the exception of the compounds listed below:

COMPOUND	CONCENTRATION	% RECOVERY
Trichloroethene	25. ppb	79.4

Analyst: 

Gary C. Eden
Analyst, Organic Chemistry

Reviewed By: 

Richard F. Meyerhein 06/18/91
Supervisor, Organic Chemistry Section

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION

700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106

Organic Chemistry Section - Telephone: (505) 841-2570

SLD No.

0891-1641-C

Date

Received: 5-3-91

2 User Code #: 70320		3 Request ID No.:		Request ID No. 012070-C		4 Priority Code #: 3		(If "1" or "2", call EID-SLD Coordinator)	
5 Facility Name: Riffen Canyon				6 County: San Juan		7 City:		8 State: NM	
9 Sample Location: Hole #1 Bubbling Springs									
10 Collected By: David RIVIER				On: 9/10/02		At: 11432 hrs.		Time: 24 hr. clock 3:00 pm = 1500 hrs.	
11 Codes:									
Submitter		WSS #		Organization		12 Latitude (DDMMSS)			
						Longitude (DDMMSS)			
						2 Digit ID (if needed)			
13 Report To: David G. Boyer				14 Phone #: (505) 827-5812					
Address: New Mexico Oil Conservation Division									
P. O. Box 2088									
City, State Zip: Santa Fe, New Mexico 87504-2088									
15 Sampling Information:									
Sample Purpose: ☐ Grab ☐ Composite (Composite Time Period)									
☐ Compliance ☐ Flow Proportioned									
☐ Check ☐ Equal Aliquot									
☐ Monitoring ☐ Sample Split w/Permittee									
☒ Special ☐ Chain of Custody									
16 Field Data: pH: , Conductivity: umhos @ °C, Temperature: °C, Chlorine Residual: mg/l, Flow:									
17 Sample Source:									
☐ Stream ☐ Well; Depth: ☒ Spring									
☐ Lake ☐ Distribution									
☐ Drain ☐ Point-of-Entry									
☐ Pool ☐ Other:									
☐ WWTP									
18 Field Notes/ Sample #: Sample from dug hole 8-10 ft from Embankment Face, 15 ft from bench end									
19 Sample Type: ☒ Water, ☐ Soil, ☐ Food, ☐ Wastewater, ☐ Other									
20 Preservation:									
☐ NP No Preservation; Sample stored at room temperature									
☒ P-ice Sample stored in an ice bath (Not Frozen)									
☐ P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual									
☐ P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)									
☒ Other HgCl ₂									
21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.									
Volatile Screens:									
☐ (753) Aliphatic Headspace (1-5 Carbons)									
☒ (754) Aromatic & Halogenated Purgeables (EPA 601 & 602)									
☐ (765) Mass Spectrometer Purgeables (EPA 624)									
☐ (766) SDWA Total Trihalomethanes (EPA 501.1)									
☐ (774) SDWA VOC's I [8 Regulated +] (EPA 502.2)									
☐ (775) SDWA VOC's II [EDB & DBCP] (EPA 504)									
Other Specific Compounds or Classes:									
- ()									
- ()									
- ()									
Semivolatiles Screens:									
☐ (763) Acid Extractables									
☐ (751) Aliphatic Hydrocarbons									
☐ (755) Base/Neutral Extractables (EPA 625)									
☐ (756) Base/Neutral/Acid Extractables (EPA 8270)									
☐ (758) Herbicides, Chlorophenoxy Acid									
☐ (759) Herbicides, Triazines									
☐ (760) Organochlorine Pesticides									
☐ (761) Organophosphate Pesticides									
☐ (767) Polychlorinated Biphenyls (PCB's)									
☐ (764) Polynuclear Aromatic Hydrocarbons									
☐ (762) SDWA Pesticides & Herbicides									
Remarks:									
ST 21 WJ 02 NUP 16.									
RECEIVED									
OIL CONSERVATION DIVISION									

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

ORGANIC CHEMISTRY SECTION [505]-841-2570

June 25, 1991

Request
ID No. 012070**ANALYTICAL REPORT**
SLD Accession No. OR-91-1641Distribution☐ User 70320
☒ Submitter 260
☒ SLD FilesTo: David Boyer
NM Oil Conserv. Div.
State Land Office Bldg.
P.O. Box 2088
Santa Fe, NM 87504-2088From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: A water, purgeable sample submitted to this laboratory on May 3, 1991

DEMOGRAPHIC DATA

COLLECTION	LOCATION
On: 2-May-91 By: Boy ...	Hole #1 Bubbling Springs
At: 14:32 hrs. In/Near: San Juan County	

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable [EPA-601/2] Screen {754}

Parameter	Value	Note	MDL	Units
Benzene	210.00	A	1.00	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;
T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.Evidentiary Seals: Not Sealed ☒; Intact: No ☐, Yes ☐ & Broken By: _____ Date: _____Laboratory Remarks:

Note: The value for benzene (210) is approximate.

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: NM SCIENTIFIC LABORATORY DIVISION	Contract: N/A
Lab Code: N/A Case No.: N/A	SAS No.: N/A SDG No.: N/A
Matrix: (soil/water) Water	Lab Sample ID: OR-91-1641
Sample wt/vol: 5.0 (g/mL) mL	Lab File ID: _____
Level: (low/med) Low	Date Received: 5/3/91
% Moisture: not dec. N/A dec. N/A	Date Extracted: N/A
Extraction: (SepF/Cont/Sonc) N/A	Date Analyzed: 5/10/91
GPC Cleanup: (Y/N) No pH: _____	Dilution Factor: 1
	CONCENTRATION UNITS:
	(ug/L or ug/Kg): _____ ug/L

This sample was analyzed for the following compounds
using EPA Methods 601 & 602

(Continued on page 2.)

ANALYTICAL REPORT
 SLD Accession No. OR-91-1641
 Continuation, Page 2 of 4

CAS NO.	COMPOUND	CONC.	QUALIFIER
67-64-1	Acetone	5.0	U
71-43-2	Benzene	210	
108-86-1	Bromobenzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
78-93-3	2-Butanone (MEK)	5.0	U
104-51-8	n-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
1634-04-4	tert-Butyl methyl ether (MTBE)	5.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
67-66-3	Chloroform	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
74-95-3	Dibromomethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
142-28-9	1,3-Dichloropropane	1.0	U
590-20-7	2,2-Dichloropropane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
1006-01-5	cis-1,3-Dichloropropene	1.0	U
1006-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U
98-82-8	Isopropylbenzene	1.0	U
99-87-6	4-Isopropyltoluene	1.0	U
75-09-2	Methylene chloride	5.0	U
90-12-0	1-Methylnaphthalene	1.0	U

(Continued on page 3.)

ANALYTICAL REPORT
 SLD Accession No. OR-91-1641
 Continuation, Page 3 of 4

91-57-6	2-Methylnaphthalene	1.0	U
91-20-3	Naphthalene	1.0	U
103-65-1	Propylbenzene	1.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
109-99-9	Tetrahydrofuran (THF)	5.0	U
108-88-3	Toluene	1.0	U
87-61-5	1,2,3-Trichlorobenzene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	1.0	U
95-47-6	o-Xylene	1.0	U
N/A	p- & m-Xylene	1.0	U

Qualifier Definitions:

- B - Indicates compound was detected in the Lab Blank as well as in the sample.
- D - Indicates value taken from a secondary (diluted) sample analysis.
- E - Indicates compound concentration exceeded the range of the standard curve.
- J - Indicates an estimated value for tentatively identified compounds, or for compounds detected and identified but present at a concentration less than the quantitation limit.
- N - Indicates that more than one peak was used for quantitation.
- U - Indicates compound was analyzed for, but not detected above the concentration listed (Quantitation Limit).

QUALITY CONTROL SUMMARY FOR VOLATILES SCREEN

METHOD BLANK: A laboratory method blank was analyzed along with this sample to assure the absence of interfering contaminants from lab reagents, instruments, or the general laboratory environment. Unless listed below, no contaminants were detected in this blank above the reported detection limit.

(Continued on page 4.)

ANALYTICAL REPORT
SLD Accession No. OR-91-1641
Continuation, Page 4 of 4

COMPOUND DETECTED
No Compounds Detected

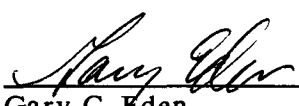
CONCENTRATION (PPB)

SURROGATE RECOVERIES:

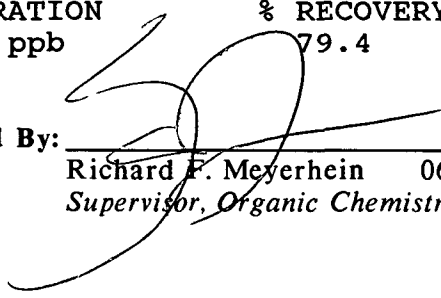
SURROGATE	CONCENTRATION	% RECOVERY
Fluorobenzene	25.0 ppb	95.
2-Bromo-1-chloropropane	15.0 ppb	111.2

SPIKE RECOVERY: The % recoveries for compounds in the batch spike were from 80% to 120% with the exception of the compounds listed below:

COMPOUND	CONCENTRATION	% RECOVERY
Trichloroethene	25. ppb	79.4

Analyst: 

Gary C. Eden
Analyst, Organic Chemistry

Reviewed By: 

Richard F. Meyerhein 06/25/91
Supervisor, Organic Chemistry Section

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION

700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106

Organic Chemistry Section - Telephone: (505) 841-2570

SLD No.

0R91-1640-C

Date

Received: 5-3-91

Request ID No. 012069-C

2 User Code #: 7 0 3 2 1 0

3 Request ID No.:

4 Priority Code #: 3

[If "1" or "2", call EID-SLD Coordinator]

5 Facility Name: Kiffen Canyon

6 County: San Juan

7 City: -

8 State: NM

9 Sample Location: SURFACE FLOW BUBBLING SPRINGS

10 Collected By: David BOYER

First

Last

On: 9/10/02

Date: (YY/MM/DD)

At: 114115 hrs.

Time: 24 hr. clock
3:00 pm = 1500 hrs.

11 Codes:

Submitter

WSS #

Organization

12 Latitude (DDMMSS)

Longitude (DDMMSS)

2 Digit ID
(if needed)

13 Report

Name

14 Phone #:

To: David G. Boyer

(505) 827-5812

Address

New Mexico Oil Conservation Division

P. O. Box 2088

City, State Zip

Santa Fe, New Mexico 87504-2088

15 Sampling Information:

- ☐ - Grab
☐ - Composite (Composite Time Period)
☐ - Compliance
☐ - Flow Proportioned
☐ - Check
☐ - Equal Aliquot
☐ - Monitoring
☐ - Sample Split w/Permittee
☒ - Special
☐ - Chain of Custody

16 Field

Data: pH: 7, Conductivity: umhos @ °C, Temperature: °C, Chlorine Residual: mg/l, Flow:

17 Sample Source:

- ☐ - Stream
☐ - Lake
☐ - Drain
☐ - Pool
☐ - WWTP
☐ - Well; Depth:
☒ - Spring
☐ - Distribution
☐ - Point-of-Entry
☐ - Other:

18 Field Notes/
Sample #:

Sample from bench Tarrugo bottom, Gassy, no odor

19 Sample Type: ☒ - Water, ☐ - Soil, ☐ - Food, ☐ - Wastewater, ☐ - OtherThis form accompanies a single sample consisting of:

2 - septum vial(s) (volume = 40 ml)

- glass jugs (volume =)

- (volume =)

20 Preservation:

- ☐ - NP No Preservation; Sample stored at room temperature
☒ - P-Ice Sample stored in an ice bath (Not Frozen)
☐ - P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual
☐ - P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
☒ - Other HgCl₂

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.

Volatile Screens:

- ☐ - (753) Aliphatic Headspace (1-5 Carbons)
☒ - (754) Aromatic & Halogenated Purgeables (EPA 601 & 602)
☐ - (765) Mass Spectrometer Purgeables (EPA 624)
☐ - (766) SDWA Total Trihalomethanes (EPA 501.1)
☐ - (774) SDWA VOC's I [8 Regulated +] (EPA 502.2)
☐ - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)

Other Specific Compounds or Classes:

- ☐ - ()
☐ - ()
☐ - ()

Semivolatile Screens:

- ☐ - (763) Acid Extractables
☐ - (751) Aliphatic Hydrocarbons
☐ - (755) Base/Neutral Extractables (EPA 625)
☐ - (756) Base/Neutral/Acid Extractables (EPA 8270)
☐ - (758) Herbicides, Chlorophenoxy Acid
☐ - (759) Herbicides, Triazines
☐ - (760) Organochlorine Pesticides
☐ - (761) Organophosphate Pesticides
☐ - (767) Polychlorinated Biphenyls (PCB's)
☐ - (764) Polynuclear Aromatic Hydrocarbons
☐ - (762) SDWA Pesticides & Herbicides

Remarks:

91 JUN 28 12 13

REC'D

OIL CONSERVATION DIVISION

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700

700 Camino de Salud, NE
[505]-841-2500

ORGANIC CHEMISTRY SECTION [505]-841-2570

June 26, 1991

Request
ID No. 012069

ANALYTICAL REPORT

SLD Accession No. OR-91-1640

Distribution

☐ User 70320
☒ Submitter 260
☒ SLD Files

To: David Boyer
NM Oil Conserv. Div.
State Land Office Bldg.
P.O. Box 2088
Santa Fe, NM 87504-2088

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: A water, purgeable sample submitted to this laboratory on May 3, 1991

DEMOGRAPHIC DATA

COLLECTION	LOCATION
On: 2-May-91 By: Boy ...	Surface Flow Bubbling Springs
At: 14:15 hrs. In/Near: San Juan County	

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable [EPA-601/2] Screen {754}

Parameter	Value	Note	MDL	Units
Benzene	160.00	A	1.00	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;
T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Evidentiary Seals: Not Sealed ☒; Intact: No ☐, Yes ☐ & Broken By: _____ Date: _____

Laboratory Remarks:

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: NM SCIENTIFIC LABORATORY DIVISION Contract: N/A
 Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: N/A
 Matrix: (soil/water) Water Lab Sample ID: OR-91-1640
 Sample wt/vol: 5.0 (g/mL) mL Lab File ID: _____
 Level: (low/med) Low Date Received: 5/3/91
 % Moisture: not dec. N/A dec. N/A Date Extracted: N/A
 Extraction: (SepF/Cont/Sonc) N/A Date Analyzed: 5/10/91
 GPC Cleanup: (Y/N) No pH: _____ Dilution Factor: 1
 CONCENTRATION UNITS:
 (ug/L or ug/Kg): _____ ug/L

This sample was analyzed for the following compounds
using EPA Methods 601 & 602

CAS NO.	COMPOUND	CONC.	QUALIFIER
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(Continued on page 2.)

ANALYTICAL REPORT
 SLD Accession No. OR-91-1640
 Continuation, Page 2 of 3

67-64-1	Acetone	5.0	U
71-43-2	Benzene	160	
108-86-1	Bromobenzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
78-93-3	2-Butanone (MEK)	5.0	U
104-51-8	n-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
1634-04-4	tert-Butyl methyl ether (MTBE)	5.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
67-66-3	Chloroform	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
74-95-3	Dibromomethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
142-28-9	1,3-Dichloropropane	1.0	U
590-20-7	2,2-Dichloropropane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
1006-01-5	cis-1,3-Dichloropropene	1.0	U
1006-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U
98-82-8	Isopropylbenzene	1.0	U
99-87-6	4-Isopropyltoluene	1.0	U
75-09-2	Methylene chloride	5.0	U
90-12-0	1-Methylnaphthalene	1.0	U
91-57-6	2-Methylnaphthalene	1.0	U
91-20-3	Naphthalene	1.0	U

(Continued on page 3.)

103-65-1	Propylbenzene	1.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
109-99-9	Tetrahydrofuran (THF)	5.0	U
108-88-3	Toluene	1.0	U
87-61-5	1,2,3-Trichlorobenzene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	1.0	U
95-47-6	o-Xylene	1.0	U
N/A	p- & m-Xylene	1.0	U

Qualifier Definitions:

- B - Indicates compound was detected in the Lab Blank as well as in the sample.
- D - Indicates value taken from a secondary (diluted) sample analysis.
- E - Indicates compound concentration exceeded the range of the standard curve.
- J - Indicates an estimated value for tentatively identified compounds, or for compounds detected and identified but present at a concentration less than the quantitation limit.
- N - Indicates that more than one peak was used for quantitation.
- U - Indicates compound was analyzed for, but not detected above the concentration listed (Quantitation Limit).

QUALITY CONTROL SUMMARY FOR VOLATILES SCREEN

METHOD BLANK: A laboratory method blank was analyzed along with this sample to assure the absence of interfering contaminants from lab reagents, instruments, or the general laboratory environment. Unless listed below, no contaminants were detected in this blank above the reported detection limit.

COMPOUND DETECTED

CONCENTRATION (PPB)

(Continued on page 4.)

No Compounds Detected

SURROGATE RECOVERIES:

SURROGATE	CONCENTRATION	% RECOVERY
Fluorobenzene	25.0 ppb	99.2
2-Bromo-1-chloropropane	15.0 ppb	112.4

SPIKE RECOVERY: The % recoveries for compounds in the batch spike were from 80% to 120% with the exception of the compounds listed below:

COMPOUND	CONCENTRATION	% RECOVERY
Trichloroethene	25. ppb	79.4

Analyst: *Gary C. Eden*

Gary C. Eden
Analyst, Organic Chemistry

Reviewed By: *[Signature]*

Richard F. Meyerhein 06/25/91
Supervisor, Organic Chemistry Section

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION

700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106

Organic Chemistry Section - Telephone: (505) 841-2570

SLD No.

OR91-1644-C

Date

Received: 5-3-91

Request ID No. 012073-C

2 User Code #: 7103210	3 Request ID No.:	4 Priority Code #: 13	7 City: [blank]	8 State: NM
5 Facility Name: Kiffen Canyon	6 County: San Juan			

9 Sample Location: HORTON SPRING-PIPELINE HOLE

10 Collected By: DAVID BOYER On: 5/10/92 At: 11:35 hrs.
First Last Date: (YY/MM/DD) Time: 24 hr. clock
3:00 pm = 1500 hrs.

11 Codes: Submitter WSS # Organization 12 Latitude (DDMMSS) Longitude (DDMMSS) 2 Digit ID (if needed)

13 Report To: David G. Boyer 14 Phone #: (505) 827-5812
Address: New Mexico Oil Conservation Division
P. O. Box 2088
City, State Zip: Santa Fe, New Mexico 87504-2088
15 Sampling Information:
Sample Purpose: ☐ Grab ☐ Composite (Composite Time Period)
☐ Compliance ☐ Flow Proportioned
☐ Check ☐ Equal Aliquot
☐ Monitoring ☐ Sample Split w/Permittee
☒ Special ☐ Chain of Custody

16 Field Data: pH: , Conductivity: umhos @ °C, Temperature: °C, Chlorine Residual: mg/l, Flow:

17 Sample Source: ☐ Stream ☐ Well; Depth: ☒ Spring
☐ Lake ☐ Distribution
☐ Drain ☐ Point-of-Entry
☐ Pool ☐ Other:
☐ WWTP
18 Field Notes/
Sample #: SAMPLE FROM UPPER
Hole. Springs/seeps above
gas well in arroyo and
below cotton woods19 Sample Type: ☒ Water, ☐ Soil, ☐ Food,
☐ Wastewater, ☐ Other
This form accompanies a single sample consisting of:
2 - septum vial(s) (volume = 40ml)
- glass jugs (volume =)
(volume =)
20 Preservation:
☐ NP No Preservation; Sample stored at room temperature
☒ P-ice Sample stored in an ice bath (Not Frozen)
☐ P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual
☐ P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
☒ Other HgCl

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.

Volatile Screens:

- ☐ - (753) Aliphatic Headspace (1-5 Carbons)
☒ - (754) Aromatic & Halogenated Purgeables (EPA 601 & 602)
☐ - (765) Mass Spectrometer Purgeables (EPA 624)
☐ - (766) SDWA Total Trihalomethanes (EPA 501.1)
☐ - (774) SDWA VOC's I [8 Regulated +] (EPA 502.2)
☐ - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)

Other Specific Compounds or Classes:

☐ - ()
☐ - ()
☐ - ()

Semivolatile Screens:

- ☐ - (763) Acid Extractables
☐ - (751) Aliphatic Hydrocarbons
☐ - (755) Base/Neutral Extractables (EPA 625)
☐ - (756) Base/Neutral/Acid Extractables (EPA 8270)
☐ - (758) Herbicides, Chlorophenoxy Acid
☐ - (759) Herbicides, Triazines
☐ - (760) Organochlorine Pesticides
☐ - (761) Organophosphate Pesticides
☐ - (767) Polychlorinated Biphenyls (PCB's)
☐ - (764) Polynuclear Aromatic Hydrocarbons
☐ - (762) SDWA Pesticides & Herbicides

Remarks:

ST 21 WD 82 NMP 16.

RECEIVED

OIL CONSERVATION DIVISION

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

ORGANIC CHEMISTRY SECTION [505]-841-2570

June 19, 1991

Request
ID No. 012073**ANALYTICAL REPORT**
SLD Accession No. OR-91-1644Distribution☐ User 70320
☒ Submitter 260
☒ SLD FilesTo: David Boyer
NM Oil Conserv. Div.
State Land Office Bldg.
P.O. Box 2088
Santa Fe, NM 87504-2088From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: A water, purgeable sample submitted to this laboratory on May 3, 1991

DEMOGRAPHIC DATA

COLLECTION	LOCATION
On: 2-May-91 By: Boy ...	Horton Spring-Upper Hole
At: 17:35 hrs. In/Near: San Juan County	

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable [EPA-601/2] Screen (754)

Parameter	Value	Note	MDL	Units
Halogenated Volatiles (42)	0.00	N	1.00	ppb
Benzene	2.40		1.00	ppb
Ethylbenzene	3.30		1.00	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;
T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.Evidentiary Seals: Not Sealed ☒; Intact: No ☐, Yes ☐ & Broken By: _____ Date: _____Laboratory Remarks:

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: NM SCIENTIFIC LABORATORY DIVISION	Contract: N/A
Lab Code: N/A Case No.: N/A	SAS No.: N/A SDG No.: N/A
Matrix: (soil/water) Water	Lab Sample ID: OR-91-1644
Sample wt/vol: 5.0 (g/mL) mL	Lab File ID: _____
Level: (low/med) Low	Date Received: 5/3/91
% Moisture: not dec. N/A dec. N/A	Date Extracted: N/A
Extraction: (SepF/Cont/Sonc) N/A	Date Analyzed: 5/10/91
GPC Cleanup: (Y/N) No pH: _____	Dilution Factor: 1
	CONCENTRATION UNITS:
	(ug/L or ug/Kg): _____ ug/L

This sample was analyzed for the following compounds

(Continued on page 2)

RECEIVED
OIL CONSERVATION DIVISION
JUN 11 1991

ANALYTICAL REPORT
 SLD Accession No. OR-91-1644
 Continuation, Page 2 of 4

using EPA Methods 601 & 602

CAS NO.	COMPOUND	CONC.	QUALIFIER
67-64-1	Acetone	5.0	U
71-43-2	Benzene	2.4	
108-86-1	Bromobenzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
78-93-3	2-Butanone (MEK)	5.0	U
104-51-8	n-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
1634-04-4	tert-Butyl methyl ether (MTBE)	5.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
67-66-3	Chloroform	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
74-95-3	Dibromomethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
142-28-9	1,3-Dichloropropane	1.0	U
590-20-7	2,2-Dichloropropane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
1006-01-5	cis-1,3-Dichloropropene	1.0	U
1006-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	3.3	
87-68-3	Hexachlorobutadiene	1.0	U
98-82-8	Isopropylbenzene	1.0	U
99-87-6	4-Isopropyltoluene	1.0	U
75-09-2	Methylene chloride	5.0	U

(Continued on page 3.)

90-12-0	1-Methylnaphthalene	1.0	U
91-57-6	2-Methylnaphthalene	1.0	U
91-20-3	Naphthalene	1.0	U
103-65-1	Propylbenzene	1.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
109-99-9	Tetrahydrofuran (THF)	5.0	U
108-88-3	Toluene	1.0	U
87-61-5	1,2,3-Trichlorobenzene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	1.0	U
95-47-6	o-Xylene	1.0	U
N/A	p- & m-Xylene	1.0	U

Qualifier Definitions:

- B - Indicates compound was detected in the Lab Blank as well as in the sample.
- D - Indicates value taken from a secondary (diluted) sample analysis.
- E - Indicates compound concentration exceeded the range of the standard curve.
- J - Indicates an estimated value for tentatively identified compounds, or for compounds detected and identified but present at a concentration less than the quantitation limit.
- N - Indicates that more than one peak was used for quantitation.
- U - Indicates compound was analyzed for, but not detected above the concentration listed (Quantitation Limit).

QUALITY CONTROL SUMMARY FOR VOLATILES SCREEN

METHOD BLANK: A laboratory method blank was analyzed along with this sample to assure the absence of interfering contaminants from lab reagents, instruments, or the general laboratory environment. Unless listed below, no contaminants were detected

(Continued on page 4.)

in this blank above the reported detection limit.

COMPOUND DETECTED
No Compounds Detected

CONCENTRATION (PPB)

SURROGATE RECOVERIES:

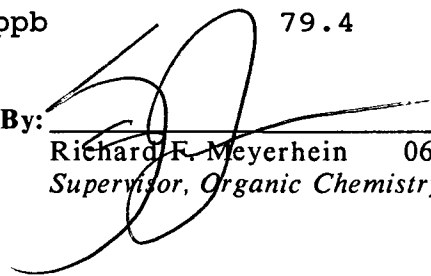
SURROGATE	CONCENTRATION	% RECOVERY
Fluorobenzene	25.0 ppb	93.2
2-Bromo-1-chloropropane	15.0 ppb	111.

SPIKE RECOVERY: The % recoveries for compounds in the batch spike were from 80% to 120% with the exception of the compounds listed below:

COMPOUND	CONCENTRATION	% RECOVERY
Trichloroethene	25. ppb	79.4

Analyst: 

Gary C. Eden
Analyst, Organic Chemistry

Reviewed By: 

Richard F. Meyerhein 06/18/91
Supervisor, Organic Chemistry Section

KIFFEN NACIMIENTO

(Gas)

T. 32 N., R. 11 W., NMPM

San Juan County, New Mexico

By: Elliott A. Riggs

Independent Petroleum Geologist

91 APR 15 AM 10 29

GEOLOGY**Regional Setting:** Northwestern part, San Juan Basin**Surface Formations:** Tertiary, Nacimiento Formation**Exploration Method Leading to Discovery:** A nearby well kicked while drilling deeper to the Pictured Cliffs Sandstone**Type of Trap:** Stratigraphic**Producing Formation:** Paleocene, Nacimiento Formation**Gross Thickness and Lithology of Reservoir Rocks:** About 7 feet, lithology unknown**Geometry of Reservoir Rock:** Unknown**Other Significant Shows:** None**Oldest Stratigraphic Horizon Penetrated:** Nacimiento Formation**Porosity:** Unknown**Permeability:** Unknown**Water Saturation:** Unknown**Initial Field Pressure:** 405 psig (shut-in casing pressure)**Type of Drive:** Gas expansion**Gas Characteristics and Analysis:** Sweet, high Btu**Associated Water Characteristics and Analysis:** Fresh**Original Gas, Oil, and Water Contact Datums:** Unknown**Estimated Primary Recovery:** 12,000 MCFG**Type of Secondary Recovery:** (existing or planned) None**Estimated Ultimate Recovery:** 12,000 MCFG**Present Daily Average Production:** Well shut-in, unable to buck high line pressure**Market Outlets:** Southwest Gas Corp.**DISCOVERY WELL****Name:** Kimbark Operating Co. No. 3 Storey**Location:** SE SE (1,190' FSL and 1,012' FEL) sec. 34, T. 32 N., R. 11 W.**Elevation (KB):** 6,009 feet**Date of Completion:** February 19, 1976**Total Depth:** 725 feet**Production Casing:** 4 1/2" to 710 feet**Perforations:** None**Stimulation:** None**Initial Potential:** 410 MCFGD, 5 BWD**Bottom Hole Pressure:** 405 psig (shut-in casing pressure)**DRILLING AND COMPLETION PRACTICES**

Due to the high pressure of this reservoir (greater than hydrostatic), it was necessary to drill the well with special precautions. A string of 8 5/8" casing was set to 124 feet and cemented to the surface. A string of 4 1/2" casing was run in a 6 3/4" hole to 710 feet and cemented. A bit and a bit sub were run on 2 7/8" tubing to drill out the cement and to open the hole below the 4 1/2" casing. The well was drilled out with gas and the well began to make new gas at 718 feet. The well was drilled to a total depth of 725 feet where a large increase in gas was noted. The tubing, bit, and bit sub were left in the hole. Two 1/4" Kinley shots were made in the tubing, one at 658 feet and the other at 659 feet. The well was shut-in pending pipeline connection.

RESERVOIR DATA**Productive Area:**

Proved: Unknown

Unproved: Unknown

Approved Spacing: 160 acres

No. of Producing Wells: 1

No. of Abandoned Wells: 0

No. of Dry Holes: 0

Average Net Pay: 7 feet**FIELD COMMENTARY**

The potential for a shallow producing gas zone in this area was noted during the drilling of the Kimbark No. 2 Storey, a Pictured Cliffs Sandstone well which was drilled nearby. This well kicked while drilling at 726 feet. It continued to make enough gas during the drilling to the Pictured Cliffs, that it was not prudent to run electric logs and casing was run without logging the open hole. A through casing thermal neutron decay log indicated a thin gas zone was present and further study was warranted. The Kimbark No. 1-A Storey Mesa Verde Group well was drilled several hundred feet to the south of the No. 2 Storey Pictured Cliffs well and it was anticipated that this well might also kick at approximately the 726 foot interval. This did not happen. The rig was shut down at about 1,300 feet for eight hours for rig repair and the well then did begin to make some gas. Based on this information, the location for the shallow Nacimiento test was moved and the bore hole located about 72 1/2 feet west of the No. 2 Storey wellhead. The well was completed open hole.

A good suite of logs does not exist on this thin shallow zone; however, it is thought to be either a fractured sandy interval or an unusually porous and permeable sandstone-stringer. The fact that the No. 1-A Storey Mesa Verde well did not kick indicates that a blanket sandstone condition does not exist. The New Mexico Oil Conservation Commission ordered bradenhead tests on all wells in the area in the event that a leaky string of casing was charging up this shallow interval. The bradenhead tests were all negative and it was concluded that this is not a charged-up interval. In all probability this zone would never have been noted on electric well logs and it was only through alert well site personnel and the fact that they noted the kick, that this future completion was possible. The well is currently shut-in due to the high pressure gathering line situation in the area. The reservoir appears to have a limited extent as the productivity decline is rather steep. It is doubtful that the well will pay out.

REFERENCES

New Mexico Oil & Gas Engineering Committee, annual production figures.
Riggs, E. A., personal files and geologic data.

KIFFEN NACIMIENTO

973

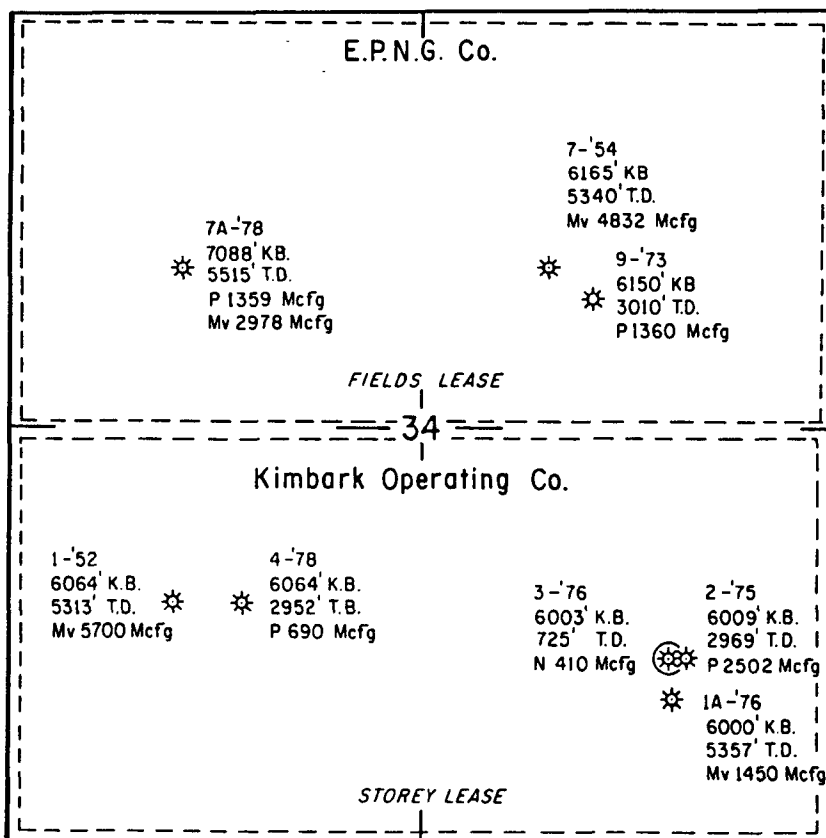
KIFFEN NACIMIENTO

* NO. OF WELLS @ YR. END				PRODUCTION OIL IN BARRELS GAS IN MCF	
YEAR	TYPE	PROD.	SI/ABN	ANNUAL	CUMULATIVE
1976	Oil Gas		1	0	0
1977	Oil Gas	1		3,736	3,736
1978	Oil Gas	1		4,307	8,043
1979	Oil Gas	1		1,844	9,887
1980	Oil Gas	1		907	10,794
1981	Oil Gas	1		471	11,625
1982	Oil Gas	1		351	11,976

RTS

KIFFEN NACIMIENTO (GAS)

SAN JUAN, CO., NEW MEXICO



N - NACIMIENTO COMPLETION
P - PICTURED CLIFFS "
Mv - MESAVERDE "

* DISCOVERY WELL.

Sec. 34, T32N, R 11W.



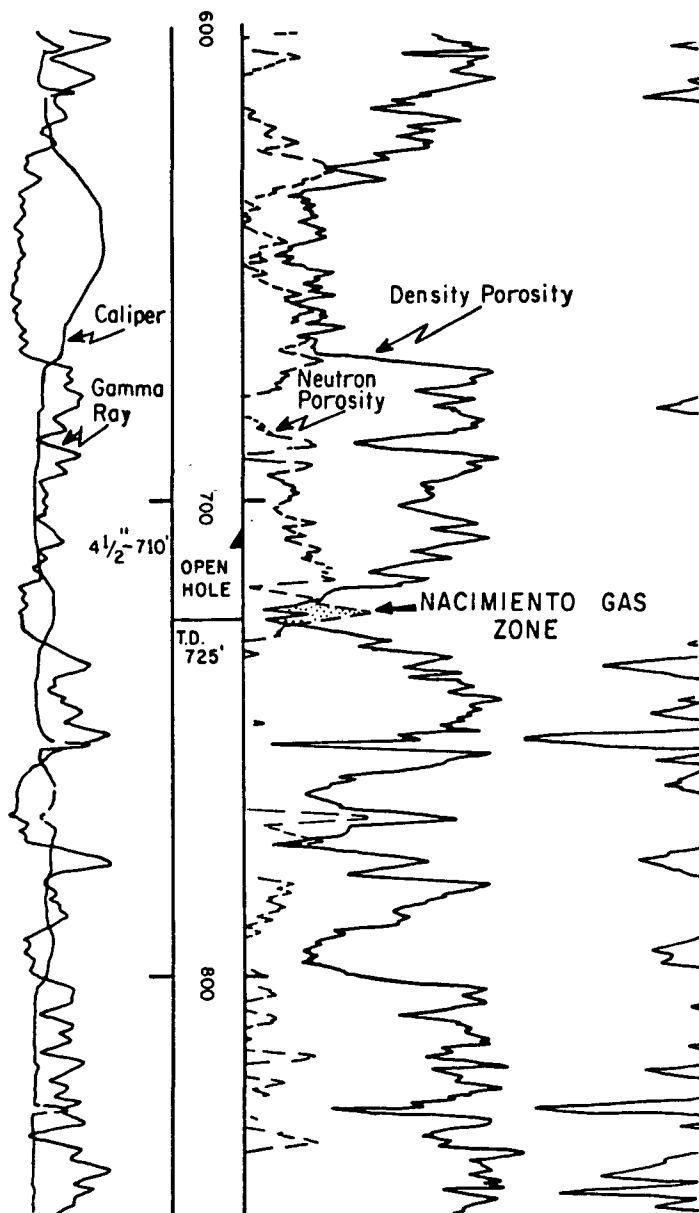
GEOLOGIST: Elliott A. Riggs

DRAFTING: James L. Hopkins

KIFFEN NACIMIENTO

KIMBARK OPERATING CO.

#1A Storey

Sec. 34 - T 32N - R 11W
San Juan Co., New Mexico

NOTE: { This log run on deeper well 250' away
from # 3 Storey. }

GEOLOGIST: Elliott A. Riggs

DRAFTING: James L. Hopkins

OIL CONSERVATION DIVISION
RECEIVED

'91 MAY 7 AM 11717

VOLATILE AROMATIC HYDROCARBONS

Client: NMOCD Report Date: 04-19-91

Sample ID: Dugan Storey #3 Date Sampled: 04-15-91
Laboratory Number: C2839 (F6098) Date Received: 04-16-91
Analysis Requested: BTEX Date Analyzed: 04-19-91
Sample Matrix: Water Preservative: None
Condition: Ambient, Intact

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	386	20
Toluene	91	20
Ethylbenzene	ND	20
p,m-Xylene	ND	20
o-Xylene	ND	20

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Fluorobenzene	90.2 %

Method: Method 8020, Aromatic Volatile Organics, SW-846,
USEPA, (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Wanda M. Kiger
Analyst

Mary Higginbotham
Review

Sample from Surface Casing
FORMERLY KIM BARK STOREY #3
ASB

**** QUALITY ASSURANCE REPORT**
MATRIX DUPLICATE - VOLATILE AROMATIC HYDROCARBONS

Laboratory Number: C2839 Date Sampled: 04-15-91
Analysis: BTEX Date Analyzed: 04-19-91
Sample Matrix: Water Preservative: None
Condition: Ambient, Intact

Parameter	Sample Result (ug/L)	Duplicate Result (ug/L)	Percent Difference
Benzene	386	465	18.6
Toluene	91	93	2.0
Ethylbenzene	ND	ND	NA
p,m-Xylene	ND	ND	NA
o-Xylene	ND	ND	NA

QA ACCEPTANCE CRITERIA: Administrative control limit set at
20% difference.

SURROGATE RECOVERY:	Parameter	% Recovery
	Toluene-d8	91.3
	4-Bromofluorobenzene	86.3

Method: Method 8020, Aromatic Volatile Organics, SW-846, USEPA
 (Sept. 1986).

ND - Parameter not detected at the stated detection limit.

Comments:

Wanda M. Rogers
Analyst

Mary Higginsbotham
Review



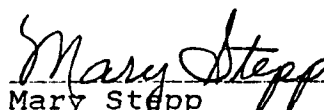
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: NMOCD
ID: #3
SITE: Dugan Storey
LAB NO: F6098

DATE REPORTED: 04/23/91
DATE RECEIVED: 04/15/91
DATE COLLECTED: 04/15/91

Lab pH (s.u.).....	6.88
Lab conductivity, umhos/cm.....	12500
Lab resistivity, ohm-m.....	0.8
Total dissolved solids (180), mg/l..	10400
Total dissolved solids (calc), mg/l.	10500
Total alkalinity as CaCO ₃ , mg/l.....	21.1
Total hardness as CaCO ₃ , mg/l.....	1080
Sodium absorption ratio.....	39.6

	mg/l	meq/l
Bicarbonate as HCO ₃	25.6	0.42
Carbonate as CO ₃	0	0
Chloride.....	807	22.8
Sulfate.....	6270	131
Calcium.....	428	21.3
Magnesium.....	2.35	0.19
Potassium.....	5.5	0.14
Sodium.....	2990	130
Major cations.....		152
Major anions.....		154
Cation/anion difference.....		0.66 %


Mary Stepp
Lab Manager



CHAIN OF CUSTODY RECORD

11

[illegible]