

GW - 40

INSPECTIONS & DATA

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-5

<u>SAMPLER</u>	<u>GIANT</u>	<u>OCD</u>	<u>OCD</u>
<u>DATE</u>	<u>3/13/86</u>	<u>6/9/86</u>	<u>11/20/86</u>
<u>PARAMETER</u>			
DETECTION LIMIT	1.0	50.0	10.0
BENZENE	830.0	530.0	210.0
BROMODICHLOROMETHANE	NA	ND	ND
BROMOFORM	NA	ND	ND
BROMOMETHANE	NA	ND	ND
CARBON TETRACHLORIDE	NA	ND	ND
CHLOROBENZENE	NA	ND	ND
CHLOROETHANE	NA	ND	ND
CHLOROFORM	NA	ND	ND
CHLOROMETHANE	NA	ND	ND
DIBROMOCHLOROMETHANE	NA	ND	ND
1,2-DICHLOROBENZENE	NA	ND	ND
1,3-DICHLOROBENZENE	NA	ND	ND
1,4-DICHLOROBENZENE	NA	ND	ND
DICHLORODIFLUOROMETHANE	NA	ND	ND
1,1-DICHLOROETHANE	NA	ND	ND
1,2-DICHLOROETHANE	NA	ND	ND
1,1-DICHLOROETHENE	NA	ND	ND
CIS-1,2-DICHLOROETHENE	NA	ND	ND
TRANS-1,2-DICHLOROETHENE	NA	ND	ND
DICHLOROMETHANE	NA	ND	ND
1,2-DICHLOROPROPANE	NA	ND	ND
ETHYLBENZENE	299.0	1,000	700.0
METHYLENE CHLORIDE	NA	ND	ND
1,1,2,2-TETRACHLOROETHANE	NA	ND	ND
TETRACHLOROETHENE	NA	ND	ND
TOLUENE	638.0	200.0	31.0
1,1,1-TRICHLOROETHANE	NA	ND	ND
1,1,2-TRICHLOROETHANE	NA	ND	ND
TRICHLOROETHENE	NA	ND	ND
TRICHLOROFLUOROMETHANE	NA	ND	ND
VINYL CHLORIDE	NA	ND	ND
TOTAL XYLENES	2,204	4,600	2,701

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

86- 1370-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

STATE OF NEW MEXICO

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1370 A.B.
DATE REC. 11-26-86

PHONE(S): 327-5812 USER CODE: 8 2 2 3 5
SUBMITTER: David Boyer CODE: 12 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8611201640888
SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: CODE: ☐ ☐ ☐
COUNTY: San Juan; CITY: Los Alamos CODE: ☐ ☐ ☐
LOCATION CODE: (Township-Range-Section-Tracts) 29N+1SW+27+113 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= ; Conductivity= 1625 umho/cm at 15 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant GBR-5, production well

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer Method of Shipment to the Lab: Handcarried

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from Will Olson to Mary C. Eden
at (location) HED/SLD on 11/26/86 - 4:07PM and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐Signatures Will Olson Mary C. Eden

For OCD Use: Date Owner Notified Phone or Letter? Initials

ANALYSES PERFORMED

LAB. No. OR-1370

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
halogenated purgeables	ND		
benzene	210		
toluene	31		
ethylbenzene	700		
p-xylene	550		
m-xylene	1400		
o-xylene	81		
* DETECTION LIMIT *	* 10ppb *	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

Eighteen other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

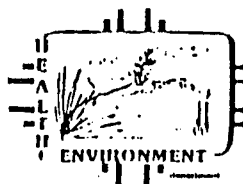
Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: JPB date: 12-4-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4 Dec 86 Analyst's signature: J. Finney

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R. Meyerhen



STATE OF NEW MEXICO

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

86-0677-C

REPORT TO:
PLEASE PRINT

DAVID G. BOYER

NEW MEXICO OIL CONSERVATION DIV.

P.O. BOX 2088

SANTA FE, NM 87504-2088

S.L.D. No.: OR-677-#18

DATE REC.: 06/09/86

SLD PRIORITY #:

PHONE(S): 827-5812

USER CODE: 8 2 2 3 5

SUBMITTER:

DAVID BOYER

SUBMITTER CODE: | | | |

SAMPLE TYPE: WATER ☒, SOIL ☐, OTHER ☐

SAMPLE TYPE CODE: | | |

COLLECTED: 06/06/85-17:45 BY DGB

CODE: | | | | | | | | | | | | | | | |

SOURCE: GBR-5

CODE: | | | | | | | | | | | | | | | |

NEAREST CITY: Bloomfield

CODE: | | | | | |

LOCATION: Giant Bloomfield Refinery

CODE: 29 W 1 2 W 2 2 1 1 1 1

pH= 7; Conductivity= 3700 umho/cm at 25 °C; Chlorine Residual=

Dissolved Oxygen= mg/l; Alkalinity=; Flow Rate=

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Monitor well, Hydrocarbon emulsion

I certify that the statements in this block accurately reflect the results of my field analyses, observations and activities. DGB

Method of shipment to the Laboratory

Hand carried

This form accompanies 2 Septum Vials, Glass Jugs, Containers are marked as follows to indicate preservation:

- ☐ NP: No preservation; sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (not frozen).
☐ P-Na₂S₂O₃; Sample preserved with Na₂S₂O₃ to remove chlorine residual.

I (we) certify that this sample was transferred from DGB to R. Meyerhein at (location) SLR on

6/9/86-16:15 and that the statements in this block are correct.

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures R Meyerhein

DGB

(we) certify that this sample was transferred from

at (location)

on

and that the statements in this block are correct.

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures

ANALYSES REQUESTED

LAB. No.: ORG-

677

PLEASE CHECK THE APPROPRIATE BOXES BELOW TO INDICATE THE TYPE OF ANALYTICAL SCREENS REQUIRED. WHENEVER POSSIBLE LIST SPECIFIC COMPOUNDS SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
		ALIPHATIC HYDROCARBON SCREEN			ALIPHATIC HYDROCARBONS
X	X	AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
X	X	HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
					ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
					POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS

REMARKS:

ANALYTICAL RESULTS

COMPOUND	[PPB]	COMPOUND	[PPB]
<i>benzene</i>	<i>530</i>		
<i>toluene</i>	<i>200</i>		
<i>ethylbenzene</i>	<i>1000</i>		
<i>p-xylene</i>	<i>1000</i>		
<i>m-xylene</i>	<i>2300</i>		
<i>o-xylene</i>	<i>300</i>		
<i>halogenated purgables</i>	<i>were detected</i>		
		* DETECTION LIMIT	<i>50 µg/m³</i>

REMARKS: *Six other compounds were detected by the aromatic screen that were not identified.*

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ NO ☐ . Seal(s) broken by: *JAF* date: *12 June 86*
 I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.
 Date(s) of analysis: *12 June 86* . Analyst's signature: *[Signature]*
 I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block. Reviewers signature: *[Signature]*

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____

8601231230
 thru 8601231410

Assaiac Analytical Laboratories, Inc.
 7300 Jefferson N.E.
 Albuquerque, NM 87109

TO: Geoscience Consultants Ltd.
 Attn: Trent Thomas
 500 Copper N.W. Suite 325
 Albuquerque, NM 87102

DATE: 13 March 1986
 0132

ANALYTE

SAMPLE ID / ANALYTICAL RESULTS

8601231410 B
 Borehole GBT-5

8601231410 C
 Borehole GBT-5

8601231300 A
 Abandoned Supply Well

8601231310
 Abandoned Supply Well

8601231230

NOTINAL DETECTION LIMITS

Oil & Grease
 Benzene
 Toluene
 Ethylbenzene
 Xylenes
 PAH's
 Naphthalene

0.830 mg/l
 0.636 mg/l
 0.299 mg/l
 2.204 mg/l
 **
 **

2703 mg/l

N.D. *
 N.D. *
 N.D. *
 N.D. *

4.5 mg/l

N.D. *
 N.D. *
 N.D. *
 N.D. *

0.1 mg/l
 0.001 mg/l
 0.001 mg/l
 0.001 mg/l
 0.001 mg/l

N.D. * = None Detected
 ** = Insufficient sample to analyze

REFERENCE: "Standard Methods for the Examination of Water and Wastewater",
 15th Edition, APHA, N.Y., 1980.

An invoice for services is enclosed. Thank you for contacting Assaiac Laboratories.

Sincerely,

Jennifer V. Smith
 Jennifer V. Smith, Ph.D.
 Laboratory Director





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

857 wrf
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

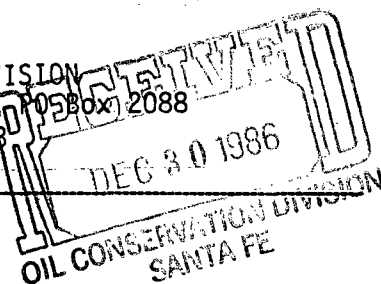
DATE RECEIVED <u>11/26/86</u>	LAB NO. <u>WC 5439</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: <u>82235</u>
Collection DATE <u>11/20/86</u>	SITE INFORMATION	Sample location <u>Giant, Bloom Field Refinery</u>
Collection TIME <u>1600</u>		Collection site description <u>GBR 5</u>
Collected by — Person/Agency <u>BOYER / OLSON / OCD</u>		

SEND
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REPORT
TO
▶

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg. 505 Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code
Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) <u>1625</u> μ mho	Water Temp. (00010) <u>15</u> °C	Conductivity at 25 °C (00094) μ mho	
Field comments <u>Several inches product.</u>				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added	☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25 °C (00095)	<u>3698</u> μ mho	<u>12/12</u>	☒ Calcium (00915)	<u>540</u> mg/l	<u>12-1</u>
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	<u>134</u> mg/l	<u>12-1</u>
☒ Other: <u>pH</u>	<u>7.80</u>	<u>12/8</u>	☒ Sodium (00930)	<u>522</u> mg/l	<u>12-4</u>
☐ Other:			☒ Potassium (00935)	<u>3.51</u> mg/l	<u>12-4</u>
☐ Other:			☒ Bicarbonate (00440)	<u>704</u> mg/l	<u>12/8</u>
			☒ Chloride (00940)	<u>494</u> mg/l	<u>12/5</u>
			☒ Sulfate (00945)	<u>1420</u> mg/l	<u>12/6</u>
			☒ Total filterable residue (dissolved) (70300)	<u>3684</u> mg/l	<u>12/4</u>
			☒ Other: <u>CO3</u>	<u>0</u>	<u>12/8</u>
			☒ Other: <u>BR</u>	<u>0.4</u>	<u>12/10</u>
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported <u>12/12/86</u>	Reviewed by <u>CG</u>

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
2

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED	6/10/86	LAB NO.	2509	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	86106105	SITE INFORMATION	Sample location		
Collection TIME	1745		GBR-5		
Collected by — Person/Agency		Collection site description			
BOYER		GIANT BLOOMFIELD REFINERY			

AUG - 6 1986

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
				GRAB
pH (00400)	7	Conductivity (Uncorrected)	Water Temp. (00010)	Conductivity at 25°C (00094)
		3700 µmho	25 °C	µmho
Field comments				
HYDROCARBON EMULSION				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µmembrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	µmho		☒ Calcium (00915)	320 mg/l	6-11
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	97.6 mg/l	"
☐ Other:			☒ Sodium (00930)	588.8 mg/l	"
☐ Other:			☒ Potassium (00935)	6.79 mg/l	"
☐ Other:			☒ Bicarbonate (00440)	837 mg/l	6/24
			☒ Chloride (00940)	464 mg/l	6/17
			☒ Sulfate (00945)	491 mg/l	6/19
			☒ Total filterable residue (dissolved) (70300)	2865 mg/l	6/18
			☒ Other: CO ₃	0	6/13
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					

Laboratory remarks

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

850
2

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED <u>6/10/86</u>	LAB NO. <u>WC-2510</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>8/6/06/05</u>	SITE INFORMATION	Sample location <u>GBR-5</u>
Collection TIME <u>1745</u>		Collection site description <u>GIANT BLOOMFIELD REFINERY</u>
Collected by — Person/Agency <u>BOYER /OCD</u>		

SEND
FINAL
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TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type <u>GRAB</u>
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>3700</u> μ mho	Water Temp. (00010) <u>25</u> °C	Conductivity at 25 °C (00094) <u> </u> μ mho	
Field comments <u>HYDROCARBON EMULSION</u>				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify: <u> </u> ☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added			

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☒ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	mg/l	
☐ Other:			☒ Sodium (00930)	mg/l	
☐ Other:			☒ Potassium (00935)	mg/l	
☐ Other:			☒ Bicarbonate (00440)	mg/l	
			☒ Chloride (00940)	mg/l	
			☒ Sulfate (00945)	mg/l	
			☒ Total filterable residue (dissolved) (70300)	mg/l	
			☒ Other: <u>CO₃</u>	<u>0</u>	<u>6/13</u>
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported <u>7/10/86</u>	Reviewed by <u>[Signature]</u>

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified Phone or letter? Initials





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED 11/26/86	LAB NO. HM 2422	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE 11/20/86	SITE INFORMATION	Sample location Giant, Bloomfield Refinery
Collection TIME 1640		Collection site description GBR-5
Collected by — Person/Agency BOYER/OLSON/OCD		

SEND
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TO
▶

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) 1625 μ mho	Water Temp. (00010) 15 °C	Conductivity at 25 °C (00094) μ mho	
Field comments				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added	☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25 °C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: ICAP			☐ Sodium (00930)	mg/l	
☒ Other: AS			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks Sample digested			Analyst	Date Reported 1/13/87	Reviewed by Jim Ashby

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

ICAP SCAN

SLD Lab No. HM 2422

Analyst Q/B

Date Analyzed 12/10/86

Reviewed by: Jim Ashby

Date Reported: 11/13/87

ELEMENT	ICAP VALUE (mg/l)	AA VALUE (mg/l)
Aluminum	<0.1	
Barium	0.2	
Beryllium	<0.1	
Boron	0.6	
Cadmium	<0.1	
Calcium	570.	
Chromium	<0.1	
Cobalt	<0.1	
Copper	<0.1	
Iron	0.1	
Lead	<0.1	
Magnesium	105.	
Manganese	3.9	
Molybdenum	<0.1	
Nickel	<0.1	
Silicon	16.	
Silver	<0.1	
Strontium	11.	
Tin	<0.1	
Vanadium	<0.1	
Zinc	<0.1	
Arsenic		<0.005
Selenium		
Mercury		



TO: Geoscience Consultants Ltd.
Attn: Randy Hicks
500 Copper NW Suite 325
Albuquerque, NM 87102

DATE: 18 June 1986
0879

SAMPLE ID: 8605291130 GBR5 *perforated*

ANALYTE ANALYTICAL RESULTS

Density	0.807 g/ml
Specific Gravity	0.794
Scan	see enclosed

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

Jennifer V. Smith
Jennifer V. Smith, Ph.D.
Laboratory Director

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-6

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>3/15/89</u>	<u>6/13/89</u>	<u>9/12/89</u>	<u>12/13/89</u>
<u>PARAMETER</u>				
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)	(BELOW)
BENZENE	222.0	136.0	200.0	110.0
BROMODICHLOROMETHANE	ND(<1.0)	ND(10.0)	ND(25.0)	ND(<1.0)
BROMOFORM	ND(<1.0)	ND(10.0)	ND(500.0)	ND(<1.0)
BROMOMETHANE	ND(1.0)	ND(10.0)	ND(250.0)	ND(1.2)
CARBON TETRACHLORIDE	ND(<1.0)	ND(10.0)	ND(50.0)	ND(<1.0)
CHLOROBENZENE	ND(<1.0)	ND(<1.0)	ND(25.0)	ND(10.0)
CHLOROETHANE	ND(1.0)	ND(10.0)	ND(130.0)	ND(<1.0)
CHLOROFORM	ND(<1.0)	ND(10.0)	ND(25.0)	ND(<1.0)
CHLOROMETHANE	ND(1.0)	ND(10.0)	ND(134.0)	ND(<1.0)
DIBROMOCHLOROMETHANE	ND(<1.0)	ND(10.0)	ND(50.0)	ND(<1.0)
1,2-DICHLOROBENZENE	ND(<1.0)	ND(<1.0)	ND(50.0)	ND(20.0)
1,3-DICHLOROBENZENE	ND(<1.0)	ND(<1.0)	ND(100.0)	ND(20.0)
1,4-DICHLOROBENZENE	ND(<1.0)	ND(<1.0)	ND(50.0)	ND(15.0)
DICHLORODIFLUOROMETHANE	ND(1.0)	ND(10.0)	NA	ND(<1.0)
1,1-DICHLOROETHANE	ND(<1.0)	ND(10.0)	ND(25.0)	ND(<1.0)
1,2-DICHLOROETHANE	ND(<1.0)	ND(10.0)	ND(25.0)	1.2
1,1-DICHLOROETHENE	ND(<1.0)	ND(10.0)	ND(25.0)	ND(<1.0)
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	ND(<1.0)	ND(10.0)	NA	ND(<1.0)
TOTAL 1,2-DICHLOROETHENE	NA	NA	ND(25.0)	NA
DICHLOROMETHANE	ND(<1.0)	ND(10.0)	NA	ND(<1.0)
1,2-DICHLOROPROPANE	ND(<1.0)	ND(10.0)	ND(25.0)	ND(<1.0)
ETHYLBENZENE	323.0	149.0	860.0	85.0
METHYLENE CHLORIDE	2.0	ND(10.0)	ND(100.0)	ND(<1.0)
1,1,2,2-TETRACHLOROETHANE	ND(<1.0)	ND(10.0)	ND(50.0)	ND(<1.0)
TETRACHLOROETHENE	ND(<1.0)	ND(10.0)	ND(25.0)	ND(<1.0)
TOLUENE	ND(2.0)	ND(<1.0)	ND(75.0)	ND(10.0)
1,1,1-TRICHLOROETHANE	ND(<1.0)	ND(10.0)	ND(50.0)	ND(<1.0)
1,1,2-TRICHLOROETHANE	ND(<1.0)	ND(10.0)	ND(50.0)	ND(<1.0)
TRICHLOROETHENE	ND(<1.0)	ND(10.0)	ND(50.0)	ND(<1.0)
TRICHLOROFLUOROMETHANE	ND(<1.0)	ND(10.0)	ND(25.0)	ND(<1.0)
VINYL CHLORIDE	ND(1.0)	ND(10.0)	ND(50.0)	ND(<1.0)
TOTAL XYLENES	432.0	206.0	4,100	140.0

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-6

<u>SAMPLER</u>	<u>OCD</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>11/20/86</u>	<u>9/10/87</u>	<u>10/6/87</u>	<u>11/11/87</u>	<u>12/7/88</u>
<u>PARAMETER</u>					
DETECTION LIMIT	1.0	<1.0	(BELOW)	(BELOW)	(BELOW)
BENZENE	70.0	101.0	85.0	75.0	740.0
BROMODICHLOROMETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
BROMOFORM	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
BROMOMETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND(1.2)
CARBON TETRACHLORIDE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
CHLOROBENZENE	ND	ND	ND(<1.0)	ND(5.0)	ND(300.0)
CHLOROETHANE	ND	ND	ND(1.0)	ND(2.0)	ND(<1.0)
CHLOROFORM	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
CHLOROMETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
DIBROMOCHLOROMETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
1,2-DICHLOROBENZENE	ND	ND	ND(4.0)	ND(5.0)	ND(400.0)
1,3-DICHLOROBENZENE	ND	ND	ND(4.0)	ND(5.0)	ND(400.0)
1,4-DICHLOROBENZENE	ND	ND	ND(6.0)	ND(5.0)	ND(300.0)
DICHLORODIFLUOROMETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
1,1-DICHLOROETHANE	ND	0.9	ND(<1.0)	ND(2.0)	ND(<1.0)
1,2-DICHLOROETHANE	3.0	2.6	ND(<1.0)	ND(2.0)	1.7
1,1-DICHLOROETHENE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
CIS-1,2-DICHLOROETHENE	ND	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
1,2-DICHLOROPROPANE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
ETHYLBENZENE	ND	74.4	169.0	240.0	25,000
METHYLENE CHLORIDE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
TETRACHLOROETHENE	TR	0.3	ND(<1.0)	ND(2.0)	0.6
TOLUENE	ND	8.0	ND(4.0)	ND(10.0)	ND(200.0)
1,1,1-TRICHLOROETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
1,1,2-TRICHLOROETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
TRICHLOROETHENE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
TRICHLOROFLUOROMETHANE	ND	ND	ND(<1.0)	ND(20.0)	ND(<1.0)
VINYL CHLORIDE	ND	ND	ND(<1.0)	ND(2.0)	ND(<1.0)
TOTAL XYLENES	1,240	190.8	46.3	190.0	31,000
TR -	TRACE				
ND -	NOT DETECTED				
NA -	NOT ANALYZED				
* -	DUPLICATE ANALYSIS				

Geoscience Consultants, Ltd.
 Radfan Work Order: 89-12-112

Method: Volatile aromatics (1)	<i>lab 15</i>	<i>lab 33</i>	<i>lab 31</i>	<i>lab 32</i>
List: SU8020				
Sample ID:	8912131000	8912131210	8912131300	8912131600
Factors:	1	25	1	50
Results in:	ug/L	ug/L	ug/L	ug/L
	138	148	158	168
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	<u>63 D</u>	1.0	<u>73</u>	5.0	ND	0.20	<u>110</u>	10
Chlorobenzene	ND	0.20	ND	5.0	ND	0.20	ND	10
1,2-Dichlorobenzene	ND	0.40	ND	10	ND	0.40	ND	20
1,3-Dichlorobenzene	ND	0.40	ND	10	ND	0.40	ND	20
1,4-Dichlorobenzene	ND	0.30	ND	7.5	ND	0.30	ND	15
Ethylbenzene	<u>2.8</u>	0.20	<u>120</u>	5.0	ND	0.20	<u>85</u>	10
Toluene	<u>0.45 *</u>	0.20	ND	5.0	ND	0.20	ND	10
Total xylenes	<u>1.5</u>	0.20	<u>170</u>	5.0	ND	0.20	<u>140</u>	10
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	98		116		108		136	
Control Limits: 76 to 140								

D Sample diluted for this analyte

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Halogenated volatiles (1)

List: SUB010

Sample ID:

8912131210

8912131300

8912131600

8912131030

Factor:

1

1

1

1

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

Bromodichloromethane

Result Det. Limit

ND 0.10

Result Det. Limit

ND 0.10

Result Det. Limit

ND 0.10

Result Det. Limit

ND 0.10

Bromoform

ND 0.50

ND 0.50

ND 0.50

ND 0.50

Bromomethane

ND 1.2

ND 1.2

ND 1.2

ND 1.2

Carbon Tetrachloride

ND 0.12

ND 0.12

ND 0.12

ND 0.12

Chlorobenzene

ND 0.25

ND 0.25

ND 0.25

ND 0.25

Chloroethane

ND 0.52

ND 0.52

ND 0.52

ND 0.52

2-Chloroethylvinylether

ND 0.50

ND 0.50

ND 0.50

ND 0.50

Chloroform

ND 0.10

ND 0.10

ND 0.10

ND 0.10

Chloromethane

ND 0.30

ND 0.30

ND 0.30

ND 0.30

Dibromochloromethane-(2)

ND 0.20

ND 0.20

ND 0.20

ND 0.20

1,2-Dichlorobenzene

ND 0.50

ND 0.50

ND 0.50

ND 0.50

1,3-Dichlorobenzene

ND 0.32

ND 0.32

ND 0.32

ND 0.32

1,4-Dichlorobenzene

ND 0.24

ND 0.24

ND 0.24

ND 0.24

1,1-Dichloroethane

ND 0.50

3.4 0.50

ND 0.50

ND 0.50

1,2-Dichloroethane

4.0 0.10

2.0 0.10

1.2 0.10

0.94 0.10

1,1-Dichloroethane

ND 0.20

ND 0.20

ND 0.20

ND 0.20

trans-1,2-Dichloroethane

1.1 0.20

44 0.20

ND 0.20

ND 0.20

1,2-Dichloropropene

ND 0.10

ND 0.10

ND 0.10

ND 0.10

cis-1,3-Dichloropropene-(2)

N/A N/A

N/A N/A

N/A N/A

N/A N/A

trans-1,3-Dichloropropene

ND 0.30

ND 0.30

ND 0.30

ND 0.30

Methylene Chloride

ND 0.40

1.1 * 0.40

ND 0.40

ND 0.40

1,1,2,2-Tetrachloroethane-(3)

ND 0.15

ND 0.15

ND 0.15

ND 0.15

Tetrachloroethene-(3)

ND 0.10

12 0.10

ND 0.10

ND 0.10

1,1,2-Trichloroethane-(2)

ND 0.20

ND 0.20

ND 0.20

ND 0.20

1,1,1-Trichloroethane

ND 0.20

1.4 0.20

ND 0.20

ND 0.20

Trichloroethene

ND 0.20

7.9 0.20

ND 0.20

ND 0.20

Trichlorofluoromethane

ND 0.20

ND 0.20

ND 0.20

ND 0.20

Vinyl Chloride

ND 0.20

ND 0.20

ND 0.20

ND 0.20

ND Not detected at specified detection limit

N/A Not available

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

 (2) Dibromochloromethane, 1,1,2-Trichloroethane, and
 cis-1,3-Dichloropropene coelute. Quantitated as
 Dibromochloromethane unless otherwise noted.

 (3) Tetrachloroethene and 1,1,2,2-Tetrachloroethane
 coelute. Quantitated as Tetrachloroethene unless
 otherwise noted.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: SW8310 PAH's by MPLC (1)

List: 8310 Method analytes

Sample ID:	8912134300	8912131600	8912131030	8912120950
Factor:	0.94	24	1.9	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	15C	16C	17C	18A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	2.2	ND	55	ND	2.2	ND	2.2
Acenaphthene	ND	1.7	ND	43	14 D	1.7	ND	1.7
Anthracene	ND	0.62	ND	16	ND	1.3	ND	0.62
Benzo(a)anthracene	ND	0.012	0.57 *	0.31	0.026 *	0.025	0.026 *	0.012
Benzo(a)pyrene	ND	0.022	ND	0.55	ND	0.044	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.43	ND	0.034	ND	0.017
Benzo(g,h,i)perylene	ND	0.071	ND	1.8	ND	0.14	ND	0.071
Benzo(k)fluoranthene	ND	0.016	ND	0.41	ND	0.032	ND	0.016
Chrysene	ND	0.012	7.3	0.31	0.27	0.025	0.20	0.012
Dibenzo(a,h)anthracene	ND	0.028	ND	0.72	ND	0.057	ND	0.028
Fluoranthene	ND	0.20	ND	5.0	ND	0.40	0.40 *	0.20
Fluorene	ND	0.20	13 *D	5.0	4.1 D	0.20	2.3 D	0.20
Indeno(1,2,3-cd)pyrene	ND	0.040	ND	1.0	ND	0.040	ND	0.040
Naphthalene	ND	1.7	ND	43	5.8 *D	1.7	5.6 *D	1.7
Phenanthrene	ND	0.60	29 *	15	1.5 *	1.2	2.0 *	0.60
Pyrene	ND	0.25	ND	6.5	ND	0.51	0.25 *	0.25
<u>Surrogate Recovery(%)</u>								
Terphenyl-d14	84		106		76		124	
Control Limits: 37 to 139								

 ND Not detected at specified detection limit
 D Sample diluted for this analyte

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: PAHs by GC 8100 (1)				
List: 8100, special list				
Sample ID:	8912131300	8912131600	8912131030	8912120950
Factor:	0.94	94	0.94	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	15C	16C	17C	18A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1-Methylnaphthalene	ND	0.94	ND	94	ND	0.94	ND	0.94
2-Methylnaphthalene	ND	0.94	ND	94	10	0.94	ND	0.94

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

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Received: 09/14/89

RAS Sacramento

REPORT

Work Order # S9-09-081

Results by Sample

SAMPLE ID 8909121650 H2O GBR-6

FRACTION 03C TEST CODE 602B

NAME Purgeable Aromatics - H2O

Date & Time Collected 09/12/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST	MC	FILE #	EB092613	VERIFIED	JD
INSTRMT	B	INJECTD	09/26/89	250 UNITS	ug/L
CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR	
71-43-2	Benzene	200 CE	25	250	
108-88-3	Toluene	ND	75	250	
100-41-4	Ethylbenzene	860 CE	25	250	
108-90-7	Chlorobenzene	ND	25	250	
1330-20-7	Total Xylenes	4100 C	50	250	
106-46-7	1,4-Dichlorobenzene	ND	50	250	
541-73-1	1,3-Dichlorobenzene	ND	100	250	
95-50-1	1,2-Dichlorobenzene	ND	50	250	

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 90% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

Received: 09/14/89

RAS Sacramento

Results by Sample

REPORT

Work Order # S9-09-081

SAMPLE ID 8909121650 H2O GBR-06

FRACTION 03A TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/12/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST _____
INSTRMT B

INJECTD 09/26/89

FILE # DB092613
FACTOR 250

VERIFIED _____
UNITS ug/L

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	ND	130	250
74-83-9	Bromomethane	ND	250	250
75-01-4	Vinyl Chloride	ND	50	250
75-00-3	Chloroethane	ND	130	250
75-09-2	Methylene Chloride	ND	100	250
75-69-4	Trichlorofluoromethane	ND	25	250
75-35-4	1,1-Dichloroethene	ND	25	250
75-34-3	1,1-Dichloroethane	ND	25	250
540-59-0	Total 1,2-Dichloroethene (2)	ND	25	250
67-66-3	Chloroform	ND	25	250
107-06-2	1,2-Dichloroethane	ND	25	250
71-55-6	1,1,1-Trichloroethane	ND	50	250
56-23-5	Carbon Tetrachloride	ND	50	250
75-27-4	Bromodichloromethane	ND	25	250
78-87-5	1,2-Dichloropropane	ND	25	250
10061-01-5	cis-1,3-Dichloropropene	ND	100	250
79-01-6	Trichloroethene	ND	50	250
124-48-1	Dibromochloromethane (3)	ND	50	250
79-00-5	1,1,2-Trichloroethane (3)	ND	50	250
10061-02-6	trans-1,3-Dichloropropene (3)	ND	100	250
110-75-8	2-Chloroethylvinyl Ether	ND	500	250
75-25-2	Bromoform	ND	500	250
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	50	250
127-18-4	Tetrachloroethene (4)	ND	25	250
108-90-7	Chlorobenzene	ND	50	250
541-73-1	1,3-Dichlorobenzene	ND	130	250
95-50-1	1,2-Dichlorobenzene	ND	50	250
106-46-7	1,4-Dichlorobenzene	ND	50	250

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Received: 09/14/89

RAS Sacramento

REPORT

Results by Sample

Work Order # S9-09-081
Continued From Above

SAMPLE ID 8909121650 H2O GBR-6

FRACTION 03A

TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/12/89

Category

SURROGATES

540-36-3	1-4-Difluorobenzene	NA % Recovery
460-00-4	1-Bromo-4-Fluorobenzene	110 % Recovery

- (1) See Appendix A for Glossary of Report and Data Flag Definitions
- (2) Quantitated as the Trans-isomer
- (3) Dibromochloromethane, 1,1,2-Trichloroethane and Trans-1,3-dichloropropene co-elute.
- (4) 1,1,2,2-Tetrachloroethane and tetrachloroethene co-elute.

Analytical Data Summary

Page: 2

Geoscience Consultants, Ltd.
 Radian Work Order: 89-09-111

Method: PAHs by MPLC (1)

List:

Sample ID:

GBR-13

GBR-8

GBR-6

GBR-33

GBR-15

GBR-240

8909121550

8909121615

8909121650

8909121750

8909130830

8909130915

Factor:

94

95

24

9

1

1

Results in:

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

water

water

Acenaphthalene

<220

<220

<55

<21

<2.3

<2.3

Acenaphthene

<170

<170

580

<16

<1.8

<1.8

Anthracene

<62

<63

<16

<5.9

<0.66

<0.66

Benzo(a)anthracene

<1.2

<1.2

<0.31

<0.12

<0.013

<0.013

Benzo(a)pyrene

<2.2

<2.2

<0.55

<0.21

<0.023

<0.023

Benzo(b)fluoranthene

<1.7

<1.7

<0.43

<0.16

<0.018

<0.018

Benzo(g,h,i)perylene

<7.1

<7.2

<1.8

<0.68

<0.076

<0.076

Benzo(k)fluoranthene

<1.6

<1.6

<0.41

<0.15

<0.017

<0.017

Chrysene

<1.2

<1.2

<0.31

<0.12

<0.013

<0.013

Dibenzo(a,h)anthracene

<2.8

<2.9

<0.72

<0.27

<0.030

<0.030

Fluoranthene

830

<20

<5.0

<1.9

<0.21

<0.21

Fluorene

<20

<20

57

6*

<0.21

4.6

Indeno(1,2,3-cd)pyrene

<4.0

<4.1

<1.0

<0.39

<0.043

<0.043

Naphthalene

330*

420*

120*

16*

<1.8

<1.8

Phenanthrene

<60

320

25*

<5.8

<0.64

7.4

Pyrene

<25

59*

<6.5

<2.4

<0.27

<0.27

Surrogate Recovery(%)

Terphenyl-d14

NC

NC

NC

PC

122

110

Control Limits: 37 to 139

* Est. result less than 5 times detection limit

NC Not calculated

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



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

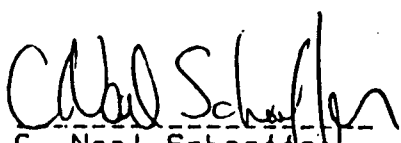
Client: GCL #8906131220
Site: GBR-6
IML #: F1577

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
BENZENE	136 (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	149 (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	167 (0.2)	ug/l
o-XYLENE	39 (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1902)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist



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

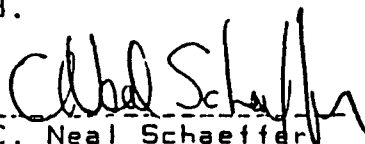
Client: GCL #8906131220
Site: GBR-6
IML #: F1577

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (10.0)	ug/l
BROMOMETHANE	ND (10.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (10.0)	ug/l
VINYL CHLORIDE	ND (10.0)	ug/l
CHLOROETHANE	ND (10.0)	ug/l
METHYLENE CHLORIDE	ND (10.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (10.0)	ug/l
1,1-DICHLOROETHENE	ND (10.0)	ug/l
1,1-DICHLOROETHANE	ND (10.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (10.0)	ug/l
CHLOROFORM	ND (10.0)	ug/l
1,2-DICHLOROETHANE	ND (10.0)	ug/l
1,1,1-TRICHLOROETHANE	ND (10.0)	ug/l
CARBON TETRACHLORIDE	ND (10.0)	ug/l
BROMODICHLOROMETHANE	ND (10.0)	ug/l
1,2-DICHLOROPROPANE	ND (10.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (10.0)	ug/l
TRICHLOROETHENE	ND (10.0)	ug/l
DIBROMOCHLOROMETHANE	ND (10.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (10.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (10.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (10.0)	ug/l
BROMOFORM	ND (10.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (10.0)	ug/l
TETRACHLOROETHENE	ND (10.0)	ug/l
CHLOROBENZENE	ND (10.0)	ug/l
1,3-DICHLOROBENZENE	ND (10.0)	ug/l
1,2-DICHLOROBENZENE	ND (10.0)	ug/l
1,4-DICHLOROBENZENE	ND (10.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUNDWATER
POLYNUCLEAR AROMATIC HYDROCARBONS
(ug/m) unless otherwise noted)

(Sampling Event: 06/13/89)

ANALYTE	GBR-06	GBR-08	GBR-13	GRW-13	GBR-15
Acenaphthene	ND (0.003)	36 (14)	31 (4.4)	ND (0.003)	0.008 (0.005)
Acenaphthylene	ND (0.003)	22 (14)	18 (4.4)	ND (0.003)	T (0.005)
Anthracene	0.004 (0.003)	T (14)	4.7 (4.4)	0.005 (0.003)	0.006 (0.005)
Benzo(a)anthracene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(a)pyrene	ND (0.003)	ND (14)	ND (4.4)	0.005 (0.003)	ND (0.005)
Benzo(b)fluoranthene	0.020 (0.003)	ND (14)	ND (4.4)	0.009 (0.003)	0.019 (0.005)
Benzo(j)fluoranthene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(k)fluoranthene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(g,h,i)perylene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Chrysene	0.010 (0.003)	ND (14)	ND (4.4)	0.004 (0.003)	0.031 (0.005)
Dibenz(a,h)acridine	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,j)acridine	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenzo(a,h)anthracene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,e)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,h)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Fluoranthene	T (0.003)	ND (14)	ND (4.4)	ND (0.003)	0.009 (0.005)
Fluorene	0.004 (0.003)	23 (14)	29 (4.4)	0.004 (0.003)	0.010 (0.005)
Indeno(1,2,3-cd)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Naphthalene	ND (0.003)	15 (14)	11 (4.4)	ND (0.003)	ND (0.005)
Phenanthrene	0.003 (0.003)	ND (14)	ND (4.4)	0.006 (0.003)	0.014 (0.005)
Pyrene	0.003 (0.003)	ND (14)	ND (4.4)	0.004 (0.003)	0.009 (0.005)
1-Methylnaphthalene	NA (0.003)	NA (14)	NA (4.4)	NA (0.003)	NA (0.005)
3-Methylnaphthalene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)

() = Detection limit

ND = Not detected

T = Detected below quantifiable level

NA = Not analyzed



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

Date: April 01, 1989

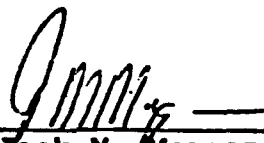
Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151217
Sample Site: GBR-6
IML Lab No: F890940
Analysis Requested: Purgeable Aromatic
Sample Matrix: Water

Date Sampled: 03/15/89
Date Received: 03/15/89
Date Extracted: NA
Date Analyzed: 03/27/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	222 (2.0)	ug/l
TOLUENE	37.0 (2.0)	ug/l
ETHYLBENZENE	323 (2.0)	ug/l
m,p-XYLENE	265 (2.0)	ug/l
o-XYLENE	167 (2.0)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



Jack M. Morgan
Senior Organic Chemist

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151217
Sample Site: GBR-6
IML Sample No: F890940
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water

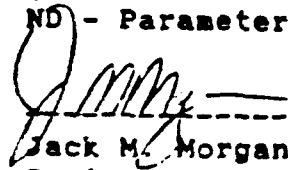
Date Sampled: 03/15/89
Date Received: 03/15/89
Date Extracted: N/A
Date Analyzed: 03/30/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	2.0 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	ND (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	ND (0.03)	ug/l
1,1,1-TRICHLOROETHANE	ND (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	ND (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	ND (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

Date: April 09, 1989

Client:	Geoscience Consultants, Ltd.		
GCL Sample No:	8903151217	Date Sampled:	03/15/89
Sample Site:	GBR-6	Date Received:	03/15/89
IML Sample No:	F890940	Date Extracted:	03/22/89
Analysis:	Polynuclear Aromatic Hydrocarbons	Date Analyzed:	04/09/89
Sample Matrix:	Water		

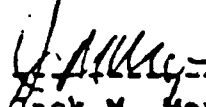
Parameter	Concentration	Units
-----	-----	-----
Acetnaphthene	ND (50.0)	ug/l
Acenaphthylene	ND (50.0)	ug/l
Anthracene	ND (50.0)	ug/l
Benzo(a)Anthracene	ND (50.0)	ug/l
Benzo(a)pyrene	ND (50.0)	ug/l
Benzo(b)fluoranthene	ND (50.0)	ug/l
Benzo(g,h,i)perylene	ND (50.0)	ug/l
Benzo(k)fluoranthene	ND (50.0)	ug/l
Chrysene	ND (50.0)	ug/l
Dibenzo(a,h)anthracene	ND (50.0)	ug/l
Fluoranthene	ND (50.0)	ug/l
Fluorene	ND (50.0)	ug/l
Indeno(1,2,3-cd)pyrene	ND (50.0)	ug/l
Naphthalene	ND (50.0)	ug/l
Phenanthrene	ND (50.0)	ug/l
Pyrene	ND (50.0)	ug/l
1-Methylnaphthalene	ND (50.0)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1986)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.

Comments: Sample required extensive cleanup. Increased detection limits reflect increased baseline perturbation as well as sample loss due to cleanup.


Jack M. Morgan
Senior Organic Chemist

Received: 12/09/88

RAS - Austin

REPORT

Results by Sample

Work Order # 88-12-057

SAMPLE ID 8812071647

602-6

FRACTION 09A

TEST CODE EPA602

NAME EPA method 602

Date & Time Collected 12/07/88

Category

ANALYST	BM	FILE #	INJECTED	12/13/88	VERIFIED	CL
INSTRMT	D				UNITS	ug/L
CAS#		COMPOUND	RESULT	DET LIMIT		
71-43-2		Benzene	740*	200		
108-88-3		Toluene	2300	200		
100-41-4		Ethylbenzene	25000	300		
108-90-7		Chlorobenzene-A	ND	300		
106-46-7		1,4-Dichlorobenzene	ND	300		
541-73-1		1,3-Dichlorobenzene	ND	400		
95-50-1		1,2-Dichlorobenzene	ND	400		

SURROGATES

98-08-8 a,a,a-Trifluorotoluene 115% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
 ND = not detected at detection limit
 NA = not analyzed
 * = less than 5 times the detection limit
 N/A = not available
 Second column confirmation NOT performed unless otherwise noted.

Page 55

Received: 12/09/88

RAS - Austin

REPORT

Results by Sample

Work Order # 88-12-057

SAMPLE ID 8812071647 602-6

FRACTION 09A TEST CODE XYLENE

NAME Xylenes, EPA 602

Date & Time Collected 12/07/88

Category

VERIFIED CL

ANALYST DM
INSTRMT Q

FILE #

INJECTD 12/13/88

UNITS ug/L

CAS #	COMPOUND	RESULT	DET LIMIT
105-42-3	p-Xylene-A	8000	200
108-38-3	m-Xylene	12000	200
95-47-6	o-Xylene	11000	100

SURROGATES

98-08-8 a,a,a-Trifluorotoluene 115% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NOT performed

unless otherwise noted.

Q = daily EPA standard recovery outside

95% confidence interval.

Chlorobenzene and p-xylene co-elute.

Quantitated as chlorobenzene unless

otherwise noted.

SAMPLE ID 8812071647

602-6

FRACTION 09B

TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 12/07/88

Category

ANALYST	CL	FILE #	VERIFIED	CL
INSTRMT	B		UNITS	ug/L
		INJECTD 12/15/88		
CAS#	COMPOUND	RESULT	DET LIMIT	
74-87-3	Chloromethane	ND	0.30	
74-83-9	Bromomethane	ND	1.2	
75-01-4	Vinyl chloride	ND	0.20	
75-00-3	Chloroethane	ND	0.50	
75-09-2	Methylene chloride	ND	0.30	
75-69-4	Trichlorofluoromethane	ND	0.10	
75-35-4	1,1-Dichloroethene	ND	0.10	
75-34-3	1,1-Dichloroethane	ND	0.090	
156-60-5	trans-1,2-Dichloroethene	ND	0.20	
67-66-3	Chloroform	ND	0.050	
107-06-2	1,2-Dichloroethane	1.7	0.030	
71-55-6	1,1,1-Trichloroethane	ND	0.090	
56-23-5	Carbon tetrachloride	ND	0.10	
75-27-4	Bromodichloromethane	ND	0.10	

Received: 12/09/88

Results by Sample

SAMPLE ID 8812071647 602-6 FRACTION 090 TEST CODE EPA601 NAME EPA method 601
Date & Time Collected 12/07/88 Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.10
10061-02-6	trans-1,3-Dichloropropene	ND	0.30
79-01-6	Trichloroethene	ND	0.20
124-48-1	Dibromochloromethane-A	ND	0.20
79-00-5	1,1,2-Trichloroethane-A	ND	0.070
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-75-8	2-Chloroethyl vinyl ether	ND	0.20
75-25-2	Bromoform	ND	0.30
79-34-5	1,1,2,2-Tetrachloroethane-B	ND	0.12
127-19-4	Tetrachloroethene-B	0.6	0.030
108-90-7	Chlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.30
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.40
SURROGATES			
74-97-5	Bromochloromethane	123 %	Recovery
460-00-4	1-Bromo-4-fluorobenzene	119 %	Recovery



Analytical Technologies, Inc.

EPA METHOD 601/602

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/11/87
LAB RECEIPT DATE: 11/16/87
ANALYSIS DATE: 11/17/87
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8711111037
LOCATION: 6BR-6
LAB SAMPLE #: 3574-3
UNITS: ug/l
DILUTION FACTOR: 10

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	2.0	ND
BROMOMETHANE	2.0	ND
DICHLORODIFLUOROMETHANE	2.0	ND
VINYL CHLORIDE	2.0	ND
CHLOROETHANE	2.0	ND
METHYLENE CHLORIDE	20	ND
TRICHLOROFLUOROMETHANE	20	ND
1,1-DICHLOROETHENE	2.0	ND
1,1-DICHLOROETHANE	2.0	ND
TRANS-1,2-DICHLOROETHENE	2.0	ND
CHLOROFORM	2.0	ND
1,2-DICHLOROETHANE	2.0	ND
1,1,1-TRICHLOROETHANE	2.0	ND
CARBON TETRACHLORIDE	2.0	ND
BROMODICHLOROMETHANE	2.0	ND
1,2-DICHLOROPROPANE	2.0	ND
TRANS-1,3-DICHLOROPROPENE	2.0	ND
TRICHLOROETHENE	2.0	ND
DIBROMOCHLOROMETHANE	2.0	ND
1,1,2-TRICHLOROETHANE	2.0	ND
CIS-1,3-DICHLOROPROPENE	2.0	ND
2-CHLOROETHYL VINYL ETHER	2.0	ND
BROMOFORM	2.0	ND
1,1,2,2-TETRACHLOROETHANE	2.0	ND
TETRACHLOROETHENE	2.0	ND
BENZENE	5.0	75
TOLUENE	10	ND
CHLOROBENZENE	5.0	ND
ETHYLBENZENE	5.0	240
1,3-DICHLOROBENZENE	5.0	ND
1,2-DICHLOROBENZENE	5.0	ND
1,4-DICHLOROBENZENE	5.0	ND
M-XYLENE	5.0	190
O,P-XYLENE	5.0	ND

92.9 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED

SAMPLE MATRIX REQUIRED DILUTION

PROJECT MANAGER: *M. Kelly*

DATE: 12/10/87



EPA METHOD 601/602
PROJECT: GBR

SAMPLE DATE: 10/06/87
LAB RECEIPT DATE: 10/09/87
ANALYSIS DATE/TIME: 10/12/87, 13:04
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8710061504
LOCATION: GBR-6
LAB SAMPLE #: 3439-1
UNITS: ug/l
DILUTION FACTOR: 10

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.2	ND
BROMOMETHANE	0.6	ND
DICHLORODIFLUOROMETHANE	0.4	ND
VINYL CHLORIDE	0.5	ND
CHLOROETHANE	1	ND
METHYLENE CHLORIDE	0.2	ND
TRICHLOROFLUOROMETHANE	0.7	ND
1,1-DICHLOROETHENE	0.7	ND
1,1-DICHLOROETHANE	0.5	ND
TRANS-1,2-DICHLOROETHENE	0.9	ND
CHLOROFORM	0.5	ND
1,2-DICHLOROETHANE	0.7	ND
1,1,1-TRICHLOROETHANE	0.3	ND
CARBON TETRACHLORIDE	0.8	ND
BROMODICHLOROMETHANE	0.4	ND
1,2-DICHLOROPROPANE	0.3	ND
TRANS-1,3-DICHLOROPROPENE	1.1	ND
TRICHLOROETHENE	0.6	ND
DIBROMOCHLOROMETHANE	0.7	ND
1,1,2-TRICHLOROETHANE	0.3	ND
CIS-1,3-DICHLOROPROPENE	0.7	ND
2-CHLOROETHYL VINYL ETHER	0.3	ND
BROMOFORM	0.9	ND
1,1,2,2-TETRACHLOROETHANE	0.3	ND
TETRACHLOROETHENE	0.3	ND
BENZENE	2	85.0
TOLUENE	4	ND
CHLOROBENZENE	1.6	ND
ETHYLBENZENE	1	169
1,3-DICHLOROBENZENE	4	ND
1,2-DICHLOROBENZENE	4	ND
1,4-DICHLOROBENZENE	6	ND
M-XYLENE	1.8	ND
O,P-XYLENE	1.5	46.3

89.0 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
MDL 10 x NORMAL DUE TO HIGH LEVELS

PROJECT MANAGER: *JMB*

DATE: 10/28/87



EPA METHOD 601/602

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 9/10/87

LAB RECEIPT DATE: 9/11/87

ANALYSIS DATE: 9/18/87

MATRIX: WATER

ANALYST: MGB

SAMPLE ID: 8709101245

LOCATION: GBR-6

LAB SAMPLE #: 3328-6

UNITS: ug/l

DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.02	ND
BROMOMETHANE	0.06	ND
DICHLORODIFLUOROMETHANE	0.04	ND
VINYL CHLORIDE	0.05	ND
CHLOROETHANE	0.1	ND
METHYLENE CHLORIDE	0.02	ND
TRICHLOROFLUOROMETHANE	0.07	ND
1,1-DICHLOROETHENE	0.07	ND
1,1-DICHLOROETHANE	0.05	0.9
TRANS-1,2-DICHLOROETHENE	0.09	ND
CHLOROFORM	0.05	ND
1,2-DICHLOROETHANE	0.07	2.6
1,1,1-TRICHLOROETHANE	0.03	ND
CARBON TETRACHLORIDE	0.08	ND
BROMODICHLOROMETHANE	0.04	ND
1,2-DICHLOROPROPANE	0.03	ND
TRANS-1,3-DICHLOROPROPENE	0.11	ND
TRICHLOROETHENE	0.06	ND
DIBROMOCHLOROMETHANE	0.07	ND
1,1,2-TRICHLOROETHANE	0.03	ND
CIS-1,3-DICHLOROPROPENE	0.07	ND
2-CHLOROETHYL VINYL ETHER	0.03	ND
BROMOFORM	0.09	ND
1,1,2,2-TETRACHLOROETHANE	0.03	ND
TETRACHLOROETHENE	0.03	0.3
BENZENE	0.2	101
TOLUENE	0.4	8.0
CHLOROBENZENE	0.16	ND
ETHYLBENZENE	0.1	74.4
1,3-DICHLOROBENZENE	0.4	ND
1,2-DICHLOROBENZENE	0.4	ND
1,4-DICHLOROBENZENE	0.6	ND
M-XYLENE	0.18	45.8
O,P-XYLENE	0.15	145

120 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: *JMM*

DATE: 27 SEPTEMBER 1987

86- 1358-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

STATE OF NEW MEXICO

REPORT TO: David Boyer

S.L.D. No. OR-

1358 AB

N.M. Oil Conservation Division

DATE REC.

11-26-86

P. O. Box 2088

Santa Fe, N.M. 87504-2088

PRIORITY

PHONE(S):

327-5812

USER CODE:

8 2 2 3 5

SUBMITTER:

David Boyer

CODE:

2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII)

86 11 20 15 45 28 2

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____

CODE:

| | | |

COUNTY: San Juan

CITY: Lee Acres

CODE:

| | | |

LOCATION CODE: (Township-Range-Section-Tracts)

29 N+ 12 W+ 27+ 11 3 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐
EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= _____; Conductivity= 1650 umho/cm at 16°C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Grant, GBR-6

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer Method of Shipment to the Lab: Hand carried

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from Willie Olson to Mary C. Eden
 at (location) HED/SLP on 11/26/86 at 4:11 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures

Willie OlsonMary C. Eden

For OCD Use: Date Owner Notified _____ Phone or Letter? _____ Initials _____

ANALYSES PERFORMED

LAB. No. OR- 1358

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

☐ _____
☐ _____
☐ _____
☐ _____
☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
1,2-dichloroethane	3		
tetrachloroethene	TR		
benzene	70		
p-xylene	1000		
o-xylene	240		
* DETECTION LIMIT *	* 1ppb	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: JBZdate: 12-4/12-9-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4+9 Dec 86 Analyst's signature: JR Finney

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: L Meyerlein

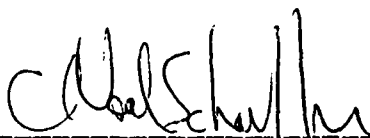


CLIENT: GBR
ID: Lab split
SITE: GBR-6 LS
LAB NO: F4591

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/10/90
DATE COLLECTED: 07/10/90

Lab pH (s.u.).....	7.64
Lab conductivity, umhos/cm.....	5047
Lab resistivity, ohm-m.....	1.9814
Total dissolved solids (180), mg/l..	3250
Total dissolved solids (calc), mg/l.	3232
Total alkalinity as CaCO ₃ , mg/l.....	668.50
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1174.68
Sodium absorption ratio.....	8.97

	mg/l	meq/l
Bicarbonate as HCO ₃	815.6	13.37
Carbonate as CO ₃	0.0	0.00
Chloride.....	839.5	23.68
Sulfate.....	846.9	17.64
Calcium.....	381.5	19.04
Magnesium.....	54.2	4.46
Potassium.....	2.6	0.07
Sodium.....	706.5	30.73
Major cations.....		54.29
Major anions.....		54.69
Cation/anion difference.....		0.37 %


C. Neal Schaeffer
Lab Director

CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: GBR-6

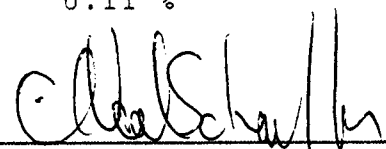
DATE RECEIVED: 12/13/89

LAB NO: F3674

DATE COLLECTED: 12/12/89

Lab pH (s.u.).....	7.30
Lab Conductivity, umhos/cm.....	3784
Lab resistivity, ohm-m.....	2.6427
Total Dissolved Solids (180), mg/l..	2486
Total Dissolved Solids (calc), mg/l.	2559
Total Alkalinity as CaCO ₃ , mg/l.....	1235.52
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1236.81
Sodium Absorption Ratio.....	5.91

	mg/l	meq/l
Bicarbonate as HCO ₃	1507.33	24.71
Carbonate as CO ₃	0.00	0.00
Chloride.....	294.41	8.31
Sulfate.....	609.02	12.69
Calcium.....	336.88	16.81
Magnesium.....	96.38	7.93
Potassium.....	3.48	0.09
Sodium.....	477.60	20.77
Major Cations.....		45.60
Major Anions.....		45.70
Cation/Anion Difference.....		0.11 %


C. Neal Schaeffer
Senior Chemist



Inter-Mountain
Laboratories, Inc.

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

CLIENT: Geoscience Consultants, Ltd. DATE REPORTED: 09/27/89
SAMPLE: 1909121AS2
SITE: 0387 DATE RECEIVED: 09/13/89
LAB NO: F3155 DATE COLLECTED: 09/12/89

Lab pH.....	7.53
Lab Conductivity, umhos/cm.....	4368
Lab resistivity, ohm-cm.....	2.4582
Total Dissolved Solids (TDS), mg/l.....	2794
Total Dissolved Solids (calc), mg/l.....	2877
Total Alkalinity as CaCO ₃ , mg/l.....	1265.56
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1340.80
Sodium Absorption Ratio.....	4.15

	mg/l	meq/l
Bicarbonate as HCO ₃	1543.75	29.71
Carbonate as CO ₃	0.00	0.00
Chloride.....	287.44	8.11
Sulfate.....	942.75	17.56
Calcium.....	383.20	19.12
Magnesium.....	98.43	8.09
Potassium.....	3.44	0.09
Sodium.....	524.40	22.81
Major Cations.....		50.11
Major Anions.....		53.98
Cation/Anion Difference.....		0.85 %


C. Neal Schaeffer
Senior Chemist

Client: GCL #8906131220
Site: GBR-6
IML #: F1577

Date of report: 06/23/09
Date sampled: 06/13/07
Date received: 06/14/07

Total dissolved solids (100)..... 2780.00 mg/l
Total dissolved solids (calculated). 2770.65 mg/l
Total alkalinity (as CaCO3)..... 1124.86 mg/l
Total hardness (as CaCO3)..... 1204.43 mg/l
Lab pH..... 7.33
Lab conductivity..... 3910 umhos/cm @ 25C
Lab resistivity..... 2.5575 ohm-m

	mg/l	meq/l
Acidity (as CaCO3).....	<1	<0.01
Bicarbonate (as HCO3).....	1372.33	22.50
Carbonate (as CO3).....	0.00	0.00
Chloride.....	315.91	8.91
Sulfate.....	773.21	16.11
Calcium.....	500.08	24.95
Magnesium.....	<1	<0.01
Potassium.....	2.64	0.07
Sodium.....	522.40	22.72
Major cations.....		46.80
Major anions.....		47.52
Anion/cation % difference.....		0.68 %


C. Neal Schaeffer
Senior Chemist

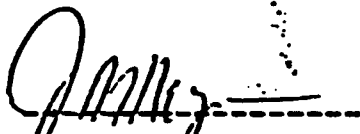
Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151217
Site: GBR-6
IML Lab No: F890940
Date Collected: 3/15/89
Date Received: 3/15/89

Total Dissolved Solids (180), mg/l.....	2576
Total Dissolved Solids (calc), mg/l.....	2530
Total Alkalinity as CaCO ₃ , mg/l.....	1222
Total Hardness as CaCO ₃ , mg/l.....	1112

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	1491	24.44
Carbonate as CO ₃	0	0.00
Chloride.....	351	9.90
Sulfate.....	525	10.94
Calcium.....	321	16.03
Magnesium.....	75	6.20
Potassium.....	4	0.11
Sodium.....	522	22.71
Nitrate/Nitrite.....	0.16	0.01

Major Cations.....	45.05
Major Anions.....	45.28
Cation/Anion Difference.....	0.25 %



Jack M. Morgan
Senior Organic Chemist

Page 14
Received: 12/09/88
RAS - Austin
Results by Sample
REPORT
Work Order # 88-12-056

SAMPLE ID 8812071647
FRACTION 09A
TEST CODE QP04
NAME Orthophosphate
Date & Time Collected not specified
Category

VERIFIED LM

ANALYST MUS
INSTRMT 21
ANALYZED 12/09/88
UNITS mg/L as P

ANALYTE RESULT DET LIMIT

Orthophosphate 0.000 0.020

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available

SAMPLE ID 8812071647
FRACTION 09A
TEST CODE TDS
NAME Total dissolved solids
Date & Time Collected not specified
Category

VERIFIED LM

ANALYST DLB
INSTRMT
ANALYZED 12/13/88
UNITS mg/L

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) 2/00 10

NOTES AND DEFINITIONS FOR THIS REPORT.

Received: 12/09/88

SAMPLE	Test:CA E	Test:CL IC	Test:EG5010	Test:F IC	Test:K E
Sample Id	ug/ml	mg/L	date complete	mg/L	ug/ml
GBR-17 01 8812070930	370	170	12/30/88	2.4	<5.0
GBR-24 02 8812071016	450	600	12/30/88	3.2	<5.0
GBR-14 03 8812071123	470	690	12/30/88	3.8@	5.2*
GBR-30 04 8812071201	460	620	12/30/88	3.6	<5.0
GBR-15-05 8812071352	450	230	12/30/88	3.7	9.6*
GBR-31 06 8812071431	500	450	12/30/88	3.5	<5.0
GBR-33 07 8812071501	390	540	12/30/88	0.63	<5.0
GBR-13 08 8812071601	470	720	12/30/88	0.56	<5.0
GBR-6 09 8812071647	280	340	12/30/88	0.35	<5.0
GBR-8 10 8812071738	360	630	12/30/88	0.70	6.7*
8812071738 oil	<10				30*

SAMPLE	Test:MS E	Test:MS E	Test:PREP X	Test:S04 IC
Sample Id	ug/ml	ug/ml	date complete	mg/L as S04
GBR-17 01 8812070930	42	290		1300

Received: 12/09/89

RAS

- ACTION

REPORT

Results by Test

Work Order # 88-12-056
Continued From Above

SAMPLE	Test: MC E	Test: WA E	Test: PREP X	Test: S04 IC
Sample Id	mg/m3	mg/L	date complete	mg/L as S04
GBL-24 8812071016	81	400		1600
GBL-14 8812071123	29	500		1500
GBL-30 8812071201	36	440		1300
GBL-15 8812071352	30	570		2000
GBL-31 8812071431	44	500		1700
GBL-33 8812071501	40	480		1400
GBL-13 8812071601	48	700		1600
GBL-16 8812071677	72	470		660
GBL-8 8812071730	59	660		490
8812071738 oil	<10	<10	12/30/88	



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

857 *to go*
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

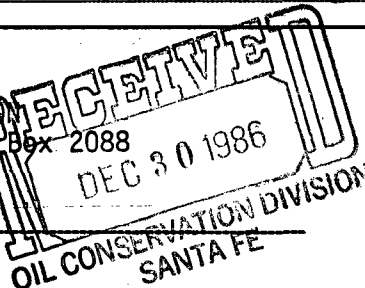
DATE RECEIVED <u>11/26/86</u>	LAB NO. <u>WC 5433</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: <u>82235</u>
Collection DATE <u>8/6/11/20</u>	SITE INFORMATION	Sample location <u>Giant, Bloom Field Refinery</u>
Collection TIME <u>1545</u>		Collection site description <u>GBR-6</u>
Collected by — Person/Agency <u>BOYER / OLSON / OCD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code
Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) <u>1650</u> μ mho	Water Temp. (00010) <u>16</u> °C	Conductivity at 25 °C (00094) μ mho	
Field comments				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25 °C (00095)	<u>3351</u> μ mho	<u>12/12</u>	☒ Calcium (00915)	<u>424</u> mg/l	<u>12-1</u>
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	<u>92.1</u> mg/l	<u>12-1</u>
☒ Other: <u>pH</u>	<u>7.32</u> mg/l	<u>12/8</u>	☒ Sodium (00930)	<u>565</u> mg/l	<u>12-4</u>
☐ Other:			☒ Potassium (00935)	<u>3.90</u> mg/l	<u>12-4</u>
☐ Other:			☒ Bicarbonate (00440)	<u>748</u> mg/l	<u>12/8</u>
			☒ Chloride (00940)	<u>358</u> mg/l	<u>12/2</u>
			☒ Sulfate (00945)	<u>1293</u> mg/l	<u>12/5</u>
			☒ Total filterable residue (dissolved) (70300)	<u>3252</u> mg/l	<u>12/4</u>
			☒ Other: <u>CO3</u>	<u>0</u>	<u>12/8</u>
			☒ Other: <u>BR</u>	<u>1.3</u>	<u>12/10</u>
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported <u>12/12/86</u>	Reviewed by <u>CO</u>

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

852-wpf
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

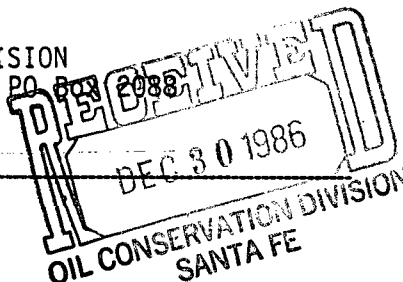
DATE RECEIVED	11/26/86	LAB NO.	WC 5457	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	11/20/86	SITE INFORMATION	Sample location		
Collection TIME	1545		Giant, Bloom Field Refinery		
Collected by — Person/Agency		Collection site description			
RDY BR/OLSON/IOCD		GBR-6			

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code
Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	1630 μ mho	Water Temp. (00010)	16 °C
			Conductivity at 25°C (00094)	μ mho
Field comments				

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	☒ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added		☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☐ Other:			☐ Sodium (00930)	mg/l	
☐ Other:			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☒ Nitrate-N +, Nitrate-N dissolved (00631)	0.11 mg/l	12/2
☐ Ammonia-N total (00610)	mg/l		☒ Ammonia-N dissolved (00608)	0.31 mg/l	12-9
☐ Total Kjeldahl-N ()	mg/l		☒ Total Kjeldahl-N ()	2.4 mg/l	12-9
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
				12/16/86	CO

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____





Analytical Technologies, Inc.

METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/11/87
LAB RECEIPT DATE: 11/16/87
MATRIX: WATER

SAMPLE ID: 8711111037
LOCATION: 6BR-6
LAB SAMPLE #: 3574-3
UNITS: mg/l

<u>ANALYSIS</u> <u>DATE</u>	<u>CONSTITUENT</u> <u>NAME</u>	<u>DILUTION</u> <u>FACTOR</u>	<u>DETECTION</u> <u>LIMIT</u>	<u>RESULT</u>
12/01/87	ARSENIC (As)	1	0.010	ND
12/02/87	BARIUM (Ba)	1	0.060	0.09
12/01/87	CADMIUM (Cd)	1	0.003	0.011
11/16/87	HEXAVALENT			
	CHROMIUM (CR+6)	1	0.03	ND
12/01/87	TOTAL			
	CHROMIUM (Cr Tot)	1	0.010	0.035
11/30/87	LEAD (Pb)	1	0.002	0.017
11/19/87	MERCURY (Hg)	1	0.0005	ND
12/01/87	SELENIUM (Se)	1	0.010	ND
12/01/87	SILVER (Ag)	1	0.010	0.011

* THE LISTED DETECTION LIMITS REFLECT ANY SAMPLE DILUTION.

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER:

Mi. Barry

DATE: 12/10/87

8710061504



Analytical Technologies, Inc.

METALS
PROJECT: GBRSAMPLE DATE: 10/06/87
LAB RECEIPT DATE: 10/09/87
MATRIX: WATERSAMPLE ID: 8710061504
LOCATION: GBR - 6
LAB SAMPLE #: 3439-1
UNITS: mg/l

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
10/14/87	ARSENIC (As)	1	0.010	ND
10/15/87	BARIUM (Ba)	1	0.060	ND
10/13/87	CADMIUM (Cd)	1	0.003	0.006
10/12/87	HEXAVALENT CHROMIUM (Cr+6)	1	0.03	ND
10/13/87	TOTAL CHROMIUM (T. Cr)	1	0.010	ND
10/12/87	LEAD (Pb)	1	0.002	0.003
10/18/87	MERCURY (Hg)	1	0.0002	ND
10/14/87	SELENIUM (Se)	1	0.010	ND
10/14/87	SILVER (Ag)	1	0.010	0.012

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: J. J. M.

DATE: 10/28/87



Analytical Technologies, Inc.

8709101245

METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 9/10/87
LAB RECEIPT DATE: 9/11/87
MATRIX: WATER

SAMPLE ID: 8709101245
LOCATION: GBR-6
LAB SAMPLE #: 3320-6
UNITS: mg/L

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
9/16/87	ARSENIC (As)	1	0.010	ND
9/23/87	BARIUM (Ba)	1	0.060	0.10
9/21/87	CADMIUM (Cd)	1	0.003	0.013
9/16/87	HEXAVALENT CHROMIUM (Cr+6)	1	0.03	ND
9/21/87	TOTAL CHROMIUM (Cr Tot)	1	0.010	0.020
9/17/87	LEAD (Pb)	1	0.002	0.009
9/25/87	MERCURY (Hg)	1	0.0002	ND
9/16/87	SELENIUM (Se)	1	0.010	ND
9/22/87	SILVER (Ag)	1	0.010	0.025

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: J. H. H.

DATE: 27 SEPTEMBER 1987

VOLATILE ORGANIC CONCENTRATIONS (pbb)
IN GROUND WATER, GIANT BLOOMFIELD REFINERY

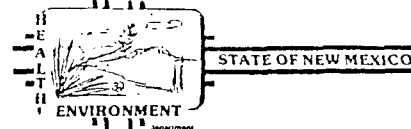
MONITOR WELL GBR-7

<u>SAMPLER</u>	<u>GIANT</u>	<u>OCD</u>
<u>DATE</u>	<u>10/17/86</u>	<u>11/20/86</u>
<u>PARAMETER</u>		
DETECTION LIMIT	1.0	10.0
BENZENE	8.0	21.0
BROMODICHLOROMETHANE	NA	ND
BROMOFORM	NA	ND
BROMOMETHANE	NA	ND
CARBON TETRACHLORIDE	NA	ND
CHLOROBENZENE	NA	ND
CHLOROETHANE	NA	ND
CHLOROFORM	NA	ND
CHLOROMETHANE	NA	ND
DIBROMOCHLOROMETHANE	NA	ND
1,2-DICHLOROBENZENE	NA	ND
1,3-DICHLOROBENZENE	NA	ND
1,4-DICHLOROBENZENE	NA	ND
DICHLORODIFLUOROMETHANE	NA	ND
1,1-DICHLOROETHANE	NA	ND
1,2-DICHLOROETHANE	NA	ND
1,1-DICHLOROETHENE	NA	ND
CIS-1,2-DICHLOROETHENE	NA	ND
TRANS-1,2-DICHLOROETHENE	NA	ND
DICHLOROMETHANE	NA	ND
1,2-DICHLOROPROPANE	NA	ND
ETHYLBENZENE	11.0	ND
METHYLENE CHLORIDE	NA	ND
1,1,2,2-TETRACHLOROETHANE	NA	ND
TETRACHLOROETHENE	NA	ND
TOLUENE	10.0	ND
1,1,1-TRICHLOROETHANE	NA	ND
1,1,2-TRICHLOROETHANE	NA	ND
TRICHLOROETHENE	NA	ND
TRICHLOROFLUOROMETHANE	NA	ND
VINYL CHLORIDE	NA	ND
TOTAL XYLENES	33.0	29.0

TR - TRACE
 ND - NOT DETECTED
 NA - NOT ANALYZED
 * - DUPLICATE ANALYSIS

86-1365-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1365 H.B.
DATE REC. 11-26-86

PHONE(S): 327-5812
SUBMITTER: David Boyer

PRIORITY
USER CODE: 3 2 2 3 5
CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8611201615288

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: CODE: ☐ ☐ ☐

COUNTY: San Juan; CITY: Los Alamos CODE: ☐ ☐ ☐

LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+27+113 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH=; Conductivity= umho/cm at °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant, GBR-7, NO product

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector):

Method of Shipment to the Lab: Hand carried

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice: Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃: Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from Will Olson to Mary C. Egan
at (location) HED/SLD on 11/26/86 4:09 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures Will Olson Mary C. Egan

For OCD Use: Date Owner Notified Phone or Letter? Initials



TO: Geoscience Consultants Ltd.
 Attn: Jan Martin
 500 Copper NW Suite 325
 Albuquerque, NM 87158

DATE: 17 December 1986
 1787

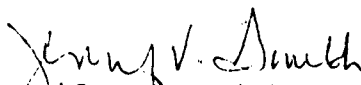
SAMPLE ID: 8610171550 GBR 7

ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Benzene	0.008 mg/l	0.001 mg/l
Toluene	0.010 mg/l	0.001 mg/l
Ethylbenzene	0.011 mg/l	0.001 mg/l
Xylenes	0.033 mg/l	0.001 mg/l
Napthalene	<0.001 mg/l	0.001 mg/l
Acenapthalene	0.007 mg/l	0.001 mg/l
Acenapthene	0.022 mg/l	0.001 mg/l
Fluroene	<0.001 mg/l	0.001 mg/l
Anthracene	<0.001 mg/l	0.001 mg/l
Phenanthracene	0.007 mg/l	0.001 mg/l
Fluoranthene	0.010 mg/l	0.001 mg/l
Pyrene	<0.001 mg/l	0.001 mg/l
Benzo(a)anthracene	<0.001 mg/l	0.001 mg/l
Chrysene	<0.001 mg/l	0.001 mg/l
Benzo(b)fluoranthene	<0.001 mg/l	0.001 mg/l
Benzo(k)fluoranthene	<0.001 mg/l	0.001 mg/l
Benzo(a)pyrene	<0.001 mg/l	0.001 mg/l
Dibenzo(a,h)anthracene	<0.001 mg/l	0.001 mg/l
Indeno(1,2,3-cd)pyrene	<0.001 mg/l	0.001 mg/l
Benzo(g,h,i)perylene	<0.001 mg/l	0.001 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,


 Jennifer D. Smith, Ph.D.
 Laboratory Director





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859-485
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

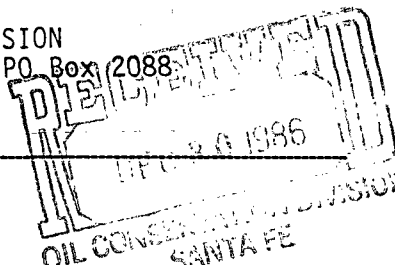
DATE RECEIVED	11/26/86	LAB NO.	WC 5432	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	11/20/86	SITE INFORMATION	Sample location	Giant, Bloomfield Refinery	
Collection TIME	1615		Collection site description	GBR 7	
Collected by — Person/Agency BOYER / OLSON / OCD					

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) 1630 µmho	Water Temp. (00010) 15 °C	Conductivity at 25°C (00094) µmho	
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	/	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µmembrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	3473 µmho	11/16	☒ Calcium (00915)	379.0 mg/l	12-1
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	146.4 mg/l	12-1
☒ Other: pH	7.20	12/8	☒ Sodium (00930)	579.6 mg/l	12-4
☐ Other:			☒ Potassium (00935)	4.29 mg/l	12-4
☐ Other:			☒ Bicarbonate (00440)	1188 mg/l	12/8
			☒ Chloride (00940)	388 mg/l	12/12
			☒ Sulfate (00945)	1143 mg/l	12/12
			☒ Total filterable residue (dissolved) (70300)	3308 mg/l	12/14
			☒ Other: CO ₃ BR	< 0.2	12/10
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
				12/17/86	CS

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

852-wpf
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

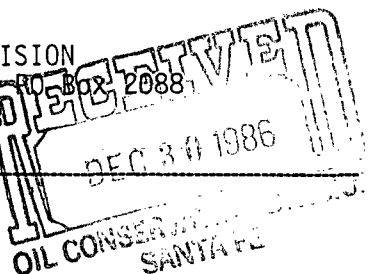
DATE RECEIVED	11/26/86	LAB NO.	WC-5458	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	11/20/86	SITE INFORMATION	Sample location	Giant, Bloom Field Refinery	
Collection TIME	1615		Collection site description	GBR-7	
Collected by — Person/Agency BOYER/OLSON/OCD					

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., Rm. 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code

Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) 1650 μ mho	Water Temp. (00010) 15 °C	Conductivity at 25°C (00094) μ mho	
Field comments				

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	☒ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added		☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, A-H ₂ SO ₄	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☐ Other:			☐ Sodium (00930)	mg/l	
☐ Other:			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☒ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	12/2
☐ Ammonia-N total (00610)	mg/l		☒ Ammonia-N dissolved (00608)	mg/l	12-9
☐ Total Kjeldahl-N ()	mg/l		☒ Total Kjeldahl-N ()	mg/l	12-9
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
				12/16/86	CS

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

VOLATILE ORGANIC CONCENTRATIONS (pbb)
IN GROUND WATER, GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-8

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>3/15/89</u>	<u>6/12/89</u>	<u>9/12/89</u>	<u>12/12/89</u>
<u>PARAMETER</u>				
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)	(BELOW)
BENZENE	5184.0	4400.0	2200.0	2000.0
BROMODICHLOROMETHANE	ND(<1.0)	ND(50.0)	ND(25.0)	ND(<1.0)
BROMOFORM	ND(<1.0)	ND(50.0)	ND(500.0)	ND(<1.0)
BROMOMETHANE	ND(1.0)	ND(50.0)	ND(250.0)	ND(1.2)
CARBON TETRACHLORIDE	ND(<1.0)	ND(50.0)	ND(50.0)	ND(<1.0)
CHLOROBENZENE	ND(<1.0)	ND(20.0)	ND(25.0)	ND(50.0)
CHLOROETHANE	ND(1.0)	ND(50.0)	ND(130.0)	1.3
CHLOROFORM	ND(<1.0)	ND(50.0)	ND(25.0)	ND(<1.0)
CHLOROMETHANE	ND(1.0)	ND(50.0)	ND(130.0)	ND(<1.0)
DIBROMOCHLOROMETHANE	ND(<1.0)	ND(50.0)	ND(50.0)	ND(<1.0)
1,2-DICHLOROBENZENE	ND(<1.0)	ND(20.0)	ND(50.0)	0.84
1,3-DICHLOROBENZENE	ND(<1.0)	ND(20.0)	ND(100.0)	ND(<1.0)
1,4-DICHLOROBENZENE	ND(<1.0)	ND(20.0)	ND(50.0)	ND(<1.0)
DICHLORODIFLUOROMETHANE	ND(1.0)	ND(50.0)	ND(25.0)	ND(<1.0)
1,1-DICHLOROETHANE	3.2	ND(50.0)	ND(25.0)	5.3
1,2-DICHLOROETHANE	5.7	ND(50.0)	ND(25.0)	4.7
1,1-DICHLOROETHENE	ND(<1.0)	ND(50.0)	ND(25.0)	ND(<1.0)
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA(<1.0)
TRANS-1,2-DICHLOROETHENE	ND(<1.0)	ND(50.0)	ND(25.0)	20.0
1,2-DICHLOROPROPANE	ND(<1.0)	ND(50.0)	ND(25.0)	ND(<1.0)
ETHYLBENZENE	1341.0	2130.0	1400.0	560.0
METHYLENE CHLORIDE	10.7	ND(50.0)	ND(100.0)	ND(<1.0)
1,1,2,2-TETRACHLOROETHANE	ND(<1.0)	ND(50.0)	ND(50.0)	ND(<1.0)
TETRACHLOROETHENE	ND(<1.0)	ND(50.0)	ND(25.0)	ND(<1.0)
TOLUENE	172.0	560.0	180.0	ND(50.0)
1,1,1-TRICHLOROETHANE	ND(<1.0)	ND(50.0)	ND(50.0)	ND(<1.0)
1,1,2-TRICHLOROETHANE	ND(<1.0)	ND(50.0)	ND(50.0)	ND(<1.0)
TRICHLOROETHENE	1.4	ND(50.0)	ND(50.0)	2.3
TRICHLOROFLUOROMETHANE	ND(<1.0)	ND(50.0)	ND(25.0)	ND(<1.0)
VINYL CHLORIDE	ND(1.0)	ND(50.0)	ND(50.0)	ND(<1.0)
TOTAL XYLENES	2664.0	7010.0	4400.0	2200.0

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS (pbb)
IN GROUND WATER, GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-8

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>10/17/86</u>	<u>10/6/87</u>	<u>11/11/87</u>	<u>12/7/88</u>	<u>1/20/89</u>
<u>PARAMETER</u>					
DETECTION LIMIT	1.0	(BELOW)	(BELOW)	(BELOW)	(BELOW)
BENZENE	2670.0	7750.0	6500.0	570.0	1000.0
BROMODICHLOROMETHANE	NA	ND(4.0)	ND(10.0)	ND(<1.0)	ND(20.0)
BROMOFORM	NA	ND(9.0)	ND(10.0)	ND(<1.0)	ND(50.0)
BROMOMETHANE	NA	ND(6.0)	ND(10.0)	ND(1.2)	ND(20.0)
CARBON TETRACHLORIDE	NA	ND(8.0)	ND(10.0)	ND(<1.0)	ND(20.0)
CHLOROBENZENE	NA	ND(16.0)	ND(25.0)	ND(150.0)	ND(50.0)
CHLOROETHANE	NA	ND(10.0)	ND(10.0)	ND(<1.0)	ND(20.0)
CHLOROFORM	NA	ND(5.0)	12.0	ND(<1.0)	ND(20.0)
CHLOROMETHANE	NA	ND(2.0)	ND(10.0)	ND(<1.0)	ND(20.0)
DIBROMOCHLOROMETHANE	NA	ND(7.0)	ND(10.0)	ND(<1.0)	ND(20.0)
1,2-DICHLOROBENZENE	NA	ND(40.0)	ND(25.0)	ND(200.0)	ND(50.0)
1,3-DICHLOROBENZENE	NA	ND(40.0)	ND(25.0)	ND(200.0)	ND(50.0)
1,4-DICHLOROBENZENE	NA	ND(60.0)	ND(25.0)	ND(150.0)	ND(50.0)
DICHLORODIFLUOROMETHANE	NA	ND(4.0)	ND(10.0)	ND(<1.0)	ND(20.0)
1,1-DICHLOROETHANE	NA	ND(5.0)	ND(10.0)	ND(<1.0)	ND(20.0)
1,2-DICHLOROETHANE	NA	ND(7.0)	32.0	ND(<1.0)	ND(20.0)
1,1-DICHLOROETHENE	NA	ND(7.0)	ND(10.0)	ND(<1.0)	ND(20.0)
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	ND(9.0)	16.0	ND(<1.0)	ND(20.0)
1,2-DICHLOROPROPANE	NA	ND(3.0)	ND(10.0)	ND(<1.0)	ND(20.0)
ETHYLBENZENE	1890.0	1320.0	1200.0	1800.0	1000.0
METHYLENE CHLORIDE	NA	ND(2.0)	ND(2.0)	ND(<1.0)	ND(200.0)
1,1,2,2-TETRACHLOROETHANE	NA	ND(3.0)	ND(10.0)	ND(<1.0)	ND(20.0)
TETRACHLOROETHENE	NA	ND(3.0)	ND(10.0)	ND(<1.0)	ND(20.0)
TOLUENE	1460.0	1160.0	820.0	470.0	940.0
1,1,1-TRICHLOROETHANE	NA	ND(3.0)	ND(10.0)	ND(<1.0)	ND(20.0)
1,1,2-TRICHLOROETHANE	NA	ND(3.0)	ND(10.0)	ND(<1.0)	ND(20.0)
TRICHLOROETHENE	NA	ND(6.0)	ND(10.0)	ND(<1.0)	ND(20.0)
TRICHLOROFLUOROMETHANE	NA	ND(7.0)	ND(2.0)	ND(<1.0)	ND(200.0)
VINYL CHLORIDE	NA	ND(5.0)	ND(10.0)	ND(<1.0)	ND(20.0)
TOTAL XYLENES	6980.0	5600.0	3600.0	9000.0	3700.0

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Volatile aromatics (1)	GRW-13	GBR-13	GBR-8	
List: SW8020				
Sample ID:	8912121200	8912121530	8912121600	TRIP BLANK
Factor:	1	500	250	1
Results in:	ug/L	ug/L	ug/L	ug/L
	098	108	118	12A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	710	100	2000	50	ND	0.20
Chlorobenzene	ND	0.20	ND	100	ND	50	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	200	ND	100	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	200	ND	100	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	150	ND	75	ND	0.30
Ethylbenzene	ND	0.20	820	100	560	50	ND	0.20
Toluene	ND	0.20	130 *	100	ND	50	ND	0.20
Total xylenes	ND	0.20	3100	100	2200	50	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	92		98		105		94	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Halogenated volatiles (1)	GRW-13	GBR-13	GBR-8	GBR-15
List: SW8010				
Sample ID:	8912121200	8912121530	8912121600	8912131000
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	09A	10A	11A	13A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon Tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	<u>1.3 *</u>	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	<u>0.84 *</u>	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	0.50	<u>4.9</u>	0.50	<u>5.3</u>	0.50	ND	0.50
1,2-Dichloroethane	<u>1.1</u>	0.10	<u>7.4</u>	0.10	<u>4.7</u>	0.10	<u>36</u>	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	<u>25</u>	0.20	<u>20</u>	0.20	ND	0.20
1,2-Dichloropropene	ND	0.10	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene-(2)	N/A	N/A	N/A	N/A	N/A	0.30	N/A	N/A
trans-1,3-Dichloropropene	ND	0.30	ND	0.30	ND	N/A	ND	0.30
Methylene Chloride	ND	0.40	<u>1.3 *</u>	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene-(3)	ND	0.10	ND	0.10	ND	0.10	ND	0.10
1,1,2-Trichloroethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,1,1-Trichloroethane	ND	0.20	<u>0.90 *</u>	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	0.20	<u>4.0</u>	0.20	<u>2.3</u>	0.20	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Vinyl Chloride	ND	0.20	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit

N/A Not available

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

(2) Dibromochloromethane, 1,1,2-Trichloroethane, and cis-1,3-Dichloropropene coelute. Quantitated as Dibromochloromethane unless otherwise noted.

(3) Tetrachloroethene and 1,1,2,2-Tetrachloroethane coelute. Quantitated as Tetrachloroethene unless otherwise noted.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: SW8310 PAH's by HPLC (1)	GBR-13	GBR-8	GBR-15	GBR-33
List: 8310 Method analytes				
Sample ID:	8912121530	8912121600	8912131000	8912131210
Factor:	380	9.4	0.94	1.9
Results in:	ug/L	ug/L	ug/L	ug/L
	10C	11C	13C	14C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	870	ND	22	<u>4.1 *D</u>	2.2	ND	4.4
Acenaphthene	ND	680	ND	17	ND	1.7	<u>6.0 *D</u>	3.4
Anthracene	ND	250	ND	6.2	ND	0.62	ND	1.3
Benzo(a)anthracene	<u>25</u>	4.9	ND	0.12	<u>0.012 *</u>	0.012	<u>0.20</u>	0.025
Benzo(a)pyrene	ND	8.7	ND	0.22	ND	0.022	ND	0.044
Benzo(b)fluoranthene	ND	6.8	ND	0.17	ND	0.017	<u>0.10 *</u>	0.034
Benzo(g,h,i)perylene	ND	29	ND	0.71	ND	0.071	ND	0.14
Benzo(k)fluoranthene	ND	6.5	ND	0.16	ND	0.016	ND	0.032
Chrysene	<u>86</u>	4.9	ND	0.12	ND	0.012	<u>0.88</u>	0.025
Dibenzo(a,h)anthracene	ND	11	ND	0.28	ND	0.028	ND	0.057
Fluoranthene	ND	80	ND	2.0	ND	0.20	ND	0.40
Fluorene	<u>360 *D</u>	80	<u>8.7 *D</u>	2.0	<u>0.47 *D</u>	0.20	<u>3.5 D</u>	0.40
Indeno(1,2,3-cd)pyrene	ND	16	ND	0.40	ND	0.040	ND	0.082
Naphthalene	ND	680	<u>88</u>	17	ND	1.7	ND	3.4
Phenanthrene	<u>1600</u>	240	<u>20 *</u>	6.0	<u>0.68 *</u>	0.60	<u>6.8</u>	1.2
Pyrene	<u>290 *</u>	100	ND	2.5	ND	0.25	<u>1.6 *</u>	0.51
<u>Surrogate Recovery(%)</u>								
Terphenyl-d14	NC		27 Q		134		120	
Control Limits: 37 to 139								

ND Not detected at specified detection limit

D Sample diluted for this analyte

* Est. result less than 5 times detection limit

NC Not calculated

Q Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method:PAHs by GC 8100 (1) List:8100, special list Sample ID:	GBR-13 8912121530	GBR-8 8912121600	GBR-15 8912131000	GBR-33 8912131210
Factor:	94	94	0.94	9.4
Results in:	ug/L 10C	ug/L 11C	ug/L 13C	ug/L 14C
Matrix:	water	water	water	water

	Result Det. Limit	Result Det. Limit	Result Det. Limit	Result Det. Limit
1-Methylnaphthalene	<u>1600</u> 94	ND 94	ND 0.94	<u>43 *</u> 9.4
2-Methylnaphthalene	<u>2000</u> 94	<u>280 *</u> 94	ND 0.94	ND 9.4

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



Page 7
Received: 09/14/89
SAMPLE ID 8909121615 H2O GBR-8
RAS Sacramento
Results by Sample
REPORT
Work Order # S9-09-081
FRACTION 02C
TEST CODE 602B
NAME Purgeable Aromatics - H2O
Date & Time Collected 09/12/89
Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST	MQ	FILE #	EBO92612	VERIFIED	JD
INSTRMT	B	INJECTD	09/26/89	250 UNITS	ug/L
CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR	
71-43-2	Benzene	2200 CE	25	250	
108-88-3	Toluene	180 CE	75	250	
100-41-4	Ethylbenzene	1400 CE	25	250	
108-90-7	Chlorobenzene	ND	25	250	
1330-20-7	Total Xylenes	4400 CE	50	250	
106-46-7	1,4-Dichlorobenzene	ND	50	250	
541-73-1	1,3-Dichlorobenzene	ND	100	250	
95-50-1	1,2-Dichlorobenzene	ND	50	250	

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 28 % recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions



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Received: 09/14/89

RAS Sacramento

REPORT

Work Order # S9-09-081

Results by Sample

SAMPLE ID 8909121615 H2O GBR-8

FRACTION 02A

TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/12/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST
INSTRMTMG
B

INJECTD 09/26/89

FILE #
FACTORDB092611
250VERIFIED
UNITSJD
ug/L

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	ND	130	250
74-83-9	Bromomethane	ND	250	250
75-01-4	Vinyl Chloride	ND	50	250
75-00-3	Chloroethane	ND	130	250
75-09-2	Methylene Chloride	ND	100	250
75-69-4	Trichlorofluoromethane	ND	25	250
75-35-4	1,1-Dichloroethene	ND	25	250
75-34-3	1,1-Dichloroethane	ND	25	250
540-59-0	Total 1,2-Dichloroethene (2)	ND	25	250
67-66-3	Chloroform	ND	25	250
107-06-2	1,2-Dichloroethane	ND	25	250
71-55-6	1,1,1-Trichloroethane	ND	50	250
56-23-5	Carbon Tetrachloride	ND	50	250
75-27-4	Bromodichloromethane	ND	25	250
78-87-5	1,2-Dichloropropane	ND	25	250
10061-01-5	cis-1,3-Dichloropropene	ND	100	250
79-01-6	Trichloroethene	ND	50	250
124-48-1	Dibromochloromethane (3)	ND	50	250
79-00-5	1,1,2-Trichloroethane (3)	ND	50	250
10061-02-6	trans-1,3-Dichloropropene (3)	ND	100	250
110-75-8	2-Chloroethylvinyl Ether	ND	500	250
75-25-2	Bromoform	ND	500	250
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	50	250
127-18-4	Tetrachloroethene (4)	ND	25	250
108-90-7	Chlorobenzene	ND	50	250
541-73-1	1,3-Dichlorobenzene	ND	130	250
95-50-1	1,2-Dichlorobenzene	ND	50	250
106-46-7	1,4-Dichlorobenzene	ND	50	250

Detection
limits
high

Page 6

Received: 09/14/89

RAS Sacramento

REPORT

Results by Sample

Work Order # 59-09-081
Continued From Above

SAMPLE ID 8909121615 H2O GBR-8

FRACTION 02A TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/12/89

Category

SURROGATES

540-36-3	1-4-Difluorobenzene	NA % Recovery
460-00-4	1-Bromo-4-Fluorobenzene	106 % Recovery

- (1) See Appendix A for Glossary of Report and Data Flag Definitions
- (2) Quantitated as the Trans-isomer
- (3) Dibromochloromethane, 1,1,2-Trichloroethane and Trans-1,3-dichloropropene co-elute.
- (4) 1,1,2,2-Tetrachloroethane and tetrachloroethene co-elute.

Analytical Data Summary

Page: 2

Geoscience Consultants, Ltd.
 Radian Work Order: 89-09-111

Method: PAHs by MPLC (1)

List:

Sample ID:

GBR-13

GBR-8

GBR-6

GBR-33

GBR-15

GBR-240

8909121550

8909121615

8909121650

8909121750

8909130830

8909130915

Factor:

94

95

24

9

1

1

Results in:

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

water

water

Acenaphthalene

<220

<220

<55

<21

<2.3

<2.3

Acenaphthene

<170

<170

580

<16

<1.8

<1.8

Anthracene

<62

<63

<16

<5.9

<0.66

<0.66

Benzo(a)anthracene

<1.2

<1.2

<0.31

<0.12

<0.013

<0.013

Benzo(a)pyrene

<2.2

<2.2

<0.55

<0.21

<0.023

<0.023

Benzo(b)fluoranthene

<1.7

<1.7

<0.43

<0.16

<0.018

<0.018

Benzo(g,h,i)perylene

<7.1

<7.2

<1.8

<0.68

<0.076

<0.076

Benzo(k)fluoranthene

<1.6

<1.6

<0.41

<0.15

<0.017

<0.017

Chrysene

<1.2

<1.2

<0.31

<0.12

<0.013

<0.013

Dibenzo(a,h)anthracene

<2.8

<2.9

<0.72

<0.27

<0.030

<0.030

Fluoranthene

830

<20

<5.0

<1.9

<0.21

<0.21

Fluorene

<20

<20

57

6*

<0.21

4.6

Indeno(1,2,3-cd)pyrene

<4.0

<4.1

<1.0

<0.39

<0.043

<0.043

Naphthalene

330*

420*

120*

16*

<1.8

<1.8

Phenanthrene

<60

320

25*

<5.8

<0.64

7.4

Pyrene

<25

59*

<6.5

<2.4

<0.27

<0.27

Surrogate Recovery(%)

Terphenyl-d14

NC

NC

NC

PC

122

110

Control Limits: 37 to 139

* Est. result less than 5 times detection limit

NC Not calculated

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Client: GCL #8906121501
Site: GBR-8
IML #: F1559

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
Benzene	4400 (20)	ug/l
Toluene	560 (20)	ug/l
Chlorobenzene	ND (20)	ug/l
Ethylbenzene	2130 (20)	ug/l
m,p-xylene	5500 (20)	ug/l
o-xylene	1510 (20)	ug/l
1,4 Dichlorobenzene	ND (20)	ug/l
1,3 Dichlorobenzene	ND (20)	ug/l
1,2 Dichlorobenzene	ND (20)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

*Detection
limits
high*

Client: GCL #8906121501
Site: GBR-8
IML #: F1559

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (50)	ug/l
BROMOMETHANE	ND (50)	ug/l
DICHLORODIFLUOROMETHANE	ND (50)	ug/l
VINYL CHLORIDE	ND (50)	ug/l
CHLOROETHANE	ND (50)	ug/l
METHYLENE CHLORIDE	ND (50)	ug/l
TRICHLOROFLUOROMETHANE	ND (50)	ug/l
1,1-DICHLOROETHENE	ND (50)	ug/l
1,1-DICHLOROETHANE	ND (50)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (50)	ug/l
CHLOROFORM	ND (50)	ug/l
1,2-DICHLOROETHANE	ND (50)	ug/l
1,1,1-TRICHLOROETHANE	ND (50)	ug/l
CARBON TETRACHLORIDE	ND (50)	ug/l
BROMODICHLOROMETHANE	ND (50)	ug/l
1,2-DICHLOROPROPANE	ND (50)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (50)	ug/l
TRICHLOROETHENE	ND (50)	ug/l
DIBROMOCHLOROMETHANE	ND (50)	ug/l
1,1,2-TRICHLOROETHANE	ND (50)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (50)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (50)	ug/l
BROMOFORM	ND (50)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (50)	ug/l
TETRACHLOROETHENE	ND (50)	ug/l
CHLOROBENZENE	ND (50)	ug/l
1,3-DICHLOROBENZENE	ND (50)	ug/l
1,2-DICHLOROBENZENE	ND (50)	ug/l
1,4-DICHLOROBENZENE	ND (50)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.

C. Neal Schaeffer
C. Neal Schaeffer
Senior Organic Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUNDWATER
POLYNUCLEAR AROMATIC HYDROCARBONS
(ug/ml unless otherwise noted)

(Sampling Event: 06/13/89)

ANALYTE	GBR-06	GBR-08	GBR-13	GRW-13	GBR-15
Acenaphthene	ND (0.003)	36 (14)	31 (4.4)	ND (0.003)	0.008 (0.005)
Acenaphthylene	ND (0.003)	22 (14)	18 (4.4)	ND (0.003)	T (0.005)
Anthracene	0.004 (0.003)	T (14)	4.7 (4.4)	0.005 (0.003)	0.006 (0.005)
Benzo(a)anthracene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(a)pyrene	ND (0.003)	ND (14)	ND (4.4)	0.005 (0.003)	ND (0.005)
Benzo(b)fluoranthene	0.020 (0.003)	ND (14)	ND (4.4)	0.009 (0.003)	0.019 (0.005)
Benzo(j)fluoranthene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(k)fluoranthene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(g,h,i)perylene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Chrysene	0.010 (0.003)	ND (14)	ND (4.4)	0.004 (0.003)	0.031 (0.005)
Dibenz(a,h)acridine	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,j)acridine	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenzo(a,h)anthracene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,e)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,h)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Fluoranthene	T (0.003)	ND (14)	ND (4.4)	ND (0.003)	0.009 (0.005)
Fluorene	0.004 (0.003)	23 (14)	29 (4.4)	0.004 (0.003)	0.010 (0.005)
Indeno(1,2,3-cd)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Naphthalene	ND (0.003)	15 (14)	11 (4.4)	ND (0.003)	ND (0.005)
Phenanthrene	0.003 (0.003)	ND (14)	ND (4.4)	0.006 (0.003)	0.014 (0.005)
Pyrene	0.003 (0.003)	ND (14)	ND (4.4)	0.004 (0.003)	0.009 (0.005)
1-Methylnaphthalene	NA (0.003)	NA (14)	NA (4.4)	NA (0.003)	NA (0.005)
3-Methylnaphthalene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)

() = Detection limit

ND = Not detected

T = Detected below quantifiable level

NA = Not analyzed

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903151135

Sample Site: GBR-8

IML Lab No: F890930

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/15/89

Date Received: 03/15/89

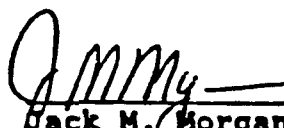
Date Extracted: NA

Date Analyzed: 03/27/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	5184 (50.0)	ug/l
TOLUENE	172 (50.0)	ug/l
ETHYLBENZENE	1341 (50.0)	ug/l
m,p-XYLENE	2080 (50.0)	ug/l
o-XYLENE	584 (50.0)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



Jack M. Morgan
Senior Organic Chemist

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151133
Sample Site: GBR-8
IML Sample No: F890930
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water

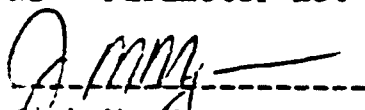
Date Sampled: 03/15/89
Date Received: 03/15/89
Date Extracted: N/A
Date Analyzed: 03/19/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	10.7 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	3.2 (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	5.7 (0.03)	ug/l
1,1,1-TRICHLOROETHANE	ND (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	1.4 (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	ND (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

Date: April 09, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903161133
Sample Site: GBR-8
IML Sample No: F890930
Analysis: Polynuclear Aromatic Hydrocarbons
Sample Matrix: Water

Date Sampled: 03/15/89
Date Received: 03/16/89
Date Extracted: 03/22/89
Date Analyzed: 04/09/89

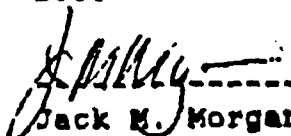
Parameter	Concentration	Units
Acetnaphthene	86.3 (50.0)	ug/l
Acenaphthylene	66.6 (50.0)	ug/l
Anthracene	ND (50.0)	ug/l
Benzo(a)Anthracene	ND (50.0)	ug/l
Benzo(a)pyrene	ND (50.0)	ug/l
Benzo(b)fluoranthene	ND (50.0)	ug/l
Benzo(g,h,i)perylene	ND (50.0)	ug/l
Benzo(k)fluoranthene	ND (50.0)	ug/l
Chrysene	ND (50.0)	ug/l
Dibenzo(a,h)anthracene	ND (50.0)	ug/l
Fluoranthene	ND (50.0)	ug/l
Fluorene	93.8 (50.0)	ug/l
Indeno(1,2,3-cd)pyrene	ND (50.0)	ug/l
Naphthalene	70.3 (50.0)	ug/l
Phenanthrene	ND (50.0)	ug/l
Pyrene	ND (50.0)	ug/l
1-Methylnaphthalene	71.8 (50.0)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1986)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.

Comments: Sample required extensive cleanup. Increased detection limits reflect increased baseline perturbation as well as sample loss due to cleanup.


Jack M. Morgan
Senior Organic Chemist

EPA METHOD 601/602
PROJECT: M & ASAMPLE DATE: 1/20/88
LAB RECEIPT DATE: 1/22/88
ANALYSIS DATE: 1/26/88
MATRIX: WATER
ANALYST: TMGSAMPLE ID: 8801201550
LOCATION: GBR 8
LAB SAMPLE #: 3873-3
UNITS: ug/l
DILUTION FACTOR: 100

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	20.0	ND
BROMOMETHANE	20.0	ND
DICHLORODIFLUOROMETHANE	20.0	ND
VINYL CHLORIDE	20.0	ND
CHLOROETHANE	20.0	ND
METHYLENE CHLORIDE	200.0	ND
TRICHLOROFLUOROMETHANE	200.0	ND
1,1-DICHLOROETHENE	20.0	ND
1,1-DICHLOROETHANE	20.0	ND
TRANS-1,2-DICHLOROETHENE	20.0	ND
CHLOROFORM	20.0	ND
1,2-DICHLOROETHANE	20.0	ND
1,1,1-TRICHLOROETHANE	20.0	ND
CARBON TETRACHLORIDE	20.0	ND
BROMODICHLOROMETHANE	20.0	ND
1,2-DICHLOROPROPANE	20.0	ND
TRANS-1,3-DICHLOROPROPENE	20.0	ND
TRICHLOROETHENE	20.0	ND
DIBROMOCHLOROMETHANE	20.0	ND
1,1,2-TRICHLOROETHANE	20.0	ND
CIS-1,3-DICHLOROPROPENE	20.0	ND
2-CHLOROETHYL VINYL ETHER	50.0	ND
BROMOFORM	50.0	ND
1,1,2,2-TETRACHLOROETHANE	20.0	ND
TETRACHLOROETHENE	20.0	ND
BENZENE	50.0	10,000
TOLUENE	50.0	940
CHLOROBENZENE	50.0	ND
ETHYLBENZENE	50.0	1,000
1,3-DICHLOROBENZENE	50.0	ND
1,2-DICHLOROBENZENE	50.0	ND
1,4-DICHLOROBENZENE	50.0	ND
M-XYLENE	50.0	1,700
O,P-XYLENE	50.0	2,000

COMMENTS: ND = NOT DETECTED
HIGH LEVELS REQUIRED DILUTION.
PROJECT MANAGER: *Mr. Tracy*% SURROGATE RECOVERY
96.2% BROMOCHLOROMETHANE
90.7% BROMOFLUOROBENZENE
DATE: 2/9/88

Received: 12/09/88

Results by Sample

SAMPLE ID 8812071738

642-8

FRACTION 10A

TEST CODE EPA602

NAME EPA method 602

Date & Time Collected 12/07/88

Category

ANALYST _____ INSTRMT _____		BM _____ D _____	INJECTED 12/13/88	FILE # _____	VERIFIED _____	CL _____
CAS#	COMPOUND	RESULT	DET LIMIT	UNITS	ug/ml	
71-43-2	Benzene	570	100			
108-88-3	Toluene	470*	100			
100-41-4	Ethylbenzene	1800	150			
108-90-7	Chlorobenzene-A	ND	150			
106-46-7	1,4-Dichlorobenzene	ND	150			
541-73-1	1,3-Dichlorobenzene	ND	200			
95-50-1	1,2-Dichlorobenzene	ND	200			

SURROGATES

98-08-8 1,1,1-Trifluoroethane 111% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

- DET LIMIT = DETECTION LIMIT
- ND = not detected at detection limit
- NA = not analyzed
- * = less than 5 times the detection limit
- N/A = not available
- Second column confirmation NOT performed unless otherwise noted.

Page 61
Received: 12/09/88
RAS - Austin
Results by Sample
REPORT
Work Order # 88-12-057

SAMPLE ID 8812071738 602-8 FRACTION 10A TEST CODE XYLENE NAME Xylenes, EPA 602
Date & Time Collected 12/07/89 Category

ANALYST _____ FILE # _____
INSTRMT _____ INJECTED 12/13/88 UNITS ug/ml
VERIFIED CL

CAS #	COMPOUND	RESULT	DET LIMIT
105-42-3	p-Xylene-A	2600	100
108-38-3	m-Xylene	3700	100
95-47-6	o-Xylene	2700	50

93-08-9 a,a,a-Trifluorotoluene 111% recovery
SURROGATES

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
= less than 5 times the detection limit
N/A = not available
Second column confirmation NOT performed unless otherwise noted.
Q = daily EPA standard recovery outside 95% confidence interval.
Chlorobenzene and p-xylene co-elute.
Quantitated as chlorobenzene unless otherwise noted.

Page 56
Received: 12/09/88

RAS - Austin
Results by Sample

REPORT

Work Order # 88-12-057

SAMPLE ID 8812071738

6B2-8

FRACTION 10B

TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 12/07/88

Category

ANALYST _____
INSTRMT _____
BM
B

INJECTD 12/15/88
FILE # _____
VERIFIED _____
UNITS _____
ug/L

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	0.30
74-83-9	Bromomethane	ND	1.2
75-01-4	Vinyl chloride	ND	0.20
75-00-2	Chloroethane	ND	0.50
75-09-2	Methylene chloride	0.9*	0.50
75-69-4	Trichlorofluoromethane	ND	0.10
75-35-4	1,1-Dichloroethene	ND	0.10
75-34-3	1,1-Dichloroethane	3.1	0.090
156-60-5	trans-1,2-Dichloroethene	13	0.20
67-66-3	Chloroform	ND	0.050
107-06-2	1,2-Dichloroethane	15	0.030
71-55-6	1,1,1-Trichloroethane	ND	0.090
56-23-5	Carbon tetrachloride	ND	0.10
75-27-4	Bromodichloromethane	ND	0.10

Received: 12/09/88

RAS - Austin

REPORT

Work Order # 88-12-057
Continued From Above

Results by Sample

SAMPLE ID 8812071738

GBL-8

FRACTION JOB

NAME EPA method 601

Date & Time Collected 12/07/88

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.10
10061-02-6	trans-1,3-Dichloropropene	ND	0.30
79-01-6	Trichloroethene	1.0	0.20
124-48-1	Dibromochloromethane-A	ND	0.20
79-09-5	1,1,2-Trichloroethane-A	ND	0.070
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-75-3	2-Chloroethyl vinyl ether	ND	0.20
75-25-2	Bromoform	ND	0.30
79-34-5	1,1,2,2-Tetrachloroethane-B	ND	0.12
127-18-4	Tetrachloroethene-B	ND	0.030
103-90-7	Chlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.30
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.40

SURROGATES

74-87-5	Bromochloromethane	123 % Recovery
460-00-4	1-Bromo-4-fluorobenzene	107 % Recovery



Analytical **Technologies, Inc.** EPA METHOD 601/602
PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/11/87
LAB RECEIPT DATE: 11/16/87
ANALYSIS DATE: 11/17/87
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8711111440
LOCATION: 6BR-8
LAB SAMPLE #: 3574-5
UNITS: ug/l
DILUTION FACTOR: 50

<u>CONSTITUENT NAME</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
CHLOROMETHANE	10	ND
BROMOMETHANE	10	ND
DICHLORODIFLUOROMETHANE	10	ND
VINYL CHLORIDE	10	ND
CHLOROETHANE	10	ND
METHYLENE CHLORIDE	2.0	ND
TRICHLOROFLUOROMETHANE	2.0	ND
1,1-DICHLOROETHENE	10	ND
1,1-DICHLOROETHANE	10	ND
TRANS-1,2-DICHLOROETHENE	10	16
CHLOROFORM	10	12
1,2-DICHLOROETHANE	10	32
1,1,1-TRICHLOROETHANE	10	ND
CARBON TETRACHLORIDE	10	ND
BROMODICHLOROMETHANE	10	ND
1,2-DICHLOROPROPANE	10	ND
TRANS-1,3-DICHLOROPROPENE	10	ND
TRICHLOROETHENE	10	ND
DIBROMOCHLOROMETHANE	10	ND
1,1,2-TRICHLOROETHANE	10	ND
CIS-1,3-DICHLOROPROPENE	10	ND
2-CHLOROETHYL VINYL ETHER	10	ND
BROMOFORM	10	ND
1,1,2,2-TETRACHLOROETHANE	10	ND
TETRACHLOROETHENE	10	ND
BENZENE	25	6500
TOLUENE	50	820
CHLOROBENZENE	25	ND
ETHYLBENZENE	25	1200
1,3-DICHLOROBENZENE	25	ND
1,2-DICHLOROBENZENE	25	ND
1,4-DICHLOROBENZENE	25	ND
M-XYLENE	25	1700
O,P-XYLENE	25	1900

93.5 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
HIGH LEVELS REQUIRED DILUTION

PROJECT MANAGER: *M. Baum*

DATE: 12/10/87



Analytical Technologies, Inc.

EPA METHOD 601/602
PROJECT: GBR

SAMPLE DATE: 10/06/87
LAB RECEIPT DATE: 10/09/87
ANALYSIS DATE/TIME: 10/12/87, 14:49
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8710061655
LOCATION: GBR-8
LAB SAMPLE #: 3439-3
UNITS: ug/l
DILUTION FACTOR: 100

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	2.0	ND
BROMOMETHANE	6.0	ND
DICHLORODIFLUOROMETHANE	4.0	ND
VINYL CHLORIDE	5.0	ND
CHLOROETHANE	10	ND
METHYLENE CHLORIDE	2.0	ND
TRICHLOROFLUOROMETHANE	7.0	ND
1,1-DICHLOROETHENE	7.0	ND
1,1-DICHLOROETHANE	5.0	ND
TRANS-1,2-DICHLOROETHENE	9.0	ND
CHLOROFORM	5.0	ND
1,2-DICHLOROETHANE	7.0	ND
1,1,1-TRICHLOROETHANE	3.0	ND
CARBON TETRACHLORIDE	8.0	ND
BROMODICHLOROMETHANE	4.0	ND
1,2-DICHLOROPROPANE	3.0	ND
TRANS-1,3-DICHLOROPROPENE	11	ND
TRICHLOROETHENE	6.0	ND
DIBROMOCHLOROMETHANE	7.0	ND
1,1,2-TRICHLOROETHANE	3.0	ND
CIS-1,3-DICHLOROPROPENE	7.0	ND
2-CHLOROETHYL VINYL ETHER	3.0	ND
BROMOFORM	9.0	ND
1,1,2,2-TETRACHLOROETHANE	3.0	ND
TETRACHLOROETHENE	3.0	ND
BENZENE	20	7750
TOLUENE	40	1160
CHLOROBENZENE	16	ND
ETHYLBENZENE	5.0	1320
1,3-DICHLOROBENZENE	40	ND
1,2-DICHLOROBENZENE	40	ND
1,4-DICHLOROBENZENE	60	ND
M-XYLENE	18	2670
O,P-XYLENE	15	2930

94.3 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
MDL 100 x NORMAL DUE TO HIGH LEVELS

PROJECT MANAGER: *JMB*

DATE: 10/28/87



TO: Geoscience Consultants Ltd.
 Attn: Jan Martin
 500 Copper NW Suite 325
 Albuquerque, NM 87158

DATE: 17 December 1986
 1787

SAMPLE ID: 8610171615 GBR 8

ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Benzene	2.67 mg/l	0.001 mg/l
Toluene	1.46 mg/l	0.001 mg/l
Ethylbenzene	1.89 mg/l	0.001 mg/l
Xylenes	6.98 mg/l	0.001 mg/l
Napthalene	0.050 mg/l	0.001 mg/l
Acenapthalene	0.244 mg/l	0.001 mg/l
Acenapthene	0.473 mg/l	0.001 mg/l
Fluroene	0.078 mg/l	0.001 mg/l
Anthracene	0.069 mg/l	0.001 mg/l
Phenanthracene	0.004 mg/l	0.001 mg/l
Fluoranthene	<0.001 mg/l	0.001 mg/l
Pyrene	<0.001 mg/l	0.001 mg/l
Benzo(a)anthracene	0.003 mg/l	0.001 mg/l
Chrysene	<0.001 mg/l	0.001 mg/l
Benzo(b)fluoranthene	<0.001 mg/l	0.001 mg/l
Benzo(k)fluoranthene	<0.001 mg/l	0.001 mg/l
Benzo(a)pyrene	<0.001 mg/l	0.001 mg/l
Dibenzo(a,h)anthracene	<0.001 mg/l	0.001 mg/l
Indeno(1,2,3-cd)pyrene	<0.001 mg/l	0.001 mg/l
Benzo(g,h,i)perylene	<0.001 mg/l	0.001 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA ,SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

Jennifer V. Smith
 Jennifer V. Smith, Ph.D.
 Laboratory Director





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

CLIENT: Geoscience Consultants

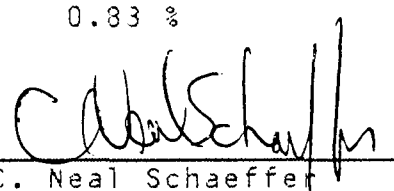
DATE REPORTED: 12/20/89

SITE: GBR-8
LAB NO: F3668

DATE RECEIVED: 12/13/89
DATE COLLECTED: 12/13/89

Lab pH (s.u.).....	7.22
Lab Conductivity, umhos/cm.....	4816
Lab resistivity, ohm-m.....	2.0764
Total Dissolved Solids (180), mg/l..	3388
Total Dissolved Solids (calc), mg/l.	3425
Total Alkalinity as CaCO ₃ , mg/l.....	934.56
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1247.33
Sodium Absorption Ratio.....	8.99

	mg/l	meq/l
Bicarbonate as HCO ₃	1140.16	18.69
Carbonate as CO ₃	0.00	0.00
Chloride.....	591.50	16.69
Sulfate.....	1071.55	22.32
Calcium.....	421.10	21.01
Magnesium.....	47.83	3.93
Potassium.....	2.00	0.05
Sodium.....	730.00	31.75
Major Cations.....		56.75
Major Anions.....		57.70
Cation/Anion Difference.....		0.83 %


C. Neal Schaeffer
Senior Chemist

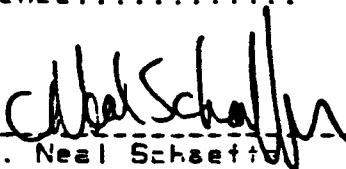


2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/27/89
SAMPLE: 8909121615
SITE: G2R-8 DATE RECEIVED: 09/13/89
LAB NO: F3153 DATE COLLECTED: 09/13/89

Lab pH.....	7.46
Lab Conductivity, $\mu\text{mhos/cm}$	4422
Lab resistivity, ohm-m	2.2614
Total Dissolved Solids (180), mg/l	2586
Total Dissolved Solids (calc), mg/l	2727
Total Alkalinity as CaCO_3 , mg/l	1298.29
Total Acidity as CaCO_3 , mg/l	0.00
Total Hardness as CaCO_3 , mg/l	700.56
Sodium Absorption Ratio.....	17.94

	mg/l	meq/l
Bicarbonate as HCO_3	1583.91	25.97
Carbonate as CO_3	0.00	0.00
Chloride.....	485.68	13.70
Sulfate.....	419.73	8.74
Calcium.....	210.55	10.51
Magnesium.....	42.62	3.50
Potassium.....	1.64	0.04
Sodium.....	787.60	34.26
Major Cations.....		48.31
Major Anions.....		48.41
Cation/Anion Difference.....		0.10 %



C. Neal Schaeffer
Senior Chemist



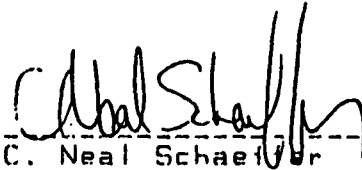
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

Client: GCL #8906121501
Site: GBR-8
IML #: F1559

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Total dissolved solids (180)..... 3380.00 mg/l
Total dissolved solids (calculated). 3280.02 mg/l
Total alkalinity (as CaCO3)..... 760.15 mg/l
Total hardness (as CaCO3)..... 1204.43 mg/l
Lab pH..... 7.27
Lab conductivity..... 4650 umhos/cm @ 25C
Lab resistivity..... 2.1505 ohm-cm

	mg/l	meq/l
Acidity (as CaCO3).....	<1.0	<0.01
Bicarbonate (as HCO3).....	1171.38	19.20
Carbonate (as CO3).....	0.00	0.00
Chloride.....	550.82	15.54
Sulfate.....	964.97	20.10
Calcium.....	377.11	18.82
Magnesium.....	64.09	5.27
Potassium.....	2.16	0.06
Sodium.....	751.60	32.69
Major cations.....		56.84
Major anions.....		54.84
Anion/cation % difference.....		1.78 %


C. Neal Schaefer
Senior Chemist

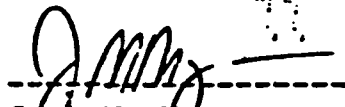
Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151133
Site: GBR-8
IML Lab No: F890930
Date Collected: 3/15/89
Date Received: 3/15/89

Total Dissolved Solids (180), mg/l.....	3240
Total Dissolved Solids (calc), mg/l.....	3175
Total Alkalinity as CaCO ₃ , mg/l.....	1182
Total Hardness as CaCO ₃ , mg/l.....	1053

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	1441	23.63
Carbonate as CO ₃	0	0.00
Chloride.....	638	18.00
Sulfate.....	653	13.61
Calcium.....	351	17.49
Magnesium.....	43	3.57
Potassium.....	3	0.07
Sodium.....	780	33.93
Nitrate/Nitrite.....	0.81	0.06

Major Cations.....	55.06
Major Anions.....	55.24
Cation/Anion Difference.....	0.16 %



Jack M. Morgan
Senior Organic Chemist

Received: 12/09/88

RAS -

Austin

REPORT

Results by Sample

Work Order # 88-12-V56
Continued From Above

SAMPLE ID 8812071647 GBR-6

FRACTION 09A TEST CODE IDS NAME Total dissolved solids
Date & Time Collected not specified Category

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available

SAMPLE ID 8812071738 GBR-8

FRACTION 10A TEST CODE OPD4 NAME Orthophosphate
Date & Time Collected not specified Category

ANALYST MJS
INSTRMT 21

ANALYZED 12/09/88

VERIFIED LM

UNITS mg/L as P

ANALYTE RESULT DET LIMIT

Orthophosphate 0.03± 0.020

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available

SAMPLE ID 8812071738 GBR-8

FRACTION 10A TEST CODE IDS NAME Total dissolved solids
Date & Time Collected not specified Category

VERIFIED LM

Received: 12/09/88

RAS - Austin

REPORT

Results by Sample

Work Order # 88-12-V56
Continued From Above

SAMPLE ID 8812071738

6012-8

FRACTION 10A

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

ANALYST _____ DLB
INSTRMT _____

ANALYZED 12/13/88

UNITS mg/L

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) 3000 10

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

RECEIVED JAN 23 1989

Page 2
Received: 12/09/88
RAS - Austin
REPORT
Results By Test
Work Order # 88-12-056

SAMPLE	Test: CA E	Test: CL IC	Test: DG5010	Test: F IC	Test: K E
Sample Id	ug/ml	mg/L	date complete	mg/L	ug/ml
GBR-17 01 8812070930	370	170	12/30/88	2.4	<5.0
GBR-24 02 8812071016	450	600	12/30/88	3.2	<5.0
GBR-14 03 8812071123	470	690	12/30/88	3.80	5.2*
GBR-30 04 8812071201	460	620	12/30/88	3.6	<5.0
GBR-15-05 8812071352	450	230	12/30/88	3.7	9.6*
GBR-31 05 8812071431	500	450	12/30/88	3.5	<5.0
GBR-33 07 8812071501	390	540	12/30/88	0.63	<5.0
GBR-13 08 8812071601	470	720	12/30/88	0.56	<5.0
GBR-6 09 8812071647	280	340	12/30/88	0.35	<5.0
GBR-8 10 8812071738	360	630	12/30/88	0.70	6.7*
11 8812071738 oil	<10				30*

SAMPLE	Test: M2 E	Test: M3 E	Test: PREP X	Test: S04 IC
Sample Id	ug/ml	ug/ml	date complete	mg/L as S04
GBR-17 01 8812070930	42	290		1300

Received: 12/09/88

RAS - Austin

REPORT

Results by Test

Work Order # 88-12-056
Continued From Above

Sample Id	Test: ME E	Test: ME E	Test: PREP X	Test: S04 IC
	mg/ml	mg/L	date complete	mg/L as S04
GBR-24 02 8812071016	81	400		1600
GBR-14 03 8812071123	29	500		1500
GBR-30 04 8812071201	36	440		1300
GBR-15 05 8812071352	30	570		2000
GBR-31 06 8812071431	44	500		1700
GBR-33 07 8812071501	40	410		1400
GBR-13 08 8812071601	48	700		1600
GBR-6 09 8812071647	72	420		660
GBR-8 10 8812071736	59	610		490
8812071738 11	<10	<10	12/30/88	



METALS
PROJECT: M&A

SAMPLE DATE: 01/20/88

SAMPLE ID: 8801201550
GBR 8LAB RECEIPT DATE: 01/22/88
MATRIX: WATERLOCATION:
LAB SAMPLE #: 3873-3
UNITS: mg/l

ANALYST	ANALYSIS DATE	CONSTITUENT NAME	DILUTION FACTOR	DETECTION LIMIT	RESULT
RC	01/27/88	ARSENIC (As)	1	0.010	ND
RC	02/01/88	BARIUM (Ba)	1	0.060	ND
RC	01/26/88	LEAD (Pb)	1	0.002	0.005
RC	01/29/88	MERCURY (Hg)	1	0.0002	ND
JH	01/28/88	SELENIUM (Se)	1	0.010	ND
JH	02/01/88	SILVER (Ag)	1	0.010	0.018

* THE LISTED DETECTION LIMITS REFLECT ANY SAMPLE DILUTION.

NOTE: ND = NOT DETECTED
NA = NOT ANALYZEDPROJECT MANAGER: RL

DATE: 03/01/88

Analytical**Technologies**, Inc.

METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/11/87
LAB RECEIPT DATE: 11/16/87
MATRIX: WATER

SAMPLE ID: 8711111440
LOCATION: 6BR-8
LAB SAMPLE #: 3574-5
UNITS: mg/l

<u>ANALYSIS</u> <u>DATE</u>	<u>CONSTITUENT</u> <u>NAME</u>	<u>DILUTION</u> <u>FACTOR</u>	<u>DETECTION</u> <u>LIMIT</u>	<u>RESULT</u>
12/01/87	ARSENIC (As)	10	0.10	0.18
12/02/87	BARIUM (Ba)	1	0.060	2.01
12/01/87	CADMIUM (Cd)	1	0.003	0.014
11/24/87	HEXAVALENT			
	CHROMIUM (CR+6)	1	0.03	ND
12/01/87	TOTAL			
	CHROMIUM (Cr Tot)	1	0.010	0.114
11/30/87	LEAD (Pb)	100	0.2	3.7
11/19/87	MERCURY (Hg)	1	0.0005	ND
12/01/87	SELENIUM (Se)	1	0.010	ND
12/01/87	SILVER (Ag)	1	0.010	0.011

* THE LISTED DETECTION LIMITS REFLECT ANY SAMPLE DILUTION.

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: *M. Barry*

DATE: 12/10/87



Analytical Technologies, Inc.

METALS
PROJECT: GBRSAMPLE DATE: 10/06/87
LAB RECEIPT DATE: 10/09/87
MATRIX: WATERSAMPLE ID: 8710061655
LOCATION: GBR-B
LAB SAMPLE #: 3439-3
UNITS: mg/kg

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
10/21/87	ARSENIC (As)	400	4.0	12.0
10/23/87	BARIUM (Ba)	100	6.0	ND
10/23/87	CADMIUM (Cd)	100	0.3	1.2
10/23/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
10/21/87	TOTAL CHROMIUM (T. Cr)	100	1.0	17.3
10/23/87	LEAD (Pb)	800	1.6	30.4
10/21/87	MERCURY (Hg)	10	0.002	ND
10/22/87	SELENIUM (Se)	100	1.0	ND
10/27/87	SILVER (Ag)	100	1.0	1.6

NOTE: ND = NOT DETECTED
NA = NOT ANALYZEDPROJECT MANAGER: *Jmt*

DATE: 10/28/87

GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-9

EID

8/25/88

DETECTION LIMIT

0.5

BENZENE 1.3

BROMODICHLOROMETHANE ND

BROMOFORM ND

BROMOMETHANE ND

CARBON TETRACHLORIDE ND

CHLOROBENZENE ND

CHLOROETHANE ND

CHLOROFORM ND

CHLOROMETHANE ND

DIBROMOCHLOROMETHANE ND

1,2-DICHLOROBENZENE ND

1,3-DICHLOROBENZENE ND

1,4-DICHLOROBENZENE	ND
---------------------	----

DICHLORODIFLUOROMETHANE ND

1,1-DICHLOROETHANE 3.4

1,2-DICHLOROETHANE 3.5

1,1-DICHLOROETHENE 1.5

CIS-1,2-DICHLOROETHENE 2.3

TRANS-1,2-DICHLOROETHENE ND

DICHLOBROMETHANE 1.2

1,2-DICHLOROPROPANE	ND
---------------------	----

ETHYLBENZENE	ND
--------------	----

METHYLENE CHLORIDE ND

1,1,2,2-TETRACHLOROETHANE	ND
---------------------------	----

TETRACHLOROETHENE	0.7
-------------------	-----

PERFLUOROMETHYLENE	SV
TOLUENE	ND

1,1,1-TRICHLOROETHANE	1.
-----------------------	----

1,1,2-TRICHLOROETHANE	ND
-----------------------	----

TRICHLOROETHENE 3.

| TRICHLOROFLUOROMETHANE | 0.5 |

VINYL CHLORIDE	ND
----------------	----

TOTAL XYLENES	ND
---------------	----

TR - TRACE

ND - NOT DETECTED

NA - NOT ANALYZED

* - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-9

<u>SAMPLER</u>	<u>GIANT</u>	<u>OCD</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>10/17/86</u>	<u>11/21/86</u>	<u>9/10/87</u>	<u>10/7/87</u>	<u>8/25/88</u>
<u>PARAMETER</u>					
DETECTION LIMIT	1.0	1.0	<1.0	<1.0	(BELOW)
BENZENE	41.0	49.0	60.9	29.3	ND(0.5)
BROMODICHLOROMETHANE	NA	ND	ND	ND	ND(0.2)
BROMOFORM	NA	ND	ND	ND	ND(0.2)
BROMOMETHANE	NA	ND	ND	ND	ND(0.2)
CARBON TETRACHLORIDE	NA	ND	ND	ND	ND(0.2)
CHLOROBENZENE	NA	ND	ND	ND	ND(0.5)
CHLOROETHANE	NA	ND	ND	ND	ND(0.2)
CHLOROFORM	NA	ND	ND	ND	ND(0.2)
CHLOROMETHANE	NA	ND	ND	ND	ND(0.2)
DIBROMOCHLOROMETHANE	NA	ND	ND	ND	ND(0.2)
1,2-DICHLOROBENZENE	NA	ND	ND	ND	ND(0.5)
1,3-DICHLOROBENZENE	NA	ND	ND	ND	ND(0.5)
1,4-DICHLOROBENZENE	NA	TR	ND	ND	ND(0.5)
DICHLORODIFLUOROMETHANE	NA	ND	ND	ND	ND(0.2)
1,1-DICHLOROETHANE	NA	4.0	8.0	9.4	3.3
1,2-DICHLOROETHANE	NA	6.0	23.3	28.6	5.1
1,1-DICHLOROETHENE	NA	ND	0.4	0.6	0.6
CIS-1,2-DICHLOROETHENE	NA	TR	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	ND	1.3	1.8	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	2.3
1,2-DICHLOROPROPANE	NA	ND	ND	ND	ND(0.2)
ETHYLBENZENE	54.0	ND	9.5	6.4	ND(0.5)
METHYLENE CHLORIDE	NA	ND	ND	ND	ND(2.0)
1,1,2,2-TETRACHLOROETHANE	NA	ND	ND	ND	ND(0.2)
TETRACHLOROETHENE	NA	TR	ND	ND	0.9
TOLUENE	66.0	ND	4.0	5.1	ND(0.5)
1,1,1-TRICHLOROETHANE	NA	TR	0.7	0.3	1.3
1,1,2-TRICHLOROETHANE	NA	ND	ND	ND	ND(0.2)
TRICHLOROETHENE	NA	TR	2.6	4.1	2.5
TRICHLOROFLUOROMETHANE	NA	ND	ND	ND	ND(2.0)
VINYL CHLORIDE	NA	ND	ND	ND	ND(0.2)
TOTAL XYLENES	138.0	2.0	53.6	44.1	ND

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

754
wpu

88-1423-C

REPORT TO: William Olson
EID Ground Water Bureau
1190 St. Francis Dr.
Santa Fe, N.M. 87504-0968
S.L.D. No. OR- 1423 A+B
DATE REC. 8-26-88
PRIORITY 3
PHONE(S): 827-2899

COLLECTION CITY: Lee Acres; COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8808250859

LOCATION CODE: (Township-Range-Section-Tracts) + + + (10N06E24342)

USER CODE: 59300 SUBMITTER: Olson CODE:

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER:

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

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

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☒ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
☐ Other Specific Compounds or Classes
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= 7.45; Conductivity= 3450 umho/cm at 18°C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water 48.31 ft.; Depth of well 67.45 ft.; Perforation Interval - ft.; Casing

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Moonfield BBR-9

RECEIVED
NOV 18 1988

GROUND WATER BUREAU

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): William Olson Method of Shipment to the Lab: hand

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Gary Eden
at (location) SLD on 8/26/88 at 14:55 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☒ OR Seals Intact: Yes ☐ No ☐

Signatures William Olson Gary C. Eden

ANALYSES PERFORMED

LAB. No.: OR- 1423

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
☐ Other Specific Compounds or Classes
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>		<i>halogenated purgeables</i>	
<i>benzene</i>	<i>1.3</i>	<i>trichloroethylene</i>	<i>.5</i>
		<i>1,1-Dichloroethene</i>	<i>1.5</i>
		<i>dichloromethane</i>	<i>1.2</i>
		<i>1,1-Dichloroethane</i>	<i>3.4</i>
		<i>cis-1,2-Dichloroethene</i>	<i>2.3</i>
		<i>1,1,1-Trichloroethane</i>	<i>1.3</i>
		<i>1,2-Dichloroethane</i>	<i>3.5</i>
		<i>trichloroethene</i>	<i>3.5</i>
		<i>tetrachloroethene</i>	<i>.7</i>
* DETECTION LIMIT *	<i>.548/L</i>	+ DETECTION LIMIT +	<i>.548/L</i>

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: *Shirley C. Eden* date: *9/14/88*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *9/14/88* Analyst's signature: *Shirley C. Eden*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *R. Meyerheim*



Analytical Technologies, Inc

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80816109

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : GIANT REFINING
PROJECT # : (NONE)
PROJECT NAME : GIANT BLOOMFIELD
CLIENT I.D. : GBR 9
SAMPLE MATRIX : AQUEOUS

DATE SAMPLED : 08/25/88
DATE RECEIVED : 08/26/88
DATE EXTRACTED : N/A
DATE ANALYZED : 09/06/88
UNITS : UG/L
DILUTION FACTOR : 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	3.3
1,2-DICHLOROETHANE	5.1
1,1-DICHLOROETHENE	0.6
1,2-DICHLOROETHENE (TOTAL)	2.3
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	0.9
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	1.3
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	2.5
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	102
TRIFLUOROTOLUENE (%)	91



Analytical Technologies, Inc.

EPA METHOD 801/802
PROJECT: GBR

SAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
ANALYSIS DATE/TIME: 10/12/87, 20:05
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8710071130
LOCATION: GBR-9
LAB SAMPLE #: 3439-8
UNITS: ug/l
DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.02	ND
BROMOMETHANE	0.06	ND
DICHLORODIFLUOROMETHANE	0.04	ND
VINYL CHLORIDE	0.05	ND
CHLOROETHANE	0.1	ND
METHYLENE CHLORIDE	0.02	ND
TRICHLOROFLUOROMETHANE	0.07	ND
1,1-DICHLOROETHENE	0.07	0.6
1,1-DICHLOROETHANE	0.05	9.4
TRANS-1,2-DICHLOROETHENE	0.09	1.8
CHLOROFORM	0.05	ND
1,2-DICHLOROETHANE	0.07	28.6
1,1,1-TRICHLOROETHANE	0.03	0.3
CARBON TETRACHLORIDE	0.08	ND
BROMODICHLOROMETHANE	0.04	ND
1,2-DICHLOROPROPANE	0.03	ND
TRANS-1,3-DICHLOROPROPENE	0.11	ND
TRICHLOROETHENE	0.06	4.1
DIBROMOCHLOROMETHANE	0.07	ND
1,1,2-TRICHLOROETHANE	0.03	ND
CIS-1,3-DICHLOROPROPENE	0.07	ND
2-CHLOROETHYL VINYL ETHER	0.03	ND
BROMOFORM	0.09	ND
1,1,2,2-TETRACHLOROETHANE	0.03	ND
TETRACHLOROETHENE	0.03	ND
BENZENE	0.2	29.3
TOLUENE	0.4	5.1
CHLOROBENZENE	0.16	ND
ETHYLBENZENE	0.1	6.4
1,3'-DICHLOROBENZENE	0.4	ND
1,2-DICHLOROBENZENE	0.4	ND
1,4-DICHLOROBENZENE	0.6	ND
M-XYLENE	0.18	18.7
O,P-XYLENE	0.15	25.4

108 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: *JMM*

DATE: 10/28/87

EPA METHOD 601/602
PROJECT: GIANT MONITOR WELLSSAMPLE DATE: 9/10/87
LAB RECEIPT DATE: 9/11/87
ANALYSIS DATE: 9/18/87
MATRIX: WATER
ANALYST: MGBSAMPLE ID: 8709101230
LOCATION: GRR-9
LAB SAMPLE #: 3328-5
UNITS: ug/l
DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.02	ND
BROMOMETHANE	0.06	ND
DICHLORODIFLUOROMETHANE	0.04	ND
VINYL CHLORIDE	0.05	ND
CHLOROETHANE	0.1	ND
METHYLENE CHLORIDE	0.02	ND
TRICHLOROFLUOROMETHANE	0.07	ND
1,1-DICHLOROETHENE	0.07	0.4
1,1-DICHLOROETHANE	0.05	8.0
TRANS-1,2-DICHLOROETHENE	0.09	1.3
CHLOROFORM	0.05	ND
1,2-DICHLOROETHANE	0.07	23.3
1,1,1-TRICHLOROETHANE	0.03	0.7
CARBON TETRACHLORIDE	0.08	ND
BROMODICHLOROMETHANE	0.04	ND
1,2-DICHLOROPROPANE	0.03	ND
TRANS-1,3-DICHLOROPROPENE	0.11	ND
TRICHLOROETHENE	0.06	2.6
DIBROMOCHLOROMETHANE	0.07	ND
1,1,2-TRICHLOROETHANE	0.03	ND
CIS-1,3-DICHLOROPROPENE	0.07	ND
2-CHLOROETHYL VINYL ETHER	0.03	ND
BROMOFORM	0.09	ND
1,1,2,2-TETRACHLOROETHANE	0.03	ND
TETRACHLOROETHENE	0.03	ND
BENZENE	0.2	60.9
TOLUENE	0.4	4.0
CHLOROBENZENE	0.16	ND
ETHYLBENZENE	0.1	9.5
1,3-DICHLOROBENZENE	0.4	ND
1,2-DICHLOROBENZENE	0.4	ND
1,4-DICHLOROBENZENE	0.6	ND
M-XYLENE	0.18	22.6
O,P-XYLENE	0.15	31.0

110 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
NA = NOT ANALYZEDPROJECT MANAGER: *JMM*

DATE: 27 SEPTEMBER 1987

REPORT TO: David Boyer
 N.M. Oil Conservation Division
 P. O. Box 2088
 Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1354 A VB
 DATE REC. 11/26/81

PHONE(S): 327-5812 USER CODE: 3 2 2 3 5
 SUBMITTER: David Boyer CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8 6 1 1 2 1 0 8 2 0 A VB
 SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: CODE: ☐ ☐ ☐
 COUNTY: San Juan CITY: Los Alamos CODE: ☐ ☐ ☐
 LOCATION CODE: (Township-Range-Section-Tracts) 2 9 N + 1 2 W + 2 7 + 1 1 3 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= ; Conductivity= 1325 umho/cm at 15°C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant, GBR-9 No Free product

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): W. H. Boyer Method of Shipment to the Lab: Hand Carried

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Mary C. Eden
 at (location) HED/SLD on 11/26/81 - 4:16 and that
 the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures

William OlsonMary C. Eden

LAB. No. OR- 1354

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes

Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- | | | |
|--------------------------|-------|-----------------------------------|
| ☐ | (751) | Aliphatic Hydrocarbons |
| ☐ | (760) | Organochlorine Pesticides |
| ☐ | (755) | Base/Neutral Extractables |
| ☐ | (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 |

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
benzene	49	1,1-dichloroethane	4
p-xylene	1	cis-1,2-dichloroethane	TR
o-xylene	1	1,2-dichloroethane	6
		1,1,1-trichloroethane	TR
		trichloroethane	TR
		tetrachloroethane	TR
		1,4-dichlorobenzene	TR
* DETECTION LIMIT *	1000	+ DETECTION LIMIT +	

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Twelve other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

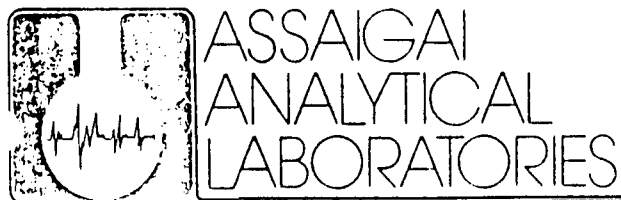
Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: [Signature] date: 12-4-12-10-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4+10 Dec 86. Analyst's signature: [Signature]

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *Richard Meyer*



TO: Geoscience Consultants Ltd.
 Attn: Jan Martin
 500 Copper NW Suite 325
 Albuquerque, NM 87158

DATE: 17 December 1986
 1787

SAMPLE ID: 8610171630 GBR 9

ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Benzene	0.041 mg/l	0.001 mg/l
Toluene	0.066 mg/l	0.001 mg/l
Ethylbenzene	0.054 mg/l	0.001 mg/l
Xylenes	0.138 mg/l	0.001 mg/l
Napthalene	0.049 mg/l	0.001 mg/l
Acenapthalene	0.019 mg/l	0.001 mg/l
Acenapthene	0.048 mg/l	0.001 mg/l
Fluroene	0.007 mg/l	0.001 mg/l
Anthracene	0.016 mg/l	0.001 mg/l
Phenanthracene	<0.001 mg/l	0.001 mg/l
Fluoranthene	<0.001 mg/l	0.001 mg/l
Pyrene	0.010 mg/l	0.001 mg/l
Benzo(a)anthracene	0.007 mg/l	0.001 mg/l
Chrysene	<0.001 mg/l	0.001 mg/l
Benzo(b)fluoranthene	<0.001 mg/l	0.001 mg/l
Benzo(k)fluoranthene	<0.001 mg/l	0.001 mg/l
Benzo(a)pyrene	<0.001 mg/l	0.001 mg/l
Dibenzo(a,h)anthracene	<0.001 mg/l	0.001 mg/l
Indeno(1,2,3-cd)pyrene	<0.001 mg/l	0.001 mg/l
Benzo(g,h,i)perylene	<0.001 mg/l	0.001 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

Jennifer V. Smith
 Jennifer V. Smith, Ph.D.
 Laboratory Director





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
wnf

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED	8/26/88	LAB NO.	WC-3454	USER CODE	☒ 59300	☐ 59600	☐ OTHER:
Collection DATE	8/25/88	SITE INFORMATION		Sample location			
Collection TIME	0859			Collection site description			
Collected by — Person/Agency		Olan					

SEND
FINAL
REPORT
TO

GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968

Attn: _____

William Olson

GROUND-WATER/HAZARDOUS WASTE
BUREAU

Station/
well code

GBR-9

Owner

Giant Dismantling

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	48.31	Discharge		Sample type	grab
pH (00400)	7.45	Conductivity (Uncorrected)	3450 μ mho	Water Temp. (00010)	18 °C	Conductivity at 25°C (00094)	μ mho

Field comments

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	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify:				

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	4040 μ mho	8/29	☒ Calcium (00915)	528 mg/l	9/29
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	45.8 mg/l	9/29
☐ Other:			☒ Sodium (00930)	518 mg/l	9/27
☐ Other:			☒ Potassium (00935)	6.4 mg/l	9/27
☐ Other:			☒ Bicarbonate (00440)	174 mg/l	9/15
			☒ Chloride (00940)	279 mg/l	9/27
			☒ Sulfate (00945)	2050 mg/l	9/27
			☒ Total filterable residue (dissolved) (70300)	3540 mg/l	9/14
			☒ Other: calcium amine balance	99%	
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
222				10/11/88	Q

SLD 726 (8/85)

DISTRIBUTION: WHITE — EID, GW&HW Bureau

CANARY — WS System

PINK — EID Local Office

GOLDENROD — SLD



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 wtf
GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED	11/26/86	LAB NO.	WC 5436	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	86/11/21	SITE INFORMATION	Sample location: Giant, Bloom Field Refinery		
Collection TIME	0820	Collection site description	GBR-9		
Collected by — Person/Agency	BOYER/OLSON /OCD				

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	Water Temp. (00010)	Conductivity at 25°C (00094)	
	400 µmho	15.7°C	µmho	
Field comments: 2' product No product Sp. Cond 1325 @ 15°C				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	/	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify: ☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added				

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	3645 µmho	12/17	☒ Calcium (00915)	520 mg/l	12-1
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	24.4 mg/l	12-1
☒ Other: pH	7.70	12/8	☒ Sodium (00930)	519 mg/l	12-8
☐ Other:			☒ Potassium (00935)	13.7 mg/l	12-8
☐ Other:			☒ Bicarbonate (00440)	245 mg/l	12/8
			☒ Chloride (00940)	259 mg/l	12/2
			☒ Sulfate (00945)	1662 mg/l	12/16
			☒ Total filterable residue (dissolved) (70300)	3536 mg/l	12/4
			☒ Other: CO ₃ BR	0.7	12/8
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
				12/16/86	CR

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED <u>11/26/86</u>	LAB NO. <u>HM 2420</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>8/6/11/21</u>	SITE INFORMATION	Sample location <u>Giant, Bloomfield Refinery</u>
Collection TIME <u>08:20</u>		Collection site description <u>GBR-9</u>
Collected by — Person/Agency <u>BOYER/OLSON/OCD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) <u>132.5</u> μ mho	Water Temp. (00010) <u>15</u> °C	Conductivity at 25°C (00094) μ mho	
Field comments <u>No product</u>				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added	☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: <u>ICAP</u>			☐ Sodium (00930)	mg/l	
☒ Other: <u>AS</u>			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks <u>Sample digested</u>			Analyst	Date Reported <u>1/13/87</u>	Reviewed by <u>J.F. Ashley</u>

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

ICAP SCAN

SLD Lab No. HM 24/20

Analyst QJB

Date Analyzed 12/10/86

Reviewed by:

Date Reported:

<u>ELEMENT</u>	<u>ICAP VALUE (mg/l)</u>	<u>AA VALUE (mg/l)</u>
Aluminum	<0.1	
Barium	<0.1	
Beryllium	<0.1	
Boron	0.3	
Cadmium	<0.1	
Calcium	520.	
Chromium	<0.1	
Cobalt	<0.1	
Copper	<0.1	
Iron	<0.1	
Lead	<0.1	
Magnesium	36.	
Manganese	1.1	
Molybdenum	<0.1	
Nickel	<0.1	
Silicon	6.3	
Silver	<0.1	
Strontium	10.	
Tin	<0.1	
Vanadium	<0.1	
Zinc	<0.1	
Arsenic		<0.005
Selenium		
Mercury		

8710071130



Analytical Technologies, Inc.

METALS

PROJECT: GBR

SAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
MATRIX: WATER

SAMPLE ID: 8710071130
LOCATION: GBR 9
LAB SAMPLE #: 3439-8
UNITS: mg/l

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
10/14/87	ARSENIC (As)	1	0.010	ND
10/15/87	BARIUM (Ba)	1	0.060	ND
10/13/87	CADMIUM (Cd)	1	0.003	0.010
10/12/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
10/13/87	TOTAL CHROMIUM (T. Cr)	1	0.010	ND
10/12/87	LEAD (Pb)	1	0.002	ND
10/18/87	MERCURY (Hg)	1	0.0002	ND
10/14/87	SELENIUM (Se)	1	0.010	ND
10/14/87	SILVER (Ag)	1	0.010	0.019

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: *Q2264*

DATE: 10/28/87

346



Analytical Technologies, Inc.

METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 9/10/87
 LAB RECEIPT DATE: 9/11/87
 MATRIX: WATER

SAMPLE ID: 0709101230
 LOCATION: G82-7
 LAB SAMPLE #: 3328-5
 UNITS: mg/l

ANALYSIS DATE	CONSTITUENT NAME	DILUTION FACTOR	DETECTION LIMIT	RESULT
9/16/87	ARSENIC (As)	1	0.010	ND
9/23/87	BARIUM (Ba)	1	0.060	0.07
9/21/87	CADMIUM (Cd)	1	0.003	0.018
9/16/87	HEXAVALENT CHROMIUM (Cr+6)	1	0.03	ND
9/21/87	TOTAL CHROMIUM (Cr Tot)	1	0.010	0.004
9/17/87	LEAD (Pb)	1	0.002	ND
9/25/87	MERCURY (Hg)	1	0.0002	ND
9/16/87	SELENIUM (Se)	1	0.010	ND
9/22/87	SILVER (Ag)	1	0.010	0.023

NOTE: ND = NOT DETECTED
 NA = NOT ANALYZED

PROJECT MANAGER: JMH

DATE: 21 SEPTEMBER 1987

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

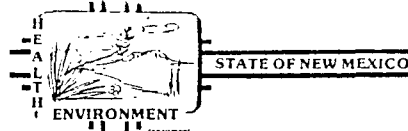
MONITOR WELL GBR-10

<u>SAMPLER</u>	OCD
<u>DATE</u>	<u>11/21/86</u>
<u>PARAMETER</u>	
DETECTION LIMIT	50.0
BENZENE	9,500
BROMODICHLOROMETHANE	ND
BROMOFORM	ND
BROMOMETHANE	ND
CARBON TETRACHLORIDE	ND
CHLOROBENZENE	ND
CHLOROETHANE	ND
CHLOROFORM	ND
CHLOROMETHANE	ND
DIBROMOCHLOROMETHANE	ND
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	TR
1,4-DICHLOROBENZENE	ND
DICHLORODIFLUOROMETHANE	ND
1,1-DICHLOROETHANE	ND
1,2-DICHLOROETHANE	150.0
1,1-DICHLOROETHENE	ND
CIS-1,2-DICHLOROETHENE	ND
TRANS-1,2-DICHLOROETHENE	ND
DICHLOROMETHANE	ND
1,2-DICHLOROPROPANE	ND
ETHYLBENZENE	670.0
METHYLENE CHLORIDE	ND
1,1,2,2-TETRACHLOROETHANE	ND
TETRACHLOROETHENE	ND
TOLUENE	1,100
1,1,1-TRICHLOROETHANE	ND
1,1,2-TRICHLOROETHANE	ND
TRICHLOROETHENE	ND
TRICHLOROFLUOROMETHANE	ND
VINYL CHLORIDE	ND
TOTAL XYLENES	3,130

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
*	-	DUPLICATE ANALYSIS

86-1353-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1353 A+B
DATE REC. 86-11-26

PHONE(S): 327-5812
SUBMITTER: David Boyer

PRIORITY
USER CODE: 8 2 2 3 5
CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8611210845A88

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: CODE: ☐ ☐ ☐

COUNTY: San Juan; CITY: Lee Acres CODE: ☐ ☐ ☐

LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+27+113 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes

Other Specific Compounds or Classes

☐ _____
☐ _____
☐ _____
☐ _____
☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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: _____

FIELD DATA:

pH= _____; Conductivity= 1900 umho/cm at 15.7°C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant, GBR-10 250 product

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer Method of Shipment to the Lab: Handcarried

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from Willie Olson to Yany C. Eden
at (location) HEB/SLD on 11/26/86 at 4:15 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐Signatures Willie Olson Yany C. Eden

For OCD Use: Date Owner Notified _____ Phone or Letter? _____ Initials _____

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
benzene	9500		
toluene	1100		
ethylbenzene	670		
p-xylene	940		
m-xylene	1600		
o-xylene	590		
1,2-dichloroethane	150		
1,3-dichlorobenzene	TR		
* DETECTION LIMIT *	50ppb	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Four other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: SAZ date: 12-4-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4 Dec. 8 Analyst's signature: JA Timney

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: Richard Meyerheim





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 *cont*
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED <u>11/26/86</u>	LAB NO. <u>WC 5445</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: <u>82235</u>
Collection DATE <u>11/21</u>	SITE INFORMATION	Sample location <u>Giant, Bloom Field Refinery</u>
Collection TIME <u>0845</u>		Collection site description <u>GBR 10</u>
Collected by — Person/Agency <u>BOYER / OLSON / OCD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) <u>1900</u> μ mho	Water Temp. (00010) <u>15.7</u> °C	Conductivity at 25 °C (00094) <u> </u> μ mho	
Field comments <u>2' product</u>				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added	☐ Other-specify: <u> </u>	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25 °C (00095) <u>4557</u> μ mho		<u>12/16</u>	☒ Calcium (00915) <u>410</u> mg/l		<u>12-1</u>
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925) <u>90.3</u> mg/l		<u>12-1</u>
☒ Other: <u>pH</u> <u>7.35</u>	mg/l	<u>12/8</u>	☒ Sodium (00930) <u>678</u> mg/l		<u>12/4</u>
☐ Other:			☒ Potassium (00935) <u>5.85</u> mg/l		<u>12/4</u>
☐ Other:			☒ Bicarbonate (00440) <u>597</u> mg/l		<u>12/8</u>
			☒ Chloride (00940) <u>1149</u> mg/l		<u>12/5</u>
			☒ Sulfate (00945) <u>46.3</u> mg/l		<u>12/12/18</u>
			☒ Total filterable residue (dissolved) (70300) <u>3332</u> mg/l		<u>12/4</u>
			☒ Other: <u>CO3</u> <u>BR</u> <u>1.8</u>		<u>12/8</u>
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported <u>12/16/86</u>	Reviewed by <u>CEJ</u>

FOR OCD USE -- Date Owner Notified Phone or Letter? Initials

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

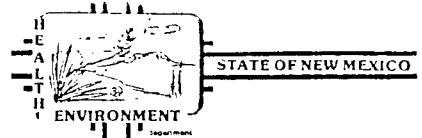
MONITOR WELL GBR-11

<u>SAMPLER</u>	<u>GIANT</u>	<u>OCD</u>	<u>OCD</u>
<u>DATE</u>	<u>5/29/86</u>	<u>6/5/86</u>	<u>11/20/86</u>
<u>PARAMETER</u>			
DETECTION LIMIT	1.0	50.0	50.0
BENZENE	9,025	4,600	6,500
BROMODICHLOROMETHANE	NA	ND	ND
BROMOFORM	NA	ND	ND
BROMOMETHANE	NA	ND	ND
CARBON TETRACHLORIDE	NA	ND	ND
CHLOROBENZENE	NA	ND	ND
CHLOROETHANE	NA	ND	ND
CHLOROFORM	NA	ND	ND
CHLOROMETHANE	NA	ND	ND
DIBROMOCHLOROMETHANE	NA	ND	ND
1,2-DICHLOROBENZENE	NA	ND	ND
1,3-DICHLOROBENZENE	NA	ND	ND
1,4-DICHLOROBENZENE	NA	ND	ND
DICHLORODIFLUOROMETHANE	NA	ND	ND
1,1-DICHLOROETHANE	NA	ND	ND
1,2-DICHLOROETHANE	NA	140.0	ND
1,1-DICHLOROETHENE	NA	ND	ND
CIS-1,2-DICHLOROETHENE	NA	ND	ND
TRANS-1,2-DICHLOROETHENE	NA	ND	ND
DICHLOROMETHANE	NA	ND	ND
1,2-DICHLOROPROPANE	NA	ND	ND
ETHYLBENZENE	NA	960.0	680.0
METHYLENE CHLORIDE	NA	ND	ND
1,1,2,2-TETRACHLOROETHANE	NA	ND	ND
TETRACHLOROETHENE	NA	ND	TR
TOLUENE	3,088	3,100	2,800
1,1,1-TRICHLOROETHANE	NA	ND	ND
1,1,2-TRICHLOROETHANE	NA	ND	ND
TRICHLOROETHENE	NA	ND	TR
TRICHLOROFLUOROMETHANE	NA	ND	ND
VINYL CHLORIDE	NA	ND	ND
TOTAL XYLENES	6,981	4,200	1,780

TR - TRACE
 ND - NOT DETECTED
 NA - NOT ANALYZED
 * - DUPLICATE ANALYSIS

86- 1359-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- SP 13 59A B
DATE REC. 11-26-86

PHONE(S): 327-5812 USER CODE: 8 2 2 3 5

SUBMITTER: David Boyer CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8611201515 288

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____ CODE: _____

COUNTY: San Juan; CITY: Lee Acres CODE: _____

LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+27+113 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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: _____

FIELD DATA:

pH= _____; Conductivity= 2500 umho/cm at 17.5°C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant, GBR-11, product in well

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector) D. A. Boyer Method of Shipment to the Lab: Handcarried

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from Willie Olson to Mary C. Edlen

at (location) HED/SLD on 11/26/86 4:12 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures Willie Olson Mary C. Edlen

For OCD Use: Date Owner Notified _____ Phone or Letter? _____ Initials _____

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐
EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>benzene</i>	<i>6500</i>	<i>1,1,1-trichloroethane</i>	<i>TR</i>
<i>toluene</i>	<i>2800</i>	<i>trichloroethene</i>	<i>TR</i>
<i>ethylbenzene</i>	<i>680</i>	<i>tetrachloroethene</i>	<i>TR</i>
<i>p-xylene</i>	<i>690</i>		
<i>m-xylene</i>	<i>1400</i>		
<i>o-xylene</i>	<i>690</i>		
<i>1,2-dichloroethane</i>	<i>170</i>		
* DETECTION LIMIT *	<i>50ppb</i>	+ DETECTION LIMIT +	<i>+</i>

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: *Six other compounds were detected by the aromatic screen that were not identified.*

CERTIFICATE OF ANALYTICAL PERSONNEL

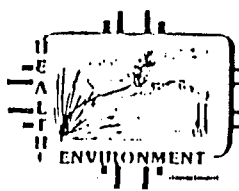
 Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: *JSZ* date: *12-4/12-9-86*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

 Date(s) of analysis: *4+9 Dec 86* Analyst's signature: *J. Stinner*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

 Reviewers signature: *R. Meyerlein*



STATE OF NEW MEXICO

86- 0678-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO:

DAVID G. BOYER

PLEASE PRINT

NEW MEXICO OIL CONSERVATION DIV.

P.O. BOX 2088

SANTA FE, NM 87504-2088

S.L.D. No.: OR- 678-ABDATE REC.: 06/09/86

SLD PRIORITY #: _____

PHONE(S): 827-5812

USER CODE: 8 2 2 3 5

SUBMITTER:

DAVID G. BOYERSUBMITTER CODE: SAMPLE TYPE: WATER ☒ , SOIL ☐ , OTHER _____SAMPLE TYPE CODE: COLLECTED: 06/06/85 - 17:05 BY DRBCODE: SOURCE: GBR-11, Giant BloomfieldCODE: NEAREST CITY: Bloomfield RefineryCODE:

LOCATION:

CODE: 29N 12W 27S 11EpH= 7 ; Conductivity= 7200 umho/cm at 25 °C; Chlorine Residual= _____

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ ; Flow Rate= _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Monitor well (replacement). Hydrocarbon odor, strongI certify that the statements in this block accurately reflect the results of my field analyses, observations and activities. DRBMethod of shipment to the Laboratory Hand CarriedThis form accompanies 2 Septum Vials, _____ Glass Jugs, _____ Containers are marked as follows to indicate preservation:

- ☐ NP: No preservation; sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (not frozen).
☐ P-Na₂S₂O₃; Sample preserved with Na₂S₂O₃ to remove chlorine residual.

I (we) certify that this sample was transferred from DRB to R Meyerlein at (location) SLD on6/9/86 - 14:18 and that the statements in this block are correct.Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐Signatures R Meyerlein DRB

(we) certify that this sample was transferred from _____ at (location) _____ on

 - : and that the statements in this block are correct.Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures _____

ANALYSES REQUESTED

LAB. No.: ORG-

678

PLEASE CHECK THE APPROPRIATE BOXES BELOW TO INDICATE THE TYPE OF ANALYTICAL SCREENS REQUIRED. WHENEVER POSSIBLE LIST SPECIFIC COMPOUNDS SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
		ALIPHATIC HYDROCARBON SCREEN			ALIPHATIC HYDROCARBONS
☒	☒	AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
☒	☒	HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
					ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
					POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS

REMARKS:

ANALYTICAL RESULTS

COMPOUND	[PPB]	COMPOUND	[PPB]
<i>Benzene</i>	<i>4600</i>		
<i>Toluene</i>	<i>3100</i>		
<i>Ethylbenzene</i>	<i>960</i>		
<i>p-Xylene</i>	<i>1000</i>		
<i>m-Xylene</i>	<i>2100</i>		
<i>o-Xylene</i>	<i>1100</i>		
<i>1,2-dichloroethane</i>	<i>140</i>		
		* DETECTION LIMIT	<i>50 µg/mL</i>

REMARKS: *Eight other compounds were detected by the aromatic screen that were not ~~identified~~ identified.*

CERTIFICATE OF ANALYTICAL PERSONNEL

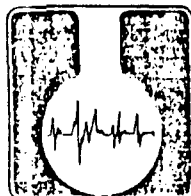
Seal(s) Intact: Yes ☒ NO ☐ . Seal(s) broken by: *JAF* date: *12 June 86*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *12 June 86* . Analyst's signature: *J. J. Jurney*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block. Reviewers signature: *R. Meyer*

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____

ASSAIGAI
ANALYTICAL
LABORATORIES

TO: Geoscience Consultants Ltd.
Attn: Randy Hicks
500 Copper NW Suite 325
Albuquerque, NM 87102

DATE: 18 June 1986
0879

SAMPLE ID: 8605291615 *QW2-11*

ANALYTE	ANALYTICAL RESULTS	DETECTION LIMITS
Pb	0.066 mg/l	0.001 mg/l
Benzene	9025 ug/l	1 ug/l
Toluene	3088 ug/l	1 ug/l
Xylenes	6981 ug/l	1 ug/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

Jennifer V. Smith
Jennifer V. Smith, Ph.D.
Laboratory Director





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859-~~top~~ wtf
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED <u>11/26/86</u>	LAB NO. <u>WC 5434</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>11/20/86</u>	SITE INFORMATION	Sample location <u>Giant, Bloom Field Refinery</u>
Collection TIME <u>1515</u>		Collection site description <u>GBR-11</u>
Collected by — Person/Agency <u>BOYER/OLSON /OCD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) <u>2500</u> μ mho	Water Temp. (00010) <u>17.5</u> °C	Conductivity at 25 °C (00094) <u> </u> μ mho	
Field comments <u>One inch product</u>				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify: ☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added			

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25 °C (00095)	<u>4532</u> μ mho	<u>12/16</u>	☒ Calcium (00915)	<u>496</u> mg/l	<u>12-1</u>
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	<u>13.4</u> mg/l	<u>12-1</u>
☒ Other: <u>pH</u>	<u>7.07</u>	<u>12/8</u>	☒ Sodium (00930)	<u>680.8</u> mg/l	<u>12-4</u>
☐ Other:			☒ Potassium (00935)	<u>5.07</u> mg/l	<u>12-4</u>
☐ Other:			☒ Bicarbonate (00440)	<u>734</u> mg/l	<u>12/8</u>
			☒ Chloride (00940)	<u>1194</u> mg/l	<u>12/2</u>
			☒ Sulfate (00945)	<u>294</u> mg/l	<u>12/12</u>
			☒ Total filterable residue (dissolved) (70300)	<u>3460</u> mg/l	<u>12/4</u>
			☒ Other: <u>CO3</u>	<u>0</u>	<u>12/8</u>
				<u>2.9</u>	<u>12/10</u>
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					

Laboratory remarks	Analyst <u>12/16/86</u>	Date Reported <u>12/16/86</u>	Reviewed by <u>13</u>
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FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED <u>6/10/86</u>	LAB NO. <u>WC 2524</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>6/10/86</u>	SITE INFORMATION <u>BOYER</u>	Sample location <u>GIANT BLOOMFIELD REF. GBR-11</u>
Collection TIME <u>1705</u>		Collection site description
Collected by — Person/Agency <u>Boyer</u>	<u>70CD</u>	

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type <u>GRAB</u>
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>7200</u> μ mho	Water Temp. (00010) <u>25</u> °C	Conductivity at 25°C (00094) <u> </u> μ mho	
Field comments				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☒ Calcium (00915)	<u>1030</u> mg/l	<u>6-23</u>
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	<u>68</u> mg/l	<u> </u>
☐ Other:			☒ Sodium (00930)	<u>782</u> mg/l	<u> </u>
☐ Other:			☒ Potassium (00935)	<u>585</u> mg/l	<u> </u>
☐ Other:			☒ Bicarbonate (00440)	<u>474</u> mg/l	<u>6/13</u>
			☒ Chloride (00940)	<u>2200</u> mg/l	<u>6/17</u>
			☒ Sulfate (00945)	<u>314</u> mg/l	<u>6/19</u>
			☒ Total filterable residue (dissolved) (70300)	<u>7593</u> mg/l	<u>6/18</u>
			☒ Other: <u>CO₂</u>	<u>0</u>	<u>6/13</u>
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					

Laboratory remarks

SLD 726 (12/84)

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New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED	11/26/86	LAB NO.	HM 2415	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	06/11/20	SITE INFORMATION	Sample location		
Collection TIME	1515		Giant, Bloomfield Refinery		
Collected by — Person/Agency		Collection site description			
BOYER/OLSON/OCD		GBR-11			

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

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	2500 μ mho	Water Temp. (00010)	17.5 °C
Field comments		Conductivity at 25 °C (00094) μ mho		

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	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added		☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added ☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25 °C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: ICAP			☐ Sodium (00930)	mg/l	
☒ Other: AS			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
Sample digested				1/13/87	Jim Baldy

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

ICAP SCAN

SLD Lab No. HM 2415

Reviewed by: Jim Ashby

Analyst YB

Date Reported: 1/13/87

Date Analyzed 12/10/86

<u>ELEMENT</u>	<u>ICAP VALUE (mg/l)</u>	<u>AA VALUE (mg/l)</u>
Aluminum	40.1	
Barium	0.4	
Beryllium	40.1	
Boron	0.3	
Cadmium	40.1	
Calcium	530.	
Chromium	40.1	
Cobalt	40.1	
Copper	40.1	
Iron	2.8	
Lead	40.1	
Magnesium	57.	
Manganese	5.7	
Molybdenum	40.1	
Nickel	40.1	
Silicon	8.5	
Silver	40.1	
Strontium	9.6	
Tin	40.1	
Vanadium	40.1	
Zinc	8.0	
Arsenic		0.013
Selenium		
Mercury		



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

pf

HEAVY METALS GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED <u>6/10/86</u>	LAB NO. <u>HM-1077</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>6/10/86</u>	SITE INFORMATION	Sample location <u>GIANT BLOOMFIELD REF. GBR-11</u>
Collection TIME <u>1705</u>		Collection site description
Collected by — <u>Parson/Agency</u> <u>BOYER</u>	<u>10CD</u>	

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type <u>GRAB</u>
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>7200</u> μ mho	Water Temp. (00010) <u>25</u> °C	Conductivity at 25°C (00094) <u> </u> μ mho	
Field comments				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added	☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: <u>ICAP</u>			☐ Sodium (00930)	mg/l	
☒ Other: <u>As</u> <u>0.014</u>			☐ Potassium (00935)	mg/l	
☒ Other: <u>Hg</u> <u>20.0005</u>			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					

Laboratory remarks

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____

Lab Number: MM 1077

Date Submitted: 6/10/86

By: Boyer

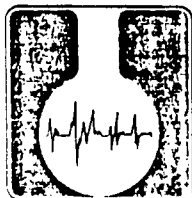
Sample ID: Plant Bloomfield GBR=11

Date Analyzed: 6/19/86

Reviewed By: J. Ashby

Date Reported: 7/8/86

Element	ICAP VALUE (MG/L)	AA VALUE (MG/L)
Aluminum	<u><0.1</u>	<u> </u>
Barium	<u>0.5</u>	<u> </u>
Beryllium	<u><0.1</u>	<u> </u>
Boron	<u>0.3</u>	<u> </u>
Cadmium	<u><0.1</u>	<u> </u>
Calcium	<u>970.</u>	<u> </u>
Chromium	<u><0.1</u>	<u> </u>
Cobalt	<u><0.1</u>	<u> </u>
Copper	<u><0.1</u>	<u> </u>
Iron	<u>6.9</u>	<u> </u>
Lead	<u><0.1</u>	<u> </u>
Magnesium	<u>100.</u>	<u> </u>
Manganese	<u>7.1</u>	<u> </u>
Molybdenum	<u><0.1</u>	<u> </u>
Nickel	<u>.2</u>	<u> </u>
Silicon	<u>7.8</u>	<u> </u>
Silver	<u><0.1</u>	<u> </u>
Strontium	<u>19.</u>	<u> </u>
Tin	<u><0.1</u>	<u> </u>
Vanadium	<u><0.1</u>	<u> </u>
Zinc	<u>7.3</u>	<u> </u>
Arsenic		<u>0.014</u>
Selenium		<u> </u>
Mercury		<u><0.0005</u>

ASSAIGAI
ANALYTICAL
LABORATORIES

TO: Geoscience Consultants Ltd.
Attn: Randy Hicks
500 Copper NW Suite 325
Albuquerque, NM 87102

DATE: 21 July 1986
0933

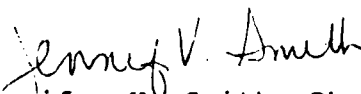
SAMPLE ID: 8606051705 GBR-11

ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMITS
Fe	<0.3 mg/l	0.3 mg/l
Pb	<0.050 mg/l	0.050 mg/l
Cr	<0.050 mg/l	0.050 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste Physical/Chemical
Methods", USEPA, SW 846, EMSL-Cincinnati, 1982

An invoice for services is enclosed. Thank you for contacting Assaigai
Laboratories.

Sincerely,


Jennifer V. Smith, Ph.D.
Laboratory Director

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-13

<u>SAMPLER</u>	GIANT	GIANT	GIANT
<u>DATE</u>	<u>6/12/89</u>	<u>9/12/89</u>	<u>12/12/89</u>
<u>PARAMETER</u>			
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)
BENZENE	1,600	1,700	710.0
BROMODICHLOROMETHANE	ND(100.0)	ND(5.0)	ND(<1.0)
BROMOFORM	ND(100.0)	ND(100.0)	ND(<1.0)
BROMOMETHANE	ND(100.0)	ND(50.0)	ND(1.2)
CARBON TETRACHLORIDE	ND(100.0)	ND(10.0)	ND(<1.0)
CHLOROBENZENE	ND(20.0)	ND(5.0)	ND(100.0)
CHLOROETHANE	ND(100.0)	ND(25.0)	ND(<1.0)
CHLOROFORM	ND(100.0)	ND(5.0)	ND(<1.0)
CHLOROMETHANE	ND(100.0)	ND(25.0)	ND(<1.0)
DIBROMOCHLOROMETHANE	ND(100.0)	ND(10.0)	ND(<1.0)
1,2-DICHLOROBENZENE	ND(20.0)	ND(10.0)	ND(200.0)
1,3-DICHLOROBENZENE	ND(20.0)	ND(20.0)	ND(200.0)
1,4-DICHLOROBENZENE	ND(20.0)	ND(10.0)	ND(150.0)
DICHLORODIFLUOROMETHANE	ND(100.0)	NA	NA
1,1-DICHLOROETHANE	ND(100.0)	ND(5.0)	4.9
1,2-DICHLOROETHANE	ND(100.0)	ND(5.0)	7.4
1,1-DICHLOROETHENE	ND(100.0)	ND(5.0)	ND(<1.0)
CIS-1,2-DICHLOROETHENE	ND(100.0)	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA	25.0
TOTAL 1,2-DICHLOROETHENE	NA	57.0	NA
1,2-DICHLOROPROPANE	ND(100.0)	ND(5.0)	ND(<1.0)
ETHYLBENZENE	620.0	540.0	820.0
METHYLENE CHLORIDE	ND(100.0)	ND(20.0)	1.3
1,1,2,2-TETRACHLOROETHANE	ND(100.0)	ND(10.0)	ND(<1.0)
TETRACHLOROETHENE	ND(100.0)	ND(5.0)	ND(<1.0)
TOLUENE	840.0	200.0	130.0
1,1,1-TRICHLOROETHANE	ND(100.0)	ND(10.0)	0.9
1,1,2-TRICHLOROETHANE	ND(100.0)	ND(10.0)	ND(<1.0)
TRICHLOROETHENE	ND(100.0)	13.0	4.0
TRICHLOROFLUOROMETHANE	ND(100.0)	ND(5.0)	ND(<1.0)
VINYL CHLORIDE	ND(100.0)	ND(10.0)	ND(<1.0)
TOTAL XYLENES	2,060	1,900	3,100

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-13

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>9/10/87</u>	<u>10/7/87</u>	<u>11/11/87</u>	<u>12/7/88</u>	<u>3/16/89</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)	(BELOW)	(BELOW)
BENZENE	2,470	1,130	4,500	390.0	309.0
BROMODICHLOROMETHANE	ND(2.0)	ND(2.0)	ND(10.0)	ND(<1.0)	ND(<1.0)
BROMOFORM	ND(4.5)	ND(4.5)	ND(10.0)	ND(<1.0)	ND(<1.0)
BROMOMETHANE	ND(3.0)	ND(3.0)	ND(10.0)	ND(1.2)	ND(1.0)
CARBON TETRACHLORIDE	ND(4.0)	ND(4.0)	ND(10.0)	ND(<1.0)	ND(<1.0)
CHLOROBENZENE	ND(8.0)	ND(8.0)	ND(25.0)	ND(7.5)	ND(<1.0)
CHLOROETHANE	ND(50.0)	ND(50.0)	ND(10.0)	ND(<1.0)	ND(1.0)
CHLOROFORM	ND(2.5)	ND(2.5)	17.0	ND(<1.0)	ND(<1.0)
CHLOROMETHANE	ND(1.0)	ND(1.0)	ND(10.0)	ND(<1.0)	ND(1.0)
DIBROMOCHLOROMETHANE	ND(3.5)	ND(3.5)	ND(10.0)	ND(<1.0)	ND(<1.0)
1,2-DICHLOROBENZENE	ND(20.0)	ND(20.0)	ND(25.0)	ND(10.0)	ND(<1.0)
1,3-DICHLOROBENZENE	ND(20.0)	ND(20.0)	ND(25.0)	ND(10.0)	ND(<1.0)
1,4-DICHLOROBENZENE	ND(30.0)	ND(30.0)	ND(25.0)	ND(7.5)	ND(<1.0)
DICHLORODIFLUOROMETHANE	ND(2.0)	ND(2.0)	ND(10.0)	ND(<1.0)	ND(1.0)
1,1-DICHLOROETHANE	58.9	60.0	ND(10.0)	5.2	4.3
1,2-DICHLOROETHANE	41.8	34.0	35.0	9.0	4.4
1,1-DICHLOROETHENE	ND(3.5)	ND(3.5)	ND(10.0)	ND(<1.0)	ND(<1.0)
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	44.7	55.0	29.0	14.0	ND(<1.0)
1,2-DICHLOROPROPANE	ND(1.5)	ND(1.5)	ND(10.0)	ND(<1.0)	ND(<1.0)
ETHYLBENZENE	797.0	495.0	1,700	330.0	166.0
METHYLENE CHLORIDE	ND(1.0)	ND(1.0)	ND(2.0)	1.6	30.8
1,1,2,2-TETRACHLOROETHANE	ND(1.5)	ND(1.5)	ND(10.0)	ND(<1.0)	ND(<1.0)
TETRACHLOROETHENE	ND(1.5)	ND(1.5)	ND(10.0)	ND(<1.0)	ND(<1.0)
TOLUENE	1,240	288.0	3,000	78.0	24.3
1,1,1-TRICHLOROETHANE	11.7	ND(1.5)	ND(10.0)	1.8	ND(<1.0)
1,1,2-TRICHLOROETHANE	ND(1.5)	ND(1.5)	ND(10.0)	ND(<1.0)	ND(<1.0)
TRICHLOROETHENE	ND(3.0)	15.0	ND(10.0)	4.8	3.6
TRICHLOROFLUOROMETHANE	ND(3.5)	ND(3.5)	ND(2.0)	0.6	ND(<1.0)
VINYL CHLORIDE	ND(2.5)	ND(2.5)	ND(10.0)	ND(<1.0)	ND(1.0)
TOTAL XYLENES	3,790	1,715	5,200	1,530	132.9

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-13

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>	<u>OCD</u>	<u>OCD</u>	<u>EID</u>
<u>DATE</u>	<u>4/15/85</u>	<u>5/9/86</u>	<u>6/5/86</u>	<u>11/20/86</u>	<u>8/5/87</u>
<u>PARAMETER</u>					
DETECTION LIMIT	10.0	1.0	10.0	5.0	25.0
BENZENE	42.0	129.0	1,300	2,900	1,050
BROMODICHLOROMETHANE	NA	NA	ND	ND	ND
BROMOFORM	NA	NA	ND	ND	ND
BROMOMETHANE	NA	NA	ND	ND	ND
CARBON TETRACHLORIDE	NA	NA	ND	ND	ND
CHLOROBENZENE	NA	NA	ND	ND	ND
CHLOROETHANE	NA	NA	ND	ND	ND
CHLOROFORM	NA	NA	ND	ND	ND
CHLOROMETHANE	NA	NA	ND	ND	ND
DIBROMOCHLOROMETHANE	NA	NA	ND	ND	ND
1,2-DICHLOROBENZENE	NA	NA	ND	ND	ND
1,3-DICHLOROBENZENE	NA	NA	ND	ND	ND
1,4-DICHLOROBENZENE	NA	NA	ND	ND	ND
DICHLORODIFLUOROMETHANE	NA	NA	ND	ND	ND
1,1-DICHLOROETHANE	NA	NA	25.0	44.0	TR
1,2-DICHLOROETHANE	NA	NA	58.0	32.0	TR
1,1-DICHLOROETHENE	NA	NA	ND	ND	ND
CIS-1,2-DICHLOROETHENE	NA	NA	NA	23.0	25.0
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	ND	ND
TOTAL 1,2 DICHLOROETHENE	NA	NA	10.0	NA	NA
DICHLOROMETHANE	NA	NA	25.0	ND	ND
1,2-DICHLOROPROPANE	NA	NA	ND	ND	ND
ETHYLBENZENE	11.0	3.0	130.0	520.0	275.0
METHYLENE CHLORIDE	NA	NA	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	NA	NA	ND	ND	ND
TETRACHLOROETHENE	NA	NA	TR	19.0	ND
TOLUENE	25.0	32.0	12.0	1,800	390.0
1,1,1-TRICHLOROETHANE	NA	NA	23.0	16.0	TR
1,1,2-TRICHLOROETHANE	NA	NA	ND	ND	ND
TRICHLOROETHENE	NA	NA	TR	12.0	TR
TRICHLOROFLUOROMETHANE	NA	NA	ND	ND	ND
VINYL CHLORIDE	NA	NA	ND	ND	ND
TOTAL XYLENES	99.0	105.0	731.0	2870.0	1125.0

TR - TRACE
 ND - NOT DETECTED
 NA - NOT ANALYZED
 * - DUPLICATE ANALYSIS

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Volatile aromatics (1)	GRW-13	GBR-13	GBR-8	
List: SW8020				
Sample ID:	8912121200	8912121530	8912121600	TRIP BLANK
Factor:	1	500	250	1
Results in:	ug/L	ug/L	ug/L	ug/L
	098	108	118	12A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	710	100	2000	50	ND	0.20
Chlorobenzene	ND	0.20	ND	100	ND	50	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	200	ND	100	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	200	ND	100	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	150	ND	75	ND	0.30
Ethylbenzene	ND	0.20	820	100	560	50	ND	0.20
Toluene	ND	0.20	130 *	100	ND	50	ND	0.20
Total xylenes	ND	0.20	3100	100	2200	50	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	92		98		105		94	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Halogenated volatiles (1)	GRW-13	GBR-13	GBR-8	GBR-15
List: SW8010				
Sample ID:	8912121200	8912121530	8912121600	8912131000
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	09A	10A	11A	13A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon Tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	1.3 *	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	0.84 *	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	0.50	4.9	0.50	5.3	0.50	ND	0.50
1,2-Dichloroethane	1.1	0.10	7.4	0.10	4.7	0.10	36	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	25	0.20	20	0.20	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene-(2)	N/A	N/A	N/A	N/A	N/A	0.30	N/A	N/A
trans-1,3-Dichloropropene	ND	0.30	ND	0.30	ND	N/A	ND	0.30
Methylene Chloride	ND	0.40	1.3 *	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene-(3)	ND	0.10	ND	0.10	ND	0.10	ND	0.10
1,1,2-Trichloroethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,1,1-Trichloroethane	ND	0.20	0.90 *	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	0.20	4.0	0.20	2.3	0.20	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Vinyl Chloride	ND	0.20	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit

N/A Not available

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

 (2) Dibromochloromethane, 1,1,2-Trichloroethane, and
 cis-1,3-Dichloropropene coelute. Quantitated as
 Dibromochloromethane unless otherwise noted.

 (3) Tetrachloroethene and 1,1,2,2-Tetrachloroethane
 coelute. Quantitated as Tetrachloroethene unless
 otherwise noted.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: SW8310 PAH's by HPLC (1)	GBR-13	GBR-8	GBR-15	GBR-33
List: 8310 Method analytes				
Sample ID:	8912121530	8912121600	8912131000	8912131210
Factor:	380	9.4	0.94	1.9
Results in:	ug/L	ug/L	ug/L	ug/L
	10C	11C	13C	14C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	870	ND	22	<u>4.1 *D</u>	2.2	ND	4.4
Acenaphthene	ND	680	ND	17	ND	1.7	<u>6.0 *D</u>	3.4
Anthracene	ND	250	ND	6.2	ND	0.62	ND	1.3
Benzo(a)anthracene	<u>25</u>	4.9	ND	0.12	<u>0.012 *</u>	0.012	<u>0.20</u>	0.025
Benzo(a)pyrene	ND	8.7	ND	0.22	ND	0.022	ND	0.044
Benzo(b)fluoranthene	ND	6.8	ND	0.17	ND	0.017	<u>0.10 *</u>	0.034
Benzo(g,h,i)perylene	ND	29	ND	0.71	ND	0.071	ND	0.14
Benzo(k)fluoranthene	ND	6.5	ND	0.16	ND	0.016	ND	0.032
Chrysene	<u>86</u>	4.9	ND	0.12	ND	0.012	<u>0.88</u>	0.025
Dibenzo(a,h)anthracene	ND	11	ND	0.28	ND	0.028	ND	0.057
Fluoranthene	ND	80	ND	2.0	ND	0.20	ND	0.40
Fluorene	<u>360 *D</u>	80	<u>8.7 *D</u>	2.0	<u>0.47 *D</u>	0.20	<u>3.5 D</u>	0.40
Indeno(1,2,3-cd)pyrene	ND	16	ND	0.40	ND	0.040	ND	0.082
Naphthalene	ND	680	<u>88</u>	17	ND	1.7	ND	3.4
Phenanthrene	<u>1600</u>	240	<u>20 *</u>	6.0	<u>0.68 *</u>	0.60	<u>6.8</u>	1.2
Pyrene	<u>290 *</u>	100	ND	2.5	ND	0.25	<u>1.6 *</u>	0.51
Surrogate Recovery(%)								
Terphenyl-d14	NC		27 Q		134		120	
Control Limits: 37 to 139								

ND Not detected at specified detection limit

D Sample diluted for this analyte

* Est. result less than 5 times detection limit

NC Not calculated

Q Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: PAHs by GC 8100 (1) List: 8100, special list	GBR-13	GBR-8	GBR-15	GBR-33
Sample ID:	8912121530	8912121600	8912131000	8912131210
Factor:	94	94	0.94	9.4
Results in:	ug/L	ug/L	ug/L	ug/L
	10C	11C	13C	14C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1-Methylnaphthalene	1600	94	ND	94	ND	0.94	43 *	9.4
2-Methylnaphthalene	2000	94	280 *	94	ND	0.94	ND	9.4

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

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Received: 09/14/89
RAS Sacramento
Results by Sample
REPORT
Work Order # S9-09-081

SAMPLE ID B909121550 H2O GBR-13 FRACTION O1C TEST CODE 602B NAME Purgeable Aromatics - H2O
Date & Time Collected 09/12/89 Category _____

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST _____	MG _____	FILE # _____	EB092610	VERIFIED _____	JD _____
INSTRMT _____	B _____	INJECTD <u>09/26/89</u>	FACTOR <u>50</u>	UNITS	ug/L
CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR	
71-43-2	Benzene	<u>1700 C</u>	<u>5.0</u>	<u>50</u>	
108-88-3	Toluene	<u>200 C</u>	<u>15</u>	<u>50</u>	
100-41-4	Ethylbenzene	<u>540 C</u>	<u>5.0</u>	<u>50</u>	
108-90-7	Chlorobenzene	<u>ND</u>	<u>5.0</u>	<u>50</u>	
1330-20-7	Total Xylenes	<u>1900 C</u>	<u>10</u>	<u>50</u>	
106-46-7	1,4-Dichlorobenzene	<u>ND</u>	<u>10</u>	<u>50</u>	
541-73-1	1,3-Dichlorobenzene	<u>ND</u>	<u>20</u>	<u>50</u>	
95-50-1	1,2-Dichlorobenzene	<u>ND</u>	<u>10</u>	<u>50</u>	

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 76% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

Page 2
Received: 09/14/89

RAS Sacramento

REPORT

Work Order # S9-09-081

Results by Sample

SAMPLE ID 8909121550 H2O GBR-13

FRACTION 01A TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/12/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST _____
INSTRMT _____

INJECTD 09/26/89

FILE # DB09269
FACTOR 50

VERIFIED _____
UNITS _____

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	ND	25	50
74-83-9	Bromomethane	ND	50	50
75-01-4	Vinyl Chloride	ND	10	50
75-00-3	Chloroethane	ND	25	50
75-09-2	Methylene Chloride	ND	20	50
75-69-4	Trichlorofluoromethane	ND	5.0	50
75-35-4	1,1-Dichloroethene	ND	5.0	50
75-34-3	1,1-Dichloroethane	ND	5.0	50
540-59-0	Total 1,2-Dichloroethene (2)	57 C	5.0	50
67-66-3	Chloroform	ND	5.0	50
107-06-2	1,2-Dichloroethane	ND	5.0	50
71-55-6	1,1,1-Trichloroethane	ND	10	50
56-23-5	Carbon Tetrachloride	ND	10	50
75-27-4	Bromodichloromethane	ND	5.0	50
78-87-5	1,2-Dichloropropane	ND	5.0	50
10061-01-5	cis-1,3-Dichloropropene	ND	20	50
79-01-6	Trichloroethene	13 C	10	50
124-48-1	Dibromochloromethane (3)	ND	10	50
79-00-5	1,1,2-Trichloroethane (3)	ND	10	50
10061-02-6	trans-1,3-Dichloropropene (3)	ND	20	50
110-75-8	2-Chloroethylvinyl Ether	ND	100	50
75-25-2	Bromoform	ND	100	50
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	10	50
127-18-4	Tetrachloroethene (4)	ND	5.0	50
108-90-7	Chlorobenzene	ND	10	50
541-73-1	1,3-Dichlorobenzene	ND	25	50
95-50-1	1,2-Dichlorobenzene	ND	10	50
106-46-7	1,4-Dichlorobenzene	ND	10	50

*Attention
Limits
high*

Page 3

Received: 09/14/89

RAS Sacramento

REPORT

Results by Sample

Work Order # S9-09-081
Continued From Above

SAMPLE ID 8909121550 H2O 6BR-13 FRACTION 01A TEST CODE 601 NAME Purgeable Halocarbons H2O

Date & Time Collected 09/12/89 Category _____

SURROGATES

540-36-3	1-4-Difluorobenzene	_____	NA % Recovery
460-00-4	1-Bromo-4-Fluorobenzene	_____	96 % Recovery

- (1) See Appendix A for Glossary of Report and Data Flag Definitions
- (2) Quantitated as the Trans-isomer
- (3) Dibromochloromethane, 1,1,2-Trichloroethane and Trans-1,3-dichloropropene co-elute.
- (4) 1,1,2,2-Tetrachloroethane and tetrachloroethene co-elute.

Analytical Data Summary

Page: 2

Geoscience Consultants, Ltd.
 Radian Work Order: 89-09-111

Method: PAMS by MPLC (1)

List:

Sample ID:

Factor:

Results in:

Matrix:

	GBR-13	GBR-8	GBR-6	GBR-33	GBR-15	GBR-240
	8909121550	8909121615	8909121650	8909121750	8909130830	8909130915
	94	95	24	9	1	1
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A	05A	06A
	water	water	water	water	water	water
Acenaphthalene	<220	<220	<55	<21	<2.3	<2.3
Acenaphthene	<170	<170	580	<16	<1.8	<1.8
Anthracene	<62	<63	<16	<5.9	<0.66	<0.66
Benzo(a)anthracene	<1.2	<1.2	<0.31	<0.12	<0.013	<0.013
Benzo(a)pyrene	<2.2	<2.2	<0.55	<0.21	<0.023	<0.023
Benzo(b)fluoranthene	<1.7	<1.7	<0.43	<0.16	<0.018	<0.018
Benzo(g,h,i)perylene	<7.1	<7.2	<1.8	<0.68	<0.076	<0.076
Benzo(k)fluoranthene	<1.6	<1.6	<0.41	<0.15	<0.017	<0.017
Chrysene	<1.2	<1.2	<0.31	<0.12	<0.013	<0.013
Dibenzo(a,h)anthracene	<2.8	<2.9	<0.72	<0.27	<0.030	<0.030
Fluoranthene	830	<20	<5.0	<1.9	<0.21	<0.21
Fluorene	<20	<20	57	6*	<0.21	4.6
Indeno(1,2,3-cd)pyrene	<4.0	<4.1	<1.0	<0.39	<0.043	<0.043
Naphthalene	330*	420*	120*	16*	<1.8	<1.8
Phenanthrene	<60	320	25*	<5.8	<0.64	7.4
Pyrene	<25	59*	<6.5	<2.4	<0.27	<0.27

Surrogate Recovery(%)

Terphenyl-d14

NC

NC

NC

NC

122

110

Control Limits: 57 to 139

* Est. result less than 5 times detection limit

NC Not calculated

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



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

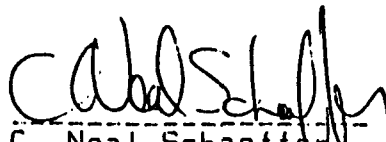
Client: GCL #8906121548
Site: GBR-13
IML #: F1560

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	1600 (20)	ug/l
TOLUENE	840 (20)	ug/l
ETHYLBENZENE	620 (20)	ug/l
CHLOROBENZENE	ND (20)	ug/l
m,p-XYLENE	1400 (20)	ug/l
o-XYLENE	660 (20)	ug/l
1,4-DICHLOROBENZENE	ND (20)	ug/l
1,3-DICHLOROBENZENE	ND (20)	ug/l
1,2-DICHLOROBENZENE	ND (20)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1902)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

*high
detection
limits*

Client: GCL #8906121548
Site: GBR-13
IML #: F1560

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (100)	ug/l
BROMOMETHANE	ND (100)	ug/l
DICHLORODIFLUOROMETHANE	ND (100)	ug/l
VINYL CHLORIDE	ND (100)	ug/l
CHLOROETHANE	ND (100)	ug/l
METHYLENE CHLORIDE	ND (100)	ug/l
TRICHLOROFLUOROMETHANE	ND (100)	ug/l
1,1-DICHLOROETHENE	ND (100)	ug/l
1,1-DICHLOROETHANE	ND (100)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (100)	ug/l
CHLOROFORM	ND (100)	ug/l
1,2-DICHLOROETHANE	ND (100)	ug/l
1,1,1-TRICHLOROETHANE	ND (100)	ug/l
CARBON TETRACHLORIDE	ND (100)	ug/l
BROMODICHLOROMETHANE	ND (100)	ug/l
1,2-DICHLOROPROPANE	ND (100)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (100)	ug/l
TRICHLOROETHENE	ND (100)	ug/l
DIBROMOCHLOROMETHANE	ND (100)	ug/l
1,1,2-TRICHLOROETHANE	ND (100)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (100)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (100)	ug/l
BROMOFORM	ND (100)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (100)	ug/l
TETRACHLOROETHENE	ND (100)	ug/l
CHLOROBENZENE	ND (100)	ug/l
1,3-DICHLOROBENZENE	ND (100)	ug/l
1,2-DICHLOROBENZENE	ND (100)	ug/l
1,4-DICHLOROBENZENE	ND (100)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.

C. Neal Schaeffer
C. Neal Schaeffer
Senior Organic Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUNDWATER
POLYNUCLEAR AROMATIC HYDROCARBONS
(ug/ml unless otherwise noted)
(Sampling Event: 06/13/89)

ANALYTE	GBR-06	GBR-08	GBR-13	GRW-13	GBR-15
Acenaphthene	ND (0.003)	36 (14)	31 (4.4)	ND (0.003)	0.008 (0.005)
Acenaphthylene	ND (0.003)	22 (14)	18 (4.4)	ND (0.003)	T (0.005)
Anthracene	0.004 (0.003)	T (14)	4.7 (4.4)	0.005 (0.003)	0.006 (0.005)
Benzo(a)anthracene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(a)pyrene	ND (0.003)	ND (14)	ND (4.4)	0.005 (0.003)	ND (0.005)
Benzo(b)fluoranthene	0.020 (0.003)	ND (14)	ND (4.4)	0.009 (0.003)	0.019 (0.005)
Benzo(j)fluoranthene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(k)fluoranthene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(g,h,i)perylene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Chrysene	0.010 (0.003)	ND (14)	ND (4.4)	0.004 (0.003)	0.031 (0.005)
Dibenz(a,h)acridine	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,j)acridine	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenzo(a,h)anthracene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,e)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,h)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Fluoranthene	T (0.003)	ND (14)	ND (4.4)	ND (0.003)	0.009 (0.005)
Fluorene	0.004 (0.003)	23 (14)	29 (4.4)	0.004 (0.003)	0.010 (0.005)
Indeno(1,2,3-cd)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Naphthalene	ND (0.003)	15 (14)	11 (4.4)	ND (0.003)	ND (0.005)
Phenanthrene	0.003 (0.003)	ND (14)	ND (4.4)	0.006 (0.003)	0.014 (0.005)
Pyrene	0.003 (0.003)	ND (14)	ND (4.4)	0.004 (0.003)	0.009 (0.005)
1-Methylnaphthalene	NA (0.003)	NA (14)	NA (4.4)	NA (0.003)	NA (0.005)
3-Methylnaphthalene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)

() = Detection limit

ND = Not detected

T = Detected below quantifiable level

NA = Not analyzed



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

Date: April 01, 1989

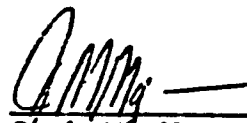
Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903161013
Sample Site: GBR-13
IML Lab No: F890980
Analysis Requested: Purgeable Aromatic
Sample Matrix: Water

Date Sampled: 03/16/89
Date Received: 03/16/89
Date Extracted: NA
Date Analyzed: 03/28/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	309 (2.0)	ug/l
TOLUENE	24.3 (2.0)	ug/l
ETHYLBENZENE	166 (2.0)	ug/l
m,p-XYLENE	102 (2.0)	ug/l
o-XYLENE	30.9 (2.0)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



Jack M. Morgan
Senior Organic Chemist

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903161013
Sample Site: GBR-13
IML Sample No: F890980
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water

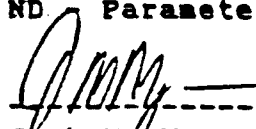
Date Sampled: 03/16/89
Date Received: 03/16/89
Date Extracted: N/A
Date Analyzed: 03/19/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	30.8 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	4.3 (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	4.4 (0.03)	ug/l
1,1,1-TRICHLOROETHANE	ND (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	3.6 (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	ND (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND Parameter not detected at the stated detection limit.


Jack M. Morgan
Senior Organic Chemist

Date: April 08, 1989

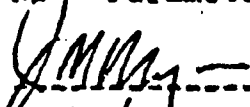
Client:	Geoscience Consultants, Ltd.		
GCL Sample No:	8903161013	Date Sampled:	03/16/89
Sample Site:	GBR-13	Date Received:	03/16/89
IML Sample No:	F890980	Date Extracted:	03/22/89
Analysis:	Polynuclear Aromatic Hydrocarbons	Date Analyzed:	04/07/89
Sample Matrix:	Water		

Parameter	Concentration	Units
-----	-----	-----
Acetnaphthene	ND (5.0)	ug/l
Acenaphthylene	ND (5.0)	ug/l
Anthracene	ND (5.0)	ug/l
Benzo(a)Anthracene	ND (1.0)	ug/l
Benzo(a)pyrene	ND (1.0)	ug/l
Benzo(b)fluoranthene	ND (1.0)	ug/l
Benzo(g,h,i)perylene	ND (1.0)	ug/l
Benzo(k)fluoranthene	ND (1.0)	ug/l
Chrysene	ND (1.0)	ug/l
Dibenzo(a,h)anthracene	ND (1.0)	ug/l
Fluoranthene	ND (5.0)	ug/l
Fluorene	ND (5.0)	ug/l
Indeno(1,2,3-cd)pyrene	ND (1.0)	ug/l
Naphthalene	ND (5.0)	ug/l
Phenanthrene	ND (5.0)	ug/l
Pyrene	ND (5.0)	ug/l
1-Methylnaphthalene	ND (5.0)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1986)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

Page 47
Received: 12/09/88
RAS - Austin
Results by Sample
REPORT
Work Order # 88-12-057

SAMPLE ID 8812071601 602-13

FRACTION Q84 TEST CODE EPA602 NAME EPA method 602
Date % Time Collected 12/07/88 Category

ANALYST _____ CL
INSTRMT _____ D
INJECTED 12/13/88
FILE # _____
VERIFIED _____ CL
UNITS _____ ug/L

CAS#	COMPOUND	RESULT	DET LIMIT
71-43-2	Benzene	390	5.0
108-88-3	Toluene	78	5.0
100-41-4	Ethylbenzene	330	7.5
108-90-7	Chlorobenzene	ND	7.5
106-46-7	1,4-Dichlorobenzene	ND	7.5
541-73-1	1,3-Dichlorobenzene	ND	10
95-50-1	1,2-Dichlorobenzene	ND	10

SURROGATES
98-08-6 a,a,a-Trifluorotoluene 142**% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available
Second column confirmation NOT performed
unless otherwise noted.

Page 49

Received: 12/09/88

RAS - Austin

REPORT
Results by Sample

Work Order # 88-12-057

SAMPLE ID 8812071601

602-13

FRACTION 08A

TEST CODE XYLENE NAME Xylenes, EPA 602

Date & Time Collected 12/07/88

Category

ANALYST
INSTRMTCL
D

FILE #

INJECTED 12/13/88

VERIFIED CL

UNITS

ug/L

CAS #	COMPOUND	RESULT	DET LIMIT
106-42-3	p-Xylene-A	410	5.0
108-38-3	m-Xylene	720	5.0
95-47-6	o-Xylene	400	2.5

98-08-8

SURROGATES

a,a,a-Trifluorotoluene 142**% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NOT performed unless otherwise noted.

Q = daily EPA standard recovery outside 95% confidence interval.

Chlorobenzene and p-xylene co-elute.

Quantitated as chlorobenzene unless otherwise noted.

SAMPLE ID 8812071601

GPR-13

FRACTION Q8B

TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 12/07/88

Category

ANALYST _____ INSTRMT _____ BM _____
 FILE # _____ UNITS _____ ug/L _____
 INJECTD 12/15/88

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	0.30
74-83-9	Bromomethane	ND	1.2
75-01-4	Vinyl chloride	ND	0.20
75-00-3	Chloroethane	ND	0.50
75-09-2	Methylene chloride	1.6	0.30
75-69-4	Trichlorofluoromethane	0.6	0.10
75-35-4	1,1-Dichloroethene	ND	0.10
75-34-3	1,1-Dichloroethane	5.2	0.090
156-60-5	trans-1,2-Dichloroethene	14	0.20
67-66-3	Chloroform	ND	0.050
107-06-2	1,2-Dichloroethane	9.0	0.030
71-55-6	1,1,1-Trichloroethane	1.8	0.090
56-23-5	Carbon tetrachloride	ND	0.10
75-27-4	Bromodichloromethane	ND	0.10

Received: 12/09/88

RAS - Austin

REPORT

Results by Sample

Work Order # 88-12-057

Continued From Above

SAMPLE ID 8812071601

6B2-13

FRACTION 08B

TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 12/07/88

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.10
10061-02-6	trans-1,3-Dichloropropene	ND	0.30
79-01-6	Trichloroethene	4.8	0.20
124-48-1	Dibromochloromethane-A	ND	0.20
79-00-5	1,1,2-Trichloroethane-A	ND	0.070
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-75-8	2-Chloroethyl vinyl ether	ND	0.20
75-25-2	Bromoform	ND	0.30
79-34-5	1,1,2,2-Tetrachloroethane-B	ND	0.12
127-18-4	Tetrachloroethane-B	ND	0.030
108-90-7	Chlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.30
95-50-1	1,2-Dichlorobenzene	ND	0.50
105-46-7	1,4-Dichlorobenzene	ND	0.40

SURROGATES

74-97-5	Bromochloromethane	118	% Recovery
460-00-4	1-Bromo-4-fluorobenzene	96	% Recovery



Analytical **Technologies, Inc.** EPA METHOD 601/602
PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/11/87
LAB RECEIPT DATE: 11/16/87
ANALYSIS DATE: 11/17/87
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8711111545
LOCATION: 6BR-13
LAB SAMPLE #: 3574-6
UNITS: ug/l
DILUTION FACTOR: 50

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	10	ND
BROMOMETHANE	10	ND
DICHLORODIFLUOROMETHANE	10	ND
VINYL CHLORIDE	10	ND
CHLOROETHANE	10	ND
METHYLENE CHLORIDE	2.0	ND
TRICHLOROFLUOROMETHANE	2.0	ND
1,1-DICHLOROETHENE	10	ND
1,1-DICHLOROETHANE	10	ND
TRANS-1,2-DICHLOROETHENE	10	29
CHLOROFORM	10	17
1,2-DICHLOROETHANE	10	35
1,1,1-TRICHLOROETHANE	10	ND
CARBON TETRACHLORIDE	10	ND
BROMODICHLOROMETHANE	10	ND
1,2-DICHLOROPROPANE	10	ND
TRANS-1,3-DICHLOROPROPENE	10	ND
TRICHLOROETHENE	10	ND
DIBROMOCHLOROMETHANE	10	ND
1,1,2-TRICHLOROETHANE	10	ND
CIS-1,3-DICHLOROPROPENE	10	ND
2-CHLOROETHYL VINYL ETHER	10	ND
BROMOFORM	10	ND
1,1,2,2-TETRACHLOROETHANE	10	ND
TETRACHLOROETHENE	10	ND
BENZENE	25	4500
TOLUENE	50	3000
CHLOROBENZENE	25	ND
ETHYLBENZENE	25	1700
1,3-DICHLOROBENZENE	25	ND
1,2-DICHLOROBENZENE	25	ND
1,4-DICHLOROBENZENE	25	ND
M-XYLENE	25	2600
O,P-XYLENE	25	2600

98.3 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
HIGH LEVELS REQUIRED DILUTION

PROJECT MANAGER: *M. Parry*

DATE: 12/10/87



Analytical **Technologies, Inc.**

EPA METHOD 801/802

PROJECT: GBR

SAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
ANALYSIS DATE/TIME: 10/12/87, 17:27
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8710070905
LOCATION: GBR - 13
LAB SAMPLE #: 3439-6
UNITS: ug/l
DILUTION FACTOR: 50

<u>CONSTITUENT NAME</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
CHLOROMETHANE	1.0	ND
BROMOMETHANE	3.0	ND
DICHLORODIFLUOROMETHANE	2.0	ND
VINYL CHLORIDE	2.5	ND
CHLOROETHANE	50	ND
METHYLENE CHLORIDE	1.0	ND
TRICHLOROFLUOROMETHANE	3.5	ND
1,1-DICHLOROETHENE	3.5	ND
1,1-DICHLOROETHANE	2.5	60
TRANS-1,2-DICHLOROETHENE	4.5	55
CHLOROFORM	2.5	ND
1,2-DICHLOROETHANE	3.5	34
1,1,1-TRICHLOROETHANE	1.5	ND
CARBON TETRACHLORIDE	4.0	ND
BROMODICHLOROMETHANE	2.0	ND
1,2-DICHLOROPROPANE	1.5	ND
TRANS-1,3-DICHLOROPROPENE	5.5	ND
TRICHLOROETHENE	3.0	15
DIBROMOCHLOROMETHANE	3.5	ND
1,1,2-TRICHLOROETHANE	1.5	ND
CIS-1,3-DICHLOROPROPENE	3.5	ND
2-CHLOROETHYL VINYL ETHER	1.5	ND
BROMOFORM	4.5	ND
1,1,2,2-TETRACHLOROETHANE	1.5	ND
TETRACHLOROETHENE	1.5	ND
BENZENE	10	1130
TOLUENE	20	288
CHLOROBENZENE	8.0	ND
ETHYLBENZENE	5.0	495
1,3'-DICHLOROBENZENE	20	ND
1,2-DICHLOROBENZENE	20	ND
1,4-DICHLOROBENZENE	30	ND
M-XYLENE	9.0	730
O,P-XYLENE	7.5	985

118 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
MDL 50 x NORMAL DUE TO HIGH LEVELS

PROJECT MANAGER: *JmW*

DATE: 10/28/87



EPA METHOD 601/602

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 9/10/87

LAB RECEIPT DATE: 9/11/87

ANALYSIS DATE: 9/18/87

MATRIX: WATER

ANALYST: MGB

SAMPLE ID: 8709101000

LOCATION: GBR-13

LAB SAMPLE #: 3328-4

UNITS: ug/l

DILUTION FACTOR: 50

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	1.0	ND
BROMOMETHANE	3.0	ND
DICHLORODIFLUOROMETHANE	2.0	ND
VINYL CHLORIDE	2.5	ND
CHLOROETHANE	50	ND
METHYLENE CHLORIDE	1.0	ND
TRICHLOROFLUOROMETHANE	3.5	ND
1,1-DICHLOROETHENE	3.5	ND
1,1-DICHLOROETHANE	2.5	58.9
TRANS-1,2-DICHLOROETHENE	4.5	44.7
CHLOROFORM	2.5	ND
1,2-DICHLOROETHANE	3.5	41.8
1,1,1-TRICHLOROETHANE	1.5	11.7
CARBON TETRACHLORIDE	4.0	ND
BROMODICHLOROMETHANE	2.0	ND
1,2-DICHLOROPROPANE	1.5	ND
TRANS-1,3-DICHLOROPROPENE	5.5	ND
TRICHLOROETHENE	3.0	ND
DIBROMOCHLOROMETHANE	3.5	ND
1,1,2-TRICHLOROETHANE	1.5	ND
CIS-1,3-DICHLOROPROPENE	3.5	ND
2-CHLOROETHYL VINYL ETHER	1.5	ND
BROMOFORM	4.5	ND
1,1,2,2-TETRACHLOROETHANE	1.5	ND
TETRACHLOROETHENE	1.5	ND
BENZENE	10	2470
TOLUENE	20	1240
CHLOROBENZENE	8.0	ND
ETHYLBENZENE	5.0	797
1,3-DICHLOROBENZENE	20	ND
1,2-DICHLOROBENZENE	20	ND
1,4-DICHLOROBENZENE	30	ND
M-XYLENE	9.0	1680
O,P-XYLENE	7.5	2110

115 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED

MDL 50 x NORMAL DUE TO HIGH LEVELS

PROJECT MANAGER: *JmH*

DATE: 27 SEPTEMBER 1987



SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO:

McQuillan

S.L.D. No. OR-

1323EID Ground Water/Haz. Waste

DATE REC.

8-7-871190 St. Francis Dr.

PRIORITY

2Santa Fe 87504-0968

PHONE(S):

827-2912COLLECTION CITY: Lee AcresCOUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

8/7/87 08:05:13:05

LOCATION CODE: (Township-Range-Section-Tracts)

29N+12W+27+113 (10N06E24342)

USER CODE:

59300

SUBMITTER:

McQuillanCODE: M.C.Q.SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice: Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃: Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (733) Aliphatic Headspace (1-6 Carbons)
☒ (734) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (753) Base/Neutral Extractables
☐ (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: _____

FIELD DATA:pH= _____; Conductivity= 7200 umho/cm at 20.0°C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____

Depth to water 39.32 ft.; Depth of well _____ ft.; Perforation Interval _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Well GBR-13 odor of hydrocarbonsLIQUID WASTE/GROUND WATER
SURVEILLANCE

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): Dennis McQuillan Method of Shipment to the Lab: air/auts

CHAIN OF CUSTODY

I certify that this sample was transferred from Dennis McQuillan to John Gould
at (location) EID water lab on 8/6/87 - 15:00 and that

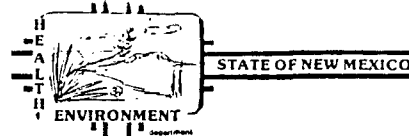
the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐

Signatures

Dennis McQuillanJohn Gould8/6/87 16:00 Seals intact & transferred to:ALBERT BERNARDY
Albert S. Bernardy 8/6/87

86-1366-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1366 A, B
DATE REC. 11-26-86

PHONE(S): 327-5812 USER CODE: 8 2 2 3 5
SUBMITTER: David Boyer CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) B 6 1 1 2 0 1 7 3 5 A 4 8
SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____ CODE: _____
COUNTY: San Juan; CITY: Lee Acres CODE: _____
LOCATION CODE: (Township-Range-Section-Tracts) 29 N + 12 W + 27 + 11 3 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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: _____

FIELD DATA:

pH= _____; Conductivity= 250 umho/cm at 13.5 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant GBR-13

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer Method of Shipment to the Lab: Hand Carried

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Harry C. Eden
at (location) HED/SLD on 11/26/86 4:09 PM and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐Signatures William Olson Harry C. Eden

For OCD Use: Date Owner Notified _____ Phone or Letter? _____ Initials _____

ANALYSES PERFORMED

LAB. No. OR- 1366

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
Benzene	2900	1,1-dichloroethane	44
Toluene	1800	cis-1,2-dichloroethane	23
Ethylbenzene	520	1,2-dichloroethane	32
p-Xylene	740	1,1,1-trichloroethane	16
m-Xylene	1500	Trichloroethene	12
O-Xylene	630	Tetrachloroethene	19
* DETECTION LIMIT *	* 5ppb	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Eight other compounds were detected by the aromatic screen that were not identified

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: JTB

date: 12-4/12-11-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4+10 Dec 86. Analyst's signature: J Finney

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R Meyerheim

Signatures

ANALYSES REQUESTED

LAB. No.: ORG-676

PLEASE CHECK THE APPROPRIATE BOXES BELOW TO INDICATE THE TYPE OF ANALYTICAL SCREENS REQUIRED. WHENEVER POSSIBLE LIST SPECIFIC COMPOUNDS SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
		ALIPHATIC HYDROCARBON SCREEN			ALIPHATIC HYDROCARBONS
☒	☒	AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
☒	☒	HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
					ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
					POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS

REMARKS:

ANALYTICAL RESULTS

COMPOUND	[PPB]	COMPOUND	[PPB]
<i>benzene</i>	<i>1300</i>	<i>dichloromethane</i>	<i>25</i>
<i>toluene</i>	<i>12</i>	<i>1,1-dichloroethane</i>	<i>25</i>
<i>ethylbenzene</i>	<i>130</i>	<i>1,2-dichloroethane</i>	<i>10</i>
<i>p-xylene</i>	<i>250</i>	<i>1,1,1-trichloroethane</i>	<i>23</i>
<i>m-xylene</i>	<i>410</i>	<i>trichloroethene</i>	<i>trace < 10</i>
<i>o-xylene</i>	<i>71</i>	<i>tetrachloroethene</i>	<i>trace < 10</i>
<i>1,2-dichloroethane</i>	<i>58</i>		
		* DETECTION LIMIT	<i>10 ng/ml</i>

REMARKS:

For other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ NO ☐ . Seal(s) broken by: *JAF* date: *20 June 86*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *12 & 20 June 86* . Analyst's signature: *J. J. Turner*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block. Reviewers signature: *R. Meyerham*

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____

8605090925
 8605091700

Assaigal Analytical Laboratories, Inc.
 1000 Jefferson N.E.
 Albuquerque, NM 87109

TO: Geoscience Consultants Ltd. DATE: 29 May 1986
 Attn: Randy Hicks 0752 revised
 500 Copper N.W. Suite 325
 Albuquerque, NM 87102

ANALYTE	SAMPLE ID/ ANALYTICAL RESULTS			
	8605090925 A & B GBR 18	8605091040 A & B GBR 20	8605091140 Steel Well	8605091250 A & B GBR 25
Benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Toluene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Xylenes	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Ethyl benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
EC		3840 umhos/cm		4980 umhos/cm
TDS				5096 mg/l
	2605091550 A & B GBR 13	8605091625 GBR 24	8605091700 GBR 21	8605091515 A & B GBR 26
Benzene	129 ug/l	1154 ug/l	<1.0 ug/l	<1.0 ug/l
Toluene	32 ug/l	803 ug/l	22 ug/l	<1.0 ug/l
Xylenes	105 ug/l	1020 ug/l	234 ug/l	<1.0 ug/l
Ethyl benzene	3 ug/l	147 ug/l	2 ug/l	<1.0 ug/l
EC	6300 umhos/cm	2690 umhos/cm		
TDS				

NOMINAL DETECTION LIMITS

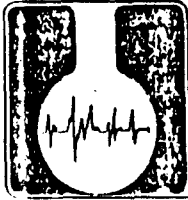
1.0 ug/l
 1.0 ug/l
 1.0 ug/l
 1.0 ug/l
 1 umhos/cm
 1 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846 ENSL-Cincinnati, 1982

An invoice for services is enclosed. Thank you for contacting Assaigal Laboratories.

Sincerely,

James V. Smith
 James V. Smith, Ph.D.
 Laboratory Director

ASSAIGAI
ANALYTICAL
LABORATORIES

8604151545?

~~8504151545~~ →

TO: Geoscience Consultants Ltd.
Attn: Randy Hicks
500 Copper H.W. Suite 325
Albuquerque, NM 87102

DATE: 24 April 1986
0629

SAMPLE ID: 8504151545 682-13

ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Benzene	0.042 mg/l	0.01 mg/l
Toluene	0.025 mg/l	0.01 mg/l
Ethylbenzene	0.011 mg/l	0.01 mg/l
Xylenes	0.099 mg/l	0.01 mg/l

REFERENCE: "Test Methods for the Examination of Solid Waste Physical/
Chemical Methods", USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assagai
Laboratories.

Sincerely,

Jennifer V. Smith
Jennifer V. Smith, Ph.D.
Laboratory Director

4/15/85





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

CLIENT: Geoscience Consultants

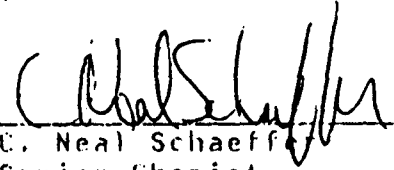
DATE REPORTED: 12/20/89

SITE: GBR-13
LAB NO: F3669

DATE RECEIVED: 12/13/89
DATE COLLECTED: 12/12/89

Lab pH (s.u.).....	7.16
Lab Conductivity, umhos/cm.....	5222
Lab resistivity, ohm-m.....	1.9150
Total Dissolved Solids (180), mg/l..	3968
Total Dissolved Solids (calc), mg/l.	3958
Total Alkalinity as CaCO ₃ , mg/l.....	744.48
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1584.16
Sodium Absorption Ratio.....	8.14

	mg/l	meq/l
Bicarbonate as HCO ₃	908.27	14.89
Carbonate as CO ₃	0.00	0.00
Chloride.....	594.18	16.76
Sulfate.....	1559.59	32.49
Calcium.....	570.59	28.47
Magnesium.....	39.04	3.21
Potassium.....	2.64	0.07
Sodium.....	744.80	32.40
Major Cations.....		64.15
Major Anions.....		64.14
Cation/Anion Difference.....		0.00 %


C. Neal Schaeff
Senior Chemist

CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: GBR-13

DATE RECEIVED: 12/13/89

LAB NO: F3669

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Major Anions.....		64.14
Cation/Anion Difference.....		0.00 %


C. Neal Schaeffer
Senior Chemist



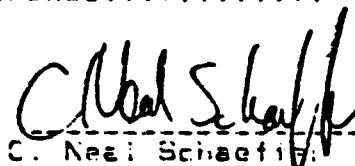
Inter-Mountain
Laboratories, Inc.

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

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/27/89
SAMPLE: 2909121550
SITE: FBR13 DATE RECEIVED: 09/13/89
LAB NO: F3154 DATE COLLECTED: 09/12/89

Lab pH	7.53
Lab Conductivity, $\mu\text{mhos/cm}$	5394
Lab Resistivity, Ωcm	1.8574
Total Dissolved Solids (TDS), mg/l	4084
Total Dissolved Solids (calc), mg/l	3762
Total Alkalinity as CaCO_3 , mg/l	676.42
Total Acidity as CaCO_3 , mg/l	0.00
Total Hardness as CaCO_3 , mg/l	1436.42
Sodium Absorption Ratio	2.05

	mg/l	meq/l
Dicarbonate as HCO_3	825.23	13.53
Carbonate as CO_3	0.00	0.00
Chloride	604.62	17.06
Sulfate	1512.26	33.59
Calcium	551.64	27.53
Magnesium	14.40	1.20
Potassium	2.64	0.07
Sodium	770.80	33.53
Major Cations		62.32
Major Anions		64.17
Cation/Anion Difference		1.46 %

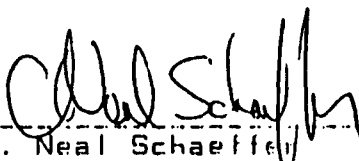

C. Neal Schaeffer
Senior Chemist

Client: GCL #8906121548
Site: GBR-13
IML #: F1560

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Total dissolved solids (180)..... 4220.00 mg/l
Total dissolved solids (calculated). 4013.88 mg/l
Total alkalinity (as CaCO₃)..... 736.30 mg/l
Total hardness (as CaCO₃)..... 1781.77 mg/l
Lab pH..... 7.30
Lab conductivity..... 5340 umhos/cm @ 25C
Lab resistivity..... 1.8727 ohm-m

	mg/l	meq/l
Acidity (as CaCO ₃).....	<1.0	<0.01
Bicarbonate (as HCO ₃).....	898.29	14.73
Carbonate (as CO ₃).....	0.00	0.00
Chloride.....	599.42	16.91
Sulfate.....	1698.26	35.38
Calcium.....	278.73	13.91
Magnesium.....	264.19	21.73
Potassium.....	2.32	0.06
Sodium.....	734.40	31.94
Major cations.....		67.64
Major anions.....		67.02
Anion/cation % difference.....		0.46 %


C. Neal Schaeffer
Senior Chemist

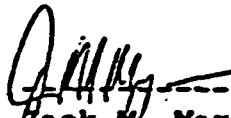
Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903161013
Site: GBR-13
IML Lab No: F890980
Date Collected: 3/16/89
Date Received: 3/16/89

Total Dissolved Solids (180), mg/l.....	4212
Total Dissolved Solids (calc), mg/l.....	4156
Total Alkalinity as CaCO ₃ , mg/l.....	724
Total Hardness as CaCO ₃ , mg/l.....	1709

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	883	14.47
Carbonate as CO ₃	0	0.00
Chloride.....	667	18.82
Sulfate.....	1639	34.15
Calcium.....	603	30.09
Magnesium.....	50	4.08
Potassium.....	3	0.08
Sodium.....	761	33.10
Nitrate/Nitrite.....	0.19	0.01

Major Cations.....	67.35
Major Anions.....	67.44
Cation/Anion Difference.....	0.07 %



Jack M. Morgan
Senior Organic Chemist

Page 12

Received: 12/09/88

RAS -

Austin

REPORT

Results by Sample

Work Order # 88-12-056
Continued From Above

SAMPLE ID 8812071501

602-33

FRACTION 07A

TEST CODE OPOA

NAME Orthophosphate

Date & Time Collected not specified

Category

N/A = not available

SAMPLE ID 8812071501

602-33

FRACTION 07A

TEST CODE IDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

VERIFIED LM

ANALYST DLB
INSTRMT

ANALYZED 12/15/88

UNITS mg/L

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) 3500 10

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8812071601

602-13

FRACTION 08A

TEST CODE OPOA

NAME Orthophosphate

Date & Time Collected not specified

Category

VERIFIED LM

ANALYST NJS
INSTRMT CI

ANALYZED 12/09/88

UNITS mg/L as P

Received: 12/09/88

RAS - Austin

REPORT

Results by Sample

Work Order # 88-12-056
Continued From Above

SAMPLE ID 8812071601

6-92-13

FRACTION 08A

TEST CODE OPD4

NAME Orthophosphate

Date & Time Collected not specified

Category

ANALYTE RESULT DET LIMIT

Orthophosphate 0.000 0.020

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8812071601

6-92-13

FRACTION 08A

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

ANALYST DLB
INSTRMT

ANALYZED 12/13/88

VERIFIED LM

UNITS mg/L

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) 4100 10

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Received: 12/09/88

Results By Test

SAMPLE	Test: CA E	Test: CL IC	Test: EG5010	Test: F IC	Test: K E
Sample Id	ug/ml	mg/L	date complete	mg/L	ug/ml
GBR-17 01 8812070930	370	170	12/30/88	2.4	<5.0
GBR-24 02 8812071016	450	600	12/30/88	3.2	<5.0
GBR-14 03 8812071123	470	690	12/30/88	3.8@	5.2*
GBR-30 04 8812071201	460	620	12/30/88	3.6	<5.0
GBR-15 05 8812071352	450	230	12/30/88	3.7	9.6*
GBR-31 06 8812071431	500	450	12/30/88	3.5	<5.0
GBR-33 07 8812071501	390	540	12/30/88	0.63	<5.0
GBR-13 08 8812071601	470	720	12/30/88	0.56	<5.0
GBR-6 09 8812071647	280	340	12/20/88	0.35	<5.0
GBR-8 10 8812071738	360	630	12/30/88	0.70	6.7*
8812071738 oil	<10				30*

SAMPLE	Test: MG E	Test: MO E	Test: PREP X	Test: S04 IC
Sample Id	ug/ml	ug/ml	date complete	mg/L as S04
GBR-17 01 8812070930	42	290		1300

Sample Id	Sample	Test: ME	mg/m ³	Test: NA E	mg/m ³	Test: PREP X	date complete	Test: S04 IC	mg/L as S04
GBR-24 8812071016	02	81		400				1600	
GBR-14 8812071123	03	29		500				1500	
GBR-30 8812071201	04	36		440				1300	
GBR-15 8812071352	05	30		570				2000	
GBR-31 8812071431	06	44		500				1700	
GBR-33 8812071501	07	40		480				1400	
GBR-13 8812071601	08	48		700				1600	
GBR-6 8812071647	09	72		420				660	
GBR-8 8812071736	10	59		660				490	
	11	<10		<10			12/30/88		
8812071738	oil								

REPORT TO: McQuillan
Ground Water & Hazardous Waste Bureau
Environmental Improvement Division
Health & Environment Department
P.O. Box 968 - Crown Building
Santa Fe, NM 87504-0968

LAB NUMBER WC 3619
DATE RECEIVED 8-7-87
DATE REPORTED 10/7/87
Initials
SLD USER CODE NUMBER 59300

Well Location Address Well GBR-13, Lee Acres, San Juan Co. 29N.12W.27.113

Point of Collection well head

Well Owner/User Giant Refinery

Number of People Drinking Water from Well 0

Collected 870805 13:05
Date Time

By McQuillan/Boyer EID/OCB
Name Agency

Well Depth _____

pH _____

Water Level _____

Conductivity (Uncorrected) 7200 umho/cm

Taste? Odor? Color? Collectors Remarks

Temperature 20.0 °C

strong odor hydrocarbons

Conductivity at 25°C RECEIVED umho/cm

OCT 22 1987

PROJECT: Lee Acres

From _____, A-H₂SO₄ Sample:

LIQUID WASTE/GROUND WATER
From NF, NA Sample SURVEILLANCE Date Analyzed

☐ Nitrate-N⁺ _____ mg/l
Nitrite-N _____
☐ Ammonia-N _____ mg/l
☐ Chemical _____ mg/l
oxygen demand
☐ _____

☒ Calcium 1004 mg/l 9/8
☒ Potassium 4.29 mg/l 9/31
☒ Magnesium 71 mg/l 9/8
☒ Sodium 1056 mg/l 9/31
☒ Bicarbonate 415 mg/l 9/2
☒ Chloride 1960 mg/l 9/1
☒ Sulfate 1560 mg/l 9/1
☒ Total Solids 6908 mg/l 10/2
☒ Bromide 0.25 mg/L 9/25

From _____, A-HNO₃ Sample:

☐ ICAP Scan
☐ Metals by AA (Specify)

This form accompanies one sample(s) marked as follows to indicate field treatment:

(NF) Whole sample (no filtration)
F: Filtered in field with 0.45u membrane filter
A-H₂SO₄: Acidified with 2 ml conc H₂SO₄/l
A-HNO₃: Acidified with 5ml conc HNO₃/l
(NA) No acid added

transfer to J. Gould 8/6/87
15:00 Debra McQuillan
15:00 John Gould
8/6/87 15:00 Seals intact & transfered to:
Chris D...



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859-wrf
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED	11/26/86	LAB NO.	WC 5437	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	86/11/20	SITE INFORMATION	Sample location		
Collection TIME	1235		Giant, Bloomfield Refinery		
Collected by — Person/Agency		Collection site description			
BOYER/OLSON /OCD		GBR-13			

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	Water Temp. (00010)	Conductivity at 25°C (00094)	
	2950 µmho	13.5°C	µmho	
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	/	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	µmho	12/16	☒ Calcium (00915)	mg/l	12-1
	9832		☒ Magnesium (00925)	mg/l	12-1
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Sodium (00930)	mg/l	12-4
☒ Other: pH	7.07	12/8	☒ Potassium (00935)	mg/l	12-4
☐ Other:			☒ Bicarbonate (00440)	mg/l	12/8
☐ Other:			☒ Chloride (00940)	mg/l	12/12
			☒ Sulfate (00945)	mg/l	12/16
			☒ Total filterable residue (dissolved) (70300)	mg/l	12/14
NF, A-H ₂ SO ₄			☒ Other: CO ₃ BR	0.6	12/16
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		F, A-H ₂ SO ₄		
☐ Ammonia-N total (00610)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Total organic carbon ()	mg/l		☐ Other:		
☐ Other:			Analyst	Date Reported	Reviewed by
☐ Other:				11/16/86	CE
Laboratory remarks					

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
2

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED <u>6/10/86</u>	LAB NO. <u>WC-2515</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>86/06/05</u>	SITE INFORMATION	Sample location <u>GBR-13</u>
Collection TIME <u>1900</u>		Collection site description <u>GIANT BLOOMFIELD REFINERY</u>
Collected by — Person/Agency <u>/OCD</u>		Station/well code

SEND FINAL REPORT TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type <u>GRAB</u>
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>7800</u> μ mho	Water Temp. (00010) <u>18.5</u> °C	Conductivity at 25°C (00094) <u> </u> μ mho	
Field comments <u>HYDROCARBON SHEEN & ODOR</u>				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added	☐ Other-specify: <u> </u>	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☒ Calcium (00915)	mg/l	<u>6/11</u>
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	mg/l	<u>70.8</u>
☐ Other:			☒ Sodium (00930)	mg/l	<u>377.2</u>
☐ Other:			☒ Potassium (00935)	mg/l	<u>2.73</u>
☐ Other:			☒ Bicarbonate (00440)	mg/l	<u>470</u>
			☒ Chloride (00940)	mg/l	<u>3070</u>
			☒ Sulfate (00945)	mg/l	<u>1332</u>
			☒ Total filterable residue (dissolved) (70300)	mg/l	<u>10553</u>
			☒ Other: <u>CO₃</u>		<u>6/13</u>
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported <u>6/24/86</u>	Reviewed by <u>CS</u>

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified Phone or letter? Initials



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED 6/10/86	LAB NO. WC-2516	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE 86106105	SITE INFORMATION	Sample location GBR-13
Collection TIME 1900		Collection site description GIANT BLOOMFIELD REFINERY
Collected by — Person/Agency	/OCD	

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type GRAB
pH (00400) 7	Conductivity (Uncorrected) 7800 μ mho	Water Temp. (00010) 18.5 $^{\circ}$ C	Conductivity at 25 $^{\circ}$ C (00094) μ mho	
Field comments HYDROCARBON SHEEN & ODOR				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added	☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25 $^{\circ}$ C (00095)	μ mho		☒ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	mg/l	
☐ Other:			☒ Sodium (00930)	mg/l	
☐ Other:			☒ Potassium (00935)	mg/l	
☐ Other:			☒ Bicarbonate (00440)	mg/l	
			☒ Chloride (00940)	mg/l	
			☒ Sulfate (00945)	mg/l	
			☒ Total filterable residue (dissolved) (00300)	mg/l	
NF, A-H ₂ SO ₄			☒ Other: CO ₃		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		F, A-H ₂ SO ₄		
☐ Ammonia-N total (00610)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Total organic carbon ()	mg/l		☐ Other:		
☐ Other:			Analyst	Date Reported	Reviewed by
☐ Other:					
Laboratory remarks					

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified Phone or letter? Initials





Analytical**Technologies**, Inc.

METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/11/87
LAB RECEIPT DATE: 11/16/87
MATRIX: WATER

871111545
SAMPLE ID: 8711111545
LOCATION: 6BR-13
LAB SAMPLE #: 3574-6
UNITS: mg/l

<u>ANALYSIS</u> <u>DATE</u>	<u>CONSTITUENT</u> <u>NAME</u>	<u>DILUTION</u> <u>FACTOR</u>	<u>DETECTION</u> <u>LIMIT</u>	<u>RESULT</u>
12/01/87	ARSENIC (As)	10	0.10	0.12
12/02/87	BARIUM (Ba)	1	0.060	1.34
12/01/87	CADMIUM (Cd)	1	0.003	0.016
11/16/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
12/01/87	TOTAL CHROMIUM (Cr Tot)	1	0.010	0.172
11/30/87	LEAD (Pb)	4	0.008	0.096
11/19/87	MERCURY (Hg)	1	0.0005	ND
12/01/87	SELENIUM (Se)	1	0.010	ND
12/01/87	SILVER (Ag)	1	0.010	0.015

* THE LISTED DETECTION LIMITS REFLECT ANY SAMPLE DILUTION.

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: *M. Barry*

DATE: 12/10/87



Analytical Technologies, Inc.

METALS

PROJECT: GBR

SAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
MATRIX: WATER

SAMPLE ID: 8710070905
LOCATION: GBR 13
LAB SAMPLE #: 3439-6
UNITS: mg/l

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
10/14/87	ARSENIC (As)	1	0.010	ND
10/15/87	BARIUM (Ba)	1	0.060	ND
10/13/87	CADMIUM (Cd)	1	0.003	0.016
10/12/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
10/13/87	TOTAL CHROMIUM (T. Cr)	1	0.010	0.056
10/12/87	LEAD (Pb)	1	0.002	0.012
10/18/87	MERCURY (Hg)	1	0.0002	ND
10/14/87	SELENIUM (Se)	1	0.010	ND
10/14/87	SILVER (Ag)	1	0.010	0.030

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER:

2/2/88

DATE: 10/28/87

METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 9/10/87
LAB RECEIPT DATE: 9/11/87
MATRIX: WATER

SAMPLE ID: 8709101000
LOCATION: GBR-13
LAB SAMPLE #: 3328-4
UNITS: mg/l

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
9/16/87	ARSENIC (As)	1	0.010	ND
9/23/87	BARIUM (Ba)	1	0.060	0.16
9/21/87	CADMIUM (Cd)	1	0.003	0.017
9/16/87	HEXAVALENT CHROMIUM (Cr+6)	1	0.03	ND
9/21/87	TOTAL CHROMIUM (Cr Tot)	1	0.010	0.135
9/17/87	LEAD (Pb)	1	0.002	0.025
9/25/87	MERCURY (Hg)	1	0.0002	ND
9/16/87	SELENIUM (Se)	1	0.010	ND
9/22/87	SILVER (Ag)	1	0.010	0.027

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: JMM

DATE: 27 SEPTEMBER 1987



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED	11/26/86	LAB NO.	HM 2421	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	8/6/11/20	SITE INFORMATION	Sample location		
Collection TIME	1235		Giant, Bloomfield Refinery		
Collected by — Person/Agency		Collection site description			
BOYER/OLSON/OCD		GBR-13			

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

Station/
well code
Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) <u>29.50</u> μ mho	Water Temp. (00010) <u>13.5</u> °C	Conductivity at 25°C (00094) <u> </u> μ mho	
Field comments				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added		☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added ☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: <u>ICAP</u>			☐ Sodium (00930)	mg/l	
☒ Other: <u>AS</u>			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N + , Nitrate-N total (00630)	mg/l		☐ Nitrate-N + , Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
<u>Sample digested</u>				<u>1/13/87</u>	<u>Jim Ashby</u>

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

ICAP SCAN

SLD Lab No. #M 2421

Analyst *VB*

Date Analyzed 12/10/86

Reviewed by:

Date Reported:

ELEMENT	ICAP VALUE (mg/l)	AA VALUE (mg/l)
Aluminum	40.1	
Barium	0.3	
Beryllium	<0.1	
Boron	0.5	
Cadmium	<0.1	
Calcium	1610.	
Chromium	<0.1	
Cobalt	<0.1	
Copper	<0.1	
Iron	6.5	
Lead	<0.1	
Magnesium	130.	
Manganese	4.0	
Molybdenum	<0.1	
Nickel	0.6	
Silicon	7.0	
Silver	<0.1	
Strontium	30.	
Tin	<0.1	
Vanadium	<0.1	
Zinc	<0.1	
Arsenic		<0.005
Selenium		
Mercury		

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-14/GRW-13

<u>SAMPLER</u>	GIANT	GIANT
<u>DATE</u>	<u>9/4/90</u>	<u>10/4/90</u>
<u>PARAMETER</u>		
DETECTION LIMIT	<1.0	<1.0
BENZENE	ND	ND
BROMODICHLOROMETHANE	NA	ND
BROMOFORM	NA	ND
BROMOMETHANE	NA	ND
CARBON TETRACHLORIDE	NA	ND
CHLOROBENZENE	ND	ND
CHLOROETHANE	NA	ND
CHLOROFORM	NA	ND
CHLOROMETHANE	NA	ND
DIBROMOCHLOROMETHANE	NA	ND
1,2-DICHLOROBENZENE	ND	ND
1,3-DICHLOROBENZENE	ND	ND
1,4-DICHLOROBENZENE	ND	ND
1,1-DICHLOROETHANE	NA	ND
1,2-DICHLOROETHANE	NA	4.1
1,1-DICHLOROETHENE	NA	ND
CIS-1,2-DICHLOROETHENE	NA	ND
TRANS-1,2-DICHLOROETHENE	NA	ND
1,2-DICHLOROPROPANE	NA	ND
ETHYLBENZENE	ND	ND
METHYLENE CHLORIDE	NA	0.52 X
1,1,2,2-TETRACHLOROETHANE	NA	ND
TETRACHLOROETHENE	NA	ND
TOLUENE	ND	2.0 X
1,1,1-TRICHLOROETHANE	NA	0.62 X
1,1,2-TRICHLOROETHANE	NA	ND
TRICHLOROETHENE	NA	ND
TRICHLOROFLUOROMETHANE	NA	0.2 X
VINYL CHLORIDE	NA	ND
TOTAL XYLENES	ND	ND

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE
X	-	PRESENCE NOT CONFIRMED

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-14/GRW-13

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>6/13/89</u>	<u>9/13/89</u>	<u>12/12/89</u>	<u>4/2/90</u>	<u>7/17/90</u>
<u>PARAMETER</u>					
DETECTION LIMIT	1.0	<1.0	<1.0	<1.0	<1.0
BENZENE	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND	ND	ND
BROMOFORM	ND	ND	ND	ND	ND
BROMOMETHANE	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND	ND	ND
CHLOROBENZENE	ND	ND	ND	ND	ND
CHLOROETHANE	ND	ND	ND	ND	ND
CHLOROFORM	ND	ND	ND	ND	ND
CHLOROMETHANE	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	ND	ND	ND	ND	ND
1,1-DICHLOROETHANE	ND	ND	ND	ND	ND
1,2-DICHLOROETHANE	4.3	12.0	1.1	4.5	4.8
1,1-DICHLOROETHENE	ND	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	NA	NA	NA	ND	ND
TRANS-1,2-DICHLOROETHENE	ND	NA	ND	ND	ND
TOTAL 1,2-DICHLOROETHENE	NA	ND	NA	NA	NA
1,2-DICHLOROPROPANE	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND	ND
TETRACHLOROETHENE	ND	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	ND	0.29	ND	ND	ND
1,1,2-TRICHLOROETHANE	ND	ND	ND	ND	ND
TRICHLOROETHENE	ND	ND	ND	ND	3.0
TRICHLOROFLUOROMETHANE	ND	2.0	ND	ND	0.25
VINYL CHLORIDE	ND	ND	ND	ND	ND
TOTAL XYLENES	ND	4.7	ND	ND	ND

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-14/GRW-13

<u>SAMPLER</u>	<u>GIANT</u>	<u>OCD</u>	<u>OCD</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>10/17/86</u>	<u>11/21/86</u>	<u>6/8/88</u>	<u>12/7/88</u>	<u>3/14/89</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	1.0	0.5	<1.0	(BELOW)
BENZENE	ND(1.0)	ND	TR	ND	ND(<1.0)
BROMODICHLOROMETHANE	ND(5.0)	ND	ND	ND	ND(<1.0)
BROMOFORM	ND(5.0)	ND	ND	ND	ND(<1.0)
BROMOMETHANE	NA	ND	ND	ND	ND(1.0)
CARBON TETRACHLORIDE	ND(5.0)	ND	ND	ND	ND(<1.0)
CHLOROBENZENE	NA	ND	ND	ND	ND(<1.0)
CHLOROETHANE	ND(5.0)	ND	ND	ND	ND(1.0)
CHLOROFORM	ND(5.0)	ND	ND	ND	ND(<1.0)
CHLOROMETHANE	NA	ND	ND	ND	ND(1.0)
DIBROMOCHLOROMETHANE	ND(5.0)	ND	ND	ND	ND(<1.0)
1,2-DICHLOROBENZENE	NA	ND	ND	ND	ND(<1.0)
1,3-DICHLOROBENZENE	NA	ND	ND	ND	ND(<1.0)
1,4-DICHLOROBENZENE	NA	ND	ND	ND	ND(<1.0)
DICHLORODIFLUOROMETHANE	NA	ND	ND	ND	ND(1.0)
1,1-DICHLOROETHANE	ND(5.0)	ND	ND	ND	ND(<1.0)
1,2-DICHLOROETHANE	ND(5.0)	9.0	2.5	3.4	2.1
1,1-DICHLOROETHENE	ND(5.0)	ND	ND	ND	ND(<1.0)
CIS-1,2-DICHLOROETHENE	NA	ND	ND	ND	NA(<1.0)
TRANS-1,2-DICHLOROETHENE	ND(5.0)	ND	ND	ND	ND(<1.0)
1,2-DICHLOROPROPANE	ND(5.0)	ND	ND	ND	ND(<1.0)
ETHYLBENZENE	ND(1.0)	ND	ND	ND	ND(<1.0)
METHYLENE CHLORIDE	ND(5.0)	ND	ND	ND	2.0
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	ND	ND	ND	ND(<1.0)
TETRACHLOROETHENE	ND(5.0)	ND	ND	ND	ND(<1.0)
TOLUENE	ND(1.0)	ND	ND	ND	ND(<1.0)
1,1,1-TRICHLOROETHANE	ND(5.0)	ND	ND	ND	ND(<1.0)
1,1,2-TRICHLOROETHANE	ND(5.0)	ND	ND	ND	ND(<1.0)
TRICHLOROETHENE	ND(5.0)	ND	ND	ND	ND(<1.0)
TRICHLOROFLUOROMETHANE	NA	ND	ND	ND	ND(<1.0)
VINYL CHLORIDE	ND(5.0)	ND	ND	ND	ND(1.0)
TOTAL XYLENES	ND(1.0)	ND	ND	ND	ND(<1.0)

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

Giant Refining Company
 Radian Work Order: SO-10-043

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	901004945	9010041010	9010041028	9010041100
	RW-4	RW-6	RW-3	RW-13
Factor:	50	10	20	1
Results in:	ug/L	ug/L	ug/L	ug/L
	10A	11A	12A	13A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	770 C	10	300 C	2.0	490 C	4.0	ND	0.20
Chlorobenzene	ND	10	ND	2.0	5.8 X ^a	4.0	ND	0.20
1,2-Dichlorobenzene	ND	20	ND	4.0	ND	8.0	ND	0.40
1,3-Dichlorobenzene	ND	20	ND	4.0	ND	8.0	ND	0.40
1,4-Dichlorobenzene	ND	15	20 G	3.0	290 G	6.0	ND	0.30
Ethylbenzene	160 C	10	47 C	2.0	420 C	4.0	ND	0.20
Toluene	ND	10	ND	2.0	ND	4.0	2.0 X	0.20
Xylenes (total)	ND	10	6.8 G ^a	2.0	710 C	4.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	117		122		97		112	
Control Limits: 40 to 140								

C Confirmed on second column or by GC/MS

G Indicates an estimated GC value due to interferences.

X See definition in report narrative

ND Not detected at specified detection limit

^a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
Radian Work Order: 50-10-043

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	901004945	9010041010	9010041028	9010041100
	RW-4	RW-6	RW-3	RW-13
Factor:	50	10	20	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	5.0	ND	1.0	ND	2.0	ND	0.10
Bromoform	ND	25	ND	5.0	ND	10	ND	0.50
Bromomethane	ND	59	ND	12	ND	24	ND	1.2
Carbon tetrachloride	ND	6.0	ND	1.2	ND	2.4	ND	0.12
Chlorobenzene	ND	12	ND	2.5	ND	5.0	ND	0.25
Chloroethane	ND	26	ND	5.2	ND	10	ND	0.52
2-Chloroethylvinylether	ND	25	ND	5.0	ND	10	ND	0.50
Chloroform	ND	5.0	ND	1.0	ND	2.0	ND	0.10
Chloromethane	ND	15	ND	3.0	ND	6.0	ND	0.30
Dibromochloromethane	ND	10	ND	2.0	ND	4.0	ND	0.20
1,2-Dichlorobenzene	ND	25	ND	5.0	ND	10	ND	0.50
1,3-Dichlorobenzene	ND	16	ND	3.2	ND	6.4	ND	0.32
1,4-Dichlorobenzene	ND	12	ND	2.4	ND	4.8	ND	0.24
1,1-Dichloroethane	ND	25	ND	5.0	ND	10	ND	0.50
1,2-Dichloroethane	6.1 Xa	5.0	6.1 C	1.0	4.3 Xa	2.0	4.1 C	0.10
1,1-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
cis-1,2-Dichloroethene	25 Xa	10	4.5 Ca	2.0	17 Ca	4.0	ND	0.20
trans-1,2-Dichloroethene	ND	25	ND	5.0	ND	10	ND	0.50
1,2-Dichloroethane	6.1 Xa	5.0	6.1 C	1.0	4.3 Xa	2.0	4.1 C	0.10
1,1-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
cis-1,2-Dichloroethene	25 Xa	10	4.5 Ca	2.0	17 Ca	4.0	ND	0.20
trans-1,2-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
1,2-Dichloropropane	ND	5.0	ND	1.0	ND	2.0	ND	0.10
cis-1,3-Dichloropropene	ND	10	ND	2.0	ND	4.0	ND	0.20
trans-1,3-Dichloropropene	ND	17	ND	3.4	ND	6.8	ND	0.34
Methylene chloride	22 Xa	20	8.1 Xa	4.0	ND	8.0	0.52 Xa	0.40
1,1,2,2-Tetrachloroethane	ND	7.5	ND	1.5	ND	3.0	ND	0.15
Tetrachloroethene	ND	5.0	1.6 Xa	1.0	ND	2.0	ND	0.10
1,1,1-Trichloroethane	ND	10	ND	2.0	ND	4.0	0.62 Xa	0.20
1,1,2-Trichloroethane	ND	10	ND	2.0	ND	4.0	ND	0.20
Trichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
Trichlorofluoromethane	11 Xa	10	ND	2.0	ND	4.0	0.20 Xa	0.20
Vinyl chloride	ND	10	ND	2.0	ND	4.0	ND	0.20

ND Not detected at specified detection limit
a Est. result less than 5 times detection limit

X See definition in report narrative
C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Co.
 Radian Work Order: 90-09-163

Method: Vol. aromatics by SW8020 (1)

List: SW8020

Sample ID:	9009041352	900905957	9009051004	Reagent blank
	RW-13	STRIP INFL	STRIP EFFL	
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	09A	10A	11A	12A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	2.8 X	0.20	ND	0.20	ND	0.20
Chlorobenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Ethylbenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Toluene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Total xylenes	ND	0.20	0.92 Xa	0.20	ND	0.20	ND	0.20
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	92		88		93		92	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

X See definition in report narrative

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: SO-07-122

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9007171035	9007171055	9007171215	9007171345
	STRIPPER EFF	RW-13	GBR-17	GBR-15
Factor:	1	1	1	2
Results in:	ug/L	ug/L	ug/L	ug/L
	10A	12A	14A	16A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	ND	0.20	39 C	0.40
Chlorobenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.40
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.80
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.80
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	0.30	ND	0.60
Ethylbenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.40
Toluene	ND	0.20	ND	0.20	ND	0.20	ND	0.40
Xylenes (total)	ND	0.20	ND	0.20	ND	0.20	ND	0.40
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	105		104		98		98	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-07-122

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9007171035	9007171055	9007171215	9007171345
	STRIPPER EFF	RW-13	GBR-17	GBR-15
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	09A	11A	13A	15A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	ND	0.10	4.8 C	0.10	ND	0.10	33 C	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	0.45 Xa	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	0.34	ND	0.34
Methylene chloride	0.69 Xa	0.40	ND	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene	0.14 Xa	0.10	ND	0.10	0.19 Xa	0.10	ND	0.10
1,1,1-Trichloroethane	0.94 Ga	0.20	ND	0.20	0.30 Ca	0.20	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Trichloroethene	6.8 G	0.20	3.0 X	0.20	1.5 X	0.20	ND	0.20
Trichlorofluoromethane	0.24 Xa	0.20	0.25 Xa	0.20	ND	0.20	ND	0.20
Vinyl chloride	ND	0.20	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

X See definition in report narrative

G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-04-013

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9004021255	9004021430	TRIP BLANK #2	REAGENT BLANK
	/STRIPPER EFFL	/GRW-13		
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	05C	06C	07A	09A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Chlorobenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Ethylbenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Toluene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Xylenes (total)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	92		89		89		101	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-04-013

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9004021255	9004021430	TRIP BLANK #2	REAGENT BLANK
	/STRIPPER EFFL	/GRW-13		
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	05A	06A	07A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	ND	0.10	4.5 C	0.10	ND	0.10	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	0.34	ND	0.34
Methylene chloride	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene	ND	0.10	ND	0.10	ND	0.10	ND	0.10
1,1,1-Trichloroethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Vinyl chloride	ND	0.20	ND	0.20	ND	0.20	ND	0.20

ND: Not detected at specified detection limit

C: Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Co.
 Radian Work Order: 90-04-031

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9004021255	9004021215	REAGENT BLANK
	STRIP EFFLUE	GRW-13	
Factor:	4.7	0.94	1
Results in:	ug/L	ug/L	ug/L
	05A	06A	07A
Matrix:	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	1.1	ND	2.2	ND	2.3		
Acenaphthene	ND	8.5	ND	1.7	ND	1.8		
Anthracene	ND	3.1	ND	0.62	ND	0.66		
Benzo(a)anthracene	ND	0.061	ND	0.012	ND	0.013		
Benzo(a)pyrene	ND	0.11	ND	0.022	ND	0.023		
Benzo(b)fluoranthene	ND	0.085	ND	0.017	ND	0.018		
Benzo(g,h,i)perylene	ND	0.36	ND	0.071	ND	0.076		
Benzo(k)fluoranthene	ND	0.080	ND	0.016	ND	0.017		
Chrysene	ND	0.061	ND	0.012	ND	0.013		
Dibenzo(a,h)anthracene	ND	0.14	ND	0.028	ND	0.030		
Fluoranthene	ND	0.99	ND	0.20	ND	0.21		
Fluorene	ND	0.99	ND	0.20	ND	0.21		
Indeno(1,2,3-cd)pyrene	ND	0.20	ND	0.040	ND	0.043		
Naphthalene	ND	8.5	ND	1.7	ND	1.8		
Phenanthrene	ND	3.0	ND	0.60	ND	0.64		
Pyrene	ND	1.3	ND	0.25	ND	0.27		
Surrogate Recovery(%)								
Terphenyl-d14	86		54		62			
Control Limits: 24 to 146								

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Volatile aromatics (1)	GRW-13	GBR-13	GBR-8	
List: SW8020				
Sample ID:	8912121200	8912121530	8912121600	TRIP BLANK
Factor:	1	500	250	1
Results in:	ug/L	ug/L	ug/L	ug/L
	09B	10B	11B	12A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	710	100	2000	50	ND	0.20
Chlorobenzene	ND	0.20	ND	100	ND	50	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	200	ND	100	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	200	ND	100	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	150	ND	75	ND	0.30
Ethylbenzene	ND	0.20	820	100	560	50	ND	0.20
Toluene	ND	0.20	130 *	100	ND	50	ND	0.20
Total xylenes	ND	0.20	3100	100	2200	50	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	92		98		105		94	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Halogenated volatiles (1)	GRW-13	GBR-13	GBR-8	GBR-15
List: SW8010				
Sample ID:	8912121200	8912121530	8912121600	8912131000
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	09A	10A	11A	13A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon Tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	<u>1.3 *</u>	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	<u>0.84 *</u>	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	0.50	<u>4.9</u>	0.50	<u>5.3</u>	0.50	ND	0.50
1,2-Dichloroethane	<u>1.1</u>	0.10	<u>7.4</u>	0.10	<u>4.7</u>	0.10	<u>36</u>	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	<u>25</u>	0.20	<u>20</u>	0.20	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene-(2)	N\A	N\A	N\A	N\A	N\A	0.30	N\A	N\A
trans-1,3-Dichloropropene	ND	0.30	ND	0.30	ND	N\A	ND	0.30
Methylene Chloride	ND	0.40	<u>1.3 *</u>	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene-(3)	ND	0.10	ND	0.10	ND	0.10	ND	0.10
1,1,2-Trichloroethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,1,1-Trichloroethane	ND	0.20	<u>0.90 *</u>	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	0.20	<u>4.0</u>	0.20	<u>2.3</u>	0.20	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Vinyl Chloride	ND	0.20	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit

N\A Not available

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

 (2) Dibromochloromethane, 1,1,2-Trichloroethane, and
 cis-1,3-Dichloropropene coelute. Quantitated as
 Dibromochloromethane unless otherwise noted.

 (3) Tetrachloroethene and 1,1,2,2-Tetrachloroethane
 coelute. Quantitated as Tetrachloroethene unless
 otherwise noted.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: SW8310 PAH's by HPLC (1)	Stripper Eff	Stripper Inf	GBR-24D	GRW-13
List: 8310 Method analytes				
Sample ID:	8912121145E	8912121145I	8912121130	8912121200
Factor:	0.94	1.9	0.94	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	06C	07C	08C	09C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	2.2	ND	4.4	ND	2.2	ND	2.2
Acenaphthene	ND	1.7	ND	3.4	<u>144 D</u>	1.7	ND	1.7
Anthracene	ND	0.62	ND	1.3	ND	0.62	ND	0.62
Benzo(a)anthracene	ND	0.012	ND	0.025	ND	0.012	ND	0.012
Benzo(a)pyrene	ND	0.022	ND	0.044	ND	0.022	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.034	ND	0.017	ND	0.017
Benzo(g,h,i)perylene	ND	0.071	ND	0.14	ND	0.071	ND	0.071
Benzo(k)fluoranthene	ND	0.016	ND	0.032	ND	0.016	ND	0.016
Chrysene	ND	0.012	ND	0.025	ND	0.012	ND	0.012
Dibenzo(a,h)anthracene	ND	0.028	ND	0.057	ND	0.028	ND	0.028
Fluoranthene	ND	0.20	ND	0.40	ND	0.20	ND	0.20
Fluorene	<u>3.4 D</u>	0.20	<u>4.0 D</u>	0.40	<u>2.6 D</u>	0.20	ND	0.20
Indeno(1,2,3-cd)pyrene	ND	0.040	ND	0.082	ND	0.040	ND	0.040
Naphthalene	<u>8.9 D</u>	1.7	<u>14 *D</u>	3.4	<u>1.9 *D</u>	1.7	<u>4.3 *D</u>	1.7
Phenanthrene	<u>11</u>	0.60	<u>13</u>	1.2	<u>3.0</u>	0.60	ND	0.60
Pyrene	<u>0.62 *</u>	0.25	<u>0.54 *</u>	0.51	<u>0.29 *</u>	0.25	ND	0.25
<u>Surrogate Recovery(%)</u>								
Terphenyl-d14	93		80		79		80	
Control Limits: 37 to 139								

 ND Not detected at specified detection limit
 * Est. result less than 5 times detection limit

D Sample diluted for this analyte

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method:PAHs by GC 8100 (1) List:8100, special list	Stripper Eff	Stripper Inf	GBR-24D	GRW-13
Sample ID:	8912121145E	8912121145I	8912121130	8912121200
Factor:	0.94	0.94	0.94	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	06C	07C	08C	09C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1-Methylnaphthalene	<u>2.0 *</u>	0.94	<u>6.3</u>	0.94	<u>5.8</u>	0.94	ND	0.94
2-Methylnaphthalene	<u>2.8 *</u>	0.94	<u>2.8 *</u>	0.94	ND	0.94	ND	0.94

* Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Page 25

Received: 09/14/89

RAS Sacramento

REPORT

Work Order # S9-09-081

Results by Sample

(GBR-14)

SAMPLE ID 8909131030 H2O

GRW-13

FRACTION OBC

TEST CODE 602B

NAME Purgeable Aromatics - H2O

Date & Time Collected 09/13/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST _____
INSTRMT _____

FILE # EBO92811
FACTOR 1 UNITS

INJECTD 09/28/89

VERIFIED JD
ug/L

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
71-43-2	Benzene	ND	0.10	1
108-88-3	Toluene	ND	0.30	1
100-41-4	Ethylbenzene	ND	0.10	1
108-90-7	Chlorobenzene	ND	0.10	1
1330-20-7	Total Xylenes	4.7 C	0.20	1
106-46-7	1,4-Dichlorobenzene	ND	0.20	1
541-73-1	1,3-Dichlorobenzene	ND	0.40	1
95-50-1	1,2-Dichlorobenzene	ND	0.20	1

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 91% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

Received: 09/14/89

RAS Sacramento

Results by Sample

REPORT

Work Order # 59-09-081

GRW-13

SAMPLE ID 8909131030 H2O (682-14)

FRACTION OBA TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/13/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST INSTRMT

MG B

INJECTD 09/28/89

FILE # DB092810
FACTOR 1

VERIFIED JD
UNITS ug/L

CAS#

COMPOUND

RESULT

DET LIMIT

FACTOR

74-87-3

Chloromethane

ND

0.50

1

74-83-9

Bromomethane

ND

1.0

1

75-01-4

Vinyl Chloride

ND

0.20

1

75-00-3

Chloroethane

ND

0.50

1

75-09-2

Methylene Chloride

ND

0.40

1

75-69-4

Trichlorofluoromethane

2.0 C

0.10

1

75-35-4

1,1-Dichloroethene

ND

0.10

1

75-34-3

1,1-Dichloroethane

ND

0.10

1

540-59-0

Total 1,2-Dichloroethene (2)

ND

0.10

1

67-66-3

Chloroform

ND

0.10

1

107-06-2

1,2-Dichloroethane

12 C

0.10

1

71-55-6

1,1,1-Trichloroethane

0.29 C

0.20

1

56-23-5

Carbon Tetrachloride

ND

0.20

1

75-27-4

Bromodichloromethane

ND

0.10

1

78-87-5

1,2-Dichloropropane

ND

0.10

1

10061-01-5

cis-1,3-Dichloropropene

ND

0.40

1

79-01-6

Trichloroethene

ND

0.20

1

124-48-1

Dibromochloromethane (3)

ND

0.20

1

79-00-5

1,1,2-Trichloroethane (3)

ND

0.20

1

10061-02-6

trans-1,3-Dichloropropene (3)

ND

0.40

1

110-75-8

2-Chloroethylvinyl Ether

ND

2.0

1

75-25-2

Bromoform

ND

2.0

1

79-34-5

1,1,2,2-Tetrachloroethane (4)

ND

0.20

1

127-18-4

Tetrachloroethene (4)

ND

0.10

1

108-90-7

Chlorobenzene

ND

0.20

1

541-73-1

1,3-Dichlorobenzene

ND

0.50

1

95-50-1

1,2-Dichlorobenzene

ND

0.20

1

106-46-7

1,4-Dichlorobenzene

ND

0.20

1

Received: 09/14/89

RAS Sacramento

REPORT

Results by Sample

Work Order # 59-09-081
Continued From Above

(6B2-14)

SAMPLE ID 8909131030 H2O 62W-13

FRACTION 08A

TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/13/89

Category

SURROGATES

540-36-3	1-4-Difluorobenzene	NA % Recovery
460-00-4	1-Bromo-4-Fluorobenzene	102 % Recovery

- (1) See Appendix A for Glossary of Report and Data Flag Definitions
- (2) Quantitated as the Trans-isomer
- (3) Dibromochloromethane, 1,1,2-Trichloroethane and Trans-1,3-dichloropropene co-elute.
- (4) 1,1,2,2-Tetrachloroethane and tetrachloroethene co-elute.

Geoscience Consultants, Ltd.
Radian Work Order: 89-09-111

Method: PAHs by HPLC (1)

Lists

Sample ID:

GBR-30

8909131015

GRW-13

8909131030

GBR-31

8909131145

GBR-17

8909131230

Influent

8909131300

Effluent

8909131330

Factor:

24

1

1

1

24

10

Results in:

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

water

water

Acenaphthalene

<55

<2.3

<2.3

<2.3

<55

<23

Acenaphthene

<43

<1.8

<1.8

<1.8

<43

<18

Anthracene

<16

<0.66

<0.66

<0.66

<16

<6.6

Benzo(a)anthracene

<0.31

<0.013

<0.013

<0.013

<0.31

<0.13

Benzo(a)pyrene

<0.55

<0.023

<0.023

<0.023

<0.55

<0.23

Benzo(b)fluoranthene

<0.43

<0.018

<0.018

<0.018

<0.43

<0.18

Benzo(g,h,i)perylene

<1.8

<0.076

<0.076

<0.076

<1.8

<0.76

Benzo(k)fluoranthene

<0.41

<0.017

<0.017

<0.017

<0.41

<0.17

Chrysene

<0.31

<0.013

<0.013

<0.013

<0.31

<0.13

Dibenzo(a,h)anthracene

<0.72

<0.030

<0.030

<0.030

<0.72

<0.30

Fluoranthene

<5.0

<0.21

<0.21

<0.21

<5.0

<2.1

Fluorene

11*

<0.21

<0.21

<0.21

9.6*

9.5*

Indeno(1,2,3-cd)pyrene

<1.0

<0.043

<0.043

<0.043

<1.0

<0.43

Naphthalene

<43

<1.8

<1.8

<1.8

<43

<18

Phenanthrene

<15

<0.64

<0.64

<0.64

<15

<6.4

Pyrene

<6.5

<0.27

<0.27

<0.27

<6.5

<2.7

Surrogate Recovery(%)

Terphenyl-d14

NC

128

129

114

NC

130

Control Limits: 37 to 139

* Est. result less than 5 times detection limit

NC Not calculated

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



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

Client: GCL #8906131426
Site: GBR-14 **
IML #: F1500

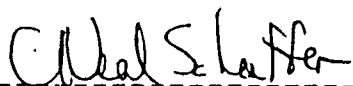
Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.

** This sample was labeled GBR-14 on the volatiles sample bottles.


C. Neal Schaeffer
Senior Organic Chemist



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

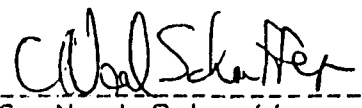
Client: GCL #8906131426
Site: GBR-14
IML #: F1580

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	4.3 (1.0)	ug/l
1,1,1-TRICHLOROETHANE	ND (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	ND (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUNDWATER
POLYNUCLEAR AROMATIC HYDROCARBONS

(ug/ml unless otherwise noted)

(Sampling Event: 06/13/89)

GBR-14

ANALYTE	GBR-06	GBR-08	GBR-13	GBR-15
Acenaphthene	ND (0.003)	36 (14)	31 (4.4)	0.008 (0.005)
Acenaphthylene	ND (0.003)	22 (14)	18 (4.4)	T (0.005)
Anthracene	0.004 (0.003)	T (14)	4.7 (4.4)	0.006 (0.005)
Benzo(a)anthracene	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)
Benzo(a)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)
Benzo(b)fluoranthene	0.020 (0.003)	ND (14)	ND (4.4)	0.019 (0.005)
Benzo(j)fluoranthene	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)
Benzo(k)fluoranthene	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)
Benzo(g,h,i)perylene	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)
Chrysene	0.010 (0.003)	ND (14)	ND (4.4)	0.031 (0.005)
Dibenz(a,h)acridine	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)
Dibenz(a,j)acridine	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)
Dibenzo(a,h)anthracene	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)
Dibenz(a,e)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)
Dibenz(a,h)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)
Fluoranthene	T (0.003)	ND (14)	ND (4.4)	0.009 (0.005)
Fluorene	0.004 (0.003)	23 (14)	29 (4.4)	0.010 (0.005)
Indeno(1,2,3-cd)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)
Naphthalene	ND (0.003)	15 (14)	11 (4.4)	ND (0.005)
Phenanthrene	0.003 (0.003)	ND (14)	ND (4.4)	0.014 (0.005)
Pyrene	0.003 (0.003)	ND (14)	ND (4.4)	0.009 (0.005)
1-Methylnaphthalene	NA (0.003)	NA (14)	NA (4.4)	NA (0.005)
3-Methylnaphthalene	ND (0.003)	ND (14)	ND (4.4)	ND (0.005)

() = Detection limit

ND = Not detected

T = Detected below quantifiable level

NA = Not analyzed



2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 376 4737

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903141503

Sample Site: GRW-13

IML Lab No: F890880

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/14/89

Date Received: 03/14/89

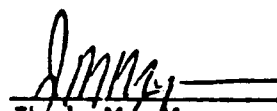
Date Extracted: NA

Date Analyzed: 03/23/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



Jack M. Morgan
Senior Organic Chemist

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141503
Sample Site: GRW-13
IML Sample No: F890880
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water

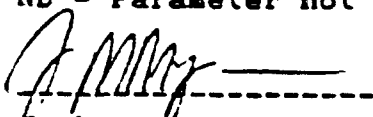
Date Sampled: 03/14/89
Date Received: 03/14/89
Date Extracted: N/A
Date Analyzed: 03/28/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	2.0 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	ND (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	2.1 (0.03)	ug/l
1,1,1-TRICHLOROETHANE	ND (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	ND (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	ND (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan -
Senior Organic Chemist

Date: April 08, 1989

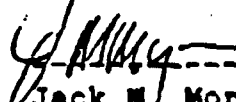
Client:	Geoscience Consultants, Ltd.		
GCL Sample No:	8903141503	Date Sampled:	03/14/89
Sample Site:	GRW-13	Date Received:	03/14/89
IML Sample No:	F890880	Date Extracted:	03/16/89
Analysis:	Polynuclear Aromatic Hydrocarbons	Date Analyzed:	04/01/89
Sample Matrix:	Water		

Parameter	Concentration	Units
Acetnaphthene	ND (0.5)	ug/l
Acenaphthylene	ND (0.5)	ug/l
Anthracene	ND (0.5)	ug/l
Benzo(a)Anthracene	ND (0.5)	ug/l
Benzo(a)pyrene	ND (0.5)	ug/l
Benzo(b)fluoranthene	ND (0.5)	ug/l
Benzo(g,h,i)perylene	ND (0.5)	ug/l
Benzo(k)fluoranthene	ND (0.5)	ug/l
Chrysene	ND (0.5)	ug/l
Dibenzo(a,h)anthracene	ND (0.5)	ug/l
Fluoranthene	ND (0.5)	ug/l
Fluorene	ND (0.5)	ug/l
Indeno(1,2,3-cd)pyrene	ND (0.5)	ug/l
Naphthalene	ND (0.5)	ug/l
Phenanthrene	ND (0.5)	ug/l
Pyrene	ND (0.5)	ug/l
1-Methylnaphthalene	ND (0.5)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1986)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

**** Quality Assurance Report
Duplicate Matrix Spike**

Date: April 08, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141503
Sample Site: GRW-13
IML Sample No: F890880
Analysis: Polynuclear Aromatic
Hydrocarbons
Sample Matrix: Water

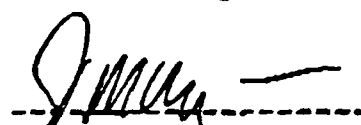
Date Sampled: 03/14/89
Date Received: 03/14/89
Date Extracted: 03/16/89
Date Analyzed: 04/04/89

Parameter	Concentration (ug/l)	Percent Recovery
-----	-----	-----
Acetnaphthene	5.78 (0.5)	57.8
Acenaphthylene	6.81 (0.5)	58.1
Anthracene	5.83 (0.5)	58.3
Benzo(a)Anthracene	4.03 (0.5)	40.3
Benzo(a)pyrene	4.46 (0.5)	44.6
Benzo(b)fluoranthene	4.21 (0.5)	42.1
Benzo(g,h,i)perylene	1.49 (0.5)	14.9
Benzo(k)fluoranthene	5.77 (0.5)	57.7
Chrysene	5.29 (0.5)	52.9
Dibenzo(a,h)anthracene	3.11 (0.5)	31.1
Fluoranthene	5.29 (0.5)	52.9
Fluorene	5.93 (0.5)	59.3
Indeno(1,2,3-cd)pyrene	3.60 (0.5)	36.0
Naphthalene	5.95 (0.5)	59.5
Phenanthrene	6.23 (0.5)	62.3
Pyrene	5.81 (0.5)	58.1

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1986)

Detection Limit in parenthesis

Comments: Spike 10 ug of all parameters into 1 litre of sample.



Jack M. Morgan
Senior Organic Chemist

Page 17
Received: 12/09/88

EAS - Austin

REPORT
Results by Sample

Work Order # 88-12-057

SAMPLE ID 8812071123 6BL-14

FRACTION Q3A TEST CODE EPA602 NAME EPA method 602
Date & Time Collected 12/07/88 Category

ANALYST _____ CL _____
INSTRMT _____ D _____
FILE # _____ INJECTED 12/12/88
VERIFIED _____ CL _____

UNITS ug/L

CAS# COMPOUND RESULT DET LIMIT

71-43-2 Benzene ND 0.20

108-20-3 Toluene ND 0.20

100-41-4 Ethylbenzene ND 0.30

108-90-7 Chlorobenzene-A ND 0.30

106-46-7 1,4-Dichlorobenzene ND 0.30

541-73-1 1,3-Dichlorobenzene ND 0.40

95-50-1 1,2-Dichlorobenzene ND 0.40

SURROGATES

98-08-8 a,a,a-Trifluorotoluene 127**% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NOT performed

unless otherwise noted.

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Received: 12/09/88

LAB - Austin

REPORT

Work Order # 88-12-057

Results by Sample

684-14

SAMPLE ID 8812071123

FRACTION 02A TEST CODE XYLENE NAME Xylenes, EPA 602

Date & Time Collected 12/07/88

Category

ANALYST _____ CL _____ VERIFIED _____ CL _____
INSTRMT _____ D _____ FILE # _____ UNITS _____ ug/L

CAS #	COMPOUND	RESULT	DET LIMIT
105-42-3	p-Xylene-A	ND	0.20
103-08-3	m-Xylene	ND	0.20
95-47-5	o-Xylene	ND	0.10

SURROGATES

93-03-8 m,a,a-Trifluorotoluene 137**% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NOT performed

unless otherwise noted.

Q = daily EPA standard recovery outside

95% confidence interval.

Chlorobenzene and p-xylene co-elute.

Quantitated as chlorobenzene unless

otherwise noted.

Page 14
 Received: 12/09/88

RAS - Austin

REPORT

Work Order # 88-12-057

Results by Sample

SAMPLE ID 8812071123

GOR-14

FRACTION 038

TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 12/07/88

Category

 ANALYST _____ BM _____
 INSTRMT _____ E _____
 INJECTED 12/14/88
 FILE # _____
 VERIFIED _____ CL _____
 UNITS _____ ug/L _____

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	0.30
74-82-9	Bromomethane	ND	1.2
75-01-4	Vinyl chloride	ND	0.20
75-00-3	Chloroethane	ND	0.50
75-09-2	Methylene chloride	ND	0.30
75-69-4	Trichlorofluoromethane	ND	0.10
75-35-4	1,1-Dichloroethene	ND	0.10
75-34-3	1,1-Dichloroethane	ND	0.090
156-60-5	trans-1,2-Dichloroethene	ND	0.20
67-66-3	Chloroform	ND	0.050
107-06-2	1,2-Dichloroethane	3.4	0.030
71-55-6	1,1,1-Trichloroethane	ND	0.090
56-23-5	Carbon tetrachloride	ND	0.10
75-27-4	Bromodichloromethane	ND	0.10

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Received: 12/09/88

888 - 8888

REPORT

Work Order # 88-12-057
Continued From Above

Results by Sample

SAMPLE ID 8813071120

682-14

FRACTION 922

TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 12/07/88

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.10
10061-02-6	trans-1,3-Dichloropropene	ND	0.30
79-01-6	Trichloroethene	ND	0.20
124-48-1	Dibromochloromethane-A	ND	0.20
79-00-5	1,1,2-Trichloroethane-A	ND	0.070
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-75-8	2-Chloroethylvinyl ether	ND	0.20
75-25-2	Bromoform	ND	0.30
79-34-5	1,1,2,2-Tetrachloroethane-B	ND	0.12
127-18-4	Tetrachloroethene-B	ND	0.030
108-90-7	Chlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.30
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.40
SURROGATES			
74-97-5	Bromochloromethane	129 %	Recovery
460-00-4	1-Bromo-4-fluorobenzene	57 %	Recovery



SCIENTIFIC LABORATORY DIVISION

ORGANIC ANALYSIS REQUEST FORM

Organic Section - Phone: 841-2570

88-0854-C

REPORT TO: DAVID BOYERS.L.D. No. OR- N.M. OIL CONSERVATION DIVISIONDATE REC. 6/10/88P.O. Box 2088PRIORITY 3Santa Fe, NM 87504-2088PHONE(S): 827-5812COLLECTION CITY: Bloomfield; COUNTY: San JuanCOLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8806101515LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+217+113 (10N06E24342)USER CODE: 82235 SUBMITTER: David Boyer CODE: 2610SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

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

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.**PURGEABLE SCREENS**

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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: **FIELD DATA:**pH= 7; Conductivity= 4400 umho/cm at 27 °C; Chlorine Residual= mg/lDissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate / Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Bloomfield GBR-14 Recovery well Some product cloudy. Sample from lift pump hose outletI certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): A. H. Boyer Method of Shipment to the Lab: State Car**CHAIN OF CUSTODY**I certify that this sample was transferred from DAVID BOYER to Mary C. Eden
at (location) SLD - ALB on 6/9/88 and thatthe statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐Signatures A. H. Boyer Mary C. EdenFor OCD use: Date owner notified: 8/19/88 Phone or Letter? Initials DBB

ANALYSES PERFORMED

LAB. No.: OR- 854

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
 Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>			
<i>benzene</i>	<i>T.R.</i>		
<i>halogenated purgeables</i>			
<i>1,2-Dichloroethane</i>	<i>2.5</i>		
* DETECTION LIMIT *	<i>549/L</i>	+ DETECTION LIMIT +	<i>+</i>

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: *Greg C. Allen* date: *6/14/88*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *6/14/88* Analyst's signature: *Greg C. Allen*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *R. Meyerhan*

86- 1362-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

STATE OF NEW MEXICO

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1362 A, B
DATE REC. 11-26-86

PHONE(S): 327-5812
SUBMITTER: David Boyer

PRIORITY
USER CODE: 8 2 2 3 5
CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8611211135888
SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____ CODE: _____
COUNTY: San Juan; CITY: Lee Acres CODE: _____
LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+27+1111 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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: _____

FIELD DATA:

pH= _____; Conductivity= 1250 umho/cm at 16.5 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant, GBR-17, Recovery wellI certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer Method of Shipment to the Lab: Hand carriedThis form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice: Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃: Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from Will Olson to Mary C. Eden
at (location) HED/SLD on 11/26/86 at 4:13 and thatthe statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐Signatures Will Olson Mary C. Eden

For OCD Use: Date Owner Notified _____ Phone or Letter? _____ Initials _____

ANALYSES PERFORMED

LAB. No. OR- 1362

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes

Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
aromatic-purgeables	ND		
1,2-dichloroethane	9		
* DETECTION LIMIT *	1ppb	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: ALZ

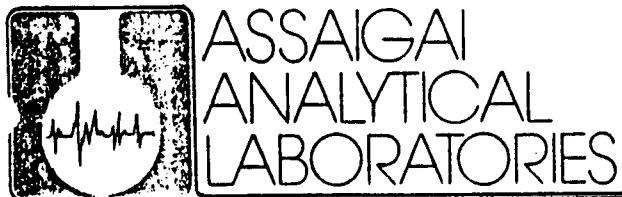
date: 12-4-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4 Dec 86 Analyst's signature: McInerney

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R. Meyerheim



TO: Geoscience Consultants Ltd.
 Attn: Jan Martin
 500 Copper NW Suite 325
 Albuquerque, NM 87158

DATE: 17 December 1986
 1787

SAMPLE ID: 8610171215 GBR 14

ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Benzene	<0.001 mg/l	0.001 mg/l
Toluene	<0.001 mg/l	0.001 mg/l
Ethylbenzene	<0.001 mg/l	0.001 mg/l
Xylenes	<0.001 mg/l	0.001 mg/l
Acrolein	<25 ug/l	25 ug/l
Acrylonitrile	<25 ug/l	25 ug/l
Bromoform	<5.0 ug/l	5.0 ug/l
Carbon Tetrachloride	<5.0 ug/l	5.0 ug/l
Chlorodibromomethane	<5.0 ug/l	5.0 ug/l
Chloroethane	<5.0 ug/l	5.0 ug/l
2-Chloroethylvinyl Ether	<5.0 ug/l	5.0 ug/l
Chloroform	<5.0 ug/l	5.0 ug/l
Dichlorobromomethane	<5.0 ug/l	5.0 ug/l
1,1-Dichloroethane	<5.0 ug/l	5.0 ug/l
1,2-Dichloroethane	<5.0 ug/l	5.0 ug/l
1,1-Dichloroethene	<5.0 ug/l	5.0 ug/l
1,2-Dichloropropane	<5.0 ug/l	5.0 ug/l
1,3-Dichloropropylene	<5.0 ug/l	5.0 ug/l
Methyl Bromide	<5.0 ug/l	5.0 ug/l
Methyl Chloride	<5.0 ug/l	5.0 ug/l
Methylene Chloride	<5.0 ug/l	5.0 ug/l
1,1,2,2-Tetrachloroethane	<5.0 ug/l	5.0 ug/l
Tetrachloroethene	<5.0 ug/l	5.0 ug/l
Trans-1,2-Dichloroethene	<5.0 ug/l	5.0 ug/l
1,1,1-Trichloroethane	<5.0 ug/l	5.0 ug/l
1,1,2-Trichloroethane	<5.0 ug/l	5.0 ug/l
Trichloroethene	<5.0 ug/l	5.0 ug/l
Vinyl Chloride	<5.0 ug/l	5.0 ug/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

Jennifer V. Smith
 Jennifer V. Smith, Ph.D.





Inter-Mountain
Laboratories, Inc.

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

CLIENT: Giant Refinery
ID: 9010041100
SITE: RW-13
LAB NO: F5143

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/04/90
DATE COLLECTED: 10/04/90

Lab pH (s.u.).....	8.02
Lab conductivity, umhos/cm.....	4500
Lab resistivity, ohm-m.....	2.22
Total dissolved solids (180), mg/l..	3510
Total dissolved solids (calc), mg/l.	3370
Total alkalinity as CaCO ₃ , mg/l.....	265
Total acidity as CaCO ₃ , mg/l.....	0
Total hardness as CaCO ₃ , mg/l.....	1210
Sodium absorption ratio.....	8.04

	mg/l	meq/l
Bicarbonate as HCO ₃	323	5.3
Carbonate as CO ₃	0	0
Chloride.....	698	19.7
Sulfate.....	1430	29.8
Calcium.....	349	17.4
Magnesium.....	83.4	6.86
Potassium.....	3.36	0.09
Sodium.....	644	28
Major cations.....		52.4
Major anions.....		54.8
Cation/anion difference.....		2.26 %

C. Neal Schaeffer
Lab Director



Inter-Mountain
Laboratories, Inc.

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

CLIENT: Giant Refinery
ID: 9010041100
SITE: RW-13 L/S
LAB NO: F5148

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/04/90
DATE COLLECTED: 10/04/90

Lab pH (s.u.).....	8.04
Lab conductivity, umhos/cm.....	4710
Lab resistivity, ohm-m.....	2.12
Total dissolved solids (180), mg/l..	3530
Total dissolved solids (calc), mg/l.	3380
Total alkalinity as CaCO ₃ , mg/l.....	248
Total acidity as CaCO ₃ , mg/l.....	0
Total hardness as CaCO ₃ , mg/l.....	1260
Sodium absorption ratio.....	8.27

	mg/l	meq/l
Bicarbonate as HCO ₃	303	4.96
Carbonate as CO ₃	0	0
Chloride.....	685	19.3
Sulfate.....	1420	29.5
Calcium.....	382	19
Magnesium.....	73.7	6.06
Potassium.....	3.33	0.09
Sodium.....	674	29.3
Major cations.....		54.5
Major anions.....		53.8
Cation/anion difference.....		0.64 %

C. Neal Schaeffer
Lab Director



Inter-Mountain
Laboratories, Inc.

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

CLIENT: GBR
ID: 9007101115
SITE: GRW-13
LAB NO: F4588

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/10/90
DATE COLLECTED: 07/10/90

Lab pH (s.u.).....	8.05
Lab conductivity, umhos/cm.....	5139
Lab resistivity, ohm-m.....	1.9459
Total dissolved solids (180), mg/l..	3800
Total dissolved solids (calc), mg/l.	3608
Total alkalinity as CaCO ₃ , mg/l.....	305.60
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1355.40
Sodium absorption ratio.....	8.18

	mg/l	meq/l
Bicarbonate as HCO ₃	372.8	6.11
Carbonate as CO ₃	0.0	0.00
Chloride.....	682.1	19.24
Sulfate.....	1602.0	33.37
Calcium.....	289.2	14.43
Magnesium.....	154.2	12.68
Potassium.....	4.4	0.11
Sodium.....	692.5	30.12
Major cations.....		57.34
Major anions.....		58.73
Cation/anion difference.....		1.19 %

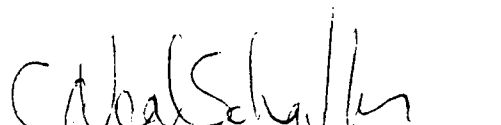
C. Neal Schaeffer
Lab Director

CLIENT: Giant Refinery
ID: GRW-13
SITE: GBR
LAB NO: F4081

DATE REPORTED: 04/13/90
DATE RECEIVED: 04/02/90
DATE COLLECTED: 04/02/90

Lab pH (s.u.).....	7.30
Lab Conductivity, umhos/cm.....	4699
Lab resistivity, ohm-m.....	2.1281
Total Dissolved Solids (180), mg/l..	3288
Total Dissolved Solids (calc), mg/l.	3258
Total Alkalinity as CaCO ₃ , mg/l.....	382.00
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1273.65
Sodium Absorption Ratio.....	7.42

	mg/l	meq/l
Bicarbonate as HCO ₃	466.0	7.64
Carbonate as CO ₃	0.0	0.00
Chloride.....	639.6	18.04
Sulfate.....	1274.4	26.55
Calcium.....	492.7	24.59
Magnesium.....	10.8	0.89
Potassium.....	2.8	0.07
Sodium.....	608.5	26.47
Major Cations.....		52.01
Major Anions.....		52.23
Cation/Anion Difference.....		0.21 %


C. Neal Schaeffer
Lab Director

CLIENT: Giant Refinery
ID: GRW-13 LS
SITE: GBR
LAB NO: F4084

DATE REPORTED: 04/13/90
DATE RECEIVED: 04/02/90
DATE COLLECTED: 04/02/90

Lab pH (s.u.).....	7.61
Lab Conductivity, umhos/cm.....	4699
Lab resistivity, ohm-m.....	2.1281
Total Dissolved Solids (180), mg/l..	3298
Total Dissolved Solids (calc), mg/l.	3220
Total Alkalinity as CaCO ₃ , mg/l.....	382.00
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1231.54
Sodium Absorption Ratio.....	7.54

	mg/l	meq/l
Bicarbonate as HCO ₃	466.0	7.64
Carbonate as CO ₃	0.0	0.00
Chloride.....	619.3	17.47
Sulfate.....	1273.6	26.53
Calcium.....	475.8	23.74
Magnesium.....	10.8	0.89
Potassium.....	2.8	0.07
Sodium.....	608.5	26.47
Major Cations.....		51.17
Major Anions.....		51.64
Cation/Anion Difference.....		0.46 %


C. Neal Schaeffer
Lab Director

CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: GRW-13

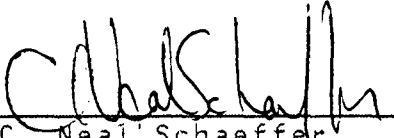
DATE RECEIVED: 12/13/89

LAB NO: F3670

DATE COLLECTED: 12/12/89

Lab pH (s.u.).....	8.06
Lab Conductivity, umhos/cm.....	4325
Lab resistivity, ohm-m.....	2.3121
Total Dissolved Solids (180), mg/l..	3242
Total Dissolved Solids (calc), mg/l.	3075
Total Alkalinity as CaCO ₃ , mg/l.....	278.63
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1384.17
Sodium Absorption Ratio.....	5.76

	mg/l	meq/l
Bicarbonate as HCO ₃	339.93	5.57
Carbonate as CO ₃	0.00	0.00
Chloride.....	567.41	16.01
Sulfate.....	1318.45	27.47
Calcium.....	484.26	24.16
Magnesium.....	42.78	3.52
Potassium.....	2.12	0.05
Sodium.....	492.80	21.44
Major Cations.....		49.17
Major Anions.....		49.05
Cation/Anion Difference.....		0.13 %


C. Neal Schaeffer
Senior Chemist



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

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/27/89
SAMPLE: 89D9131030
SITE: GRW-13 DATE RECEIVED: 09/13/89
LAB NO: F3160 DATE COLLECTED: 09/13/89

Lab pH.....	8.10
Lab Conductivity, umhos/cm.....	4506
Lab resistivity, ohm-m.....	2.2193
Total Dissolved Solids (180), mg/l..	3154
Total Dissolved Solids (calc), mg/l..	3133
Total Alkalinity as CaCO ₃ , mg/l.....	360.03
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1209.60
Sodium Absorption Ratio.....	7.43

	mg/l	meq/l
Bicarbonate as HCO ₃	439.24	7.20
Carbonate as CO ₃	0.00	0.00
Chloride.....	644.27	18.17
Sulfate.....	1203.23	25.07
Calcium.....	444.26	22.17
Magnesium.....	24.60	2.02
Potassium.....	5.84	0.15
Sodium.....	594.40	25.85
Major Cations.....		50.20
Major Anions.....		50.44
Cation/Anion Difference.....		0.24 %


C. Neal Schaeffer
Senior Chemist



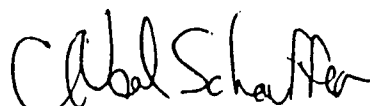
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

Client: GCL #8906131426
Site: GBR-14
IML #: F1580

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Total dissolved solids (180)..... 4318.00 mg/l
Total dissolved solids (calculated). 4072.08 mg/l
Total alkalinity (as CaCO₃)..... 246.67 mg/l
Total hardness (as CaCO₃)..... 1602.59 mg/l
Lab pH..... 7.27
Lab conductivity..... 5750 umhos/cm @ 25C
Lab resistivity..... 1.7391 ohm-m

	mg/l	meq/l
Acidity (as CaCO ₃).....	<1.0	<0.01
Bicarbonate (as HCO ₃).....	300.93	4.93
Carbonate (as CO ₃).....	0.00	0.00
Chloride.....	899.14	25.36
Sulfate.....	1686.33	35.13
Calcium.....	577.96	28.84
Magnesium.....	39.05	3.21
Potassium.....	4.96	0.13
Sodium.....	738.40	32.12
Major cations.....		64.30
Major anions.....		65.43
Anion/cation % difference.....		0.87 %



C. Neal Schaeffer
Senior Chemist

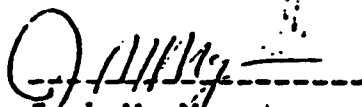
Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141503
Site: GRW-13
IML Lab No: F890880
Date Collected: 3/14/89
Date Received: 3/14/89

Total Dissolved Solids (180), mg/l.....	4232
Total Dissolved Solids (calc), mg/l.....	4116
Total Alkalinity as CaCO ₃ , mg/l.....	216
Total Hardness as CaCO ₃ , mg/l.....	1586

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	263	4.31
Carbonate as CO ₃	0	0.00
Chloride.....	830	23.42
Sulfate.....	1796	37.41
Calcium.....	588	29.33
Magnesium.....	29	2.39
Potassium.....	7	0.17
Sodium.....	738	32.10
Nitrate/Nitrite.....	0.41	0.03

Major Cations.....	63.99
Major Anions.....	65.14
Cation/Anion Difference.....	0.89 %



Jack M. Morgan
Senior Organic Chemist

Page 6
Received: 12/09/88
RAS - ANALYSIS
REPORT
RESULTS BY SAMPLE

Work Order # 88-12-056
Continued From Above

SAMPLE ID 8812071016 602-24 FRACTION 02A TEST CODE IDS NAME Total dissolved solids
Date & Time Collected not specified Category

ANALYST _____ HLB
INSTRMT _____ ANALYZED 12/13/88 UNITS _____ mg/L

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) 3000 19

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available

SAMPLE ID 8812071123 602-14 FRACTION 03A TEST CODE OP04 NAME Orthophosphate
Date & Time Collected not specified Category

VERIFIED _____ LM

ANALYST _____ HUS
INSTRMT _____ ANALYZED 12/09/88 UNITS _____ mg/L as P

ANALYTE RESULT DET LIMIT

Orthophosphate 0.064 0.020

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit

Page 7
Received: 12/09/88
RAS - Austin
RESULTS by Sample
REPORT
Work Order # 88-12-056
Continued From Above

SAMPLE ID 8812071123 602-34
FRACTION 03A TEST CODE OP04 NAME Orthophosphate
Date & Time Collected not specified Category

N/A = not available

SAMPLE ID 8812071123 602-34
FRACTION 03A TEST CODE IDS NAME Total dissolved solids
Date & Time Collected not specified Category

ANALYST _____ DLB
INSTRMT _____
ANALYZED 12/13/88
ANALYTE RESULT DET LIMIT
UNITS mg/L
VERIFIED LM

Filterable Residue (TDS) 3700 10

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available

SAMPLE ID 8812071201 602-30
FRACTION 04A TEST CODE OP04 NAME Orthophosphate
Date & Time Collected not specified Category

ANALYST _____ KJS
INSTRMT _____
ANALYZED 12/09/88
UNITS mg/L as P
VERIFIED LM

SAMPLE	Test: CA E	Test: CL IC	Test: DG5010	Test: F IC	Test: K E
Sample Id	ug/ml	mg/L	date complete	mg/L	ug/ml
602-17 01 8812070930	370	170	12/30/88	2.4	<5.0
602-24 02 8812071016	450	600	12/30/88	3.2	<5.0
602-14 03 8812071123	470	690	12/30/88	3.80	5.2*
602-30 04 8812071201	460	620	12/30/88	3.6	<5.0
602-15-05 8812071352	450	230	12/30/88	3.7	9.6*
602-31 06 8812071431	500	450	12/30/88	3.5	<5.0
602-33 07 8812071501	390	540	12/30/88	0.63	<5.0
602-13 08 8812071601	470	720	12/30/88	0.56	<5.0
602-6 09 8812071647	280	340	12/30/88	0.35	<5.0
602-8 10 8812071738	360	630	12/30/88	0.70	6.7*
11 8812071738 oil	<10				30*

SAMPLE	Test: M3 E	Test: M4 E	Test: PREP X	Test: S04 IC
Sample Id	ug/ml	mg/L	date complete	mg/L as S04
602-17 01 8812070930	42	290		1300

Sample Id	Sample	Test: ME E	Test: ME E	Test: PREP X	Test: S04 IC
		mg/L	mg/L	date complete	mg/L as S04
GBR-24 02 8812071016	81	400			1600
GBR-14 03 8812071123	29	500			1500
GBR-30 04 8812071201	36	440			1300
GBR-15 05 8812071352	30	570			2000
GBR-31 06 8812071431	44	500			1700
GBR-33 07 8812071501	40	480			1400
GBR-13 08 8812071601	48	700			1600
GBR-6 09 8812071647	72	420			660
GBR-8 10 8812071736	59	640			490
8812071738 oil	11	610		12/30/89	



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

659
WMP

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

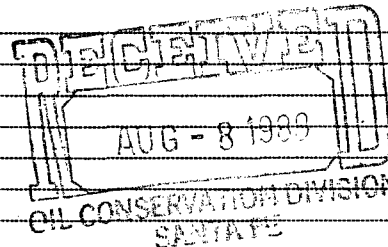
DATE RECEIVED	6/10/88	LAB NO.	40-2085	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	6/10/88	SITE INFORMATION	Sample location		
Collection TIME	1343		Giant Bloomfield GBR-14		
Collected by — Person/Agency		Collection site description			
Boyer / Audemore / OCD					

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code
Owner

SAMPLING CONDITIONS

☐ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water level	Discharge	Sample type
				GRAB
pH (00400)	7	Conductivity (Uncorrected)	Water Temp. (00010)	Conductivity at 25°C (00094)
		4400 µmho	27 °C	µmho
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	/	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From F, NA Sample:	Date Analyzed
☒ Conductivity (Corrected) 25°C (00095)	µmho	7/11	☒ Calcium	552 mg/l 7/19
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Potassium	5.5 mg/l 7/25
☒ Other: Lab pH	8.12	7/20	☒ Magnesium	52.5 mg/l 7/19
☐ Other:			☒ Sodium	639 mg/l 7/25
☐ Other:			☒ Bicarbonate	180 mg/l 7/20
A-H ₂ SO ₄			☒ Chloride	496 mg/l 7/26
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☒ Sulfate	2070 mg/l 7/26
☐ Ammonia-N total (00610)	mg/l		☒ Total Solids	3948 mg/l 7/7
☐ Total Kjeldahl-N ()	mg/l		☒ Bromide	0.163 6/22
☐ Chemical oxygen demand (00340)	mg/l		☐	
☐ Total organic carbon ()	mg/l		☒ Cation/Anion Balance	
☐ Other:			Analyst	Date Reported
☐ Other:				7/29/88
Laboratory remarks				
Received by [Signature] 6/9/88 SLB-ALB [Signature]				

FOR OCD USE -- Date Owner Notified 8/19/88 Phone or Letter? ()

Initials [Signature]

450

CATIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	27.54	552.00	<3.0
Mg	4.31	52.50	<0.3
Na	27.79	639.00	<10.0
K	0.14	5.50	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	
SUMS	59.79	1249.00	
Total Dissolved Solids=			3948
Ion Balance =			99.54%

ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
HC03	2.95	180.00	<1.0
SO4	43.13	2070.00	<10.0
CL	13.99	496.00	<5.0
NO3	0.00	0.00	< 0.
CO3	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.
	60.07	2746.00	

WC No. = 8802095
Date out/By CE 7/27/58



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 wnf
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

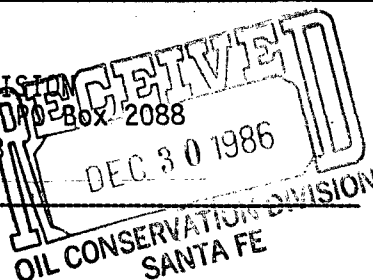
DATE RECEIVED	11/26/86	LAB NO.	WC 5447	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	11/21	SITE INFORMATION	Sample location		
Collection TIME	11:35		Giant, Bloomfield Refinery		
Collected by — Person/Agency		Collection site description			
BOYER/OLSON /OCD		GBR - 14			

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code
Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	1250 µmho	Water Temp. (00010)	16.5 °C
Field comments		Conductivity at 25°C (00094) µmho		

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	/	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	2769 µmho	12/12	☒ Calcium (00915)	300 mg/l	12-1
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	12.2 mg/l	12-1
☒ Other: pH	7.94	12/8	☒ Sodium (00930)	531 mg/l	12/4
☐ Other:			☒ Potassium (00935)	3.70 mg/l	12/4
☐ Other:			☒ Bicarbonate (00440)	368 mg/l	12/8
			☒ Chloride (00940)	262 mg/l	12/5
			☒ Sulfate (00945)	1122 mg/l	12/8
			☒ Total filterable residue (dissolved) (70300)	2442 mg/l	12/4
			☒ Other: CO ₃ BR	0.6	12/8
					12/10
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					

Laboratory remarks	Analyst	Date Reported	Reviewed by
		12/12/86	CS

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2553

Date Received 6/10/88 Lab No. ICP-269 User Code ☒ 82235 ☐ Other:

COLLECTION DATE & TIME: yy mm dd hh mm 88 06 08 15 45 COLLECTION SITE DESCRIPTION GPR-14

COLLECTED BY: Boyer/Anderson

TO:

OWNER: Giant Bloomfield

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)

ATTN: A Boyer
TELEPHONE: 827-5812

STATION/ WELL CODE: 29N12W27113

LATITUDE, LONGITUDE:

SAMPLING CONDITIONS:

☐ Bailed ☒ Pump ☐ Dipped ☐ Tap Water Level: Discharge: Sample Type: GPR

pH(00400) 7 Conductivity(Uncorr.) 4400 μ mho Water Temp.(00010) 27 $^{\circ}$ C Conductivity at 25 $^{\circ}$ C (00094) μ mho

FIELD COMMENTS:

SAMPLE FIELD TREATMENT

Check proper boxes:

☐ WPN: Water Preserved w/HNO₃ Non-Filtered ☒ WPF: Water Preserved w/HNO₃ Filtered

LAB ANALYSIS REQUESTED:

☒ ICAP Scan
Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	<u>40.1</u>		Silicon	<u>7.1</u>	
Barium	<u>40.1</u>		Silver	<u>40.1</u>	☐
Beryllium	<u>40.1</u>		Strontium	<u>9.7</u>	
Boron	<u>0.2</u>		Tin	<u>40.1</u>	
Cadmium	<u>40.1</u>	☐	Vanadium	<u>40.1</u>	
Calcium	<u>530.</u>		Zinc	<u>40.1</u>	
Chromium	<u>40.1</u>	☒ <u>40.005</u>	Arsenic		☐
Cobalt	<u>40.05</u>		Selenium		☐
Copper	<u>40.1</u>		Mercury		☐
Iron	<u>40.1</u>				☐
Lead	<u>40.1</u>	☒ <u>40.01</u>			☐
Magnesium	<u>37.</u>				☐
Manganese	<u>0.25</u>				☐
Molybdenum	<u>40.1</u>				☐
Nickel	<u>40.1</u>				☐

LAB COMMENTS: Soil intact, Burkley JTA 6/14/88

For OCD Use:

Date Owner Notified:
Phone or Letter?
Initials:

ICAP Analyst JB

Reviewer Jim Ashby

Date Analyzed 7/15/88

Date Received 11/1/88

Received by [Signature]

6/9/88 SLB-ALB

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-15

<u>SAMPLER</u>	GIANT	GIANT	GIANT
<u>DATE</u>	<u>4/3/90</u>	<u>7/17/90</u>	<u>10/4/90</u>
<u>PARAMETER</u>			
DETECTION LIMIT	(BELOW)	<1.0	(BELOW)
BENZENE	110.0	39.0	87.0
BROMODICHLOROMETHANE	ND(2.0)	ND	ND(1.0)
BROMOFORM	ND(10.0)	ND	ND(5.0)
BROMOMETHANE	ND(24.0)	ND	ND(12.0)
CARBON TETRACHLORIDE	ND(2.4)	ND	ND(1.2)
CHLOROBENZENE	ND(4.0)	ND	ND(2.0)
CHLOROETHANE	ND(10.0)	ND	ND(5.2)
CHLOROFORM	ND(2.0)	ND	ND(1.0)
CHLOROMETHANE	ND(6.0)	ND	ND(3.0)
DIBROMOCHLOROMETHANE	ND(4.0)	ND	ND(2.0)
1,2-DICHLOROBENZENE	ND(8.0)	ND	ND(4.0)
1,3-DICHLOROBENZENE	ND(8.0)	ND	ND(4.0)
1,4-DICHLOROBENZENE	ND(6.0)	ND	ND(3.0)
1,1-DICHLOROETHANE	84.0	ND	ND(5.0)
1,2-DICHLOROETHANE	ND(2.0)	33.0	52.0
1,1-DICHLOROETHENE	ND(4.0)	ND	ND(2.0)
CIS-1,2-DICHLOROETHENE	ND(4.0)	ND	ND(2.0)
TRANS-1,2-DICHLOROETHENE	ND(4.0)	0.45	ND(2.0)
1,2-DICHLOROPROPANE	ND(2.0)	ND	ND(1.0)
ETHYLBENZENE	ND(4.0)	ND	ND(2.0)
METHYLENE CHLORIDE	ND(8.0)	ND	ND(4.0)
1,1,2,2-TETRACHLOROETHANE	ND(3.0)	ND	ND(1.5)
TETRACHLOROETHENE	ND(2.0)	ND	ND(1.0)
TOLUENE	ND(4.0)	ND	ND(2.0)
1,1,1-TRICHLOROETHANE	ND(4.0)	ND	ND(2.0)
1,1,2-TRICHLOROETHANE	ND(4.0)	ND	ND(2.0)
TRICHLOROETHENE	ND(4.0)	ND	ND(2.0)
TRICHLOROFLUOROMETHANE	ND(4.0)	ND	ND(2.0)
VINYL CHLORIDE	ND(4.0)	ND	ND(2.0)
TOTAL XYLENES	ND(4.0)	ND	ND(2.0)

TR - TRACE
 ND - NOT DETECTED
 NA - NOT ANALYZED
 * - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-15

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>12/7/88</u>	<u>3/14/89</u>	<u>6/12/89</u>	<u>9/13/89</u>	<u>12/13/89</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)	(BELOW)	<1.0
BENZENE	ND(<1.0)	32.6	23.7	33.0	63.0
BROMODICHLOROMETHANE	ND(<1.0)	ND(<1.0)	ND(1.0)	ND(<1.0)	ND
BROMOFORM	ND(1.5)	ND(<1.0)	ND(1.0)	ND(10.0)	ND
BROMOMETHANE	ND(6.0)	ND(1.0)	ND(1.0)	ND(5.0)	ND
CARBON TETRACHLORIDE	ND(<1.0)	ND(<1.0)	ND(1.0)	ND(1.0)	ND
CHLOROBENZENE	ND(1.5)	ND(<1.0)	ND(<1.0)	ND(<1.0)	ND
CHLOROETHANE	ND(2.5)	ND(1.0)	ND(1.0)	ND(2.5)	ND
CHLOROFORM	ND(<1.0)	ND(<1.0)	ND(1.0)	ND(<1.0)	ND
CHLOROMETHANE	ND(1.5)	ND(1.0)	ND(1.0)	ND(2.5)	ND
DIBROMOCHLOROMETHANE	ND(1.0)	ND(<1.0)	ND(1.0)	ND(1.0)	ND
1,2-DICHLOROBENZENE	ND(2.5)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
1,3-DICHLOROBENZENE	ND(1.5)	ND(<1.0)	ND(<1.0)	ND(2.0)	ND
1,4-DICHLOROBENZENE	ND(2.0)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
DICHLORODIFLUOROMETHANE	ND(<1.0)	ND(1.0)	ND(1.0)	NA	ND
1,1-DICHLOROETHANE	ND(<1.0)	0.1	ND(1.0)	ND(<1.0)	ND
1,2-DICHLOROETHANE	51.0	16.9	10.7	77.0	ND
1,1-DICHLOROETHENE	ND(<1.0)	ND(<1.0)	ND(1.0)	ND(<1.0)	ND
CIS-1,2-DICHLOROETHENE	NA	NA	NA(1.0)	NA	NA
TRANS-1,2-DICHLOROETHENE	ND(1.0)	ND(<1.0)	ND(1.0)	NA	ND
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	ND(<1.0)	NA
1,2-DICHLOROPROPANE	ND(<1.0)	ND(<1.0)	ND(1.0)	ND(<1.0)	ND
ETHYLBENZENE	1.3	2.9	ND(<1.0)	ND(<1.0)	2.8
METHYLENE CHLORIDE	ND(1.5)	1.2	ND(1.0)	6.7	ND
1,1,2,2-TETRACHLOROETHANE	ND(<1.0)	ND(<1.0)	ND(1.0)	ND(1.0)	ND
TETRACHLOROETHENE	ND(<1.0)	ND(<1.0)	ND(1.0)	ND(<1.0)	ND
TOLUENE	ND(<1.0)	2.1	ND(<1.0)	ND(1.5)	ND
1,1,1-TRICHLOROETHANE	ND(<1.0)	ND(<1.0)	ND(1.0)	ND(1.0)	ND
1,1,2-TRICHLOROETHANE	ND(<1.0)	ND(<1.0)	ND(1.0)	ND(1.0)	ND
TRICHLOROETHENE	ND(1.0)	ND(<1.0)	ND(1.0)	ND(1.0)	ND
TRICHLOROFLUOROMETHANE	ND(<1.0)	ND(<1.0)	ND(1.0)	ND(<1.0)	ND
VINYL CHLORIDE	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND
TOTAL XYLENES	2.5	ND(<1.0)	ND(<1.0)	ND(1.0)	ND

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER(pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-15

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>10/17/86</u>	<u>9/10/87</u>	<u>10/7/87</u>	<u>11/11/87</u>	<u>1/20/88</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	<1.0	<1.0	(BELOW)	(BELOW)
BENZENE	334.0	100.0	70.5	114.0	106.0
BROMODICHLOROMETHANE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
BROMOFORM	ND(5.0)	ND	ND	ND(<1.0)	ND(5.0)
BROMOMETHANE	NA	ND	ND	ND(<1.0)	ND(2.0)
CARBON TETRACHLORIDE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
CHLOROBENZENE	NA	ND	ND	ND(<1.0)	ND(5.0)
CHLOROETHANE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
CHLOROFORM	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
CHLOROMETHANE	NA	ND	ND	ND(<1.0)	ND(2.0)
DIBROMOCHLOROMETHANE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
1,2-DICHLOROBENZENE	NA	ND	ND	ND(<1.0)	ND(5.0)
1,3-DICHLOROBENZENE	NA	ND	ND	ND(<1.0)	ND(5.0)
1,4-DICHLOROBENZENE	NA	ND	ND	ND(<1.0)	ND(5.0)
DICHLORODIFLUOROMETHANE	NA	ND	ND	ND(<1.0)	ND(2.0)
1,1-DICHLOROETHANE	ND(5.0)	0.9	ND	ND(<1.0)	ND(2.0)
1,2-DICHLOROETHANE	78.0	51.4	68.7	53.4	54.0
1,1-DICHLOROETHENE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
1,2-DICHLOROPROPANE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
ETHYLBENZENE	209.0	ND	1.9	2.1	ND(5.0)
METHYLENE CHLORIDE	ND(5.0)	ND	ND	ND(2.0)	ND(20.0)
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
TETRACHLOROETHENE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
TOLUENE	52.0	2.4	1.5	1.7	ND(5.0)
1,1,1-TRICHLOROETHANE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
1,1,2-TRICHLOROETHANE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
TRICHLOROETHENE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
TRICHLOROFLUOROMETHANE	NA	ND	ND	ND(2.0)	ND(20.0)
VINYL CHLORIDE	ND(5.0)	ND	ND	ND(<1.0)	ND(2.0)
TOTAL XYLENES	772.0	15.9	7.9	ND(<1.0)	ND(5.0)

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

Giant Refining Company
 Radian Work Order: S0-10-043

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9010041115	9010041125	9010041320	9010041444
	STRIPPER INF.	STRIPPER EFF.	G-BR-17	G-BR-15
Factor:	10	10	10	10
Results in:	ug/L	ug/L	ug/L	ug/L
	14A	15A	16A	17A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	60 C	2.0	5.9 Xa	2.0	4.6 Xa	2.0	87 C	2.0
Chlorobenzene	4.5 Xa	2.0	14 X	2.0	13 X	2.0	ND	2.0
1,2-Dichlorobenzene	ND	4.0	ND	4.0	4.1 Xa	4.0	ND	4.0
1,3-Dichlorobenzene	ND	4.0	19 Ga	4.0	19 Xa	4.0	ND	4.0
1,4-Dichlorobenzene	100 G	3.0	20 G	3.0	11 Xa	3.0	ND	3.0
Ethylbenzene	ND	2.0	3.0 Ca	2.0	7.8 Xa	2.0	ND	2.0
Toluene	3.0 Ga	2.0	6.5 Ga	2.0	7.2 Ca	2.0	ND	2.0
Xylenes (total)	140 C	2.0	35 G	2.0	35 X	2.0	ND	2.0
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	101		106		110		105	
Control Limits: 40 to 140								

C Confirmed on second column or by GC/MS

X See definition in report narrative

a Est. result less than 5 times detection limit

ND Not detected at specified detection limit

G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: SD-10-043

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9010041115	9010041125	9010041320	9010041444
	STRIPPER INF.	STRIPPER EFF.	G-BR-17	G-BR-15
Factor:	10	10	10	10
Results in:	ug/L	ug/L	ug/L	ug/L
	05A	06A	07A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	13 X	1.0	9.4 X	1.0	ND	1.0
Bromoform	ND	5.0	23 Xa	5.0	21 Xa	5.0	ND	5.0
Bromomethane	ND	12	ND	12	ND	12	ND	12
Carbon tetrachloride	ND	1.2	16 X	1.2	14 X	1.2	ND	1.2
Chlorobenzene	ND	2.5	16 X	2.5	13 X	2.5	ND	2.5
Chloroethane	ND	5.2	ND	5.2	ND	5.2	ND	5.2
2-Chloroethylvinylether	ND	5.0	ND	5.0	ND	5.0	ND	5.0
Chloroform	ND	1.0	10 X	1.0	8.2 X	1.0	ND	1.0
Chloromethane	ND	3.0	ND	3.0	ND	3.0	ND	3.0
Dibromochloromethane	ND	2.0	14 Y	2.0	13 Y	2.0	ND	2.0
1,2-Dichlorobenzene	ND	5.0	ND	5.0	ND	5.0	ND	5.0
1,3-Dichlorobenzene	ND	3.2	23 X	3.2	23 X	3.2	ND	3.2
1,4-Dichlorobenzene	ND	2.4	26 X	2.4	25 X	2.4	ND	2.4
1,1-Dichloroethane	ND	5.0	13 Xa	5.0	11 Xa	5.0	ND	5.0
1,2-Dichloroethane	2.7 Xa	1.0	13 X	1.0	10 X	1.0	52 C	1.0
1,1-Dichloroethene	ND	2.0	14 X	2.0	11 X	2.0	ND	2.0
cis-1,2-Dichloroethene	16 X	2.0	13 X	2.0	11 X	2.0	ND	2.0
trans-1,2-Dichloroethene	ND	2.0	ND	2.0	ND	2.0	ND	2.0
1,2-Dichloropropane	ND	1.0	6.7 X	1.0	5.6 X	1.0	ND	1.0
cis-1,3-Dichloropropene	ND	2.0	19 X	2.0	18 X	2.0	ND	2.0
trans-1,3-Dichloropropene	ND	3.4	14 Ya	3.4	13 Ya	3.4	ND	3.4
Methylene chloride	4.9 Xa	4.0	9.5 Xa	4.0	11 Xa	4.0	ND	4.0
1,1,2,2-Tetrachloroethane	ND	1.5	ND	1.5	ND	1.5	ND	1.5
Tetrachloroethene	1.5 Xa	1.0	16 X	1.0	15 X	1.0	ND	1.0
1,1,1-Trichloroethane	2.5 Xa	2.0	20 X	2.0	17 X	2.0	ND	2.0
1,1,2-Trichloroethane	ND	2.0	ND	2.0	ND	2.0	ND	2.0
Trichloroethene	2.3 Xa	2.0	9.9 Xa	2.0	9.5 Xa	2.0	ND	2.0
Trichlorofluoromethane	3.0 Xa	2.0	22 X	2.0	18 X	2.0	ND	2.0
Vinyl chloride	ND	2.0	ND	2.0	ND	2.0	ND	2.0

ND Not detected at specified detection limit
 a Est. result less than 5 times detection limit
 C Confirmed on second column or by GC/MS

X See definition in report narrative
 Y See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-07-122

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9007171035	9007171055	9007171215	9007171345
	STRIPPER EFF	RW-13	GBR-17	GBR-15
Factor:	1	1	1	2
Results in:	ug/L	ug/L	ug/L	ug/L
	10A	12A	14A	16A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	ND	0.20	39 C	0.40
Chlorobenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.40
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.80
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.80
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	0.30	ND	0.60
Ethylbenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.40
Toluene	ND	0.20	ND	0.20	ND	0.20	ND	0.40
Xylenes (total)	ND	0.20	ND	0.20	ND	0.20	ND	0.40
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	105		104		98		98	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: SO-07-122

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9007171035	9007171055	9007171215	9007171345
	STRIPPER EFF	RW-13	GBR-17	GBR-15
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	09A	11A	13A	15A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	ND	0.10	4.8 C	0.10	ND	0.10	33 C	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	0.45 Xa	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	0.34	ND	0.34
Methylene chloride	0.69 Xa	0.40	ND	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene	0.14 Xa	0.10	ND	0.10	0.19 Xa	0.10	ND	0.10
1,1,1-Trichloroethane	0.94 Ga	0.20	ND	0.20	0.30 Ca	0.20	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Trichloroethene	6.8 G	0.20	3.0 X	0.20	1.5 X	0.20	ND	0.20
Trichlorofluoromethane	0.24 Xa	0.20	0.25 Xa	0.20	ND	0.20	ND	0.20
Vinyl chloride	ND	0.20	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit
 a Est. result less than 5 times detection limit
 C Confirmed on second column or by GC/MS

X See definition in report narrative
 G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-04-020

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9004031005	9004031109	9004031150	9004031359
	/GBR-17	/GBR-30	/GBR-240	/GBR-15
Factor:	1	1	1	20
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	31 C	0.20	110 C	4.0
Chlorobenzene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	0.30	ND	6.0
Ethylbenzene	ND	0.20	2.0 C	0.20	13 C	0.20	ND	4.0
Toluene	ND	0.20	3.1 CG	0.20	2.3 C	0.20	ND	4.0
Xylenes (total)	ND	0.20	ND	0.20	6.7 C	0.20	ND	4.0
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	99		111		90		86	
Control Limits: 40 to 140								

ND Not detected at specified detection limit.

C Confirmed on second column or by GC/MS.

G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-04-020

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9004031005	9004031109	9004031150	9004031359
	/GBR-17	/GBR-30	/GBR-24D	/GBR-15
Factor:	1	1	1	20
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	2.0
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	10
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	24
Carbon tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	2.4
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	5.0
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	10
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	10
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	2.0
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	6.0
Dibromochloromethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	10
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	6.4
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	4.8
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	0.50	84 C	10
1,2-Dichloroethane	ND	0.10	ND	0.10	16 C	0.10	ND	2.0
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
cis-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	2.0
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	0.34	ND	6.8
Methylene chloride	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	0.15	ND	3.0
Tetrachloroethene	0.37 C	0.10	ND	0.10	0.21 C	0.10	ND	2.0
1,1,1-Trichloroethane	1.7 C	0.20	ND	0.20	ND	0.20	ND	4.0
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Trichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Vinyl chloride	ND	0.20	ND	0.20	ND	0.20	ND	4.0

ND Not detected at specified detection limit

C Confirmed on second column or by GC/MS

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Co.
 Radian Work Order: 90-04-043

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9004031005	9004031109	9004031150	9004031359
	GBR-17	GBR-30	GBR-24D	GBR-15
Factor:	0.94	9.6	4.7	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	2.2	ND	22	ND	11	ND	2.2
Acenaphthene	ND	1.7	ND	17	ND	8.5	ND	1.7
Anthracene	ND	0.62	ND	6.3	ND	3.1	ND	0.62
Benzo(a)anthracene	ND	0.012	ND	0.12	ND	0.061	ND	0.012
Benzo(a)pyrene	ND	0.022	ND	0.22	ND	0.11	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.17	ND	0.085	ND	0.017
Benzo(g,h,i)perylene	ND	0.071	ND	0.73	ND	0.36	ND	0.071
Benzo(k)fluoranthene	ND	0.016	ND	0.16	ND	0.080	ND	0.016
Chrysene	ND	0.012	ND	0.12	ND	0.061	ND	0.012
Dibenzo(a,h)anthracene	ND	0.028	ND	0.29	ND	0.14	ND	0.028
Fluoranthene	ND	0.20	ND	2.0	ND	0.99	ND	0.20
Fluorene	ND	0.20	2.8 *	2.0	2.0 *	0.99	0.35 *	0.20
Indeno(1,2,3-cd)pyrene	ND	0.040	ND	0.41	ND	0.20	ND	0.040
Naphthalene	ND	1.7	ND	17	ND	8.5	ND	1.7
Phenanthrene	ND	0.60	ND	6.1	ND	3.0	ND	0.60
Pyrene	ND	0.25	ND	2.6	ND	1.3	ND	0.25
Surrogate Recovery(%)								
Terphenyl-d14	54		234	q	69		72	
Control Limits: 24 to 146								

 ND Not detected at specified detection limit
 Q Outside control limits

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Volatile aromatics (1)	GBR-15	GBR-33	GBR-31	GBR-6
List: SW8020				
Sample ID:	8912131000	8912131210	8912131300	8912131600
Factor:	1	25	1	50
Results in:	ug/L	ug/L	ug/L	ug/L
	138	148	158	168
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	<u>63 D</u>	1.0	<u>73</u>	5.0	ND	0.20	<u>110</u>	10
Chlorobenzene	ND	0.20	ND	5.0	ND	0.20	ND	10
1,2-Dichlorobenzene	ND	0.40	ND	10	ND	0.40	ND	20
1,3-Dichlorobenzene	ND	0.40	ND	10	ND	0.40	ND	20
1,4-Dichlorobenzene	ND	0.30	ND	7.5	ND	0.30	ND	15
Ethylbenzene	<u>2.8</u>	0.20	<u>120</u>	5.0	ND	0.20	<u>85</u>	10
Toluene	<u>0.45 *</u>	0.20	ND	5.0	ND	0.20	ND	10
Total xylenes	<u>1.5</u>	0.20	<u>170</u>	5.0	ND	0.20	<u>140</u>	10
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	98		116		108		136	
Control Limits: 76 to 140								

D Sample diluted for this analyte

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Halogenated volatiles (1)	GRW-13	GBR-13	GBR-8	GBR-15
List: SW8010				
Sample ID:	8912121200	8912121530	8912121600	8912131000
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	09A	10A	11A	13A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon Tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	<u>1.3 *</u>	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	<u>0.84 *</u>	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	0.50	<u>4.9</u>	0.50	<u>5.3</u>	0.50	ND	0.50
1,2-Dichloroethane	<u>1.1</u>	0.10	<u>7.4</u>	0.10	<u>4.7</u>	0.10	<u>36</u>	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	<u>25</u>	0.20	<u>20</u>	0.20	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene-(2)	N\A	N\A	N\A	N\A	N\A	0.30	N\A	N\A
trans-1,3-Dichloropropene	ND	0.30	ND	0.30	ND	N\A	ND	0.30
Methylene Chloride	ND	0.40	<u>1.3 *</u>	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene-(3)	ND	0.10	ND	0.10	ND	0.10	ND	0.10
1,1,2-Trichloroethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,1,1-Trichloroethane	ND	0.20	<u>0.90 *</u>	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	0.20	<u>4.0</u>	0.20	<u>2.3</u>	0.20	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Vinyl Chloride	ND	0.20	ND	0.20	ND	0.20	ND	0.20

 ND Not detected at specified detection limit
 * Est. result less than 5 times detection limit

N\A Not available

- (1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
- (2) Dibromochloromethane, 1,1,2-Trichloroethane, and cis-1,3-Dichloropropene coelute. Quantitated as Dibromochloromethane unless otherwise noted.
- (3) Tetrachloroethene and 1,1,2,2-Tetrachloroethane coelute. Quantitated as Tetrachloroethene unless otherwise noted.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: SW8310 PAH's by HPLC (1)	GBR-13	GBR-8	GBR-15	GBR-33
List: 8310 Method analytes				
Sample ID:	8912121530	8912121600	8912131000	8912131210
Factor:	380	9.4	0.94	1.9
Results in:	ug/L	ug/L	ug/L	ug/L
	10C	11C	13C	14C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	870	ND	22	<u>4.1 *D</u>	2.2	ND	4.4
Acenaphthene	ND	680	ND	17	ND	1.7	<u>6.0 *D</u>	3.4
Anthracene	ND	250	ND	6.2	ND	0.62	ND	1.3
Benzo(a)anthracene	<u>25</u>	4.9	ND	0.12	<u>0.012 *</u>	0.012	<u>0.20</u>	0.025
Benzo(a)pyrene	ND	8.7	ND	0.22	ND	0.022	ND	0.044
Benzo(b)fluoranthene	ND	6.8	ND	0.17	ND	0.017	<u>0.10 *</u>	0.034
Benzo(g,h,i)perylene	ND	29	ND	0.71	ND	0.071	ND	0.14
Benzo(k)fluoranthene	ND	6.5	ND	0.16	ND	0.016	ND	0.032
Chrysene	<u>86</u>	4.9	ND	0.12	ND	0.012	<u>0.88</u>	0.025
Dibenzo(a,h)anthracene	ND	11	ND	0.28	ND	0.028	ND	0.057
Fluoranthene	ND	80	ND	2.0	ND	0.20	ND	0.40
Fluorene	<u>360 *D</u>	80	<u>8.7 *D</u>	2.0	<u>0.47 *D</u>	0.20	<u>3.5 D</u>	0.40
Indeno(1,2,3-cd)pyrene	ND	16	ND	0.40	ND	0.040	ND	0.082
Naphthalene	ND	680	<u>88</u>	17	ND	1.7	ND	3.4
Phenanthrene	<u>1600</u>	240	<u>20 *</u>	6.0	<u>0.68 *</u>	0.60	<u>6.8</u>	1.2
Pyrene	<u>290 *</u>	100	ND	2.5	ND	0.25	<u>1.6 *</u>	0.51
Surrogate Recovery(%)								
Terphenyl-d14	NC		27 Q		134		120	
Control Limits: 37 to 139								

ND Not detected at specified detection limit

D Sample diluted for this analyte

* Est. result less than 5 times detection limit

NC Not calculated

Q Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: PAHs by GC 8100 (1) List: 8100, special list Sample ID:	GBR-13 8912121530	GBR-8 8912121600	GBR-15 8912131000	GBR-33 8912131210
Factor:	94	94	0.94	9.4
Results in:	ug/L	ug/L	ug/L	ug/L
	10C	11C	13C	14C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1-Methylnaphthalene	1600	94	ND	94	ND	0.94	43 *	9.4
2-Methylnaphthalene	2000	94	280 *	94	ND	0.94	ND	9.4

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Received: 09/14/89

RAS Sacramento

REPORT

Results by Sample

Work Order # S9-09-081

SAMPLE ID 8909120830 H2O

GBR-15

FRACTION 05C

TEST CODE 602B

NAME Purgeable Aromatics - H2O

Category

Date & Time Collected 09/13/89

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST INSTRMT	MC B	INJECTD 06/27/89	FILE # FACTOR	EB092719 5 UNITS	VERIFIED ug/L	JD
CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR		
71-43-2	Benzene	33 C	0.50	5		
108-88-3	Toluene	ND	1.5	5		
100-41-4	Ethylbenzene	ND	0.50	5		
108-90-7	Chlorobenzene	ND	0.50	5		
1330-20-7	Total Xylenes	ND	1.0	5		
106-46-7	1,4-Dichlorobenzene	ND	1.0	5		
541-73-1	1,3-Dichlorobenzene	ND	2.0	5		
95-50-1	1,2-Dichlorobenzene	ND	1.0	5		

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 75% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

Received: 09/14/89

RAS Sacramento

Results by Sample

REPORT

Work Order # S9-09-081

SAMPLE ID 8909120830 H2O GBR-15

FRACTION 05A

TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/13/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST _____
INSTRMT _____

FILE # DB092717
FACTOR 5

VERIFIED _____
UNITS ug/L

INJECTD 09/27/89

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	ND	2.5	5
74-83-9	Bromomethane	ND	5.0	5
75-01-4	Vinyl Chloride	ND	1.0	5
75-00-3	Chloroethane	ND	2.5	5
75-09-2	Methylene Chloride	6.7 C	2.0	5
75-69-4	Trichlorofluoromethane	ND	0.50	5
75-35-4	1,1-Dichloroethene	ND	0.50	5
75-34-3	1,1-Dichloroethane	ND	0.50	5
540-59-0	Total 1,2-Dichloroethene (2)	ND	0.50	5
67-66-3	Chloroform	ND	0.50	5
107-06-2	1,2-Dichloroethane	77 C	0.50	5
71-55-6	1,1,1-Trichloroethane	ND	1.0	5
56-23-5	Carbon Tetrachloride	ND	1.0	5
75-27-4	Bromodichloromethane	ND	0.50	5
78-87-5	1,2-Dichloropropane	ND	0.50	5
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	5
79-01-6	Trichloroethene	ND	1.0	5
124-48-1	Dibromochloromethane (3)	ND	1.0	5
79-00-5	1,1,2-Trichloroethane (3)	ND	1.0	5
10061-02-6	trans-1,3-Dichloropropene (3)	ND	2.0	5
110-75-8	2-Chloroethylvinyl Ether	ND	1.0	5
75-25-2	Bromoform	ND	1.0	5
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	1.0	5
127-18-4	Tetrachloroethene (4)	ND	0.50	5
108-90-7	Chlorobenzene	ND	1.0	5
541-73-1	1,3-Dichlorobenzene	ND	2.5	5
95-50-1	1,2-Dichlorobenzene	ND	1.0	5
106-46-7	1,4-Dichlorobenzene	ND	1.0	5



Page 15

Received: 09/14/89

RAS Sacramento

REPORT
Results by Sample

Work Order # S9-09-081
Continued From Above

SAMPLE ID B909120830 H2O GBR-15 FRACTION 05A TEST CODE 601 NAME Purgeable Halocarbons H2O
Date & Time Collected 09/13/89 Category _____

SURROGATES

540-36-3	1-4-Difluorobenzene	NA % Recovery
460-00-4	1-Bromo-4-Fluorobenzene	<u>95</u> % Recovery

- (1) See Appendix A for Glossary of Report and Data Flag Definitions
- (2) Quantitated as the Trans-isomer
- (3) Dibromochloromethane, 1,1,2-Trichloroethane and Trans-1,3-dichloropropene co-elute.
- (4) 1,1,2,2-Tetrachloroethane and tetrachloroethene co-elute.

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUND WATER
POLYNUCLEAR AROMATIC HYDROCARBONS

(ug/L unless otherwise noted)

(Sampling Event: 09/13/89)

	GBR-6	GBR-8	GBR-13	GRW-13	GBR-15
Acenaphthalene	<55 (55)	<220 (220)	<220 (220)	<2.3 (2.3)	<2.3 (2.3)
Acenaphthene	580 (43)	<170 (170)	<170 (170)	<1.8 (1.8)	<1.8 (1.8)
Anthracene	<16 (16)	<63 (63)	<62 (62)	<0.66 (0.66)	<0.66 (0.66)
Benzo(a)anthracene	<0.31 (0.31)	<1.2 (1.2)	<1.2 (1.2)	<0.013 (0.013)	<0.013 (0.013)
Benzo(a)pyrene	<0.55 (0.55)	<2.2 (2.2)	<2.2 (2.2)	<0.023 (0.023)	<0.023 (0.023)
Benzo(b)fluoranthene	<0.43 (0.43)	<1.7 (1.7)	<1.7 (1.7)	<0.018 (0.018)	<0.018 (0.018)
Benzo(g,h,i)perylene	<1.8 (1.8)	<7.2 (7.2)	<7.1 (7.1)	<0.076 (0.076)	<0.076 (0.076)
Benzo(k)fluoranthene	<0.41 (0.41)	<1.6 (1.6)	<1.6 (1.6)	<0.017 (0.017)	<0.017 (0.017)
Chrysene	<0.31 (0.31)	<1.2 (1.2)	<1.2 (1.2)	<0.013 (0.013)	<0.013 (0.013)
Dibenzo(a,h)anthracene	<0.72 (0.72)	<2.9 (2.9)	<2.8 (2.8)	<0.030 (0.030)	<0.030 (0.030)
Fluoranthene	<5.0 (5.0)	<20 (20)	830 (20)	<0.21 (0.21)	<0.21 (0.21)
Fluorene	57 (5.0)	<20 (20)	<20 (20)	<0.21 (0.21)	<0.21 (0.21)
Indeno(1,2,3-cd)pyrene	<1.0 (1.0)	<4.1 (4.1)	<4.0 (4.0)	<0.043 (0.043)	<0.043 (0.043)
Naphthalene	120 (43)	420 (170)	330 (170)	<1.8 (1.8)	<1.8 (1.8)
Phenanthrene	25 (15)	320 (61)	<60 (60)	<0.64 (0.64)	<0.64 (0.64)
Pyrene	<6.5 (6.5)	59 (26)	<25 (25)	<0.27 (0.27)	<0.27 (0.27)

() = Detection Limit

ND = Not Detected

T = Detected Below Quantifiable Level

NA = Not Analyzed



2506 West Main Street
Farmington, New Mexico 87401
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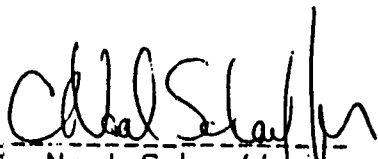
Client: GCL #8906121750
Site: GBR-15
IML #: F1561

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
BENZENE	23.7 (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

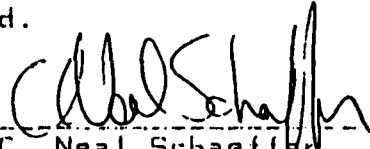
Client: GCL #8906121750
Site: GBR-15
IML #: F1561

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	10.7 (1.0)	ug/l
1,1,1-TRICHLOROETHANE	ND (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	ND (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUNDWATER
POLYNUCLEAR AROMATIC HYDROCARBONS
(ug/ml unless otherwise noted)
(Sampling Event: 06/13/89)

ANALYTE	GBR-06	GBR-08	GBR-13	GRW-13	GBR-15
Acenaphthene	ND (0.003)	36 (14)	31 (4.4)	ND (0.003)	0.008 (0.005)
Acenaphthylene	ND (0.003)	22 (14)	18 (4.4)	ND (0.003)	T (0.005)
Anthracene	0.004 (0.003)	T (14)	4.7 (4.4)	0.005 (0.003)	0.006 (0.005)
Benzo(a)anthracene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(a)pyrene	ND (0.003)	ND (14)	ND (4.4)	0.005 (0.003)	ND (0.005)
Benzo(b)fluoranthene	0.020 (0.003)	ND (14)	ND (4.4)	0.009 (0.003)	0.019 (0.005)
Benzo(j)fluoranthene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(k)fluoranthene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Benzo(g,h,i)perylene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Chrysene	0.010 (0.003)	ND (14)	ND (4.4)	0.004 (0.003)	0.031 (0.005)
Dibenz(a,h)acridine	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,j)acridine	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenzo(a,h)anthracene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,e)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Dibenz(a,h)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Fluoranthene	T (0.003)	ND (14)	ND (4.4)	ND (0.003)	0.009 (0.005)
Fluorene	0.004 (0.003)	23 (14)	29 (4.4)	0.004 (0.003)	0.010 (0.005)
Indeno(1,2,3-cd)pyrene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)
Naphthalene	ND (0.003)	15 (14)	11 (4.4)	ND (0.003)	ND (0.005)
Phenanthrene	0.003 (0.003)	ND (14)	ND (4.4)	0.006 (0.003)	0.014 (0.005)
Pyrene	0.003 (0.003)	ND (14)	ND (4.4)	0.004 (0.003)	0.009 (0.005)
1-Methylnaphthalene	NA (0.003)	NA (14)	NA (4.4)	NA (0.003)	NA (0.005)
3-Methylnaphthalene	ND (0.003)	ND (14)	ND (4.4)	ND (0.003)	ND (0.005)

() = Detection limit

ND = Not detected

T = Detected below quantifiable level

NA = Not analyzed



2500 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326 4737

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903141629

Sample Site: GBR-15

IML Lab No: F890900

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/14/89

Date Received: 03/14/89

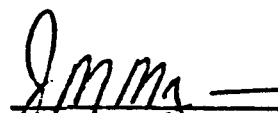
Date Extracted: NA

Date Analyzed: 03/27/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	32.6 (0.2)	ug/l
TOLUENE	2.1 (0.2)	ug/l
ETHYLBENZENE	2.9 (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



Jack M. Morgan
Senior Organic Chemist

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141629
Sample Site: GBR-15
IML Sample No: F890900
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water

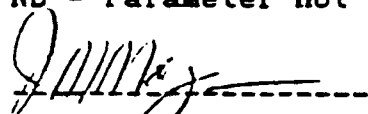
Date Sampled: 03/14/89
Date Received: 03/14/89
Date Extracted: N/A
Date Analyzed: 03/28/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	1.2 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	0.10 (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	16.9 (0.03)	ug/l
1,1,1-TRICHLOROETHANE	ND (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	ND (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	ND (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.


Jack M. Morgan
Senior Organic Chemist

Date: April 08, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141629
Sample Site: GBR-15 Date Sampled: 03/14/89
IML Sample No: F890900 Date Received: 03/14/89
Analysis: Polynuclear Aromatic Date Extracted: 03/16/89
Hydrocarbons Date Analyzed: 04/07/89
Sample Matrix: Water

Parameter	Concentration	Units
Acetnaphthene	0.9 (1.0) *	ug/l
Acenaphthylene	ND (1.0)	ug/l
Anthracene	ND (1.0)	ug/l
Benzo(a)Anthracene	ND (0.5)	ug/l
Benzo(a)pyrene	ND (0.5)	ug/l
Benzo(b)fluoranthene	ND (0.5)	ug/l
Benzo(g,h,i)perylene	ND (0.5)	ug/l
Benzo(k)fluoranthene	3.0 (0.5)	ug/l
Chrysene	7.6 (0.5)	ug/l
Dibenzo(a,h)anthracene	ND (0.5)	ug/l
Fluoranthene	2.5 (1.0)	ug/l
Fluorene	3.4 (1.0)	ug/l
Indeno(1,2,3-cd)pyrene	ND (0.5)	ug/l
Naphthalene	ND (1.0)	ug/l
Phenanthrene	ND (1.0)	ug/l
Pyrene	1.5 (1.0)	ug/l
1-Methylnaphthalene	ND (1.0)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1986)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.

* Qualitative identification below detection limit.


Jack M. Morgan
Senior Organic Chemist

Page 29
Received: 12/09/88
RAS - Austin
REPORT
Results by Sample
Work Order # 88-12-057

SAMPLE ID 2212071352 602-15
FRACTION 05A TEST CODE EPA602 NAME EPA method 602
Date & Time Collected 12/07/88 Category

ANALYST _____
INSTRMT _____
FILE # _____
INJECTED 12/12/88
UNITS _____
ug/L
VERIFIED _____
CL

CAS#	COMPOUND	RESULT	DET LIMIT
71-43-2	Benzene	ND	0.20
108-88-3	Toluene	ND	0.20
100-41-4	Ethylbenzene	1.3*	0.30
108-90-7	Chlorobenzene-A	ND	0.30
106-46-7	1,4-Dichlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.40
95-50-1	1,2-Dichlorobenzene	ND	0.40

SURROGATES
98-08-8 a,a,a-Trifluorotoluene 141**% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.
DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available
Second column confirmation NOT performed
unless otherwise noted.

DATE 12/12/88
RECEIVED: 12/09/88

SAS - ANALYST

REPORT

Work Order # 88-12-057

Results by Sample

SAMPLE ID 8819071352

602-15

FRACTION 05A TEST CODE XYLENE

NAME Xylenes, EPA 602

Date & Time Collected 12/07/88

Category

VERIFIED CL

ANALYST BM
INSTRMT D

FILE #

INJECTED 12/12/88

UNITS ug/L

CAS #	COMPOUND	RESULT	DET LIMIT
105-42-3	p-Xylene	0.30	0.20
106-38-3	m-Xylene	0.30	0.20
95-47-5	o-Xylene	0.5	0.10

SURROGATES

98-08-8 a,a,a-Trifluorotoluene 141**% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NOT performed unless otherwise noted.

Q = daily EPA standard recovery outside

95% confidence interval.

Chlorobenzene and p-xylene co-elute.

Quantitated as chlorobenzene unless otherwise noted.

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Received: 12/09/88

RAS - Austin

REPORT

Work Order # 88-12-057

Results by Sample

SAMPLE ID 8812071352

602-15

FRACTION 05B

TEST CODE EPA601 NAME EPA method 601

Date & Time Collected 12/07/88

Category

ANALYST
INSTRMTBM
E

INJECTED 12/14/88

FILE #

VERIFIED CL

UNITS ug/L

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	1.5
74-83-9	Bromomethane	ND	6.0
75-01-4	Vinyl chloride	ND	1.0
75-00-3	Chloroethane	ND	2.5
75-09-2	Methylene chloride	ND	1.5
75-69-4	Trichlorofluoromethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.45
156-60-5	trans-1,2-Dichloroethene	ND	1.0
67-66-3	Chloroform	ND	0.25
107-06-2	1,2-Dichloroethane	51	0.15
71-55-6	1,1,1-Trichloroethane	ND	0.45
56-23-5	Carbon tetrachloride	ND	0.50
76-27-4	Bromodichloromethane	ND	0.50

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 Received: 12/09/88

RAS - ACTION

 REPORT
 Results by Sample

 Work Order # 88-12-057
 Continued From Above

 SAMPLE ID 8812071392 6BL-15 FRACTION Q58 TEST CODE EPA601 NAME EPA method 601
 Date & Time Collected 12/07/88 Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-27-6	1,2-Dichloropropene	ND	0.50
10061-02-6	trans-1,2-Dichloropropene	ND	1.5
79-01-6	Trichloroethene	ND	1.0
124-48-1	Bromochloromethane-A	ND	1.0
79-00-5	1,1,2-Trichloroethane-A	ND	0.25
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-25-2	Bromoform	ND	1.5
79-34-5	1,1,2,2-Tetrachloroethane-B	ND	0.60
127-18-4	Tetrachloroethene-B	ND	0.15
109-90-7	Chlorobenzene	ND	1.5
541-73-1	1,3-Dichlorobenzene	ND	1.5
95-50-1	1,2-Dichlorobenzene	ND	2.5
106-46-7	1,4-Dichlorobenzene	ND	2.0
SURROGATES			
74-97-5	Bromochloromethane	117 % Recovery	
460-00-4	1-Bromo-4-fluorobenzene	115 % Recovery	

EPA METHOD 601/602
PROJECT: M & A

(Giant Sample)

SAMPLE DATE: 1/20/88
LAB RECEIPT DATE: 1/22/88
ANALYSIS DATE: 1/26/88
MATRIX: WATER
ANALYST: TMGSAMPLE ID: 8801201200
LOCATION: GBR 15
LAB SAMPLE #: 3873-2
UNITS: ug/l
DILUTION FACTOR: 10

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	2.0	ND
BROMOMETHANE	2.0	ND
DICHLORODIFLUOROMETHANE	2.0	ND
VINYL CHLORIDE	2.0	ND
CHLOROETHANE	2.0	ND
METHYLENE CHLORIDE	20.0	ND
TRICHLOROFLUOROMETHANE	20.0	ND
1,1-DICHLOROETHENE	2.0	ND
1,1-DICHLOROETHANE	2.0	ND
TRANS-1,2-DICHLOROETHENE	2.0	ND
CHLOROFORM	2.0	ND
1,2-DICHLOROETHANE	2.0	54
1,1,1-TRICHLOROETHANE	2.0	ND
CARBON TETRACHLORIDE	2.0	ND
BROMODICHLOROMETHANE	2.0	ND
1,2-DICHLOROPROPANE	2.0	ND
TRANS-1,3-DICHLOROPROPENE	2.0	ND
TRICHLOROETHENE	2.0	ND
DIBROMOCHLOROMETHANE	2.0	ND
1,1,2-TRICHLOROETHANE	2.0	ND
CIS-1,3-DICHLOROPROPENE	2.0	ND
2-CHLOROETHYL VINYL ETHER	5.0	ND
BROMOFORM	5.0	ND
1,1,2,2-TETRACHLOROETHANE	2.0	ND
TETRACHLOROETHENE	2.0	ND
BENZENE	5.0	106
TOLUENE	5.0	ND
CHLOROBENZENE	5.0	ND
ETHYLBENZENE	5.0	ND
1,3-DICHLOROBENZENE	5.0	ND
1,2-DICHLOROBENZENE	5.0	ND
1,4-DICHLOROBENZENE	5.0	ND
M-XYLENE	5.0	ND
O,P-XYLENE	5.0	ND

COMMENTS: ND = NOT DETECTED
HIGH LEVELS REQUIRED DILUTION% SURROGATE RECOVERY
87.9% BROMOCHLOROMETHANE
86.1% BROMOFLUOROBENZENE

PROJECT MANAGER: J. J. J.

DATE: 2/9/88



Analytical Technologies, Inc. EPA METHOD 601/602

PROJECT: GIANT MONITOR WELLS

(Giant sample)

SAMPLE DATE: 11/11/87
 LAB RECEIPT DATE: 11/16/87
 ANALYSIS DATE: 11/17/87
 MATRIX: WATER
 ANALYST: MGB

SAMPLE ID: 8711111045
 LOCATION: 6BR-15
 LAB SAMPLE #: 3574-4
 UNITS: ug/l
 DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.2	ND
BROMOMETHANE	0.2	ND
DICHLORODIFLUOROMETHANE	0.2	ND
VINYL CHLORIDE	0.2	ND
CHLOROETHANE	0.2	ND
METHYLENE CHLORIDE	2.0	ND
TRICHLOROFLUOROMETHANE	2.0	ND
1,1-DICHLOROETHENE	0.2	ND
1,1-DICHLOROETHANE	0.2	ND
TRANS-1,2-DICHLOROETHENE	0.2	ND
CHLOROFORM	0.2	ND
1,2-DICHLOROETHANE	0.2	53.4
1,1,1-TRICHLOROETHANE	0.2	ND
CARBON TETRACHLORIDE	0.2	ND
BROMODICHLOROMETHANE	0.2	ND
1,2-DICHLOROPROPANE	0.2	ND
TRANS-1,3-DICHLOROPROPENE	0.2	ND
TRICHLOROETHENE	0.2	ND
DIBROMOCHLOROMETHANE	0.2	ND
1,1,2-TRICHLOROETHANE	0.2	ND
CIS-1,3-DICHLOROPROPENE	0.2	ND
2-CHLOROETHYL VINYL ETHER	0.2	ND
BROMOFORM	0.2	ND
1,1,2,2-TETRACHLOROETHANE	0.2	ND
TETRACHLOROETHENE	0.2	ND
BENZENE	0.5	114
TOLUENE	1.0	1.7
CHLOROBENZENE	0.5	ND
ETHYLBENZENE	0.5	2.1
1,3-DICHLOROBENZENE	0.5	ND
1,2-DICHLOROBENZENE	0.5	ND
1,4-DICHLOROBENZENE	0.5	ND
M-XYLENE	0.5	ND
O,P-XYLENE	0.5	ND

85.1 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED

PROJECT MANAGER: *M. Barry*

DATE: 12/10/87



Analytical Technologies, Inc.

EPA METHOD 601/602
PROJECT: GBRSAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
ANALYSIS DATE/TIME: 10/12/87, 18:20
MATRIX: WATER
ANALYST: MGBSAMPLE ID: 8710070955
LOCATION: *GBR 15*
LAB SAMPLE #: 3439-7
UNITS: ug/l
DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.02	ND
BROMOMETHANE	0.06	ND
DICHLORODIFLUOROMETHANE	0.04	ND
VINYL CHLORIDE	0.05	ND
CHLOROETHANE	0.1	ND
METHYLENE CHLORIDE	0.02	ND
TRICHLOROFLUOROMETHANE	0.07	ND
1,1-DICHLOROETHENE	0.07	ND
1,1-DICHLOROETHANE	0.05	ND
TRANS-1,2-DICHLOROETHENE	0.09	ND
CHLOROFORM	0.05	ND
1,2-DICHLOROETHANE	0.07	68.7
1,1,1-TRICHLOROETHANE	0.03	ND
CARBON TETRACHLORIDE	0.08	ND
BROMODICHLOROMETHANE	0.04	ND
1,2-DICHLOROPROPANE	0.03	ND
TRANS-1,3-DICHLOROPROPENE	0.11	ND
TRICHLOROETHENE	0.06	ND
DIBROMOCHLOROMETHANE	0.07	ND
1,1,2-TRICHLOROETHANE	0.03	ND
CIS-1,3-DICHLOROPROPENE	0.07	ND
2-CHLOROETHYL VINYL ETHER	0.03	ND
BROMOFORM	0.09	ND
1,1,2,2-TETRACHLOROETHANE	0.03	ND
TETRACHLOROETHENE	0.03	ND
BENZENE	0.2	70.5
TOLUENE	0.4	1.5
CHLOROBENZENE	0.16	ND
ETHYLBENZENE	0.1	1.9
1,3-DICHLOROBENZENE	0.4	ND
1,2-DICHLOROBENZENE	0.4	ND
1,4-DICHLOROBENZENE	0.6	ND
M-XYLENE	0.18	2.5
O,P-XYLENE	0.15	5.4

123 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
NA = NOT ANALYZEDPROJECT MANAGER: *mm*

DATE: 10/28/87

EPA METHOD 601/602
PROJECT: GIANT MONITOR WELLSSAMPLE DATE: 9/10/87
LAB RECEIPT DATE: 9/11/87
ANALYSIS DATE: 9/18/87
MATRIX: WATER
ANALYST: MGBSAMPLE ID: 8709100915
LOCATION: 68R-15
LAB SAMPLE #: 3328-3
UNITS: ug/l
DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.02	ND
BROMOMETHANE	0.06	ND
DICHLORODIFLUOROMETHANE	0.04	ND
VINYL CHLORIDE	0.05	ND
CHLOROETHANE	0.1	ND
METHYLENE CHLORIDE	0.02	ND
TRICHLOROFLUOROMETHANE	0.07	ND
1,1-DICHLOROETHENE	0.07	ND
1,1-DICHLOROETHANE	0.05	0.9
TRANS-1,2-DICHLOROETHENE	0.09	ND
CHLOROFORM	0.05	ND
1,2-DICHLOROETHANE	0.07	51.4
1,1,1-TRICHLOROETHANE	0.03	ND
CARBON TETRACHLORIDE	0.08	ND
BROMODICHLOROMETHANE	0.04	ND
1,2-DICHLOROPROPANE	0.03	ND
TRANS-1,3-DICHLOROPROPENE	0.11	ND
TRICHLOROETHENE	0.06	ND
DIBROMOCHLOROMETHANE	0.07	ND
1,1,2-TRICHLOROETHANE	0.03	ND
CIS-1,3-DICHLOROPROPENE	0.07	ND
2-CHLOROETHYL VINYL ETHER	0.03	ND
BROMOFORM	0.09	ND
1,1,2,2-TETRACHLOROETHANE	0.03	ND
TETRACHLOROETHENE	0.03	ND
BENZENE	0.2	100
TOLUENE	0.4	2.4
CHLOROBENZENE	0.16	ND
ETHYLBENZENE	0.1	ND
1,3-DICHLOROBENZENE	0.4	ND
1,2-DICHLOROBENZENE	0.4	ND
1,4-DICHLOROBENZENE	0.6	ND
M-XYLENE	0.18	2.1
O,P-XYLENE	0.15	13.8

115 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
NA = NOT ANALYZED



TO: Geoscience Consultants Ltd.
 Attn: Jan Martin
 500 Copper NW Suite 325
 Albuquerque, NM 87158

DATE: 17 December 1986
 1787

SAMPLE ID: 8610171315 GBR 15

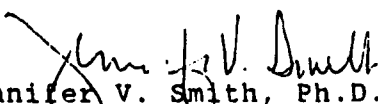
ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Benzene	0.334 mg/l	0.001 mg/l
Toluene	0.052 mg/l	0.001 mg/l
Ethylbenzene	0.209 mg/l	0.001 mg/l
Xylenes	0.772 mg/l	0.001 mg/l
Acrolein	<25 ug/l	25 ug/l
Acrylonitrile	<25 ug/l	25 ug/l
Bromoform	<5.0 ug/l	5.0 ug/l
Carbon Tetrachloride	<5.0 ug/l	5.0 ug/l
Chlorodibromomethane	<5.0 ug/l	5.0 ug/l
Chloroethane	<5.0 ug/l	5.0 ug/l
2-Chloroethylvinyl Ether	<5.0 ug/l	5.0 ug/l
Chloroform	<5.0 ug/l	5.0 ug/l
Dichlorobromomethane	<5.0 ug/l	5.0 ug/l
1,1-Dichloroethane	<5.0 ug/l	5.0 ug/l
1,2-Dichloroethane	78 ug/l	5.0 ug/l
1,1-Dichloroethene	<5.0 ug/l	5.0 ug/l
1,2-Dichloropropane	<5.0 ug/l	5.0 ug/l
1,3-Dichloropropylene	<5.0 ug/l	5.0 ug/l
Methyl Bromide	<5.0 ug/l	5.0 ug/l
Methyl Chloride	<5.0 ug/l	5.0 ug/l
Methylene Chloride	<5.0 ug/l	5.0 ug/l
1,1,2,2-Tetrachloroethane	<5.0 ug/l	5.0 ug/l
Tetrachloroethene	<5.0 ug/l	5.0 ug/l
Trans-1,2-Dichloroethene	<5.0 ug/l	5.0 ug/l
1,1,1-Trichloroethane	<5.0 ug/l	5.0 ug/l
1,1,2-Trichloroethane	<5.0 ug/l	5.0 ug/l
Trichloroethene	<5.0 ug/l	5.0 ug/l
Vinyl Chloride	<5.0 ug/l	5.0 ug/l
Napthalene	<0.001 mg/l	0.001 mg/l
Acenapthalene	0.009 mg/l	0.001 mg/l
Acenapthene	0.030 mg/l	0.001 mg/l
Fluroene	<0.001 mg/l	0.001 mg/l
Anthracene	0.007 mg/l	0.001 mg/l
Phenanthracene	<0.001 mg/l	0.001 mg/l
Fluoranthene	<0.001 mg/l	0.001 mg/l
Pyrene	0.008 mg/l	0.001 mg/l
Benzo(a)anthracene	<0.001 mg/l	0.001 mg/l
Chrysene	<0.001 mg/l	0.001 mg/l
Benzo(b)fluoranthene	<0.001 mg/l	0.001 mg/l

Benzo(k)fluoranthene	<0.001 mg/l	0.001 mg/l
Benzo(a)pyrene	<0.001 mg/l	0.001 mg/l
Dibenzo(a,h)anthracene	<0.001 mg/l	0.001 mg/l
Indeno(1,2,3-cd)pyrene	<0.001 mg/l	0.001 mg/l
Benzo(g,h,i)perylene	<0.001 mg/l	0.001 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,


Jennifer V. Smith, Ph.D.
laboratory Director





InterMountain
Laboratories, Inc.

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

CLIENT: Giant Refinery
ID: 9010041444
SITE: GBR-15
LAB NO: F5146

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/04/90
DATE COLLECTED: 10/04/90

Lab pH (s.u.).....	8.17
Lab conductivity, umhos/cm.....	4510
Lab resistivity, ohm-m.....	2.22
Total dissolved solids (180), mg/l..	3820
Total dissolved solids (calc), mg/l.	3770
Total alkalinity as CaCO ₃ , mg/l.....	197
Total acidity as CaCO ₃ , mg/l.....	0
Total hardness as CaCO ₃ , mg/l.....	1300
Sodium absorption ratio.....	8.36

	mg/l	meq/l
Bicarbonate as HCO ₃	240	3.93
Carbonate as CO ₃	0	0
Chloride.....	431	12.2
Sulfate.....	2040	42.6
Calcium.....	422	21
Magnesium.....	59.1	4.86
Potassium.....	6.8	0.17
Sodium.....	692	30.1
Major cations.....		56.2
Major anions.....		58.7
Cation/anion difference.....		2.19 %

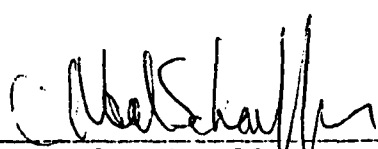
C. Neal Schaeffer
Lab Director

CLIENT: GBR
ID: 9007111005
SITE: GBR 15
LAB NO: F4593

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/11/90
DATE COLLECTED: 07/11/90

Lab pH (s.u.).....	7.75
Lab conductivity, umhos/cm.....	4776
Lab resistivity, ohm-m.....	2.0938
Total dissolved solids (180), mg/l..	3886
Total dissolved solids (calc), mg/l.	3685
Total alkalinity as CaCO ₃ , mg/l.....	152.80
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1295.16
Sodium absorption ratio.....	8.47

	mg/l	meq/l
Bicarbonate as HCO ₃	186.4	3.06
Carbonate as CO ₃	0.0	0.00
Chloride.....	440.7	12.43
Sulfate.....	2027.9	42.25
Calcium.....	257.0	12.83
Magnesium.....	159.0	13.08
Potassium.....	7.8	0.20
Sodium.....	701.0	30.49
Major cations.....		56.59
Major anions.....		57.74
Cation/anion difference.....		1.00 %


C. Neal Schaeffer
Lab Director



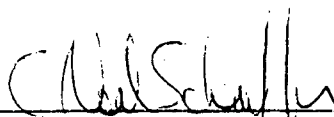
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Giant Refinery
ID: GBR-15
SITE: GBR
LAB NO: F4091

DATE REPORTED: 04/17/90
DATE RECEIVED: 04/03/90
DATE COLLECTED: 04/03/90

Lab pH (s.u.).....	7.74
Lab Conductivity, umhos/cm.....	4840
Lab resistivity, ohm-m.....	2.0661
Total Dissolved Solids (180), mg/l..	3746
Total Dissolved Solids (calc), mg/l.	3699
Total Alkalinity as CaCO ₃ , mg/l.....	187.18
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1124.48
Sodium Absorption Ratio.....	9.72

	mg/l	meq/l
Bicarbonate as HCO ₃	228.4	3.74
Carbonate as CO ₃	0.0	0.00
Chloride.....	355.4	10.02
Sulfate.....	2029.5	42.28
Calcium.....	433.7	21.64
Magnesium.....	10.3	0.85
Potassium.....	9.3	0.24
Sodium.....	749.0	32.58
Major Cations.....		55.31
Major Anions.....		56.05
Cation/Anion Difference.....		0.67 %


C. Neal Schaeffer
Lab Director

CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: G8R-15

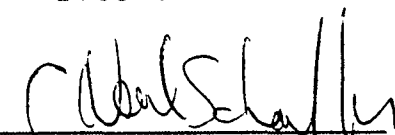
DATE RECEIVED: 12/13/89

LAB NO: F3664

DATE COLLECTED: 12/13/89

Lab pH (s.u.).....	8.41
Lab Conductivity, umhos/cm.....	4571
Lab resistivity, ohm-m.....	2.1877
Total Dissolved Solids (180), mg/l..	3694
Total Dissolved Solids (calc), mg/l.	3726
Total Alkalinity as CaCO ₃ , mg/l.....	177.65
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1326.28
Sodium Absorption Ratio.....	8.46

	mg/l	meq/l
Bicarbonate as HCO ₃	212.17	3.48
Carbonate as CO ₃	2.24	0.07
Chloride.....	337.24	9.51
Sulfate.....	2043.51	42.57
Calcium.....	511.64	25.53
Magnesium.....	12.10	0.99
Potassium.....	6.80	0.17
Sodium.....	708.40	30.81
Major Cations.....		57.51
Major Anions.....		55.64
Cation/Anion Difference.....		1.66 %


C. Neal Schaeffer
Senior Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUND WATER
GENERAL WATER CHEMISTRY
(mp/L unless otherwise noted)
(Sampling Event: 09/13/89)

	GBR-6	GBR-8	GBR-13	GRW-13	GBR-15	GBR-17	GBR-24D	GBR-30	GBR-31	GBR-33
Bicarbonate as HCO ₃	1543.98	1583.91	825.23	439.24	226.27	266.20	279.51	625.58	452.55	658.85
Calcium	383.20	210.55	551.64	444.26	452.68	357.93	585.33	326.35	526.38	391.62
Carbonate as CO ₃	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cation/Anion Difference %	0.85	0.10	1.46	0.24	0.05	1.87	0.58	1.38	0.06	0.65
Chloride	287.44	485.68	604.62	644.27	267.62	99.12	545.15	386.56	584.80	505.50
Conductivity (umhos/cm @ 25C)	4068	4422	5384	4506	4641	2984	4629	3557	4958	4105
Magnesium	98.43	42.62	14.60	24.60	7.24	8.34	54.22	4.22	26.26	24.67
Major Anions (meq/l)	50.98	48.41	64.17	50.44	54.40	34.97	55.21	38.24	56.80	46.90
Major Cations (meq/l)	50.11	48.31	62.32	50.20	54.34	33.68	55.86	37.20	56.74	47.51
pH	7.53	7.46	7.53	8.10	7.19	8.05	8.21	7.78	7.31	7.18
Potassium	3.44	1.64	2.64	5.84	6.72	1.36	5.16	1.96	2.20	1.40
Resistivity (ohm-m)	2.4582	2.2614	1.8574	2.2193	2.1547	3.3512	2.1603	2.8114	2.0169	2.4361
Sodium	524.40	787.60	770.80	594.40	712.40	347.20	507.20	471.60	649.60	595.60
Sodium Absorption Ratio	6.18	12.94	8.85	7.43	9.10	4.96	5.38	7.11	7.49	7.89
Sulfate	842.75	419.73	1612.26	1203.23	2070.67	1334.91	1692.09	819.71	1578.51	1048.50
Total Acidity as CaCO ₃	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Alkalinity as CaCO ₃	1265.56	1298.29	676.42	360.03	185.47	218.20	229.11	512.77	370.94	540.05
Total Dissolved Solids (180)	2794	2586	4084	3154	3678	2300	3666	2314	3654	2856
Total Dissolved Solids (calc)	2899	2727	3962	3133	3629	2280	3527	2318	3590	2891
Total Hardness as CaCO ₃	1360.80	700.56	1436.40	1209.60	1159.20	927.36	1683.36	831.60	1421.28	1078.56

ND = Not Detected
T = Detected Below Quantifiable Limits
NA = Not Analyzed

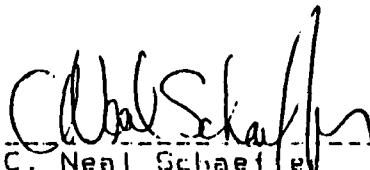
0348/QTRSAMP9.TA

Client: GCL #8906121750
Site: GBR-15
IML #: F1561

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Total dissolved solids (100).....	3754.00	mg/l
Total dissolved solids (calculated).....	3614.83	mg/l
Total alkalinity (as CaCO3).....	188.70	mg/l
Total hardness (as CaCO3).....	1274.02	mg/l
Lab pH.....	7.60	
Lab conductivity.....	4500	umhos/cm @ 25C
Lab resistivity.....	2.2222	ohm-cm

	mg/l	meq/l
Acidity (as CaCO3).....	<1.0	<0.01
Bicarbonate (as HCO3).....	230.21	3.77
Carbonate (as CO3).....	0.00	0.00
Chloride.....	307.81	8.68
Sulfate.....	2103.59	43.82
Calcium.....	209.05	10.43
Magnesium.....	187.86	15.45
Potassium.....	5.44	0.14
Sodium.....	689.20	29.98
Major cations.....		56.00
Major anions.....		56.28
Anion/cation % difference.....		0.25 %


C. Neal Schaefer
Senior Chemist

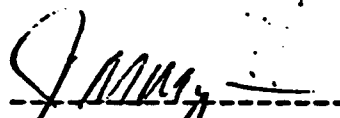
Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141629
Site: GBR-15
IML Lab No: F890900
Date Collected: 3/14/89
Date Received: 3/14/89

Total Dissolved Solids (180), mg/l.....	3724
Total Dissolved Solids (calc), mg/l.....	3670
Total Alkalinity as CaCO ₃ , mg/l.....	188
Total Hardness as CaCO ₃ , mg/l.....	1189

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	229	3.75
Carbonate as CO ₃	0	0.00
Chloride.....	282	7.96
Sulfate.....	2110	43.96
Calcium.....	449	22.41
Magnesium.....	17	1.37
Potassium.....	7	0.18
Sodium.....	693	30.14
Nitrate/Nitrite.....	0.06	.00

Major Cations.....	54.10
Major Anions.....	55.67
Cation/Anion Difference.....	1.43 %



Jack M. Morgan
Senior Organic Chemist

Received: 12/09/88

RAS - Austin

REPORT

Results by Sample

Work Order # 88-12-056

SAMPLE ID 8812071352

682-15

FRACTION 05A

TEST CODE OP04

NAME Orthophosphate

Date & Time Collected not specified

Category

ANALYST MJS
INSTRMT 21

ANALYZED 12/09/88

ANALYTE RESULT DET LIMIT

Orthophosphate 0.14 0.020

VERIFIED LMUNITS mg/L as P

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8812071352

682-15

FRACTION 05A

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

VERIFIED LMANALYST DLB
INSTRMT

ANALYZED 12/13/88

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) 0.000 10

UNITS mg/L

NOTES AND DEFINITIONS FOR THIS REPORT.

Page 10

Received: 12/09/88

RAS - Austin

REPORT

Work Order # 88-12-056
Continued From Above

Results by Sample

SAMPLE ID 8812071352

682-13

FRACTION 05A

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8812071431

682-31

FRACTION 06A

TEST CODE OP04

NAME Orthophosphate

Date & Time Collected not specified

Category

VERIFIED LM

ANALYST NJS
INSTRMT 21

ANALYZED 12/09/88

UNITS mg/L as P

ANALYTE RESULT DET LIMIT

Orthophosphate 0.030 0.020

NOTES AND DEFINITIONS FOR THIS REPORT

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8812071431

682-31

FRACTION 06A

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

VERIFIED LM

Page 2
Received: 12/09/88
RAS - AUSTON
REPORT
Results By Test
Work Order # 88-12-056

SAMPLE	Test:CA E	Test:CL IC	Test:EG5010	Test:F IC	Test:K E
Sample Id	ug/ml	mg/L	date complete	mg/L	ug/ml
602-17 01 8812070930	370	170	12/30/88	2.4	<5.0
602-24 02 8812071016	450	600	12/30/88	3.2	<5.0
602-14 03 8812071123	470	690	12/30/88	3.80	5.2*
602-30 04 8812071201	460	620	12/30/88	3.6	<5.0
602-15 05 8812071352	450	230	12/30/88	3.7	9.6*
602-31 06 8812071431	500	450	12/30/88	3.5	<5.0
602-33 07 8812071501	390	540	12/30/88	0.63	<5.0
602-13 08 8812071601	470	720	12/30/88	0.56	<5.0
602-6 09 8812071647	280	340	12/30/88	0.35	<5.0
602-8 10 8812071738	360	630	12/30/88	0.70	6.7*
11 8812071738 oil	<10				30*

SAMPLE	Test:EG E	Test:No E	Test:PREP X	Test:504 IC
Sample Id	ug/ml	mg/L	date complete	mg/L as 504
602-17 01 8812070930	42	290		1300

Received: 12/09/88

RAS - Austin

REPORT

Results by Test

Work Order # 88-12-056
Continued From Above

SAMPLE	Test: ME E	Test: NA E	Test: PREP X	Test: S04 IC
Sample Id	mg/m3	mg/L	mg/L as S04	
GBR-24 8812071016	81	400		1600
GBR-14 8812071123	39	500		1500
GBR-30 8812071201	36	440		1300
GBR-15 8812071352	30	570		2000
GBR-31 8812071431	44	500		1700
GBR-33 8812071501	40	480		1400
GBR-13 8812071601	48	700		1600
GBR-6 8812071647	72	400		660
GBR-8 8812071736	59	600		490
8812071738	<10	<10	12/30/88	
8812071738				



METALS
PROJECT: M&A

SAMPLE DATE: 01/20/88

SAMPLE ID: 8801201200
GBR 15LAB RECEIPT DATE: 01/22/88
MATRIX: WATERLOCATION:
LAB SAMPLE #: 3873-2
UNITS: mg/l

ANALYST	ANALYSIS DATE	CONSTITUENT NAME	DILUTION FACTOR	DETECTION LIMIT	RESULT
RC	01/27/88	ARSENIC (As)	1	0.010	ND
RC	02/01/88	BARIUM (Ba)	1	0.060	ND
RC	01/26/88	LEAD (Pb)	1	0.002	ND
RC	01/29/88	MERCURY (Hg)	1	0.0002	ND
JH	01/28/88	SELENIUM (Se)	1	0.010	ND
JH	02/01/88	SILVER (Ag)	1	0.010	0.010

* THE LISTED DETECTION LIMITS REFLECT ANY SAMPLE DILUTION.

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER:

G.W.

DATE: 03/01/88



Analytical**Technologies**, Inc.

METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/11/87
LAB RECEIPT DATE: 11/16/87
MATRIX: WATER

SAMPLE ID: 8711111045
LOCATION: 6BR-15
LAB SAMPLE #: 3574-4
UNITS: mg/l

<u>ANALYSIS</u> <u>DATE</u>	<u>CONSTITUENT</u> <u>NAME</u>	<u>DILUTION</u> <u>FACTOR</u>	<u>DETECTION</u> <u>LIMIT</u>	<u>RESULT</u>
12/01/87	ARSENIC (As)	1	0.010	0.031
12/02/87	BARIUM (Ba)	1	0.060	0.19
12/01/87	CADMIUM (Cd)	1	0.003	0.016
11/16/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
12/01/87	TOTAL CHROMIUM (Cr Tot)	1	0.010	0.145
11/30/87	LEAD (Pb)	1	0.002	0.006
11/19/87	MERCURY (Hg)	1	0.0005	ND
12/01/87	SELENIUM (Se)	1	0.010	ND
12/01/87	SILVER (Ag)	1	0.010	0.012

* THE LISTED DETECTION LIMITS REFLECT ANY SAMPLE DILUTION.

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER:

M. Kelly

DATE: 12/10/87



Analytical Technologies, Inc.

METALS
PROJECT: G8RSAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
MATRIX: WATERSAMPLE ID: 8710070955
LOCATION: G8R 15
LAB SAMPLE #: 3439-7
UNITS: mg/l

ANALYSIS DATE	CONSTITUENT NAME	DILUTION FACTOR	DETECTION LIMIT	RESULT
10/14/87	ARSENIC (As)	1	0.010	ND
10/15/87	BARIUM (Ba)	1	0.060	ND
10/13/87	CADMIUM (Cd)	1	0.003	0.018
10/12/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
10/13/87	TOTAL CHROMIUM (T. Cr)	1	0.010	0.020
10/12/87	LEAD (Pb)	1	0.002	0.003
10/18/87	MERCURY (Hg)	1	0.0002	ND
10/14/87	SELENIUM (Se)	1	0.010	ND
10/14/87	SILVER (Ag)	1	0.010	0.020

NOTE: ND = NOT DETECTED
NA = NOT ANALYZEDPROJECT MANAGER: *JMD*

DATE: 10/28/87



METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 9/18/87
LAB RECEIPT DATE: 9/11/87
MATRIX: WATER

SAMPLE ID: 8709100915
LOCATION: GBR-15
LAB SAMPLE #: 3320-3
UNITS: mg/l

<u>ANALYSIS</u> <u>DATE</u>	<u>CONSTITUENT</u> <u>NAME</u>	<u>DILUTION</u> <u>FACTOR</u>	<u>DETECTION</u> <u>LIMIT</u>	<u>RESULT</u>
9/16/87	ARSENIC (As)	1	0.010	ND
9/23/87	BARIUM (Ba)	1	0.060	ND
9/21/87	CADMIUM (Cd)	1	0.003	0.015
9/16/87	HEXAVALENT CHROMIUM (Cr+6)	1	0.03	ND
9/21/87	TOTAL CHROMIUM (Cr Tot)	1	0.010	0.008
9/17/87	LEAD (Pb)	1	0.002	ND
9/25/87	MERCURY (Hg)	1	0.0002	ND
9/16/87	SELENIUM (Se)	1	0.010	ND
9/22/87	SILVER (Ag)	1	0.010	0.010

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: *(Signature)*

DATE: 27 SEPTEMBER 1987

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-17

<u>SAMPLER</u>	GIANT
<u>DATE</u>	<u>10/4/90</u>
<u>PARAMETER</u>	
DETECTION LIMIT	(BELOW)
BENZENE	4.6 X
BROMODICHLOROMETHANE	9.4 X
BROMOFORM	21.0 X
BROMOMETHANE	ND(12.0)
CARBON TETRACHLORIDE	14.0 X
CHLOROBENZENE	13.0 X
CHLOROETHANE	ND(5.2)
CHLOROFORM	8.2 X
CHLOROMETHANE	ND(3.0)
DIBROMOCHLOROMETHANE	13.0
1,2-DICHLOROBENZENE	4.1 X
1,3-DICHLOROBENZENE	19.0 X
1,4-DICHLOROBENZENE	11.0 X
1,1-DICHLOROETHANE	11.0 X
1,2-DICHLOROETHANE	10.0 X
1,1-DICHLOROETHENE	11.0 X
CIS-1,2-DICHLOROETHENE	11.0 X
TRANS-1,2-DICHLOROETHENE	ND(2.0)
1,2-DICHLOROPROPANE	5.6 X
ETHYLBENZENE	7.8 X
METHYLENE CHLORIDE	11.0 X
1,1,2,2-TETRACHLOROETHANE	ND(1.5)
TETRACHLOROETHENE	15.0 X
TOLUENE	7.2
1,1,1-TRICHLOROETHANE	17.0 X
1,1,2-TRICHLOROETHANE	ND(2.0)
TRICHLOROETHENE	9.5 X
TRICHLOROFLUOROMETHANE	18.0 X
VINYL CHLORIDE	ND(2.0)
TOTAL XYLENES	35.0 X

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE
X	-	PRESENCE NOT CONFIRMED

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-17

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>6/14/89</u>	<u>9/13/89</u>	<u>12/12/89</u>	<u>4/3/90</u>	<u>7/17/90</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	<1.0	<1.0	<1.0	<1.0
BENZENE	ND(<1.0)	ND	ND	ND	ND
BROMODICHLOROMETHANE	ND(1.0)	ND	ND	ND	ND
BROMOFORM	ND(1.0)	ND	ND	ND	ND
BROMOMETHANE	ND(1.0)	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND(1.0)	ND	ND	ND	ND
CHLOROBENZENE	ND(<1.0)	ND	ND	ND	ND
CHLOROETHANE	ND(1.0)	ND	ND	ND	ND
CHLOROFORM	ND(1.0)	ND	ND	ND	ND
CHLOROMETHANE	ND(1.0)	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	ND(1.0)	ND	ND	ND	ND
1,2-DICHLOROBENZENE	ND(<1.0)	ND	ND	ND	ND
1,3-DICHLOROBENZENE	ND(<1.0)	ND	ND	ND	ND
1,4-DICHLOROBENZENE	ND(<1.0)	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	ND(1.0)	ND	ND	ND	ND
1,1-DICHLOROETHANE	ND(1.0)	0.89	ND	ND	ND
1,2-DICHLOROETHANE	ND(1.0)	ND	ND	ND	ND
1,1-DICHLOROETHENE	ND(1.0)	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	NA	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	ND(1.0)	ND	ND	ND	ND
1,2-DICHLOROPROPANE	ND(1.0)	ND	ND	ND	ND
ETHYLBENZENE	ND(<1.0)	ND	ND	ND	ND
METHYLENE CHLORIDE	ND(1.0)	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND(1.0)	ND	ND	ND	ND
TETRACHLOROETHENE	ND(1.0)	0.21	0.13	0.37	0.19
TOLUENE	ND(<1.0)	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	1.4	0.96	1.0	1.7	0.3
1,1,2-TRICHLOROETHANE	ND(1.0)	ND	ND	ND	ND
TRICHLOROETHENE	ND(1.0)	ND	ND	ND	1.5
TRICHLOROFLUOROMETHANE	ND(1.0)	3.0	ND	ND	ND
VINYL CHLORIDE	ND(1.0)	ND	ND	ND	ND
TOTAL XYLENES	ND(<1.0)	ND	ND	ND	ND

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-17

<u>SAMPLER</u>	<u>GIANT</u>	<u>EID</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>8/24/88</u>	<u>8/24/88</u>	<u>9/1/88</u>	<u>12/7/89</u>	<u>3/14/89</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	0.5		<1.0	(BELOW)
BENZENE	ND(<1.0)	ND	ND	ND	ND(<1.0)
BROMODICHLOROMETHANE	ND(<1.0)	ND	ND	ND	ND(<1.0)
BROMOFORM	ND(<1.0)	ND	ND	ND	ND(<1.0)
BROMOMETHANE	ND(<1.0)	ND	ND	ND	ND(1.0)
CARBON TETRACHLORIDE	ND(<1.0)	ND	ND	ND	ND(<1.0)
CHLOROBENZENE	ND(<1.0)	ND	ND	ND	ND(<1.0)
CHLOROETHANE	ND(<1.0)	ND	ND	ND	ND(1.0)
CHLOROFORM	ND(<1.0)	TR	ND	ND	ND(<1.0)
CHLOROMETHANE	ND(<1.0)	ND	ND	ND	ND(1.0)
DIBROMOCHLOROMETHANE	ND(<1.0)	ND	ND	ND	ND(<1.0)
1,2-DICHLOROBENZENE	ND(<1.0)	ND	ND	ND	ND(<1.0)
1,3-DICHLOROBENZENE	ND(<1.0)	ND	ND	ND	ND(<1.0)
1,4-DICHLOROBENZENE	ND(<1.0)	ND	ND	ND	ND(<1.0)
DICHLORODIFLUOROMETHANE	ND(<1.0)	ND	ND	ND	ND(1.0)
1,1-DICHLOROETHANE	ND(<1.0)	TR	ND	0.8	ND(<1.0)
1,2-DICHLOROETHANE	ND(<1.0)	ND	ND	ND	ND(<1.0)
1,1-DICHLOROETHENE	ND(<1.0)	ND	ND	ND	ND(<1.0)
CIS-1,2-DICHLOROETHENE	NA	ND	ND	ND	NA
TRANS-1,2-DICHLOROETHENE	NA	ND	ND	ND	ND(<1.0)
TOTAL 1,2-DICHLOROETHENE	ND(<1.0)	NA	ND	NA	NA
DICHLOROMETHANE	NA	TR	NA	NA	NA
1,2-DICHLOROPROPANE	ND(<1.0)	ND	ND	ND	ND(<1.0)
ETHYLBENZENE	ND(<1.0)	ND	ND	ND	ND(<1.0)
METHYLENE CHLORIDE	ND(2.0)	ND	ND	ND	1.8
1,1,2,2-TETRACHLOROETHANE	ND(<1.0)	ND	ND	ND	ND(<1.0)
TETRACHLOROETHENE	ND(<1.0)	TR	ND	0.7	ND(<1.0)
TOLUENE	ND(<1.0)	ND	ND	ND	ND(<1.0)
1,1,1-TRICHLOROETHANE	2.4	1.2	2.4	2.0	0.85
1,1,2-TRICHLOROETHANE	ND(<1.0)	ND	ND	ND	ND(<1.0)
TRICHLOROETHENE	ND(<1.0)	TR	TR	ND	ND(<1.0)
TRICHLOROFLUOROMETHANE	ND(2.0)	ND	ND	0.6	ND(<1.0)
VINYL CHLORIDE	ND(<1.0)	ND	ND	ND	ND(1.0)
TOTAL XYLENES	ND(<1.0)	ND	ND	ND	ND(<1.0)

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-17

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>	<u>EID</u>	<u>GIANT</u>
<u>DATE</u>	<u>10/7/87</u>	<u>11/12/87</u>	<u>4/20/88</u>	<u>4/20/88</u>	<u>6/2/88</u>
<u>PARAMETER</u>					
DETECTION LIMIT	<1.0	(BELOW)	0.5	0.5	(BELOW)
BENZENE	ND	ND(<1.0)	ND	ND	ND(0.5)
BROMODICHLOROMETHANE	ND	ND(<1.0)	ND	ND	ND(0.5)
BROMOFORM	ND	ND(<1.0)	ND	ND	ND(0.5)
BROMOMETHANE	ND	ND(<1.0)	ND	ND	ND(0.5)
CARBON TETRACHLORIDE	ND	ND(<1.0)	ND	ND	ND(0.5)
CHLOROBENZENE	ND	ND(<1.0)	ND	ND	ND(0.5)
CHLOROETHANE	ND	ND(<1.0)	ND	ND	ND(0.5)
CHLOROFORM	ND	1.3	ND	ND	ND(0.5)
CHLOROMETHANE	ND	ND(<1.0)	ND	ND	ND(0.5)
DIBROMOCHLOROMETHANE	ND	ND(<1.0)	ND	ND	ND(0.5)
1,2-DICHLOROBENZENE	ND	ND(<1.0)	ND	ND	ND(0.5)
1,3-DICHLOROBENZENE	ND	ND(<1.0)	ND	ND	ND(0.5)
1,4-DICHLOROBENZENE	ND	ND(<1.0)	ND	ND	ND(0.2)
DICHLORODIFLUOROMETHANE	ND	ND(<1.0)	ND	ND	ND(0.5)
1,1-DICHLOROETHANE	3.3	4.0	ND	TR	ND(0.5)
1,2-DICHLOROETHANE	ND	ND(<1.0)	ND	ND	ND(0.5)
1,1-DICHLOROETHENE	ND	ND(<1.0)	ND	TR	ND(0.2)
CIS-1,2-DICHLOROETHENE	NA	NA	ND	ND	NA
TRANS-1,2-DICHLOROETHENE	1.2	0.9	ND	ND	ND(0.5)
DICHLOROMETHANE	ND	ND(<1.0)	ND	ND	ND(0.5)
1,2-DICHLOROPROPANE	ND	ND(<1.0)	ND	ND	ND(0.5)
ETHYLBENZENE	ND	ND(<1.0)	ND	ND	ND(0.5)
METHYLENE CHLORIDE	ND	ND(2.0)	ND	ND	ND(0.5)
1,1,2,2-TETRACHLOROETHANE	ND	ND(<1.0)	ND	ND	ND(0.5)
TETRACHLOROETHENE	0.4	0.6	ND	TR	ND(0.5)
TOLUENE	ND	ND(1.0)	ND	ND	ND(0.5)
1,1,1-TRICHLOROETHANE	4.0	2.1	4.4	2.4	3.1
1,1,2-TRICHLOROETHANE	ND	ND(<1.0)	ND	ND	ND(0.5)
TRICHLOROETHENE	0.4	0.5	ND	TR	ND(0.5)
TRICHLOROFLUOROMETHANE	ND	ND(2.0)	ND	TR	ND(0.5)
VINYL CHLORIDE	ND	ND(<1.0)	ND	ND	ND(1.0)
TOTAL XYLENES	ND	ND(<1.0)	ND	ND	ND(0.5)

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-17

<u>SAMPLER</u>	GIANT	OCD	GIANT	OCD	EID
<u>DATE</u>	<u>5/29/86</u>	<u>6/5/86</u>	<u>7/15/86</u>	<u>11/21/86</u>	<u>8/5/87</u>
<u>PARAMETER</u>					
DETECTION LIMIT	1.0	2.0	1.0	(BELOW)	1.0
BENZENE	ND	ND	ND	TR(1.0)	ND
BROMODICHLOROMETHANE	NA	ND	NA	ND(20.0)	ND
BROMOFORM	NA	ND	NA	ND(20.0)	ND
BROMOMETHANE	NA	ND	NA	ND(20.0)	ND
CARBON TETRACHLORIDE	NA	ND	ND	ND(20.0)	ND
CHLOROBENZENE	NA	ND	NA	ND(20.0)	ND
CHLOROETHANE	NA	ND	NA	ND(20.0)	ND
CHLOROFORM	NA	ND	ND	ND(20.0)	ND
CHLOROMETHANE	NA	ND	NA	ND(20.0)	ND
DIBROMOCHLOROMETHANE	NA	ND	NA	ND(20.0)	ND
1,2-DICHLOROBENZENE	NA	ND	NA	ND(20.0)	ND
1,3-DICHLOROBENZENE	NA	ND	NA	ND(20.0)	ND
1,4-DICHLOROBENZENE	NA	ND	NA	ND(20.0)	ND
DICHLORODIFLUOROMETHANE	NA	ND	NA	ND(20.0)	ND
1,1-DICHLOROETHANE	NA	20.0	ND	6.0	TR
1,2-DICHLOROETHANE	NA	ND	ND	ND(20.0)	ND
1,1-DICHLOROETHENE	NA	ND	ND	ND(20.0)	ND
CIS-1,2-DICHLOROETHENE	NA	ND	NA	ND(20.0)	ND
TRANS-1,2-DICHLOROETHENE	NA	ND	ND	ND(20.0)	ND
DICHLOROMETHANE	NA	15.0	NA	TR(20.0)	ND
1,2-DICHLOROPROPANE	NA	ND	NA	ND(20.0)	ND
ETHYLBENZENE	ND	ND	NA	ND(1.0)	ND
METHYLENE CHLORIDE	NA	ND	NA	ND(20.0)	ND
1,1,2,2-TETRACHLOROETHANE	NA	ND	ND	ND(20.0)	ND
TETRACHLOROETHENE	NA	1.0	ND	TR(20.0)	TR
TOLUENE	ND	ND	ND	ND(1.0)	ND
1,1,1-TRICHLOROETHANE	NA	14.0	ND	7.0	4.0
1,1,2-TRICHLOROETHANE	NA	ND	ND	ND(20.0)	ND
TRICHLOROETHENE	NA	1.0	ND	TR(20.0)	TR
TRICHLOROFLUOROMETHANE	NA	ND	NA	ND(20.0)	ND
VINYL CHLORIDE	NA	ND	NA	ND(20.0)	ND
TOTAL XYLENES	ND	ND	ND	ND(1.0)	ND

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

LOCATION: GBR-17

TEST: Aromatic Volatile Organic Compounds

ANALYTE	6/18/86
-----	ug/l
BENZENE	ND
CHLOROBENZENE	NA
1,2-DICHLOROBENZENE	NA
1,3-DICHLOROBENZENE	NA
1,4-DICHLOROBENZENE	NA
ETHYLBENZENE	NA
TOLUENE	ND
META-XYLENE	NA
ORTH-XYLENE	NA
PARA-XYLENE	NA
M,O-XYLENE	NA
O,P-XYLENE	NA
XYLENES	ND

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMITS

LOCATION: GBR-17

TEST: 610 Polynuclear Aromatic Hydrocarbons

ANALYTE	6/02/88 ug/l	3/14/89 ug/l
ACENAPHTHENE	ND	ND
ACENAPHTHYLENE	ND	ND
ANTHRACENE	ND	ND
BENZO(A)ANTHRACENE	ND	ND
BENZO(A)PYRENE	ND	ND
BENZO(B)FLUORANTHENE	ND	ND
BENZO(J)FLUORANTHENE	ND	ND
BENZO(K)FLUORANTHENE	ND	2.6
BENZO(GHI)PERYLENE	ND	ND
CHRYSENE	ND	ND
DIBENZ(A,H)ACRIDENE	ND	ND
DIBENZ(A,J)ACRIDENE	ND	ND
DIBENZO(A,H)ANTHRACENE	ND	ND
L7H-DIBENZO(C,G)CARBAZOLE	ND	ND
DIBENZO(A,E)PYRENE	ND	ND
DIBENZO(A,H)PYRENE	ND	ND
DIBENZO(A,I)PYRENE	ND	ND
FLUORANTHENE	ND	1.4
FLUORENE	ND	1.8
INDENO(1,2,3-CD)PYRENE	ND	ND
L3-METHYLCHOLANTHRENE	ND	ND
NAPHTHALENE	ND	ND
PHENANTHRENE	ND	ND
PYRENE	ND	ND
ACENAPHTHENE	ND	ND
ACENAPHTHYLENE	ND	ND
ANTHRACENE	ND	ND

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT

Giant Refining Company

Radian Work Order: S0-10-043

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9010041115	9010041125	9010041320	9010041444
	STRIPPER INF.	STRIPPER EFF.	G-BR-17	G-BR-15
Factor:	10	10	10	10
Results in:	ug/L	ug/L	ug/L	ug/L
	14A	15A	16A	17A
Matrix:	water	water	water	water

	Result Det. Limit	Result Det. Limit	Result Det. Limit	Result Det. Limit
Benzene	60 C 2.0	5.9 Xa 2.0	4.6 Xa 2.0	87 C 2.0
Chlorobenzene	4.5 Xa 2.0	14 X 2.0	13 X 2.0	ND 2.0
1,2-Dichlorobenzene	ND 4.0	ND 4.0	4.1 Xa 4.0	ND 4.0
1,3-Dichlorobenzene	ND 4.0	19 Ga 4.0	19 Xa 4.0	ND 4.0
1,4-Dichlorobenzene	100 G 3.0	20 G 3.0	11 Xa 3.0	ND 3.0
Ethylbenzene	ND 2.0	3.0 Ca 2.0	7.8 Xa 2.0	ND 2.0
Toluene	3.0 Ga 2.0	6.5 Ga 2.0	7.2 Ca 2.0	ND 2.0
Xylenes (total)	140 C 2.0	35 G 2.0	35 X 2.0	ND 2.0
Surrogate Recovery(%)				
1-Bromo-4-fluorobenzene	101	106	110	105
Control Limits: 40 to 140				

C Confirmed on second column or by GC/MS

a Est. result less than 5 times detection limit

G Indicates an estimated GC value due to interferences.

X See definition in report narrative

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company

Radian Work Order: SO-10-043

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9010041115	9010041125	9010041320	9010041444
	STRIPPER INF.	STRIPPER EFF.	G-BR-17	G-BR-15
Factor:	10	10	10	10
Results in:	ug/L	ug/L	ug/L	ug/L
	05A	06A	07A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	13 X	1.0	9.4 X	1.0	ND	1.0
Bromoform	ND	5.0	23 Xa	5.0	21 Xa	5.0	ND	5.0
Bromomethane	ND	12	ND	12	ND	12	ND	12
Carbon tetrachloride	ND	1.2	16 X	1.2	14 X	1.2	ND	1.2
Chlorobenzene	ND	2.5	16 X	2.5	13 X	2.5	ND	2.5
Chloroethane	ND	5.2	ND	5.2	ND	5.2	ND	5.2
2-Chloroethylvinylether	ND	5.0	ND	5.0	ND	5.0	ND	5.0
Chloroform	ND	1.0	10 X	1.0	8.2 X	1.0	ND	1.0
Chloromethane	ND	3.0	ND	3.0	ND	3.0	ND	3.0
Dibromochloromethane	ND	2.0	14 Y	2.0	13 Y	2.0	ND	2.0
1,2-Dichlorobenzene	ND	5.0	ND	5.0	ND	5.0	ND	5.0
1,3-Dichlorobenzene	ND	3.2	23 X	3.2	23 X	3.2	ND	3.2
1,4-Dichlorobenzene	ND	2.4	26 X	2.4	25 X	2.4	ND	2.4
1,1-Dichloroethane	ND	5.0	13 Xa	5.0	11 Xa	5.0	ND	5.0
1,2-Dichloroethane	2.7 Xa	1.0	13 X	1.0	10 X	1.0	52 C	1.0
1,1-Dichloroethene	ND	2.0	14 X	2.0	11 X	2.0	ND	2.0
cis-1,2-Dichloroethene	16 X	2.0	13 X	2.0	11 X	2.0	ND	2.0
trans-1,2-Dichloroethene	ND	2.0	ND	2.0	ND	2.0	ND	2.0
1,2-Dichloropropane	ND	1.0	6.7 X	1.0	5.6 X	1.0	ND	1.0
cis-1,3-Dichloropropene	ND	2.0	19 X	2.0	18 X	2.0	ND	2.0
trans-1,3-Dichloropropene	ND	3.4	14 Ya	3.4	13 Ya	3.4	ND	3.4
Methylene chloride	4.9 Xa	4.0	9.5 Xa	4.0	11 Xa	4.0	ND	4.0
1,1,2,2-Tetrachloroethane	ND	1.5	ND	1.5	ND	1.5	ND	1.5
Tetrachloroethene	1.5 Xa	1.0	16 X	1.0	15 X	1.0	ND	1.0
1,1,1-Trichloroethane	2.5 Xa	2.0	20 X	2.0	17 X	2.0	ND	2.0
1,1,2-Trichloroethane	ND	2.0	ND	2.0	ND	2.0	ND	2.0
Trichloroethene	2.3 Xa	2.0	9.9 Xa	2.0	9.5 Xa	2.0	ND	2.0
Trichlorofluoromethane	3.0 Xa	2.0	22 X	2.0	18 X	2.0	ND	2.0
Vinyl chloride	ND	2.0	ND	2.0	ND	2.0	ND	2.0

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

X See definition in report narrative

Y See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: SO-07-122

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9007171035	9007171055	9007171215	9007171345
	STRIPPER EFF	RW-13	GBR-17	GBR-15
Factor:	1	1	1	2
Results in:	ug/L	ug/L	ug/L	ug/L
	10A	12A	14A	16A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	ND	0.20	39 C	0.40
Chlorobenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.40
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.80
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.80
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	0.30	ND	0.60
Ethylbenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.40
Toluene	ND	0.20	ND	0.20	ND	0.20	ND	0.40
Xylenes (total)	ND	0.20	ND	0.20	ND	0.20	ND	0.40

Surrogate Recovery(%)

1-Bromo-4-fluorobenzene

Control Limits: 40 to 140

105

104

98

98

ND Not detected at specified detection limit

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-07-122

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9007171035	9007171055	9007171215	9007171345
	STRIPPER EFF	RW-13	GBR-17	GBR-15
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	09A	11A	13A	15A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	ND	0.10	4.8 C	0.10	ND	0.10	33 C	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	0.45 Xa	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	0.34	ND	0.34
Methylene chloride	0.69 Xa	0.40	ND	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene	0.14 Xa	0.10	ND	0.10	0.19 Xa	0.10	ND	0.10
1,1,1-Trichloroethane	0.94 Ga	0.20	ND	0.20	0.30 Ca	0.20	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Trichloroethene	6.8 G	0.20	3.0 X	0.20	1.5 X	0.20	ND	0.20
Trichlorofluoromethane	0.24 Xa	0.20	0.25 Xa	0.20	ND	0.20	ND	0.20
Vinyl chloride	ND	0.20	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit
 a Est. result less than 5 times detection limit
 C Confirmed on second column or by GC/MS

X See definition in report narrative
 G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-04-020

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9004031005	9004031109	9004031150	9004031359
	/GBR-17	/GBR-30	/GBR-24D	/GBR-15
Factor:	1	1	1	20
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	31 C	0.20	110 C	4.0
Chlorobenzene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	0.30	ND	6.0
Ethylbenzene	ND	0.20	2.0 C	0.20	13 C	0.20	ND	4.0
Toluene	ND	0.20	3.1 CG	0.20	2.3 C	0.20	ND	4.0
Xylenes (total)	ND	0.20	ND	0.20	6.7 C	0.20	ND	4.0
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	99		111		90		86	
Control Limits: 40 to 140								

ND: Not detected at specified detection limit.

C: Confirmed on second column or by GC/MS.

G: Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-04-020

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9004031005	9004031109	9004031150	9004031359
	/GBR-17	/GBR-30	/GBR-24D	/GBR-15
Factor:	1	1	1	20
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	2.0
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	10
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	24
Carbon tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	2.4
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	5.0
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	10
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	10
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	2.0
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	6.0
Dibromochloromethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	10
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	6.4
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	4.8
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	0.50	84 C	10
1,2-Dichloroethane	ND	0.10	ND	0.10	16 C	0.10	ND	2.0
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
cis-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	2.0
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	0.34	ND	6.8
Methylene chloride	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	0.15	ND	3.0
Tetrachloroethene	0.37 C	0.10	ND	0.10	0.21 C	0.10	ND	2.0
1,1,1-Trichloroethane	1.7 C	0.20	ND	0.20	ND	0.20	ND	4.0
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Trichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Vinyl chloride	ND	0.20	ND	0.20	ND	0.20	ND	4.0

ND: Not detected at specified detection limit

C: Confirmed on second column or by GC/MS

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Co.
 Radian Work Order: 90-04-043

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9004031005	9004031109	9004031150	9004031359
	GBR-17	GBR-30	GBR-240	GBR-15
Factor:	0.94	9.6	4.7	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	2.2	ND	22	ND	11	ND	2.2
Acenaphthene	ND	1.7	ND	17	ND	8.5	ND	1.7
Anthracene	ND	0.62	ND	6.3	ND	3.1	ND	0.62
Benzo(a)anthracene	ND	0.012	ND	0.12	ND	0.061	ND	0.012
Benzo(a)pyrene	ND	0.022	ND	0.22	ND	0.11	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.17	ND	0.085	ND	0.017
Benzo(g,h,i)perylene	ND	0.071	ND	0.73	ND	0.36	ND	0.071
Benzo(k)fluoranthene	ND	0.016	ND	0.16	ND	0.080	ND	0.016
Chrysene	ND	0.012	ND	0.12	ND	0.061	ND	0.012
Dibenzo(a,h)anthracene	ND	0.028	ND	0.29	ND	0.14	ND	0.028
Fluoranthene	ND	0.20	ND	2.0	ND	0.99	ND	0.20
Fluorene	ND	0.20	2.8 *	2.0	2.0 *	0.99	0.35 *	0.20
Indeno(1,2,3-cd)pyrene	ND	0.040	ND	0.41	ND	0.20	ND	0.040
Naphthalene	ND	1.7	ND	17	ND	8.5	ND	1.7
Phenanthrene	ND	0.60	ND	6.1	ND	3.0	ND	0.60
Pyrene	ND	0.25	ND	2.6	ND	1.3	ND	0.25
Surrogate Recovery(%)								
Terphenyl-d14	54		234 Q		69		72	
Control Limits: 24 to 146								

 ND Not detected at specified detection limit
 Q Outside control limits

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-089

Method: Volatile aromatics (1) 12/12/89						
List: SW8020						
Sample ID:	GBR-17	GBR-32	GBR-49	GBR-50	Trip Blank	Reagent Blank
Factor:	1	1	5	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C	05A	06A
Matrix:	water	water	water	water	water	water
Benzene	<0.20	96	74	<0.20	<0.20	<0.20
Chlorobenzene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	<0.40	<0.40	<2.0	<0.40	<0.40	<0.40
1,3-Dichlorobenzene	<0.40	<0.40	<2.0	<0.40	<0.40	<0.40
1,4-Dichlorobenzene	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Ethylbenzene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Toluene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Total xylenes	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
<u>Surrogate Recovery(%)</u>						
1-Bromo-4-fluorobenzene	98	101	111	104	112	N/A
Control Limits: 76 to 140						

N/A Not available

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-089

Method: Halogenated volatiles (1)

List: SW8010

Sample ID:

GBR-17

GBR-32

GBR-49

GBR-50

Trip Blank

Reagent Blank

Factor:

1

1

5

1

1

1

Results in:

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

Matrix:

01A

02A

03A

04A

05A

06A

Matrix:

water

water

water

water

water

water

Bromodichloromethane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
Bromoform	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
Bromomethane	<1.2	<1.2	<5.9	<1.2	<1.2	<1.2
Carbon Tetrachloride	<0.12	<0.12	<0.60	<0.12	<0.12	<0.12
Chlorobenzene	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25
Chloroethane	<0.52	<0.52	<2.6	<0.52	<0.52	<0.52
2-Chloroethylvinylether	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
Chloroform	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
Chloromethane	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Dibromochloromethane-(2)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	<0.32	<0.32	<1.6	<0.32	<0.32	<0.32
1,4-Dichlorobenzene	<0.24	<0.24	<1.2	<0.24	<0.24	<0.24
1,1-Dichloroethane	<0.50	<u>3.0</u>	<u>2.8 *</u>	<0.50	<0.50	<0.50
1,2-Dichloroethane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
1,1-Dichloroethene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
trans-1,2-Dichloroethene	<0.20	<u>140 D</u>	<u>150</u>	<u>0.27 *</u>	<0.20	<0.20
1,2-Dichloropropane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
cis-1,3-Dichloropropene-(2)	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropene	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Methylene Chloride	<0.40	<u>1.2 *</u>	<2.0	<0.40	<u>7.2</u>	<0.40
1,1,2,2-Tetrachloroethane-(3)	<0.15	<0.15	<0.75	<0.15	<0.15	<0.15
Tetrachloroethene-(3)	<u>0.13 *</u>	<u>17</u>	<u>25</u>	<u>1.2</u>	<0.10	<0.10
1,1,2-Trichloroethane-(2)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	<u>1.0</u>	<u>1.3</u>	<u>1.0 *</u>	<u>0.26 *</u>	<0.20	<0.20
Trichloroethene	<0.20	<u>10</u>	<u>16</u>	<0.20	<0.20	<0.20
Trichlorofluoromethane	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Vinyl Chloride	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20

N/A Not available

D Sample diluted for this analyte

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

(2) Dibromochloromethane, 1,1,2-Trichloroethane, and cis-1,3-Dichloropropene coelute. Quantitated as Dibromochloromethane unless otherwise noted.

(3) Tetrachloroethene and 1,1,2,2-Tetrachloroethane coelute. Quantitated as Tetrachloroethene unless otherwise noted.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: SW8310 PAH's by HPLC (1)	GBR-31	GBR-6	GBR-30	GBR-17
List: 8310 Method analytes				
Sample ID:	8912131300	8912131600	8912131030	8912120950
Factor:	0.94	24	1.9	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	15C	16C	17C	18A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	2.2	ND	55	ND	2.2	ND	2.2
Acenaphthene	ND	1.7	ND	43	<u>14 D</u>	1.7	ND	1.7
Anthracene	ND	0.62	ND	16	ND	1.3	ND	0.62
Benzo(a)anthracene	ND	0.012	<u>0.57 *</u>	0.31	<u>0.026 *</u>	0.025	<u>0.026 *</u>	0.012
Benzo(a)pyrene	ND	0.022	ND	0.55	ND	0.044	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.43	ND	0.034	ND	0.017
Benzo(g,h,i)perylene	ND	0.071	ND	1.8	ND	0.14	ND	0.071
Benzo(k)fluoranthene	ND	0.016	ND	0.41	ND	0.032	ND	0.016
Chrysene	ND	0.012	<u>7.3</u>	0.31	<u>0.27</u>	0.025	<u>0.20</u>	0.012
Dibenzo(a,h)anthracene	ND	0.028	ND	0.72	ND	0.057	ND	0.028
Fluoranthene	ND	0.20	ND	5.0	ND	0.40	<u>0.40 *</u>	0.20
Fluorene	ND	0.20	<u>13 *D</u>	5.0	<u>4.1 D</u>	0.20	<u>2.3 D</u>	0.20
Indeno(1,2,3-cd)pyrene	ND	0.040	ND	1.0	ND	0.040	ND	0.040
Naphthalene	ND	1.7	ND	43	<u>5.8 *D</u>	1.7	<u>5.6 *D</u>	1.7
Phenanthrene	ND	0.60	<u>29 *</u>	15	<u>1.5 *</u>	1.2	<u>2.0 *</u>	0.60
Pyrene	ND	0.25	ND	6.5	ND	0.51	<u>0.25 *</u>	0.25
Surrogate Recovery(%)								
Terphenyl-d14	84		106		76		124	
Control Limits: 37 to 139								

 ND Not detected at specified detection limit
 D Sample diluted for this analyte

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: PAHs by GC 8100 (1) List: 8100, special list	GBR-31	GBR-6	GBR-30	GBR-17
Sample ID:	8912131300	8912131600	8912131030	8912120950
Factor:	0.94	94	0.94	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	15C	16C	17C	18A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1-Methylnaphthalene	ND	0.94	ND	94	ND	0.94	ND	0.94
2-Methylnaphthalene	ND	0.94	ND	94	10	0.94	ND	0.94

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



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Received: 09/14/89

RAS Sacramento

REPORT

Work Order # 59-09-082

Results by Sample

SAMPLE ID 8909131230 H2O

GBR-17

FRACTION 02C

TEST CODE 602B

NAME Purgeable Aromatics - H2O

Date & Time Collected 09/13/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST	MG	INJECTD 09/28/89	CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
INSTRMT	B						
			71-43-2	Benzene	ND	0.10	1
			108-88-3	Toluene	ND	0.30	1
			100-41-4	Ethylbenzene	ND	0.10	1
			108-90-7	Chlorobenzene	ND	0.10	1
			1330-20-7	Total Xylenes	ND	0.20	1
			106-46-7	1,4-Dichlorobenzene	ND	0.20	1
			541-73-1	1,3-Dichlorobenzene	ND	0.40	1
			95-50-1	1,2-Dichlorobenzene	ND	0.20	1

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 92% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

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RAS Sacramento

REPORT

Work Order # S9-09-082

Received: 09/14/89

Results by Sample

SAMPLE ID 8909131230 H2O GBR-17

FRACTION 02A

TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/13/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST _____
INSTRMT _____

INJECTD 09/28/89

FILE # DB092814
FACTOR 1

VERIFIED _____
UNITS ug/L

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	ND	0.50	1
74-83-9	Bromomethane	ND	1.0	1
75-01-4	Vinyl Chloride	ND	0.20	1
75-00-3	Chloroethane	ND	0.50	1
75-09-2	Methylene Chloride	ND	0.40	1
75-69-4	Trichlorofluoromethane	3.0 C	0.10	1
75-35-4	1,1-Dichloroethene	ND	0.10	1
75-34-3	1,1-Dichloroethane	0.89 C	0.10	1
540-59-0	Total 1,2-Dichloroethene (2)	ND	0.10	1
67-66-3	Chloroform	ND	0.10	1
107-06-2	1,2-Dichloroethane	ND	0.10	1
71-55-6	1,1,1-Trichloroethane	0.96 C	0.20	1
56-23-5	Carbon Tetrachloride	ND	0.20	1
75-27-4	Bromodichloromethane	ND	0.10	1
78-87-5	1,2-Dichloropropene	ND	0.10	1
10061-01-5	cis-1,3-Dichloropropene	ND	0.40	1
79-01-6	Trichloroethene	ND	0.20	1
124-48-1	Dibromochloromethane (3)	ND	0.20	1
79-00-5	1,1,2-Trichloroethane (3)	ND	0.20	1
10061-02-6	trans-1,3-Dichloropropene (3)	ND	0.40	1
110-75-8	2-Chloroethylvinyl Ether	ND	2.0	1
75-25-2	Bromoform	ND	2.0	1
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	0.20	1
127-18-4	Tetrachloroethene (4)	0.21 C	0.10	1
108-90-7	Chlorobenzene	ND	0.20	1
541-73-1	1,3-Dichlorobenzene	ND	0.50	1
95-50-1	1,2-Dichlorobenzene	ND	0.20	1
106-46-7	1,4-Dichlorobenzene	ND	0.20	1



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Received: 09/14/89

RAS Sacramento

Results by Sample

REPORT

Work Order # S9-09-082
Continued From Above

SAMPLE ID 8909131230 H2O GBR-17

FRACTION 02A

TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/13/89

Category

SURROGATES

540-36-3	1-4-Difluorobenzene	NA % Recovery
460-00-4	1-Bromo-4-Fluorobenzene	87 % Recovery

- (1) See Appendix A for Glossary of Report and Data Flag Definitions
- (2) Quantitated as the Trans-isomer
- (3) Dibromochloromethane, 1,1,2-Trichloroethane and Trans-1,3-dichloropropene co-elute.
- (4) 1,1,2,2-Tetrachloroethane and tetrachloroethene co-elute.

Geoscience Consultants, Ltd.
Radian Work Order: 89-09-111

Method: PAHs by HPLC (1)

List:

Sample ID:

GDL-30
8909131015GRW-13
8909131030GDL-31
8909131145GDL-17
8909131230Influent
8909131300Effluent
8909131330

Factors:

24

1

1

1

24

10

Results in:

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

water

water

Acenaphthalene	<55	<2.3	<2.3	<2.3	<55	<23
Acenaphthene	<43	<1.8	<1.8	<1.8	<43	<18
Anthracene	<16	<0.66	<0.66	<0.66	<16	<6.6
Benzo(a)anthracene	<0.31	<0.013	<0.013	<0.013	<0.31	<0.13
Benzo(a)pyrene	<0.55	<0.023	<0.023	<0.023	<0.55	<0.23
Benzo(b)fluoranthene	<0.43	<0.018	<0.018	<0.018	<0.43	<0.18
Benzo(g,h,i)perylene	<1.8	<0.076	<0.076	<0.076	<1.8	<0.76
Benzo(k)fluoranthene	<0.41	<0.017	<0.017	<0.017	<0.41	<0.17
Chrysene	<0.31	<0.013	<0.013	<0.013	<0.31	<0.13
Dibenzo(a,h)anthracene	<0.72	<0.030	<0.030	<0.030	<0.72	<0.30
Fluoranthene	<5.0	<0.21	<0.21	<0.21	<5.0	<2.1
Fluorene	11*	<0.21	<0.21	<0.21	9.6*	9.5*
Indeno(1,2,3-cd)pyrene	<1.0	<0.043	<0.043	<0.043	<1.0	<0.43
Naphthalene	<43	<1.8	<1.8	<1.8	<43	<18
Phenanthrene	<15	<0.64	<0.64	<0.64	<15	<6.4
Pyrene	<6.5	<0.27	<0.27	<0.27	<6.5	<2.7

Surrogate Recovery(%)

Terphenyl-d14

NC

128

129

114

NC

130

Control Limits: 37 to 139

* Est. result less than 5 times detection limit

NC Not calculated

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



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

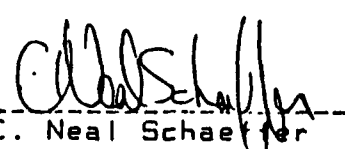
Client: GCL #8906140830
Site: GBR-17
IML #: F1574

Date of report: 06/23/89
Date sampled: 06/14/89
Date received: 06/14/89

Parameter	Concentration	Units
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

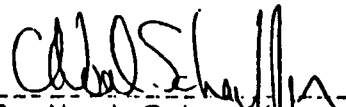
Client: GCL #8906140830
Site: GBR-17
IML #: F1574

Date of report: 06/23/87
Date sampled: 06/14/87
Date received: 06/14/87

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	ND (1.0)	ug/l
1,1,1-TRICHLOROETHANE	1.4 (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	ND (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUNDWATER
POLYNUCLEAR AROMATIC HYDROCARBONS
(ug/m) unless otherwise noted
(Sampling Event: 06/13/89)

ANALYTE	GBR-17	GBR-240	GBR-30	GBR-31	GBR-33
Acenaphthene	NA	0.010 (0.005)	2.3 (0.6)	ND (0.003)	0.34 (0.25)
Acenaphthylene	NA	0.008 (0.005)	ND (0.6)	ND (0.003)	0.44 (0.25)
Anthracene	NA	0.006 (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(a)anthracene	NA	ND (0.005)	ND (0.6)	ND (0.003)	0.59 (0.25)
Benzo(a)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(b)fluoranthene	NA	0.007 (0.005)	ND (0.6)	0.014 (0.003)	1.58 (0.25)
Benzo(j)fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(k)fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(g,h,i)perylene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Chrysene	NA	ND (0.005)	ND (0.6)	0.008 (0.003)	0.67 (0.25)
Dibenz(a,h)acridine	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,j)acridine	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenzo(a,h)anthracene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,e)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,h)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Fluorene	NA	0.009 (0.005)	ND (0.6)	0.005 (0.003)	ND (0.25)
Indeno(1,2,3-cd)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Naphthalene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Phenanthrene	NA	0.013 (0.005)	2.0 (0.6)	0.006 (0.003)	0.53 (0.25)
Pyrene	NA	ND (0.005)	ND (0.6)	0.004 (0.003)	ND (0.25)
1-Methylnaphthalene	NA	NA (0.005)	NA (0.6)	NA (0.003)	NA (0.25)
3-Methylnaphthalene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)

why
←

() = Detection limit
ND = Not detected
T = Detected below quantifiable level
NA = Not analyzed



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

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903141317

Sample Site: GBR-17

IML Lab No: F890860

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/14/89

Date Received: 03/14/89

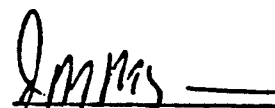
Date Extracted: NA

Date Analyzed: 03/22/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



Jack M. Morgan
Senior Organic Chemist



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

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141313
Sample Site: GBR-17
IML Sample No: F890860
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water

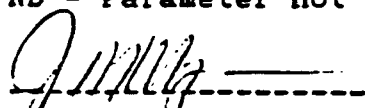
Date Sampled: 03/14/89
Date Received: 03/14/89
Date Extracted: N/A
Date Analyzed: 03/28/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	1.8 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	ND (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	ND (0.03)	ug/l
1,1,1-TRICHLOROETHANE	0.85 (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	ND (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	ND (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

Date: April 08, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141313
Sample Site: GBR-17
IML Sample No: F890860
Analysis: Polynuclear Aromatic
Hydrocarbons
Sample Matrix: Water

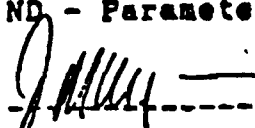
Date Sampled: 03/14/89
Date Received: 03/14/89
Date Extracted: 03/16/89
Date Analyzed: 04/06/89

Parameter	Concentration	Units
Acetnaphthene	ND (0.5)	ug/l
Acenaphthylene	ND (0.5)	ug/l
Anthracene	ND (0.5)	ug/l
Benzo(a)Anthracene	ND (0.5)	ug/l
Benzo(a)pyrene	ND (0.5)	ug/l
Benzo(b)fluoranthene	ND (0.5)	ug/l
Benzo(g,h,i)perylene	ND (0.5)	ug/l
Benzo(k)fluoranthene	2.6 (0.5)	ug/l
Chrysene	ND (0.5)	ug/l
Dibenzo(a,h)anthracene	ND (0.5)	ug/l
Fluoranthene	1.4 (0.5)	ug/l
Fluorene	1.8 (0.5)	ug/l
Indeno(1,2,3-cd)pyrene	ND (0.5)	ug/l
Naphthalene	ND (0.5)	ug/l
Phenanthrene	ND (0.5)	ug/l
Pyrene	ND (0.5)	ug/l
1-Methylnaphthalene	ND (0.5)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1986)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

Page 5
Received: 12/09/88

RAS - Austin

REPORT

Work Order # 88-12-057

Results by Sample

SAMPLE ID 8812070930

602-17

FRACTION OIA

TEST CODE EPA602

NAME EPA method 602

Date & Time Collected 12/07/88

Category

ANALYST _____ CL
INSTRMT _____ D
INJECTED 12/12/88
FILE # _____
UNITS _____ ug/L
VERIFIED _____ CL

CAS#	COMPOUND	RESULT	DET LIMIT
71-42-2	Benzene	ND	0.20
108-25-3	Toluene	ND	0.20
100-41-4	Ethylbenzene	ND	0.30
108-90-7	Chlorobenzene-A	ND	0.30
106-46-7	1,4-Dichlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.40
95-50-1	1,2-Dichlorobenzene	ND	0.40

SURROGATES
98-08-8 a,a,a-Trifluorotoluene 102% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NOT performed

unless otherwise noted.

Sample 7
Received: 12/09/88
RAS - Austin
REPORT
Results by Sample
Work Order # 88-12-057

SAMPLE ID 8812070930 6BR-17
FRACTION 01A TEST CODE XYLENE NAME Xylenes, EPA 602
Date & Time Collected 12/07/88 Category

ANALYST _____ CL
INSTRMT _____ D
INJECTD 12/12/88
FILE # _____
UNITS ug/L
VERIFIED _____ CL

CAS #	COMPOUND	RESULT	DET LIMIT
106-42-3	p-Xylene-A	ND	0.20
109-38-3	m-Xylene	ND	0.20
95-47-6	o-Xylene	ND	0.10

98-08-8 a,a,a-Trifluorotoluene 102% recovery
SURROGATES

NOTES AND DEFINITIONS FOR THIS REPORT.
DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available
Second column confirmation NOT performed unless otherwise noted.
Q = daily EPA standard recovery outside 95% confidence interval.
Chlorobenzene and p-xylene co-elute.
Quantitated as chlorobenzene unless otherwise noted.

Received: 12/09/88

RAS - Austin
Results by Sample

REPORT

Work Order # 88-12-057

SAMPLE ID 8812070930 602-17

FRACTION Q1B

TEST CODE EPA601 NAME EPA method 601

Date & Time Collected 12/07/88

Category

ANALYST	CL	VERIFIED	CL
INSTRMT	B	FILE #	UNITS ug/L
		INJECTD 12/14/88	

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	1 Chloromethane	ND	0.30
74-83-9	2 Bromomethane	ND	1.2
75-01-4	3 Vinyl chloride	ND	0.20
75-00-3	5 Chloroethane	ND	0.50
75-09-2	6 Methylene chloride	ND	0.30
75-69-4	7 Trichlorofluoromethane	0.6	0.10
75-35-4	8 1,1-Dichloroethane	ND	0.10
75-34-3	9 1,1-Dichloroethane	0.8	0.070
156-60-5	10 trans-1,2-Dichloroethane	ND	0.20
67-66-2	11 Chloroform	ND	0.050
107-06-2	12 1,2-Dichloroethane	ND	0.030
71-55-6	13 1,1,1-Trichloroethane	2.0	0.070
56-23-6	14 Carbon tetrachloride	ND	0.10
76-27-4	15 Bromodichloromethane	ND	0.10

RECEIVED DEC 29 1988

RECEIVED: 12/09/88

RAC - AUSTON

REPORT
Results by Sample

Work Order # 88-12-057
Continued From Above

SAMPLE ID 8812070930

682-17

FRACTION 01B TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 12/07/88

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.10
10061-02-6	trans-1,3-Dichloropropane	ND	0.30
79-01-6	1,1,1-Trichloroethane	ND	0.20
124-48-1	1,1,2-Dibromochloromethane-A	ND	0.20
79-00-5	1,1,2-Trichloroethane-A	ND	0.070
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-75-8	2,2-Chloroethylethyl ether	ND	0.20
75-25-2	2,3-Bromobrom	ND	0.30
79-34-5	1,1,1,2,2-Tetrachloroethane-B	ND	0.12
127-18-4	2,2,3,3-Tetrachloroethane-B	0.7	0.030
108-90-7	Chlorobenzene	ND	0.30
541-72-1	1,3-Dichlorobenzene	ND	0.30
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.40
	SURROGATES		
74-97-5	Bromochloromethane	104 %	Recovery
460-00-4	1-Bromo-4-fluorobenzene	106 %	Recovery

LOCATION

GBR-17

TEST CODE

EPA-601

COMPOUND	10/07/88 ⁸⁷	12/07/89	03/14/89
1,1,1-TRICHLOROETHANE	4.0	2.0	0.85
1,1,2,2-TETRACHLOROETHANE-B	ND	ND	ND
1,1,2-TRICHLOROETHANE-A	ND	ND	ND
1,1-DICHLOROETHANE	3.3	0.8	ND
1,1-DICHLOROETHENE	ND	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND
1,2-DICHLOROETHANE	ND	ND	ND
1,2-DICHLOROPROPANE	ND	ND	ND
1,3-DICHLOROBENZENE	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND
2-CHLOROETHYL VINYL ETHER	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND
BROMOFORM	ND	ND	ND
BROMOMETHANE	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND
CHLOROBENZENE-A	ND	ND	ND
CHLOROETHANE	ND	ND	ND
CHLOROFORM	ND	ND	ND
CHLOROMETHANE	ND	ND	ND
CIS-1,3-DICHLOROPROPENE-A	ND	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND
DICHLORODIFLUOROMETHANE	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	1.8
TETRACHLOROETHENE-B	0.4	0.7	ND
TRANS-1,2-DICHLOROETHENE	1.2	ND	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND	ND
TRICHLOROETHENE	0.4	ND	ND
TRICHLOROFLUOROMETHANE	ND	0.6	ND
VINYL CHLORIDE	ND	ND	ND

LOCATION

GBR-17

TEST CODE

EPA-602

COMPOUND -----	11/21/86 -----	10/07/87	12/07/88
BENZENE	TR	ND	ND
ETHYLBENZENE	NA	ND	ND
M-XYLENE	NA	ND	ND
O,P-XYLENE	NA	ND	ND
TOLUENE	NA	ND	ND
1,2-DICHLOROBENZENE	NA	ND	ND
1,3-DICHLOROBENZENE	NA	ND	ND
1,4-DICHLOROBENZENE	NA	ND	ND
CHLOROBENZENE-A	NA	ND	ND

LOCATION

GBR-17

TEST CODE

EPA601/602

COMPOUND	11/12/87	04/12/88	08/24/88	09/01/88
1,1,1-TRICHLOROETHANE	2.1	2.4	1.2	2.4
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	ND	ND	ND	ND
1,1-DICHLOROETHANE	4.0	TR	TR	ND
1,1-DICHLOROETHENE	ND	TR	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND	ND
1,2-DICHLOROETHANE	ND	ND	ND	ND
1,2-DICHLOROETHENE (TOTAL)	ND	ND	ND	ND
1,2-DICHLOROPROPANE	ND	ND	ND	ND
1,3-DICHLOROBENZENE	ND	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND	ND
BENZENE	TR	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND	ND
BROMOFORM	ND	ND	ND	ND
BROMOMETHANE	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND	ND
CHLOROBENZENE	ND	ND	ND	ND
CHLOROETHANE	ND	ND	ND	ND
CHLOROFORM	1.3	ND	TR	ND
CIS-1,3-DICHLOROPROPENE	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND
META XYLENE	ND	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND	ND
ORTHO & PARA XYLENE	ND	ND	ND	ND
TETRACHLOROETHENE	0.6	TR	TR	ND
TOLUENE	TR	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.9	ND	ND	ND
TRICHLOROETHENE	0.5	TR	TR	TR
TRICHLOROFLUOROMETHANE	ND	TR	ND	ND
VINYL CHLORIDE	ND	ND	ND	ND
XYLENE	TR	ND	ND	ND



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

754
wpu

88-1425-C

REPORT TO:

William Olson
EID Ground Water Bureau
1190 St. Francis Dr.
Santa Fe, N.M. 87504-0968

S.L.D. No. OR-

1425 A+B

DATE REC.

8-26-88

PRIORITY

3

PHONE(S):

827-2899

COLLECTION CITY:

Lee Acres

COUNTY:

San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

8/8/08 24/15/30

LOCATION CODE: (Township-Range-Section-Tracts)

10N06E24342

USER CODE:

59300

SUBMITTER:

Olson

CODE:

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: ☐

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

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

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= 7.2; Conductivity= 2550 umho/cm at 16.5°C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water 31.72 ft.; Depth of well 68 ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Blainfield - GBR-17

RECEIVED

NOV 18 1988

GROUND WATER BUREAU

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): William Olson Method of Shipment to the Lab: hand

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Gary Eden
at (location) SLD on 8/26/88 at 14:55 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☒ OR Seals Intact: Yes ☐ No ☐

Signatures

William Olson

Gary C. Eden



ATI I.D. : 80816105

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : GIANT REFINING
PROJECT # : (NONE)
PROJECT NAME : GIANT BLOOMFIELD
CLIENT I.D. : GBR 17
SAMPLE MATRIX : AQUEOUS

DATE SAMPLED : 08/24/88
DATE RECEIVED : 08/26/88
DATE EXTRACTED : N/A
DATE ANALYZED : 09/06/88
UNITS : UG/L
DILUTION FACTOR : 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE (TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	2.4
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	99
TRIFLUOROTOLUENE (%)	94

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

PROJECT MGR: Michael Wood
PROJECT#: 232-799-5009-10
LOCATION: Farmington, NM
MATRIX: Water
UNITS: ug/L (ppb)

6/2/88

TEST RESULTS

GER-17

TK-32

TK-24

COMPOUND	MDL	LAB # I.I.D. #	24493 021220	24494 020205	24495 TripBlank	24496 020105
Benzene	0.5		0.5	360	0.5	1100
Bromodichloromethane	0.5		0.5	0.5	0.5	0.5
Bromoform	0.5		0.5	0.5	0.5	0.5
Bromomethane	0.5		0.5	0.5	0.5	0.5
Carbon tetrachloride	0.5		0.5	0.5	0.5	0.5
Chlorobenzene	0.5		0.5	0.5	0.5	0.5
Chloroethane	0.5		0.5	0.5	0.5	0.5
2-Chloroethylvinyl ether	1.0		1.0	1.0	1.0	1.0
Chloroform	0.5		0.5	0.5	0.5	0.5
Chloromethane	0.5		0.5	0.5	0.5	0.5
Dibromochloromethane	0.5		0.5	0.5	0.5	0.5
1,2-Dichlorobenzene	0.5		0.5	0.5	0.5	0.5
1,3-Dichlorobenzene	0.5		0.5	0.5	0.5	0.5
1,4-Dichlorobenzene	0.2		0.2	0.2	0.2	0.2
Dichlorodifluoromethane	0.5		0.5	0.5	0.5	0.5
1,1-Dichloroethane	0.5		0.5	12	0.5	8.0
1,2-Dichloroethane	0.5		0.5	10	0.5	130
1,1-Dichloroethene	0.2		0.2	0.51	0.2	0.61
trans-1,2-Dichloroethene	0.5		0.5	18	0.5	13
1,2-Dichloropropane	0.5		0.5	0.5	0.5	0.5
cis-1,3-Dichloropropene	0.5		0.5	0.5	0.5	0.5
trans-1,3-Dichloropropene	0.5		0.5	0.5	0.5	0.5
Ethylbenzene	0.5		0.5	82	0.5	2.5
Methylene chloride	0.5		0.5	0.5	0.5	0.5
1,1,2,2-Tetrachloroethane	0.5		0.5	0.5	0.5	0.5
Tetrachloroethene	0.5		0.5	1.5	0.5	1.8
1,1,1-Trichloroethane	0.5		3.1	2.3	0.5	5.5
1,1,2-Trichloroethane	0.5		0.5	0.5	0.5	0.5
Trichloroethene	0.5		0.5	4.9	0.5	4.1
Trichlorofluoromethane	0.5		0.5	0.5	0.5	0.5
Vinyl Chloride	1.0		1.0	1.0	1.0	1.0
Xylenes	0.5		0.5	300	0.5	1300
Toluene	0.5		0.5	15	0.5	940

MDL = Method Detection Limit.
METHODS: EPA 8010/8020.

LOCATION

GBR-17

TEST CODE

EPA-8310

COMPOUND

06/02/88

1-METHYLNAMHTHALENE	ND
ACENAPHTHENE	ND
ACENAPHTHYLENE	ND
ANTHRACENE	ND
BENZ(A)ANTHRACENE	ND
BENZO(A)PYRENE	ND
BENZO(B)FLUORANTHENE	ND
BENZO(GHI)PERYLENE	ND
BENZO(K)FLUORANTHENE	ND
CHRYSENE	ND
DIBENZO(A,H)ANTHRACENE	ND
FLUORANTHENE	ND
FLUORENE	ND
INDENO(1,2,3-CD)PYRENE	ND
NAPHTHALENE	ND
PHENANTHRENE	ND
PYRENE	ND
ACENAPHTHENE	ND
ACENAPHTHYLENE	ND
ANTHRACENE	ND
BENZ(A)ANTHRACENE	ND
BENZO(A)PYRENE	ND
BENZO(B)FLUORANTHENE	ND
BENZO(GHI)PERYLENE	ND
BENZO(K)FLUORANTHENE	2.6
CHRYSENE	ND
DIBENZO(A,H)ANTHRACENE	ND
FLUORANTHENE	1.4
FLUORENE	1.8
INDENO(1,2,3-CD)PYRENE	ND
NAPHTHALENE	9.6
PHENANTHRENE	12
PYRENE	ND



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

754
wpu

88-1425-C

REPORT TO: William Olson S.L.D. No. OR- 1425 A+B
EID Ground Water Bureau DATE REC. 8-26-88
1199 St. Francis Dr. PRIORITY 3
Santa Fe, N.M. 87504-0968 PHONE(S): 827-2899

COLLECTION CITY: Lee Acres; COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8808241530

LOCATION CODE: (Township-Range-Section-Tracts) + + + (10N06E24342)

USER CODE: 59300 SUBMITTER: Olson CODE:

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER:

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

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

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
- ☒ (754) Aromatic & Halogenated Purgeables
- ☐ (765) Mass Spectrometer Purgeables
- ☐ (766) Trihalomethanes
- ☐ (774) SDWA VOC's I (8 Regulated +)
- ☐ (775) SDWA VOC's II (EDB & DBCP)
- Other Specific Compounds or Classes
- ☐
- ☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (755) Base/Neutral Extractables
- ☐ (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:

FIELD DATA:

pH= 7.2; Conductivity= 2550 umho/cm at 16.5°C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water 31.72 ft.; Depth of well 68 ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Hamfield - ~~GBR-17~~ GBR-17

R E C E I V E D

NOV 18 1988

GROUND WATER BUREAU

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): William Olson Method of Shipment to the Lab: hand

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Gary Eden
at (location) SLD on 8/26/88 - 14:55 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☒ OR Seals Intact: Yes ☐ No ☐

Signatures William Olson Gary C. Eden

ANALYSES PERFORMED

LAB. No.: OR- 1425

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
☐ Other Specific Compounds or Classes
☐ _____
☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>	<i>N.D.</i>		
<i>halogenated purgeables</i>			
<i>dichloromethane</i>	<i>TR</i>		
<i>1,1-Dichloroethane</i>	<i>TR</i>		
<i>chloroform</i>	<i>TR</i>		
<i>1,1,1-trichloroethane</i>	<i>1.2</i>		
<i>trichloroethene</i>	<i>TR</i>		
<i>tetrachloroethene</i>	<i>TR</i>		
* DETECTION LIMIT *	<i>578</i>	+ DETECTION LIMIT +	<i>†</i>

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: Harry C. Eden date: 9/14/88

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 9/13/88 Analyst's signature: Harry C. Eden

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R. Meyerheim



ATI I.D. : 80816105

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : GIANT REFINING
PROJECT # : (NONE)
PROJECT NAME : GIANT BLOOMFIELD
CLIENT I.D. : GBR 17
SAMPLE MATRIX : AQUEOUS

DATE SAMPLED : 08/24/88
DATE RECEIVED : 08/26/88
DATE EXTRACTED : N/A
DATE ANALYZED : 09/06/88
UNITS : UG/L
DILUTION FACTOR : 1

COMPOUNDS	RESULTS
-----------	---------

BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE (TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	2.4
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	99
TRIFLUOROTOLUENE (%)	94



GTEL Environmental Laboratories

division of Groundwater Technology, Inc.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

Page 2 of 3

PROJECT MGR: Michael Wood
PROJECT#: 232-799-5009-10
LOCATION: Farmington, NM
MATRIX: Water
UNITS: ug/L (ppb)

6/2/88

TEST RESULTS

GER-17

TK-32

TK-24

COMPOUND	MDL	LAB # I.I.D. #	24493 021220	24494 020205	24495 TripBlank	24496 020105
Benzene	0.5		0.5	350	0.5	1100
Bromodichloromethane	0.5		0.5	0.5	0.5	0.5
Bromoform	0.5		0.5	0.5	0.5	0.5
Bromomethane	0.5		0.5	0.5	0.5	0.5
Carbon tetrachloride	0.5		0.5	0.5	0.5	0.5
Chlorobenzene	0.5		0.5	0.5	0.5	0.5
Chloroethane	0.5		0.5	0.5	0.5	0.5
2-Chloroethylvinyl ether	1.0		1.0	1.0	1.0	1.0
Chloroform	0.5		0.5	0.5	0.5	0.5
Chloromethane	0.5		0.5	0.5	0.5	0.5
Dibromochloromethane	0.5		0.5	0.5	0.5	0.5
1,2-Dichlorobenzene	0.5		0.5	0.5	0.5	0.5
1,3-Dichlorobenzene	0.5		0.5	0.5	0.5	0.5
1,4-Dichlorobenzene	0.2		0.2	0.2	0.2	0.2
Dichlorodifluoromethane	0.5		0.5	0.5	0.5	0.5
1,1-Dichloroethane	0.5		0.5	12	0.5	8.0
1,2-Dichloroethane	0.5		0.5	10	0.5	130
1,1-Dichloroethene	0.2		0.2	0.51	0.2	0.61
trans-1,2-Dichloroethene	0.5		0.5	18	0.5	13
1,2-Dichloropropane	0.5		0.5	0.5	0.5	0.5
cis-1,3-Dichloropropene	0.5		0.5	0.5	0.5	0.5
trans-1,3-Dichloropropene	0.5		0.5	0.5	0.5	0.5
Ethylbenzene	0.5		0.5	82	0.5	2.5
Methylene chloride	0.5		0.5	0.5	0.5	0.5
1,1,2,2-Tetrachloroethane	0.5		0.5	0.5	0.5	0.5
Tetrachloroethene	0.5		0.5	1.5	0.5	1.8
1,1,1-Trichloroethane	0.5		3.1	2.3	0.5	5.5
1,1,2-Trichloroethane	0.5		0.5	0.5	0.5	0.5
Trichloroethene	0.5		0.5	4.9	0.5	4.1
Trichlorofluoromethane	0.5		0.5	0.5	0.5	0.5
Vinyl Chloride	1.0		1.0	1.0	1.0	1.0
Xylenes	0.5		0.5	300	0.5	1300
Toluene	0.5		0.5	15	0.5	940

MDL = Method Detection Limit.
METHODS: EPA 8010/8020.

LOCATION

GBR-17

TEST CODE

EPA-8310

COMPOUND

06/02/88

1-METHYLNAMHTHALENE	ND
ACENAPHTHENE	ND
ACENAPHTHYLENE	ND
ANTHRACENE	ND
BENZ(A)ANTHRACENE	ND
BENZO(A)PYRENE	ND
BENZO(B)FLUORANTHENE	ND
BENZO(GHI)PERYLENE	ND
BENZO(K)FLUORANTHENE	ND
CHRYSENE	ND
DIBENZO(A,H)ANTHRACENE	ND
FLUORANTHENE	ND
FLUORENE	ND
INDENO(1,2,3-CD)PYRENE	ND
NAPHTHALENE	ND
PHENANTHRENE	ND
PYRENE	ND
ACENAPHTHENE	ND
ACENAPHTHYLENE	ND
ANTHRACENE	ND
BENZ(A)ANTHRACENE	ND
BENZO(A)PYRENE	ND
BENZO(B)FLUORANTHENE	ND
BENZO(GHI)PERYLENE	ND
BENZO(K)FLUORANTHENE	2.6
CHRYSENE	ND
DIBENZO(A,H)ANTHRACENE	ND
FLUORANTHENE	1.4
FLUORENE	1.8
INDENO(1,2,3-CD)PYRENE	ND
NAPHTHALENE	9.6
PHENANTHRENE	12
PYRENE	ND



GTEL Environmental Laboratories

A division of Groundwater Technology, Inc.

RECEIVED
7/21/88

Page 2 of 3

Western Region

4080-C Pike Lane
Concord, CA 94520

(415) 685-7852

(800) 544-3422 from inside California

(800) 423-7143 from outside California

CLIENT: Michael Wood

PROJECT#: 232-799-5009-17

LOCATION: Farmington, NM

TEST RESULTS

MATRIX: Water
UNITS: ug/L

6/2/88
6BR-17 TK-32 TK-24 TK-22

COMPOUNDS	MDL	LAB #	I.D. #	24484C	24485C	24486C	24487C
				021220	020205	020105	020135
Acenaphthene	10			<10	<10	<10	<10
Acenaphthylene	10			<10	<10	<10	<10
Anthracene	10			<10	<10	<10	<10
Benzo (a) anthracene	10			<10	<10	<10	<10
Benzo (a) pyrene	10			<10	<10	<10	<10
Benzo (b) fluoranthene	10			<10	<10	<10	<10
Benzo (ghi) perylene	10			<10	<10	<10	<10
Benzo (k) fluoranthene	10			<10	<10	<10	<10
Chrysene	10			<10	<10	<10	<10
Dibenzo (a,h) anthracene	10			<10	<10	<10	<10
Fluoranthene	10			<10	<10	<10	<10
Fluorene	10			<10	<10	<10	<10
Indeno (1,2,3-cd) pyrene	10			<10	<10	<10	<10
Naphthalene	10			<10	42	39	10
Phenanthrene	10			<10	<10	<10	<10
Pyrene	10			<10	<10	<10	<10

MDL=Method Detection Limit.

METHOD: EPA Method 610.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

CLIENT: Michael Wood
PROJECT#: 232-799-5009-17
LOCATION: Farmington, NM

TEST RESULTS	MATRIX:		Water			
	UNITS:		ug/L			
COMPOUNDS	MDL	LAB #	24484C	24485C	24486C	24487C
	I.D.#		021220	020205	020105	020135
Acenaphthene	10		<10	<10	<10	<10
Acenaphthylene	10		<10	<10	<10	<10
Anthracene	10		<10	<10	<10	<10
Benzo (a) anthracene	10		<10	<10	<10	<10
Benzo (a) pyrene	10		<10	<10	<10	<10
Benzo (b) fluoranthene	10		<10	<10	<10	<10
Benzo (ghi) perylene	10		<10	<10	<10	<10
Benzo (k) fluoranthene	10		<10	<10	<10	<10
Chrysene	10		<10	<10	<10	<10
Dibenzo (a,h) anthracene	10		<10	<10	<10	<10
Fluoranthene	10		<10	<10	<10	<10
Fluorene	10		<10	<10	<10	<10
Indeno (1,2,3-cd) pyrene	10		<10	<10	<10	<10
Naphthalene	10		<10	42	39	10
Phenanthrene	10		<10	<10	<10	<10
Pyrene	10		<10	<10	<10	<10

MDL=Method Detection Limit.
METHOD: EPA Method 610.



SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE

Albuquerque, NM 87106 841-2570

88-05264

REPORT TO:

McQuillan

EID Ground Water/Haz. Waste

1190 St. Francis Dr.

Santa Fe 87504-0968

S.L.D. No. OR-

526-41B

DATE REC.

4/22/88

PRIORITY

3

PHONE(S):

827-2912

COLLECTION CITY: Lee Acres

COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8/8/04/20/15/05

LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+22+333 (10N06E24342)

USER CODE: 59300 SUBMITTER: McQuillan

CODE: MICQ

SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: _____

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes

Other Specific Compounds or Classes

☐ _____
☐ _____
☐ _____
☐ _____
☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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: _____

FIELD DATA:

pH= _____; Conductivity= 2580 umho/cm at 15.0°C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Well GBR-17; purged w/ PVC pump; sampled w/ PVC bailer

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): Dennis McQuillan

Method of Shipment to the Lab: air/auts

CHAIN OF CUSTODY

I certify that this sample was transferred from _____ to _____

at (location) _____ on _____ / _____ / _____ - _____ and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☐ No ☐

Signatures _____

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-6 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
- Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (755) Base/Neutral Extractables
- ☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]
aromatic paraffins	N.D.
halogenated paraffins	
trichloromethane	T.R.
1,1-dichloroethene	T.R.
1,1-Dichloroethane	T.R.
1,1,1-Trichloroethane	2.4
trichloroethene	T.R.
tetrachloroethene	T.R.
* DETECTION LIMIT *	.59%

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT
 T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)
 [RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☐ No ☒ Seal(s) broken by: not sealed date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 5-13/88 Analyst's signature: Mark C. Egan

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: K M Eyerher



A division of Groundwater Technology, Inc.

Western Region

4080-C Pike Lane, Concord, CA 94520

(415) 685-7852

(800) 544-3422 from inside California

(800) 423-7143 from outside California

RECEIVED
5/15/88

Page 1 of 1

05/10/88 rw

PROJECT MGR: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming NE
Albuquerque, NM 87111

PROJECT #: 232-799-5009-8

LOCATION: Farmington, NM

SAMPLED: 04/20/88 BY: T. LePage

RECEIVED: 04/22/88 BY: K. Biava

ANALYZED: 04/29/88 BY: P. Sra

MATRIX: Water

UNITS: ug/L (ppb)

TEST RESULTS

COMPOUNDS	MDL	LAB #	21156	21157	21158	21159
	I.I.D. #		6BR-17	6BR-19	6BR-31	6BR-32
Benzene	0.5		<0.5	26	<0.5	<0.5
Toluene	0.5		<0.5	3.3	<0.5	<0.5
Ethylbenzene	0.5		<0.5	17	<0.5	<0.5
Xylenes	0.5		<0.5	120	<0.5	<0.5
Chlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD:

EPA Method 8020

Safy Khalifa /EM7

SAFY KHALIFA, Ph.D., Director

Western Region

4080-C Pike Lane, Concord, CA 94520

(415) 685-7852

(800) 544-3422 from inside California

(800) 423-7143 from outside California

05/10/88 rw

PROJECT MGR: Michael Wood

Groundwater Technology, Inc.

3620 Wyoming NE

Albuquerque, NM 87111

PROJECT #: 232-799-5009-8

LOCATION: Farmington, NM

SAMPLED: 04/20/88

BY: T. LePage

RECEIVED: 04/22/88

BY: K. Biava

ANALYZED: 04/29/88

BY: P. Sra

MATRIX: Water

UNITS: ug/L (ppb)

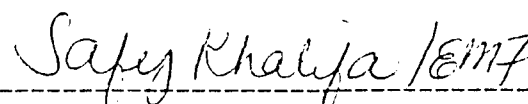
TEST RESULTS

COMPOUND	MDL	LAB #	21156	21157	21158	21159
		I.I.D. #	6BR-17	6BR-19	6BR-31	BR-32
Bromodichloromethane	0.5		0.5	0.5	0.5	0.5
Bromoform	0.5		0.5	0.5	0.5	0.5
Bromomethane	0.5		0.5	0.5	0.5	0.5
Carbon tetrachloride	0.5		0.5	0.5	0.5	0.5
Chlorobenzene	0.5		0.5	0.5	0.5	0.5
Chloroethane	0.5		0.5	0.5	0.5	0.5
2-Chloroethylvinyl ether	1.0		1.0	1.0	1.0	1.0
Chloroform	0.5		0.5	0.5	0.5	1.1
Chloromethane	0.5		0.5	0.5	0.5	0.5
Dibromochloromethane	0.5		0.5	0.5	0.76	0.5
1,2-Dichlorobenzene	0.5		0.5	0.5	0.5	0.5
1,3-Dichlorobenzene	0.5		0.5	0.5	0.5	0.5
1,4-Dichlorobenzene	0.5		0.5	0.5	0.5	0.5
Dichlorodifluoromethane	0.5		0.5	0.5	0.5	0.5
1,1-Dichloroethane	0.5		0.5	5.9	4.8	5.7
1,2-Dichloroethane	0.5		0.5	5.0	0.5	0.5
1,1-Dichloroethene	0.2		0.2	0.2	0.2	0.2
trans-1,2-Dichloroethene	0.5		0.5	35	58	160
1,2-Dichloropropane	0.5		0.5	0.5	0.5	0.5
cis-1,3-Dichloropropene	0.5		0.5	0.5	0.5	0.5
trans-1,3-Dichloropropene	0.5		0.5	0.5	0.5	0.5
Methylene chloride	0.5		0.5	0.5	0.5	0.5
1,1,2,2-Tetrachloroethane	0.5		0.5	0.5	0.5	0.5
Tetrachloroethene	0.5		0.5	1.0	0.5	17
1,1,1-Trichloroethane	0.5		4.4	0.5	2.9	1.9
1,1,2-Trichloroethane	0.5		0.5	0.5	0.5	0.5
Trichloroethene	0.5		0.5	7.2	7.3	16
Trichlorofluoromethane	0.5		0.5	0.5	0.5	0.5
Vinyl Chloride	1.0		1.0	1.0	1.0	1.0

MDL = Method Detection Limit.

METHOD:

EPA Method 8010



SAFY KHALIFA, Ph.D., Director



Analytical Technologies, Inc.

EPA METHOD 601/602

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/12/87
 LAB RECEIPT DATE: 11/16/87
 ANALYSIS DATE: 11/17/87
 MATRIX: WATER
 ANALYST: MGB

SAMPLE ID: 8711120915
 LOCATION: 6BR-17
 LAB SAMPLE #: 3574-8
 UNITS: ug/l
 DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.2	ND
BROMOMETHANE	0.2	ND
DICHLORODIFLUOROMETHANE	0.2	ND
VINYL CHLORIDE	0.2	ND
CHLOROETHANE	0.2	ND
METHYLENE CHLORIDE	2.0	ND
TRICHLOROFLUOROMETHANE	2.0	ND
1,1-DICHLOROETHENE	0.2	ND
1,1-DICHLOROETHANE	0.2	4.0
TRANS-1,2-DICHLOROETHENE	0.2	0.9
CHLOROFORM	0.2	1.3
1,2-DICHLOROETHANE	0.2	ND
1,1,1-TRICHLOROETHANE	0.2	2.1
CARBON TETRACHLORIDE	0.2	ND
BROMODICHLOROMETHANE	0.2	ND
1,2-DICHLOROPROPANE	0.2	ND
TRANS-1,3-DICHLOROPROPENE	0.2	ND
TRICHLOROETHENE	0.2	0.5
DIBROMOCHLOROMETHANE	0.2	ND
1,1,2-TRICHLOROETHANE	0.2	ND
CIS-1,3-DICHLOROPROPENE	0.2	ND
2-CHLOROETHYL VINYL ETHER	0.2	ND
BROMOFORM	0.2	ND
1,1,2,2-TETRACHLOROETHANE	0.2	ND
TETRACHLOROETHENE	0.2	0.6
BENZENE	0.5	ND
TOLUENE	1.0	ND
CHLOROBENZENE	0.5	ND
ETHYLBENZENE	0.5	ND
1,3-DICHLOROBENZENE	0.5	ND
1,2-DICHLOROBENZENE	0.5	ND
1,4-DICHLOROBENZENE	0.5	ND
M-XYLENE	0.5	ND
O,P-XYLENE	0.5	ND

98.6 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED

PROJECT MANAGER: *M. Barry*

DATE: 12/10/87



Analytical**Technologies**, Inc.

EPA METHOD 801/802
PROJECT: GBR

SAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
ANALYSIS DATE/TIME: 10/12/87, 21:49
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8710071530
LOCATION: GBR-17
LAB SAMPLE #: 3439-10
UNITS: ug/l
DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.02	ND
BROMOMETHANE	0.06	ND
DICHLORODIFLUOROMETHANE	0.04	ND
VINYL CHLORIDE	0.05	ND
CHLOROETHANE	0.1	ND
METHYLENE CHLORIDE	0.02	ND
TRICHLOROFLUOROMETHANE	0.07	ND
1,1-DICHLOROETHENE	0.07	ND
1,1-DICHLOROETHANE	0.05	3.3
TRANS-1,2-DICHLOROETHENE	0.09	1.2
CHLOROFORM	0.05	ND
1,2-DICHLOROETHANE	0.07	ND
1,1,1-TRICHLOROETHANE	0.03	4.0
CARBON TETRACHLORIDE	0.08	ND
BROMODICHLOROMETHANE	0.04	ND
1,2-DICHLOROPROPANE	0.03	ND
TRANS-1,3-DICHLOROPROPENE	0.11	ND
TRICHLOROETHENE	0.06	0.4
DIBROMOCHLOROMETHANE	0.07	ND
1,1,2-TRICHLOROETHANE	0.03	ND
CIS-1,3-DICHLOROPROPENE	0.07	ND
2-CHLOROETHYL VINYL ETHER	0.03	ND
BROMOFORM	0.09	ND
1,1,2,2-TETRACHLOROETHANE	0.03	ND
TETRACHLOROETHENE	0.03	0.4
BENZENE	0.2	ND
TOLUENE	0.4	ND
CHLOROBENZENE	0.16	ND
ETHYLBENZENE	0.1	ND
1,3-DICHLOROBENZENE	0.4	ND
1,2-DICHLOROBENZENE	0.4	ND
1,4-DICHLOROBENZENE	0.6	ND
M-XYLENE	0.18	ND
O,P-XYLENE	0.15	ND

119 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: *mtf*

DATE: 10/28/87



SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

754 wph

REPORT TO:

McQuillan
EID Ground Water/Haz. Waste
1190 St. Francis Dr.
Santa Fe 87504-0968

S.L.D. No. OR-

1320 A,B

DATE REC.

8-7-87

PRIORITY

3

PHONE(S):

827-2912

COLLECTION CITY: Lee Acres

COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

8/7/0 8:05:12

LOCATION CODE: (Township-Range-Section-Tracts)

29N+1 2W+2 2+3 33 (10N06E24S42)

USER CODE:

59300

SUBMITTER:

McQuillan

CODE:

M.C.Q.

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

☐ NP:

No Preservation; Sample stored at room temperature.

☒ P-Ice

Sample stored in an ice bath (Not Frozen).

☐ P-Na₂S₂O₃

Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

☐ (733) Aliphatic Headspace (1-5 Carbons)

☒ (734) Aromatic & Halogenated Purgeables

☐ (763) Mass Spectrometer Purgeables

☐ (766) Trihalomethanes

Other Specific Compounds or Classes

☐

☐

☐

☐

☐

☐

☐

Remarks: _____

EXTRACTABLE SCREENS

☐ (731) Aliphatic Hydrocarbons

☐ (735) Base/Neutral Extractables

☐ (738) 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

RECEIVED

FIELD DATA:

pH= _____; Conductivity= 2900 umho/cm at 18.5 °C; Chlorine Residual= LIQUID mg/L

Dissolved Oxygen= _____ mg/L; Alkalinity= _____ mg/L; Flow Rate= _____ /sec

Depth to water 32.95 ft.; Depth of well 64 ft.; Perforation Interval _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Well GBR-17

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): Dennis McQuillan Method of Shipment to the Lab: air/auto

CHAIN OF CUSTODY

I certify that this sample was transferred from Dennis McQuillan to John Gould
at (location) EID Water Lab on 8/16/87 at 15:00 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seal Intact: Yes ☒ No ☐

Signatures

Dennis McQuillan

John Gould

1600 5/6/87 Transferred to

LAB. No.: OR- 1320

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
- Other Specific Compounds or Classes**

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (755) Base/Neutral Extractables
- ☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic paraffins</i>	N.D.
<i>halogenated paraffins</i>	
<i>1,1-Dichloroethane</i>	T.R.
<i>1,1,1-Trichloroethane</i>	4
<i>Trichloroethane</i>	T.R.
<i>Total Tetrachloroethane</i>	T.R.
* DETECTION LIMIT *	1 / 89/L

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT
 T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)
 [RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: halogenated compounds confirmed by SP-1000 column

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: Garry C. Palmer date: 8/14/87

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 8/14/87. Analyst's signature: Nash C. Eder

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: K. Meyers

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE

Albuquerque, NM 87106 841-2570



STATE OF NEW MEXICO

86-1369-C

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1369 A, B
DATE REC. 11-26-86

PHONE(S): 327-5812 USER CODE: 8 2 2 3 5
SUBMITTER: David Boyer CODE: 12 6 10

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8611211450228

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: CODE: ☐ ☐ ☐

COUNTY: San Juan CITY: Lee Acres CODE: ☐ ☐ ☐

LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+22+333 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= ; Conductivity= 1500 umho/cm at 16 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Grant, GBR-17

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer Method of Shipment to the Lab: Hand Carried

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from Willie Olson to Mary C. Eden
at (location) HED/SLD on 11/26/86 4:07PM and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures Willie Olson Mary C. Eden

For OCD Use: Date Owner Notified Phone or Letter? Initials

LAB. NO. OR- 1369

This sample was tested using the analytical screening method(s) checked below:

EXTRACTABLE SCREENS

- | | | |
|--------------------------|-------|-----------------------------------|
| ☐ | (751) | Aliphatic Hydrocarbons |
| ☐ | (760) | Organochlorine Pesticides |
| ☐ | (755) | Base/Neutral Extractables |
| ☐ | (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 |

Other Specific Compounds or Classes

COMPOUND(S) DETECTED

CONC.
[PPB]

benzene	TR
* DETECTION LIMIT *	1000

* DETECTION LIMIT *

1996

COMPOUND(S) DETECTED

CONC.
[PPB]_____

dichloromethane	TR ⊕
1,1-dichloroethane	6
1,1,1-trichloroethane	7
trichloroethene	TR
tetrachloroethene	TR
PC	
⊕ DETECTION LIMIT ⊕	20 ng/l

⊕ DETECTION LIMIT ⊕

20 ppl

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: [Signature] date: 12-4/2-10-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4+10 Dec 86. Analyst's signature: [Signature]

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *K. Messel*



TO: Geoscience Consultants Ltd.
 Attn: Mike Selke
 500 Copper NW Suite 325
 Albuquerque, NM 87102

DATE: 26 August 1986
 1190

SAMPLE ID: 8607150730 GBR-17

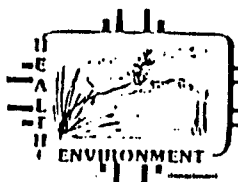
ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Carbon Tetrachloride	<1 ug/l	1 ug/l
Chloroform	<1 ug/l	1 ug/l
1,1-Dichloroethane	<1 ug/l	1 ug/l
1,2-Dichloroethylene	<1 ug/l	1 ug/l
1,1-Dichloroethylene	<1 ug/l	1 ug/l
trans-1,2-Dichloroethylene	<1 ug/l	1 ug/l
1,1,2,2-Tetrachloroethane	<1 ug/l	1 ug/l
1,1,1,2-Tetrachloroethane	<1 ug/l	1 ug/l
Tetrachloroethylene	<1 ug/l	1 ug/l
1,1,1-Trichloroethane	<1 ug/l	1 ug/l
1,1,2-Trichloroethane	<1 ug/l	1 ug/l
Trichloroethylene	<1 ug/l	1 ug/l
Benzene	<1 ug/l	1 ug/l
Toluene	<1 ug/l	1 ug/l
Xylenes	<1 ug/l	1 ug/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846, EMSL-Cincinnati, 1982

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

Jennifer L. Smith
 Jennifer L. Smith, Ph.D.
 Laboratory Director



86-0683-C

754
SCIENTIFIC LABORATORY DIVISION700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

STATE OF NEW MEXICO

JUL 10 1986

REPORT TO:
PLEASE PRINT

DAVID G. BOYER

NEW MEXICO OIL CONSERVATION DIV.

P.O. BOX 2088

SANTA FE, NM 87504-2088

S.L.D. No.: OR-683-H-B

DATE REC.: 06/09/86

SLD PRIORITY #:

PHONE(S):

827-5812

USER CODE: 8 2 2 3 5

SUBMITTER:

DAVID BOYER

SUBMITTER CODE: | | | |

SAMPLE TYPE: WATER ☒, SOIL ☐, OTHER ☐

SAMPLE TYPE CODE: | |

COLLECTED: 86/06/05 - 12:30 BY DGB

CODE: | | | | | | | | | | | | | | | |

SOURCE: GBR-17

CODE: | | | | | | | | | | | | | | | |

NEAREST CITY: Bloomfield

CODE: | | | | |

LOCATION: Giant Bloomfield Refinery

CODE: 29N 12W 27 1 1 1 1 1

pH= 7; Conductivity= 5500 umho/cm at 18.5 °C; Chlorine Residual=

Dissolved Oxygen= mg/l; Alkalinity=; Flow Rate=

Sampling Location, Methods and Remarks (i.e. odors, etc.)

ALLuvial well, No odor, Lee Acres Property

I certify that the statements in this block accurately reflect the results of my field analyses, observations and activities. David G. Boyer

Method of shipment to the Laboratory

Hand Carried

This form accompanies 2 Septum Vials, Glass Jugs, Containers are marked as follows to indicate preservation:

- ☐ NP: No preservation; sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (not frozen).
☐ P-Na₂S₂O₃; Sample preserved with Na₂S₂O₃ to remove chlorine residual.

I (we) certify that this sample was transferred from DGB oct to R Meyerheim at (location) SLD on

4/9/86 - 16:21 and that the statements in this block are correct.

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures R Meyerheim

DGB

(we) certify that this sample was transferred from

at (location) on

and that the statements in this block are correct.

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures

ANALYSES REQUESTED

LAB. No.: ORG- 683

PLEASE CHECK THE APPROPRIATE BOXES BELOW TO INDICATE THE TYPE OF ANALYTICAL SCREENS REQUIRED. WHENEVER POSSIBLE LIST SPECIFIC COMPOUNDS SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
		ALIPHATIC HYDROCARBON SCREEN			ALIPHATIC HYDROCARBONS
X	X	AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
X	X	HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
					ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
					POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS

REMARKS:

ANALYTICAL RESULTS

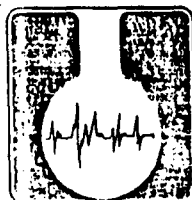
COMPOUND	[PPB]	COMPOUND	[PPB]
aromatic purgeables	none detected*		
dichloromethane	15		
1,1-dichloroethane	approx. 20		
1,2-dichloroethane	1		
1,1,1-trichloroethane	14		
trichloroethene	1		
tetrachloroethene	1		
		* DETECTION LIMIT	2 mg/l

REMARKS: There is a possible trace of benzene < 2 ppb.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes X NO ____ . Seal(s) broken by: AF date: 6-13-86
 I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.
 Date(s) of analysis: 6-13-86 . Analyst's signature: J. J. Toney
 I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block. Reviewers signature: K. Meyers

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____

ASSAIGAI
ANALYTICAL
LABORATORIES

TO: Geoscience Consultants Ltd.
Attn: Randy Hicks
500 Copper NW Suite 325
Albuquerque, NM 87102

DATE: 18 June 1986
0879

SAMPLE ID: 8605290830

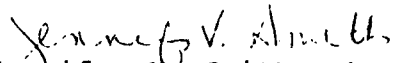
682-17

ANALYTE	ANALYTICAL RESULTS	DETECTION LIMITS
Pb	0.076 mg/l	0.001 mg/l
Benzene	<1 ug/l	1 ug/l
Toluene	<1 ug/l	1 ug/l
Xylenes	<1 ug/l	1 ug/l
TDS	3024 mg/l	1 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,


Jennifer V. Smith, Ph.D.
Laboratory Director



LOCATION: GBR-17

TEST: General Chemistry

ANALYTE	5/29/86 mg/l	06/10/86 mg/l	11/26/86 mg/l	08/07/87 mg/l	04/20/88 mg/l	06/02/88 mg/l	08/24/88 mg/l	12/07/88 mg/l
CALCIUM	NA	712	580	464	396	411	388	370
MAGNESIUM	NA	63.4	70.8	88	70.8	44	50.6	42
SODIUM	NA	616.4	358.8	380	299	281	323	290
POTASSIUM	NA	1.17	40.5	0.78	4	1.1	101	<5
AMMONIA-N	NA	NA	NA	NA	NA	NA	NA	NA
BICARBONATE	NA	376	312	805	214	124	268	NA
BROMIDE	NA	NA	649	1.57	<.3	NA	NA	NA
CARBONATE	NA	0	0	NA	NA	<20	NA	NA
CHLORIDE	NA	1005	649	337	141	370	166	170
FLUORIDE	NA	NA	NA	NA	NA	NA	NA	2.4
NITRATE-N+, NITRITE-N	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE	NA	1202	1344	1340	960	2270	1340	1300
TFS	3024	4355	3434	2820	2598	3996	2528	2500
ACIDITY AS CaCO3	NA	NA	NA	NA	NA	NA	NA	NA
ALKALINITY AS CaCO3	NA	NA	NA	NA	NA	NA	NA	NA
HARDNESS AS CaCO3	NA	NA	NA	NA	NA	NA	NA	NA
CHARGE BALANCE (%)	NA	NA	NA	NA	NA	NA	102	NA
pH	NA	7	8.19	NA	NA	NA	7.2	NA
CONDUCTIVITY (umho)	NA	NA	4078	NA	NA	NA	3051	NA

TFS = TOTAL FILTERABLE SOLIDS (DISSOLVED)

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT

LOCATION: GBR-17

TEST: General Chemistry (Cont'd)

ANALYTE	03/14/89 mg/l	03/14/89 mg/l
CALCIUM	415	422
MAGNESIUM	48	40
SODIUM	301	298
POTASSIUM	1	1
AMMONIA-N	NA	NA
BICARBONATE	282	283
BROMIDE	NA	NA
CARBONATE	0	0
CHLORIDE	162	161
FLUORIDE	NA	NA
NITRATE-N+, NITRITE-N	3.14	2.85
SULFATE	1341	1341
TFS	2496	2480
ACIDITY AS CaCO3	<1	<1
ALKALINITY AS CaCO3	232	282
HARDNESS AS CaCO3	1234	1216
CHARGE BALANCE (%)	99.12	99.77
pH	NA	NA
CONDUCTIVITY (umho)	NA	NA

TFS = TOTAL FILTERABLE SOLIDS (DISSOLVED)

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT



Inter-Mountain
Laboratories, Inc.

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

CLIENT: Giant Refinery
ID: 9010041320
SITE: GBR-17
LAB NO: F5147

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/04/90
DATE COLLECTED: 10/04/90

Lab pH (s.u.).....	8.08
Lab conductivity, umhos/cm.....	2620
Lab resistivity, ohm-m.....	3.82
Total dissolved solids (180), mg/l..	2260
Total dissolved solids (calc), mg/l.	2150
Total alkalinity as CaCO ₃ , mg/l.....	239
Total acidity as CaCO ₃ , mg/l.....	0
Total hardness as CaCO ₃ , mg/l.....	994
Sodium absorption ratio.....	4.14

	mg/l	meq/l
Bicarbonate as HCO ₃	292	4.79
Carbonate as CO ₃	0	0
Chloride.....	76.1	2.15
Sulfate.....	1280	26.7
Calcium.....	257	12.8
Magnesium.....	85.8	7.05
Potassium.....	0.6	0.02
Sodium.....	300	13.1
Major cations.....		33
Major anions.....		33.6
Cation/anion difference.....		1.02 %

C. Neal Schaeffer
Lab Director



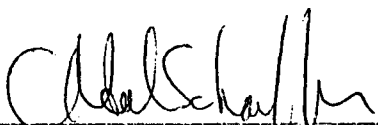
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GBR
ID: 9007101326
SITE: GBR-17
LAB NO: F4589

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/10/90
DATE COLLECTED: 07/10/90

Lab pH (s.u.).....	8.20
Lab conductivity, umhos/cm.....	2851
Lab resistivity, ohm-m.....	3.5075
Total dissolved solids (180), mg/l..	2346
Total dissolved solids (calc), mg/l.	2214
Total alkalinity as CaCO ₃ , mg/l.....	219.65
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1084.32
Sodium absorption ratio.....	3.61

	mg/l	meq/l
Bicarbonate as HCO ₃	268.0	4.39
Carbonate as CO ₃	0.0	0.00
Chloride.....	110.2	3.11
Sulfate.....	1290.9	26.89
Calcium.....	365.5	18.24
Magnesium.....	42.0	3.45
Potassium.....	0.5	0.01
Sodium.....	273.6	11.90
Major cations.....		33.60
Major anions.....		34.39
Cation/anion difference.....		1.17 %

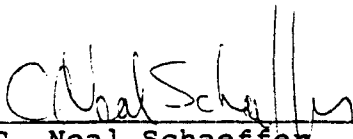

C. Neal Schaeffer
Lab Director

CLIENT: Giant Refinery
ID: GBR-17
SITE: GBR
LAB NO: F4088

DATE REPORTED: 04/17/90
DATE RECEIVED: 04/03/90
DATE COLLECTED: 04/03/90

Lab pH (s.u.).....	7.59
Lab Conductivity, umhos/cm.....	2928
Lab resistivity, ohm-m.....	3.4153
Total Dissolved Solids (180), mg/l..	2344
Total Dissolved Solids (calc), mg/l.	2258
Total Alkalinity as CaCO ₃ , mg/l.....	210.10
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1052.19
Sodium Absorption Ratio.....	3.94

	mg/l	meq/l
Bicarbonate as HCO ₃	256.3	4.20
Carbonate as CO ₃	0.0	0.00
Chloride.....	111.3	3.14
Sulfate.....	1314.3	27.38
Calcium.....	393.7	19.65
Magnesium.....	17.0	1.40
Potassium.....	1.4	0.03
Sodium.....	293.8	12.78
Major Cations.....		33.86
Major Anions.....		34.72
Cation/Anion Difference.....		1.26 %


C. Neal Schaeffer
Lab Director

CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: GBR-17

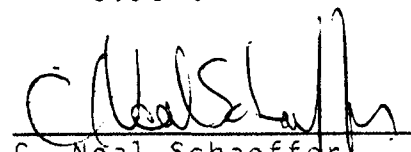
DATE RECEIVED: 12/11/89

LAB NO: F3655

DATE COLLECTED: 12/11/89

Lab pH (s.u.).....	8.24
Lab Conductivity, umhos/cm.....	2850
Lab resistivity, ohm-m.....	3.5088
Total Dissolved Solids (180), mg/l..	2310
Total Dissolved Solids (calc), mg/l.	2283
Total Alkalinity as CaCO ₃ , mg/l.....	198.00
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1063.13
Sodium Absorption Ratio.....	3.98

	mg/l	meq/l
Bicarbonate as HCO ₃	241.56	3.96
Carbonate as CO ₃	0.00	0.00
Chloride.....	117.76	3.32
Sulfate.....	1326.68	27.64
Calcium.....	412.68	20.59
Magnesium.....	8.14	0.67
Potassium.....	0.81	0.02
Sodium.....	298.50	12.98
Major Cations.....		34.27
Major Anions.....		34.92
Cation/Anion Difference.....		0.95 %


C. Neal Schaeffer
Senior Chemist



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

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/27/89
SAMPLE: B9D9131230
SITE: GDR-17 DATE RECEIVED: 09/13/89
LAB NO: F3162 DATE COLLECTED: 09/13/89

Lab pH.....	8.05
Lab Conductivity, umhos/cm.....	2984
Lab resistivity, ohm-m.....	3.3512
Total Dissolved Solids (180), mg/l..	2300
Total Dissolved Solids (calc), mg/l.	2280
Total Alkalinity as CaCO ₃ , mg/l.....	218.20
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	927.36
Sodium Absorption Ratio.....	4.96

	mg/l	meq/l
Bicarbonate as HCO ₃	266.20	4.36
Carbonate as CO ₃	0.00	0.00
Chloride.....	99.12	2.80
Sulfate.....	1334.91	27.81
Calcium.....	357.93	17.86
Magnesium.....	8.34	0.69
Potassium.....	1.36	0.03
Sodium.....	347.20	15.10
Major Cations.....		33.68
Major Anions.....		34.97
Cation/Anion Difference.....		1.87 %


C. Neal Schaeffer
Senior Chemist



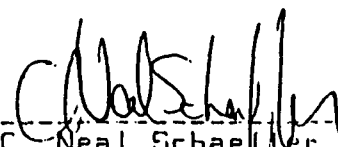
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

Client: GCL #8906140830
Site: GBR-17
IML #: F1574

Date of report: 06/23/89
Date sampled: 06/14/89
Date received: 06/14/89

Total dissolved solids (180)..... 2466.00 mg/l
Total dissolved solids (calculated). 2332.09 mg/l
Total alkalinity (as CaCO3)..... 222.00 mg/l
Total hardness (as CaCO3)..... 1134.76 mg/l
Lab pH..... 7.40
Lab conductivity..... 2970 umhos/cm @ 25C
Lab resistivity..... 3.3670 ohm-cm

	mg/l	meq/l
Acidity (as CaCO3).....	<1.0	<0.01
Bicarbonate (as HCO3).....	270.84	4.44
Carbonate (as CO3).....	0.00	0.00
Chloride.....	145.81	4.11
Sulfate.....	1332.05	27.77
Calcium.....	389.41	19.43
Magnesium.....	39.69	3.26
Potassium.....	0.72	0.02
Sodium.....	272.00	12.70
Major cations.....		35.41
Major anions.....		36.32
Anion/cation % difference.....		1.26 %


C. Neal Schaeffer
Senior Chemist

**** Quality Assurance Report
Duplicate Analysis**

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141313
Site: GBR-17
IML Lab No: F890860
Date Collected: 3/14/89
Date Received: 3/14/89

Total Dissolved Solids (180), mg/l.....	2480
Total Dissolved Solids (calc), mg/l.....	2402
Total Alkalinity as CaCO₃, mg/l.....	232
Total Hardness as CaCO₃, mg/l.....	1216

	mg/l	meq/l
Acidity as CaCO₃.....	<1	<0.01
Bicarbonate as HCO₃.....	283	4.64
Carbonate as CO₃.....	0	0.00
Chloride.....	161	4.54
Sulfate.....	1341	27.95
Calcium.....	422	21.06
Magnesium.....	40	3.26
Potassium.....	1	0.02
Sodium.....	298	12.96
Nitrate/Nitrite.....	2.85	0.20

Major Cations.....	37.30
Major Anions.....	37.13
Cation/Anion Difference.....	0.23 %



Jack M. Morgan
Senior Organic Chemist

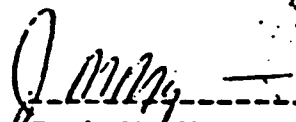
Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141313
Site: GBR-17
IML Lab No: F890860
Date Collected: 3/14/89
Date Received: 3/14/89

Total Dissolved Solids (180), mg/l.....	2496
Total Dissolved Solids (calc), mg/l.....	2407
Total Alkalinity as CaCO ₃ , mg/l.....	232
Total Hardness as CaCO ₃ , mg/l.....	1234

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	282	4.63
Carbonate as CO ₃	0	0.00
Chloride.....	162	4.56
Sulfate.....	1341	27.95
Calcium.....	415	20.72
Magnesium.....	48	3.96
Potassium.....	1	0.03
Sodium.....	301	13.09
Nitrate/Nitrite.....	3.14	0.22

Major Cations.....	37.80
Major Anions.....	37.14
Cation/Anion Difference.....	0.88 %



Jack M. Morgan
Senior Organic Chemist

Received: 12/09/88

RAS

RESULTS BY SAMPLE

REPORT

Work Order # 88-12-056

SAMPLE ID 8812070930

602-17

FRACTION VIA

TEST CODE OP04

NAME Orthophosphate

Date & Time Collected not specified

Category

VERIFIED LM

ANALYST INSTRMT

ANALYZED 12/09/88

UNITS mg/L as P

ANALYTE RESULT DET LIMIT

Orthophosphate 0.09% 0.09%

NOTES AND DEFINITIONS FOR THIS REPORT

- DET LIMIT = DETECTION LIMIT
- ND = not detected at detection limit
- NA = not analyzed
- * = less than 5 times the detection limit
- N/A = not available

SAMPLE ID 8812070930

602-17

FRACTION VIA

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

VERIFIED LM

ANALYST INSTRMT

ANALYZED 12/13/88

UNITS mg/L

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) 22000 10

NOTES AND DEFINITIONS FOR THIS REPORT

Received: 12/09/88

RAS - AUSTIN

REPORT

Results by Sample

Work Order # 88-12-056
Continued From Above

SAMPLE ID 8812070930 602-24

FRACTION 016

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8812071016 602-24

FRACTION 026

TEST CODE OP04

NAME Orthophosphate

Date & Time Collected not specified

Category

ANALYST WJS
INSTRMT 21

ANALYZED 12/09/88

UNITS mg/L as P

VERIFIED LN

ANALYTE RESULT DET LIMIT

Orthophosphate 0.068 0.020

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8812071016 602-24

FRACTION 026

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

VERIFIED LN

SAMPLE	Test:CA E	Test:CL IC	Test:EG5010	Test:F IC	Test:K E
Sample Id	ug/ml	mg/L	date complete	mg/L	ug/ml
60R-17-01 8812070930	370	170	12/30/88	2.4	<5.0
60R-24 02 8812071016	450	600	12/30/88	3.2	<5.0
60R-14 03 8812071123	470	690	12/30/88	3.8@	5.2*
60R-30 04 8812071201	460	620	12/30/88	3.6	<5.0
60R-15-05 8812071352	450	230	12/30/88	3.7	9.6*
60R-31 06 8812071431	500	450	12/30/88	3.5	<5.0
60R-33 07 8812071501	390	540	12/30/88	0.63	<5.0
60R-13 08 8812071601	470	720	12/30/88	0.56	<5.0
60R-6 09 8812071647	280	340	12/30/88	0.35	<5.0
60R-8 10 8812071738	360	630	12/30/88	0.70	6.7*
11 8812071738 011	<10				30*

SAMPLE	Test:EG E	Test:No E	Test:PREP X	Test:504 IC
Sample Id	ug/ml	mg/L	date complete	mg/L as SO4
60R-17-01 8812070930	42	290		1300



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
wps

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 8/26/88	LAB NO. WC-3450	USER CODE ☒ 59300 ☐ 59600 ☐ OTHER:
Collection DATE 8/24/88	SITE INFORMATION	Sample location
Collection TIME 1530		Collection site description
Collected by — Person/Agency Olson		

SEND FINAL REPORT TO
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: **William Olson**

GROUND WATER/HAZARDOUS WASTE BUREAU

Station/well code **G412-17**

Owner **Giant Bloom Field**

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level 31.72	Discharge	Sample type Grub
pH (00400) 7.2	Conductivity (Uncorrected) 2550 μmho	Water Temp. (00010) 16.5 °C	Conductivity at 25°C (00094) μmho	
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted 1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify:			

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	3051 μmho	8/29	☒ Calcium (00915)	388 mg/l	9/28
☐ Total non-filterable residue (suspended) (00530)	_____ mg/l	_____	☒ Magnesium (00925)	50.6 mg/l	9/28
☐ Other:	_____	_____	☒ Sodium (00930)	322 mg/l	9/28
☐ Other:	_____	_____	☒ Potassium (00935)	101 mg/l	9/28
☐ Other:	_____	_____	☒ Bicarbonate (00440)	268 mg/l	9/15
			☒ Chloride (00940)	1166 mg/l	9/22
			☒ Sulfate (00945)	1340 mg/l	9/22
			☒ Total filterable residue (dissolved) (70300)	2528 mg/l	9/14
			☒ Other: Cation-Anion balance	1022	
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	_____ mg/l	_____	☐ Nitrate-N +, Nitrate-N dissolved (00631)	_____ mg/l	_____
☐ Ammonia-N total (00610)	_____ mg/l	_____	☐ Ammonia-N dissolved (00608)	_____ mg/l	_____
☐ Total Kjeldahl-N ()	_____ mg/l	_____	☐ Total Kjeldahl-N ()	_____ mg/l	_____
☐ Chemical oxygen demand (00340)	_____ mg/l	_____	☐ Other:	_____	_____
☐ Total organic carbon ()	_____ mg/l	_____			
☐ Other:	_____	_____			
☐ Other:	_____	_____			
Laboratory remarks 135			Analyst	Date Reported 10/11/88	Reviewed by CO



GTEL
Environmental
Laboratories

A division of Groundwater Technology, Inc.

Western Region

4080-C Pike Lane
Concord, CA 94520

(415) 685-7852

(800) 544-3422 from inside California

(800) 423-7143 from outside California

Page 2 of 3

MANAGER: Michael Wood

PROJECT#: 232-799-5009-11

LOCATION: Farmington, NM

MAJOR CATIONS
TEST RESULTS

MATRIX: Water 6/7/88

GBR-17 TK-32 TK-24 TK-22

PARAMETER	UNITS	MDL	LAB #	I.D. #	24484A	24485A	24486A	24487A
-----------	-------	-----	-------	--------	--------	--------	--------	--------

Sodium	mg/L	0.1			281	620	700	752
Potassium	mg/L	1.0			1.1	2.9	3.5	3.8
Calcium	mg/L	0.1			411	474	521	579
Magnesium	mg/L	0.1			44	48	50	54

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD: EPA 3005/6010

A division of Groundwater Technology, Inc.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

Page 1 of 2

07/12/88 JP
MANAGER: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming N.E. Suite 104
Albuquerque, NM 87111

PROJECT#: 232-799-5009-9
LOCATION: Farmington, NM

SAMPLED: 06/01/88 BY: T. LePage
RECEIVED: 06/03/88 BY: J. Floro
ANALYZED: 06/07/88 BY: R. Heines
MATRIX: Water
UNITS: mg/L

TEST RESULTS

GRR-37 GBR-24D TK 22 GBR-31 GBR-17

	MDL	LAB #	24480	24481	24482	24483	24484
PARAMETER		I.D.#	010530	010347	020135	021015	021220

Total Dissolved Solids	10	3996	3487	4094	4374	2382
Bicarbonate	20	124	130	297	211	140
Carbonate	20	120	120	120	120	120
Chloride	1	370	630	910	850	190
Sulfate	1	2270	1640	1570	1920	1350

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD: TDS by Standard Method 209B
Bicarbonate by Standard Method 403
Carbonate by Standard Method 403
Chloride by Standard Method 429
Sulfate by Standard Method 429



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WNN

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED	4/22/88	LAB NO.	WC-1363	USER CODE	☒ 59300 ☐ 59600 ☐ OTHER:
Collection DATE	88104120	SITE INFORMATION	Sample location		
Collection TIME	15:05		Well GBR-17 Free Acres		
Collected by — Person/Agency		Collection site description			
McQuillan/Doremus		W side of Giant Refinery			

RECEIVED 29 N. 12 W. 22. 333

SEND
FINAL
REPORT
TO

GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: McQuillan

JUL 01 1988

GROUND WATER/HAZARDOUS WASTE
BUREAU

Station/
well code GBR-17
Owner Giant Refinery

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	Water Temp. (00010)	Conductivity at 25°C (00094)	
	2580 μ mho	15.0 °C		
Field comments well purged w/ a PVC pump prior to sampling w/ PVC bailer				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	one	☒ NF: Whole sample (Non-filtered)	☐ F: Filtered in field with 0.45 μ membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify:				

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☒ Calcium (00915)	396 mg/l	5/19
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	70.8 mg/l	5/19
☐ Other:			☒ Sodium (00930)	299 mg/l	5/12
☐ Other:			☒ Potassium (00935)	4 mg/l	5/12
☐ Other:			☒ Bicarbonate (00440)	214 mg/l	6/2
			☒ Chloride (00940)	141 mg/l	5/25
			☒ Sulfate (00945)	960 mg/l	
			☒ Total filterable residue (dissolved) (70300)	2598 mg/l	6/23
			☒ Other: bromide	20.3 mg/l	6/22
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
2/1				6/28/88	CR

REPORT TO:

McQuill

Ground Water & Hazardous Waste Bureau
 Environmental Improvement Division
 Health & Environment Department
 P.O. Box 968 - Crown Building
 Santa Fe, NM 87504-0968

LAB NUMBER

WE 3612

DATE RECEIVED

8-7-87

DATE REPORTED

10/7/87

Initials

SLD USER CODE NUMBER

59300

Well Location Address GBR-17, Lec Acres, San Juan Co. 29N.12W.22.333Point of Collection well headWell Owner/User Giant Refinery

RECEIVED

Number of People Drinking Water from Well 0

OCT 22 1987

Collected 8708051212By Boyer

Name

LIQUID WASTE/GROUND
SURVEILLANCE Agency

Well Depth _____

pH _____

Water Level _____

Conductivity
(Uncorrected)2900

umho/cm

Taste? Odor? Color? Collectors Remarks

Temperature

18.5

°C

Conductivity at
25°C

umho/cm

PROJECT: Lec AcresFrom _____, A-H₂SO₄ Sample:From NF, NA Sample:Date
Analyzed☐ Nitrate-N⁺ _____ mg/l

Nitrite-N

☐ Ammonia-N _____ mg/l☐ Chemical _____ mg/l

oxygen demand

☐ _____☒ Calcium 464 mg/l 9/8☒ Potassium 0.78 mg/l 8/87☒ Magnesium 88 mg/l☒ Sodium 380 mg/l 8/31☒ Bicarbonate 305 mg/l 7/1☒ Chloride 337 mg/l 9/1☒ Sulfate 1340 mg/l "☒ Total Solids 2820 mg/l 10/2☒ Bromide 1.57 mg/L 9/25From _____, A-HNO₃ Sample:☐ ICAP Scan☐ Metals by AA (Specify)This form accompanies one sample(s) marked as follows to indicate field treatment:☒ NF

Whole sample (no filtration)

F:

Filtered in field with 0.45u membrane filter

A-H₂SO₄:Acidified with 2 ml conc H₂SO₄/lA-HNO₃:Acidified with 5ml conc HNO₃/l☒ NA

No acid added

Seds intact + transferred to:

8/6/87 16:10

Chris Dev intact 16:10

transfer to J. Gould
 8/6/87 15:00 Dennis McQuillan
 15:00 John Gould



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 wnf
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED	11/26/86	LAB NO.	WC 5451	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	86/11/21	SITE INFORMATION	Sample location	Giant, Bloomfield Refinery	
Collection TIME	1450		Collection site description	GBR-17	
Collected by	Person/Agency BOYER/OLSON /OCD				

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) 1500 μ mho	Water Temp. (00010) 16 °C	Conductivity at 25°C (00094) μ mho	
Field comments				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify: ☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added				

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	4078 μ mho	12/16	☒ Calcium (00915)	580 mg/l	12-4
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	70.8 mg/l	12-4
☒ Other: pH	8.19	12/8	☒ Sodium (00930)	358.8 mg/l	12-4
☐ Other:			☒ Potassium (00935)	40.5 mg/l	12-4
☐ Other:			☒ Bicarbonate (00440)	362 mg/l	12/8
			☒ Chloride (00940)	671/649 mg/l	12/15
			☒ Sulfate (00945)	1344 mg/l	12/18
			☒ Total filterable residue (dissolved) (70300)	3434 mg/l	12/9
			☒ Other: CO ₃ BR	0	12/8
				1.7	12/10
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
				12/16/86	CG

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

859
2

DATE RECEIVED	6/10/86	LAB NO.	WC-2507	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	6/10/86	SITE INFORMATION	Sample location	GRANT BLOOMFIELD GBR-17	
Collection TIME	1230		Collection site description	Aug 6 1986	
Collected by	Person/Agency		BOYER /OCD		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
				GRAB
pH (00400)	7	Conductivity (Uncorrected) μ mho	Water Temp. (00010) 18.5 °C	Conductivity at 25°C (00094) μ mho
		5500		
Field comments				
ALLUVIAL WELL, NO ODOR, LIES ACROSS ARROYO				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☒ Calcium (00915)	712 mg/l	6-11
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	63.4 mg/l	6-11
☐ Other:			☒ Sodium (00930)	616.4 mg/l	"
☐ Other:			☒ Potassium (00935)	1.17 mg/l	"
☐ Other:			☒ Bicarbonate (00440)	376 mg/l	6/12
			☒ Chloride (00940)	1905 mg/l	6/17
			☒ Sulfate (00945)	1202 mg/l	6/19
			☒ Total filterable residue (dissolved) (70300)	4355 mg/l	6/12
			☒ Other: CO ₃	0	6/13
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
				7/10/86	CS

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____

108



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

850
2

DATE RECEIVED	6/10/86	LAB NO.	WC-2508	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	86/06/05	SITE INFORMATION	Sample location		
Collection TIME	1230		GIANT BLOOMFIELD GBR-17		
Collected by — Person/Agency		Collection site description			
BOYER		/OCD			

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5312

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
				GRAB
pH (00400)	7	Conductivity (Uncorrected) μ mho	Water Temp. (00010) 18.5 °C	Conductivity at 25°C (00094) μ mho
		5500		
Field comments				
ALLUVIAL WELL, NO ODOR, LEE ACRES ARROYO				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☒ Calcium (00915)	mg/l
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	mg/l
☐ Other:			☒ Sodium (00930)	mg/l
☐ Other:			☒ Potassium (00935)	mg/l
☐ Other:			☒ Bicarbonate (00440)	mg/l
			☒ Chloride (00940)	mg/l
			☒ Sulfate (00945)	mg/l
			☒ Total filterable residue (dissolved) (70300)	mg/l
			☒ Other: CO ₃	0
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄	
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:	
☐ Total organic carbon ()	mg/l			
☐ Other:				
☐ Other:				
Laboratory remarks		Analyst	Date Reported	Reviewed by
			7/10/86	CD

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____

LOCATION

GBR-17

TEST CODE

TOTAL DISSOLVED SOLIDS

COMPOUND -----	05/29/86 -----	12/07/88 -----
FILTERABLE RESIDUE	3024	2500

ND = not detected at detection limit
NA = not analyzed
N\A = not available



LOCATION: GBR-17

TEST: Metals

ANALYTE	6/10/86 mg/l	11/21/86 mg/l	10/7/87 mg/l	11/12/87 mg/l
ALUMINUM	ND	ND	NA	0.42
ARSENIC	0.007	ND	ND	NA
BARIUM	ND	ND	ND	1.52
BERYLLIUM	ND	ND	NA	NA
BORON	0.3	0.2	NA	NA
CADMIUM	ND	ND	0.004	0.018
CALCIUM	730	660	NA	NA
HEXAVALENT CHROMIUM	NA	NA	ND	ND
TOTAL CHROMIUM	ND	ND	ND	2.91
COBALT	ND	ND	NA	NA
COPPER	ND	ND	NA	NA
IRON	ND	ND	NA	NA
LEAD	ND	ND	ND	0.06
MAGNESIUM	60	54	NA	NA
MANGANESE	ND	ND	NA	NA
MERCURY	ND	NA	ND	ND
MOLYBDENUM	ND	ND	NA	NA
NICKEL	0.1	0.1	NA	NA
SELENIUM	NA	NA	ND	ND
SILICON	5.9	6.2	NA	NA
SILVER	ND	ND	0.017	0.019
STRONTIUM	12	1	NA	NA
TIN	ND	ND	NA	NA
VANADIUM	ND	ND	NA	NA
ZINC	ND	ND	NA	NA

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT

Analytical**Technologies, Inc.**

METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/12/87
LAB RECEIPT DATE: 11/16/87
MATRIX: WATER

SAMPLE ID: 8711120915
LOCATION: 6BR-17
LAB SAMPLE #: 3574-8
UNITS: mg/l

<u>ANALYSIS</u> <u>DATE</u>	<u>CONSTITUENT</u> <u>NAME</u>	<u>DILUTION</u> <u>FACTOR</u>	<u>DETECTION</u> <u>LIMIT</u>	<u>RESULT</u>
12/01/87	ARSENIC (As)	10	0.10	0.42
12/02/87	BARIUM (Ba)	1	0.060	1.52
12/01/87	CADMIUM (Cd)	1	0.003	0.018
11/16/87	HEXAVALENT			
	CHROMIUM (CR+6)	1	0.03	ND
12/01/87	TOTAL			
	CHROMIUM (Cr Tot)	4	0.04	2.91
11/30/87	LEAD (Pb)	2	0.004	0.060
11/19/87	MERCURY (Hg)	1	0.0005	ND
12/01/87	SELENIUM (Se)	1	0.010	ND
12/01/87	SILVER (Ag)	1	0.010	0.019

* THE LISTED DETECTION LIMITS REFLECT ANY SAMPLE DILUTION.

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: *M. Barry*

DATE: 12/10/87

8710071530



Analytical Technologies, Inc.

METALS

PROJECT: GBR

SAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
MATRIX: WATER

SAMPLE ID: 8710071530
LOCATION: GBR 17
LAB SAMPLE #: 3439-10
UNITS: mg/l

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
10/14/87	ARSENIC (As)	1	0.010	ND
10/15/87	BARIUM (Ba)	1	0.060	ND
10/13/87	CADMIUM (Cd)	1	0.003	0.004
10/12/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
10/13/87	TOTAL CHROMIUM (T. Cr)	1	0.010	ND
10/12/87	LEAD (Pb)	1	0.002	ND
10/18/87	MERCURY (Hg)	1	0.0002	ND
10/14/87	SELENIUM (Se)	1	0.010	ND
10/14/87	SILVER (Ag)	1	0.010	0.017

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: *DMH*

DATE: 10/20/87



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED	11/26/86	LAB NO.	HM2429	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	86/11/21	SITE INFORMATION	Sample location		
Collection TIME	1430		Giant, Bloomfield Refinery		
Collected by — Person/Agency	BOYER/OLSON/OCD		Collection site description		
			GBR-17		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

Station/
well code
Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	1500 μ mho	Water Temp. (00010)	16 °C
			Conductivity at 25°C (00094)	μ mho
Field comments				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added		☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added
				☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: ICAP			☐ Sodium (00930)	mg/l	
☒ Other: AS			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:			Analyst	Date Reported	Reviewed by
☐ Other:				11/13/87	Jim Ashby
Laboratory remarks					

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

ICAP SCAN

SLD Lab No. HM 2429

Analyst VB

Date Analyzed 12/5/86

Reviewed by: Vin Ashley

Date Reported: 01/13/87

ELEMENT	ICAP VALUE (mg/l)	AA VALUE (mg/l)
Aluminum	<0.1	
Barium	<0.1	
Beryllium	<0.1	
Boron	0.2	
Cadmium	<0.1	
Calcium	660.	
Chromium	<0.1	
Cobalt	<0.1	
Copper	<0.1	
Iron	<0.1	
Lead	<0.1	
Magnesium	54.	
Manganese	<0.05	
Molybdenum	<0.1	
Nickel	0.1	
Silicon	6.2	
Silver	<0.1	
Strontium	11.	
Tin	<0.1	
Vanadium	<0.1	
Zinc	<0.1	
Arsenic		<0.005
Selenium		
Mercury		



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

pf

HEAVY METALS GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED <u>6/10/86</u>	LAB NO. <u>HM-1076</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>6/10/86</u>	SITE INFORMATION	Sample location <u>GIANT BLOOMFIELD GBR-17</u>
Collection TIME <u>1230</u>		Collection site description
Collected by — Person/Agency <u>BOYER</u> /OCD		

260

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5312

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type <u>GRAB</u>
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>5500</u> μ mho	Water Temp. (00010) <u>18.5</u> °C	Conductivity at 25°C (00094) μ mho	
Field comments <u>ALLUVIAL WELL, NO ODOR, LIES ACROSS ARROYO</u>				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added	☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: <u>ICAP</u>			☐ Sodium (00930)	mg/l	
☒ Other: <u>As</u>	<u>0.007</u>		☐ Potassium (00935)	mg/l	
☒ Other: <u>Hg</u>	<u><0.0005</u>		☐ Bicarbonate (00440)	mg/l	
NF, A-H ₂ SO ₄			☐ Chloride (00940)	mg/l	
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Sulfate (00945)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Total filterable residue (dissolved) (70300)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Other:		
☐ Chemical oxygen demand (00340)	mg/l		F, A-H ₂ SO ₄		
☐ Total organic carbon ()	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Other:			☐ Ammonia-N dissolved (00608)	mg/l	
☐ Other:			☐ Total Kjeldahl-N ()	mg/l	
Laboratory remarks			Analyst	Date Reported <u>7/8/86</u>	Reviewed by <u>Jim Ashley</u>

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____

Lab Number: HM 1076

Date Submitted: 6/10/86

By: Boyer

Sample ~~ID~~ de: Giant Bloomfield GBR-17

Date Analyzed: 6/19/86

Reviewed By: Jim Ashby

Date Reported: 7/8/86

<u>Element</u>	<u>ICAP VALUE (MG/L)</u>	<u>AA VALUE (MG/L)</u>
Aluminum	<u><0.1</u>	<u> </u>
Barium	<u><0.1</u>	<u> </u>
Beryllium	<u><0.1</u>	<u> </u>
Boron	<u>0.3</u>	<u> </u>
Cadmium	<u><0.1</u>	<u> </u>
Calcium	<u>730.</u>	<u> </u>
Chromium	<u><0.1</u>	<u> </u>
Cobalt	<u><0.1</u>	<u> </u>
Copper	<u><0.1</u>	<u> </u>
Iron	<u><0.1</u>	<u> </u>
Lead	<u><0.1</u>	<u> </u>
Magnesium	<u>60.</u>	<u> </u>
Manganese	<u><0.05</u>	<u> </u>
Molybdenum	<u><0.1</u>	<u> </u>
Nickel	<u>0.1</u>	<u> </u>
Silicon	<u>5.9</u>	<u> </u>
Silver	<u><0.1</u>	<u> </u>
Strontium	<u>12.</u>	<u> </u>
Tin	<u><0.1</u>	<u> </u>
Vanadium	<u><0.1</u>	<u> </u>
Zinc	<u><0.1</u>	<u> </u>
Arsenic		<u>0.007</u>
Selenium		<u> </u>
Mercury		<u><0.0005</u>

LOCATION

GBR-17

TEST CODE

METALS

COMPOUND

Pb

05/29/86

0.076

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-18

<u>SAMPLER</u>	<u>OCD</u>	<u>GIANT</u>	<u>OCD**</u>
<u>DATE</u>	<u>6/8/88</u>	<u>8/24/88</u>	<u>8/24/88</u>
<u>PARAMETER</u>			
DETECTION LIMIT	0.5	<1.0	0.5
BENZENE	TR	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND
BROMOFORM	ND	ND	ND
BROMOMETHANE	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND
CHLOROBENZENE	ND	ND	ND
CHLOROETHANE	ND	ND	ND
CHLOROFORM	ND	ND	ND
CHLOROMETHANE	ND	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND
1,3-DICHLOROBENZENE	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND
DICHLORODIFLUOROMETHANE	ND	ND	ND
1,1-DICHLOROETHANE	ND	ND	ND
1,2-DICHLOROETHANE	ND	ND	ND
1,1-DICHLOROETHENE	ND	ND	ND
CIS-1,2-DICHLOROETHENE	ND	NA	ND
TRANS-1,2-DICHLOROETHENE	ND	NA	ND
TOTAL 1,2 -DICHLOROETHENE	NA	ND	NA
1,2-DICHLOROPROPANE	ND	ND	ND
ETHYLBENZENE	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND
TETRACHLOROETHENE	ND	ND	ND
TOLUENE	TR	ND	ND
1,1,1-TRICHLOROETHANE	ND	ND	ND
1,1,2-TRICHLOROETHANE	ND	ND	ND
TRICHLOROETHENE	ND	ND	ND
TRICHLOROFLUOROMETHANE	ND	ND	ND
VINYL CHLORIDE	ND	ND	ND
TOTAL XYLENES	TR	ND	ND

TR - TRACE
 ND - NOT DETECTED
 NA - NOT ANALYZED
 ** - SPLIT SAMPLE

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-18

<u>SAMPLER</u>	GIANT	OCD	OCD	OCD*	OCD
<u>DATE</u>	<u>5/9/86</u>	<u>6/5/86</u>	<u>7/8/86</u>	<u>7/8/86</u>	<u>11/21/86</u>
<u>PARAMETER</u>					
DETECTION LIMIT	1.0	2.0	2.0	1.0	5.0
BENZENE	ND	50.0	ND	ND	ND
BROMODICHLOROMETHANE	NA	ND	ND	ND	ND
BROMOFORM	NA	ND	ND	ND	ND
BROMOMETHANE	NA	ND	ND	ND	ND
CARBON TETRACHLORIDE	NA	ND	ND	ND	ND
CHLOROBENZENE	NA	ND	ND	ND	ND
CHLOROETHANE	NA	ND	ND	ND	ND
CHLOROFORM	NA	ND	ND	ND	ND
CHLOROMETHANE	NA	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	NA	ND	ND	ND	ND
1,2-DICHLOROBENZENE	NA	ND	ND	ND	ND
1,3-DICHLOROBENZENE	NA	ND	ND	ND	ND
1,4-DICHLOROBENZENE	NA	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	NA	ND	ND	ND	ND
1,1-DICHLOROETHANE	NA	ND	ND	ND	ND
1,2-DICHLOROETHANE	NA	ND	ND	ND	ND
1,1-DICHLOROETHENE	NA	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	NA	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	NA	ND	ND	ND	ND
1,2-DICHLOROPROPANE	NA	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	NA	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	NA	ND	ND	ND	ND
TETRACHLOROETHENE	NA	ND	ND	ND	ND
TOLUENE	ND	11.0	ND	1.0	ND
1,1,1-TRICHLOROETHANE	NA	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	NA	ND	ND	ND	ND
TRICHLOROETHENE	NA	ND	ND	ND	ND
TRICHLOROFLUOROMETHANE	NA	ND	ND	ND	ND
VINYL CHLORIDE	NA	ND	ND	ND	ND
TOTAL XYLENES	ND	4.0	ND	ND	ND

TR - TRACE
 ND - NOT DETECTED
 NA - NOT ANALYZED
 * - DUPLICATE ANALYSIS

LOCATION: GBR-18

TEST: Aromatic Volatile Organic Hydrocarbons

05/09/86

ug/l

BENZENE	ND
CHLOROBENZENE	ND
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
ETHYLBENZENE	ND
TOLUENE	ND
META-XYLENE	ND
ORTH-XYLENE	ND
PARA-XYLENE	ND
M,O-XYLENE	ND
O,P-XYLENE	ND
XYLENES	ND

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT

LOCATION

GBR-18

TEST CODE

EPA601/602

COMPOUND	06/05/86	06/08/88	08/24/88
1,1,1-TRICHLOROETHANE	NA	NA	ND
1,1,2,2-TETRACHLOROETHANE	NA	NA	ND
1,1,2-TRICHLOROETHANE	NA	NA	ND
1,1-DICHLOROETHANE	NA	NA	ND
1,2-DICHLOROBENZENE	NA	NA	ND
1,2-DICHLOROETHANE	NA	NA	ND
1,2-DICHLOROETHENE (TOTAL)	NA	NA	ND
1,2-DICHLOROPROPANE	NA	NA	ND
1,3-DICHLOROBENZENE	NA	NA	ND
1,4-DICHLOROBENZENE	NA	NA	ND
BENZENE	50	TR	ND
BROMODICHLOROMETHANE	NA	NA	ND
BROMOFORM	NA	NA	ND
BROMOMETHANE	NA	NA	ND
CARBON TETRACHLORIDE	NA	NA	ND
CHLOROBENZENE	NA	NA	ND
CHLOROETHANE	NA	NA	ND
CHLOROFORM	NA	NA	ND
CIS-1,3-DICHLOROPROPENE	NA	NA	ND
DIBROMOCHLOROMETHANE	NA	NA	ND
DICHLORODIFLUOROMETHANE	NA	NA	ND
ETHYLBENZENE	NA	NA	ND
META XYLENE	4	NA	ND
P,M-XYLENE	TR	NA	ND
METHYLENE CHLORIDE	NA	NA	ND
ORTHO & PARA XYLENE	NA	NA	ND
TETRACHLOROETHENE	NA	NA	ND
TOLUENE	11	TR	ND
TRANS-1,3-DICHLOROPROPENE	NA	NA	ND
TRICHLOROETHENE	NA	NA	ND
TRICHLOROFLUOROMETHANE	NA	NA	ND
VINYL CHLORIDE	NA	NA	ND

ND = not detected at detection limit

NA = not analyzed

N/A = not available



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

88-1428-C

REPORT TO: William Olson S.L.D. No. OR- 1428 AtB
EID Ground Water Bureau DATE REC. 8-26-88
1190 St. Francis Dr. PRIORITY 3
Santa Fe, N.M. 87504-0968 PHONE(S): 827-2899

COLLECTION CITY: Lee Acres; COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8/8/88 24:16:02

LOCATION CODE: (Township-Range-Section-Tracts) + + + (10N06E24342)

USER CODE: 59300 SUBMITTER: Olson CODE:

SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER:

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

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

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
☐ Other Specific Compounds or Classes
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= 7.8; Conductivity= 5200 umho/cm at 21.5 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water 13.71 ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Blomfield - GBR-18

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): William Olson Method of Shipment to the Lab: hand

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Gary Eden
at (location) SLO on 8/26/88 at 14:55 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☒ OR Seals Intact: Yes ☐ No ☐

Signatures William Olson Gary Eden

ANALYSES PERFORMED

LAB. No.: OR- 1428

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
 Other Specific Compounds or Classes

☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>	<i>N.D.</i>		
<i>halogenated purgeables</i>	<i>N.D.</i>		
* DETECTION LIMIT *	<i>1.549/1</i>	+ DETECTION LIMIT +	<i>†</i>

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: *Henry C. Eden* date: *9/13/88*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *9/13/88* Analyst's signature: *Henry C. Eden*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *R. Meyerheim*



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80816104

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : GIANT REFINING
PROJECT # : (NONE)
PROJECT NAME : GIANT BLOOMFIELD
CLIENT I.D. : GBR 18
SAMPLE MATRIX : AQUEOUS

DATE SAMPLED : 08/24/88
DATE RECEIVED : 08/26/88
DATE EXTRACTED : N/A
DATE ANALYZED : 08/31/88
UNITS : UG/L
DILUTION FACTOR : 1

COMPOUNDS

RESULTS

BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE (TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	95
TRIFLUOROTOLUENE (%)	90



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

88-0853-C

REPORT TO: DAVID BOYER

S.L.D. No. OR-

N.M. OIL CONSERVATION DIVISION

DATE REC. 6/10/88

P.O. Box 2088

PRIORITY 3

Santa Fe, NM 87504-2088

PHONE(S): 827-5812

COLLECTION CITY: Bloomfield

COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 880610 80935

LOCATION CODE: (Township-Range-Section-Tracts) 219N+12W+217+1111 (10N06E24342)

USER CODE: 82235 SUBMITTER: David Boyer CODE: 2610

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: ☐

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

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

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= 7; Conductivity= 4200 umho/cm at 16 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate

Depth to water 13.2 ft.; Depth of well 46.9 ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Refining - GBR-18 Bloomfield

No H/C odors, Pumped and bailed 12 gal dry sample

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer Method of Shipment to the Lab: State Car

CHAIN OF CUSTODY

I certify that this sample was transferred from David Boyer to Mary C. Eden
at (location) SLD - ALB on 6/9/88 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐

Signatures David Boyer Mary C. Eden

For OCD use: Date owner notified: 8/19/88 Phone or Letter? Initials DBB

ANALYSES PERFORMED

LAB. No.: OR-

853

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
 Other Specific Compounds or Classes

☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>			
<i>benzene</i>	<i>T.R.</i>		
<i>toluene</i>	<i>T.R.</i>		
<i>o-xylene</i>	<i>N.D.</i>		
<i>p+m-xylene</i>	<i>T.R.</i>		
<i>o-xylene</i>	<i>N.D.</i>		
<i>halogenated purgeables</i>	<i>N.D.</i>		
* DETECTION LIMIT *	<i>1.54%</i>	+ DETECTION LIMIT +	<i>†</i>

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: *Shirley C. Allen* date: *6/14/88*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

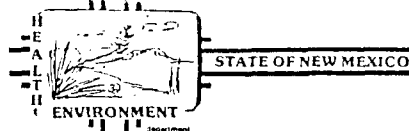
Date(s) of analysis: *6/14/88* Analyst's signature: *Shirley C. Allen*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *R. Meyerheim*

86- 1376-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO: David Boyer S.L.D. No. OR- 1376A, B
N.M. Oil Conservation Division DATE REC. 11-26-86
P. O. Box 2088
Santa Fe, N.M. 87504-2088 PRIORITY _____
 PHONE(S): 827-5812 USER CODE: 8 2 2 3 5
 SUBMITTER: David Boyer CODE: 2 6 0
 SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8 6 1 1 2 1 1 4 2 5 2 8 8
 SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____ CODE: _____
 COUNTY: San Juan CITY: Los Alamos CODE: _____
 LOCATION CODE: (Township-Range-Section-Tracts) 35N+12W+22+332 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes _____

☐ _____
☐ _____
☐ _____
☐ _____
☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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: _____

FIELD DATA:pH= _____; Conductivity= 150 umho/cm at 16.5°C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant GBR-18

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer Method of Shipment to the Lab: Hand-carried

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Mary C. Eden
 at (location) HED/SLD on 11/26/86 at 4:02 PM and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐Signatures William Olson Mary C. Eden

For OCD Use: Date Owner Notified _____ Phone or Letter? _____ Initials _____

ANALYSES PERFORMED

LAB. NO. OR- 1376

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐ _____
☐ _____
☐ _____
☐ _____
☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
aromatic purgeables	ND		
halogenated purgeables	ND		
* DETECTION LIMIT *	* 5 ppb	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: date: 12-4-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4 Dec 86 Analyst's signature: J. Finney

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

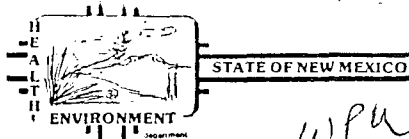
Reviewers signature: P. Meyerhew

86-0813-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE

Albuquerque, NM 87106 841-2570



REPORT TO: David Boyer
 N.M. Oil Conservation Division
 P. O. Box 2088
 Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 813 A-B

DATE REC. 2-11-86

PHONE(S): 827-5812 USER CODE: 8 2 2 3 5

SUBMITTER: David Boyer CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8 6 0 7 0 8 1 0 5 0 R C A

SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: CODE:

COUNTY: SAN JUAN; CITY: BLOOMFIELD CODE:

LOCATION CODE: (Township-Range-Section-Tracts) 2 9 N + 1 2 W + 2 7 + 1 1 1 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐ _____
☐ _____
☐ _____
☐ _____
☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH=; Conductivity= umho/cm at °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

**GIANT REFINERY - BLOOMFIELD - GBR-18, BAILED, SAMPLE
 COLLECTED ON 3RD BAIL - SLIGHT Hydrocarbon odor**

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): R. Anderson Method of Shipment to the Lab:

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from to

at (location) on / / - : and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures

For OCD Use: Date Owner Notified Phone or Letter? Initials

ANALYSES PERFORMED

LAB. No. OR-

813

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
aliphatic purgeables	ND		
halogenated purgeables	ND		
benzene	ND		
toluene	1 ppb		
ethylbenzene	ND		
p-xylene	ND		
m-xylene	ND		
o-xylene	1 ppb		
* DETECTION LIMIT *	*	+ DETECTION LIMIT +	+ 1 ppb

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Ten other compounds were detected by the aromatic screen that were not identified and appeared in trace amounts < 5 ppb.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☐ No ☒ Seal(s) broken by: _____ date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

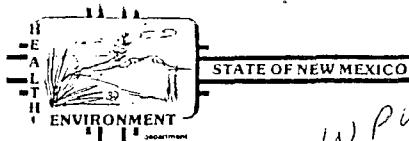
Date(s) of analysis: 16 July 86 Analyst's signature: J. J. Finney

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: K. Meyer

86-0812-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 812 A-B
DATE REC. 7-11-86

PHONE(S): 827-5812 USER CODE: 8 2 2 3 5
SUBMITTER: David Boyer CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8607081100RCA

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: CODE: ☐ ☐ ☐

COUNTY: SAN JUAN CITY: BLOOMFIELD CODE: ☐ ☐ ☐

LOCATION CODE: (Township-Range-Section-Tracts) 29 N + 12 W + 27 + 1 11 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= ; Conductivity= umho/cm at °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

GIANT REFINERY, BLOOMFIELD - GBR-18, BAILED, SAMPLE
COLLECTED ON 20th BAIL - SLIGHT HYDROCARBON ODOR

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): R. Anderson Method of Shipment to the Lab:

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from to

at (location) on / - and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures

For OCD Use: Date Owner Notified Phone or Letter? Initials

ANALYSES PERFORMED

LAB. No. OR- 812

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
aromatic purgeables	ND		
halogenated purgeables	ND		
* DETECTION LIMIT *	*	+ DETECTION LIMIT +	2 ppb

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

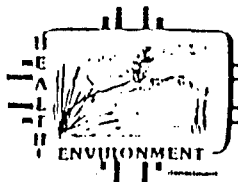
Seal(s) Intact: Yes ☐ No ☒ Seal(s) broken by: _____ date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 15 July 86 Analyst's signature: J. Steiner

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: K. Meyer



86- 0680-C

STATE OF NEW MEXICO

754
SCIENTIFIC LABORATORY DIVISION700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO:

DAVID G. BOYER

PLEASE PRINT

NEW MEXICO OIL CONSERVATION DIV.

P.O. BOX 2088

SANTA FE, NM 87504-2088

S.L.D. No.: OR- 680-17.6

DATE REC.: 06/09/86

SLD PRIORITY #:

PHONE(S):

827-5812

USER CODE: 8 2 2 3 5

SUBMITTER:

DAVID BOYER

SUBMITTER CODE: | | | |

SAMPLE TYPE: WATER ☒, SOIL ☐, OTHER

SAMPLE TYPE CODE: | | |

COLLECTED: 86/06/15 - 14:35 BY DGB

CODE: |
Y Y M M D D H H M M I I I I

SOURCE: GBR-18, Giant Bloomfield

CODE: |
AQUIFER DEPTH

NEAREST CITY: Bloomfield Refinery

CODE: | | | | | | |

LOCATION:

CODE: 29 N 12 W 22 S 31
TOWNSHIP RANGE SECTION TRACTS

pH= 7; Conductivity= 4100 umho/cm at 17 °C; Chlorine Residual=

Dissolved Oxygen= mg/l; Alkalinity=; Flow Rate=

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Well below raw water pond

I certify that the statements in this block accurately reflect the results of my field analyses, observations and activities. DGB

Method of shipment to the Laboratory Hand carried

This form accompanies 2 Septum Vials, Glass Jugs, Containers are marked as follows to indicate preservation:

- ☐ NP: No preservation; sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (not frozen).
☐ P-Na₂S₂O₃; Sample preserved with Na₂S₂O₃ to remove chlorine residual.

I (we) certify that this sample was transferred from DGB to R Meyerlein at (location) SLB on

6/9/86 - 16:20 and that the statements in this block are correct.

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures R Meyerlein DGB

(we) certify that this sample was transferred from

at (location) on

and that the statements in this block are correct.

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures

ANALYSES REQUESTED

LAB. No.: ORG- 680

PLEASE CHECK THE APPROPRIATE BOXES BELOW TO INDICATE THE TYPE OF ANALYTICAL SCREENS REQUIRED. WHENEVER POSSIBLE LIST SPECIFIC COMPOUNDS SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
		ALIPHATIC HYDROCARBON SCREEN			ALIPHATIC HYDROCARBONS
X	X	AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
X	X	HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
					ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
					POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS

REMARKS:

ANALYTICAL RESULTS

COMPOUND	[PPB]	COMPOUND	[PPB]
halogenated purgables	none detected		
benzene	50	from J.A. Finney, 2:58PM 7/7/86	
Toluene	11	Both samples had Toluene	
ethyl benzene	none detected	and m-xylene @ levels	
p-xylene	none detected	shown. Only benzene	
m-xylene	4	different. 2 of 800g	
o-xylene	none detected		
		* DETECTION LIMIT	2 ug/ml

REMARKS: The results for benzene were different between the two duplicate samples, one duplicate had 50 ppb benzene; and the other duplicate, there was none detected.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes X NO . Seal(s) broken by: TAF date: 12 June 86
 I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.
 Date(s) of analysis: 12/13 June 86. Analyst's signature: J.A. Finney
 I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block. Reviewers signature: R. Meyerham

FOR OCD USE -- Date Owner Notified Phone or letter? Initials

8605090925
that 8605091700

Assisted Analytical Laboratories, Inc.
1900 Jefferson N.E.
Albuquerque, NM 87109

TO: Geoscience Consultants Ltd.
Attn: Randy Hicks
500 Copper N.W. Suite 325
Albuquerque, NM 87102

DATE: 29 May 1988
0752 revised

ANALYTE

SAMPLE ID/ ANALYTICAL RESULTS

	8605090925 A & B GBR 18	8605091040 A & B GBR 20	8605091240 Steel Well	8605091210 A & B GBR 25	8605091250 A & B GBR 22	8605091515 A & B GBR 26
Benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Toluene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Xylenes	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Ethyl benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
EC		3840 umhos/cm		4980 umhos/cm		
TDS				5096 mg/l		

NOMINAL DETECTION LIMITS

	8605091550 A & B GBR 13	8605091625 GBR 24	8605091700 GBR 21
Benzene	129 ug/l	1154 ug/l	<1.0 ug/l
Toluene	32 ug/l	803 ug/l	22 ug/l
Xylenes	105 ug/l	1020 ug/l	234 ug/l
Ethyl benzene	3 ug/l	147 ug/l	2 ug/l
EC	6300 umhos/cm	2690 umhos/cm	
TDS			1 umhos/cm 1 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846 EMSL-Cincinnati, 1982

An invoice for services is enclosed. Thank you for contacting Assisted Laboratories.

Sincerely,

James V. Smith
James V. Smith, Ph.D.
Laboratory Director



LOCATION: GBR-18

TEST: General Chemistry

	06/05/86	11/21/86	06/08/88	08/24/88
	mg/l	mg/l	mg/l	mg/l
CALCIUM	420	460	488.00	488
IRON	NA	NA	0.00	NA
MAGNESIUM	293	14.6	90.30	60.4
MANGANESE	NA	NA	0.00	NA
SODIUM	432	990	1005.00	904
POTASSIUM	6.63	15.6	15.00	15.1
AMMONIA-N	NA	NA	0.00	NA
BICARBONATE	122	163	551.00	173
BROMIDE	NA	ND	1.30	NA
CARBONATE	0	0	0.00	NA
CHLORIDE	262	163	232.00	223
PHOSPHATE	NA	NA	0.00	NA
NITRATE-N+, NITRITE-N	NA	NA	0.00	NA
SULFATE	3141	2836	2975.00	2850
TFS	4935	4888	4802.00	4806
CHARGE BALANCE (%)	NA	NA	97.82	101
pH	7	7.79	7.00	7.8
CONDUCTIVITY (umho)	NA	4888	5495.00	5459

TFS = TOTAL FILTERABLE SOLIDS (DISSOLVED)

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WNF

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED	8/20/88	LAB NO.	WC-3451	USER CODE	☒ 59300	☐ 59600	☐ OTHER:
Collection DATE	8/24/88	SITE INFORMATION		Sample location			
Collection TIME	1602			Collection site description			
Collected by — Person/Agency				O/son			

SEND
FINAL
REPORT
TO

GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: William Olson

RECEIVED
OCT 18 1988
GROUND WATER/HAZARDOUS WASTE
BUREAU

Station/
well code Giant Bloomfield
Owner GBR-18

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	13.71	Discharge	15-85	Sample type	grab
pH (00400)	7.8	Conductivity (Uncorrected)	520 μ mho	Water Temp. (00010)	21.5 $^{\circ}$ C	Conductivity at 25 $^{\circ}$ C (00094)	μ mho
Field comments							

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	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify:				

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25 $^{\circ}$ C (00095)	5459 μ mho	8/29	☒ Calcium (00915)	488 mg/l	9/28
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	60.4 mg/l	9/28
☐ Other:			☒ Sodium (00930)	904 mg/l	9/28
☐ Other:			☒ Potassium (00935)	15.1 mg/l	9/28
☐ Other:			☒ Bicarbonate (00440)	173 mg/l	9/15
			☒ Chloride (00940)	223 mg/l	9/22
			☒ Sulfate (00945)	2850 mg/l	9/22
			☒ Total filterable residue (dissolved) (70300)	4806 mg/l	9/14
			☒ Other: Cation-Anion balance	+0170	
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
231				10/11/88	



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WNF

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

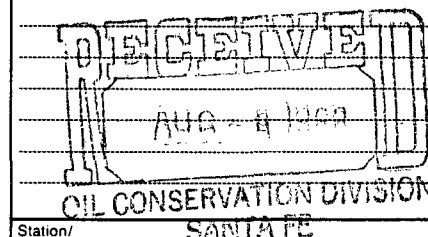
DATE RECEIVED: 6/10/88	LAB NO. WC-2090	USER CODE: ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE: 6/10/88	SITE INFORMATION	Sample location: Giant Bloomfield Refinery GBR-18
Collection TIME: 0935		Collection site description:
Collected by — Person/Agency: Royce Robinson / OCD		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water level: 13.2	Discharge: —	Sample type: Grab
pH (00400): 7	Conductivity (Uncorrected): 4200 μ mho	Water Temp. (00010): 16 °C	Conductivity at 25 °C (00094): μ mho	
Field comments:				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From F, NA Sample:	Date Analyzed
☒ Conductivity (Corrected) 25 °C (00095)	5495 μ mho	7/11	☒ Calcium 488 mg/l	7/19
☐ Total non-filterable residue (suspended) (00530)			☒ Potassium 15 mg/l	7/15
☒ Other: Lab pH	8.30	7/20	☒ Magnesium 90.3 mg/l	7/19
☐ Other:			☒ Sodium 1005 mg/l	7/25
☐ Other:			☒ Bicarbonate 551 mg/l	7/20
A-H₂SO₄			☒ Chloride 232 mg/l	6/29
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☒ Sulfate 2975 mg/l	7/26
☐ Ammonia-N total (00610)	mg/l		☒ Total Solids 4802 mg/l	7/7
☐ Total Kjeldahl-N ()	mg/l		☒ Bromide 1.30	6/22
☐ Chemical oxygen demand (00340)	mg/l		☐	
☐ Total organic carbon ()	mg/l		☒ Cation/Anion Balance	
☐ Other:			Analyst	Date Reported
☐ Other:				7/29/88
Reviewed by: [Signature]				
Laboratory remarks: Received by [Signature] 6/9/88 5:15 - ALB Seal intact				

FOR OCD USE -- Date Owner Notified 8/19/88 Phone or (Letter?) Initials [Signature]

CATIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	24.35	488.00	<3.0
Mg	7.42	90.30	<0.3
Na	43.71	1005.00	<10.0
K	0.38	15.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	
SUMS	75.87	1598.30	
Total Dissolved Solids=			4802
Ion Balance =			97.82%

ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
HCO3	9.03	551.00	<1.0
SO4	61.98	2975.00	<10.0
CL	6.54	232.00	<5.0
NO3	0.00	0.00	< 0.
CO3	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.
	77.55	3758.00	

WC No. = 8802090
 Date out/By CS 7/19/88



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED 11/26/86	LAB NO. WC 5455	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE 11/21	SITE INFORMATION	Sample location Giant, Bloomfield Refinery
Collection TIME 1455		Collection site description GBR-18
Collected by — Person/Agency BOYER/OLSON /OCD		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) 19.50 μ mho	Water Temp. (00010) 16.5 °C	Conductivity at 25 °C (00094) μ mho	
Field comments				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25 °C (00095)	4886 μ mho	12/16	☒ Calcium (00915)	460 mg/l	12-1
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	14.6 mg/l	12-1
☒ Other: pH	7.79	12/8	☒ Sodium (00930)	990 mg/l	12-21
☐ Other:			☒ Potassium (00935)	15.6 mg/l	12-21
☐ Other:			☒ Bicarbonate (00440)	163 mg/l	12/8
			☒ Chloride (00940)	243/245 mg/l	12/5
			☒ Sulfate (00945)	2836 mg/l	12/16
			☒ Total filterable residue (dissolved) (70300)	4888 mg/l	12/9
			☒ Other: CO ₃ BR	0	12/8
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l		Analyst Date Reported 1/5/87 Reviewed by CD		
☐ Other:					
☐ Other:					

Laboratory remarks

FOR OCD USE -- Date Owner Notified Phone or Letter? Initials



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED <u>6/10/86</u>	LAB NO. <u>WC-2513</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>6/10/86</u>	Collection TIME <u>1435</u>	Sample location <u>GIANT BLOOMFIELD REF GBR-18</u>
Collected by <u>Boyer</u>	Person/Agency <u>BOYER</u>	Collection site description

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type <u>GRAB</u>
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>4100</u> μ mho	Water Temp. (00010) <u>17</u> °C	Conductivity at 25°C (00094) <u> </u> μ mho	
Field comments <u>WELL BELOW RAW WATER POND</u>				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify: <u> </u>	☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☒ Calcium (00915)	mg/l	<u>6/11</u>
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	mg/l	<u>6/11</u>
☐ Other:			☒ Sodium (00930)	mg/l	<u> </u>
☐ Other:			☒ Potassium (00935)	mg/l	<u> </u>
☐ Other:			☒ Bicarbonate (00440)	mg/l	<u>6/13</u>
			☒ Chloride (00940)	mg/l	<u>6/17</u>
			☒ Sulfate (00945)	mg/l	<u>6/17</u>
			☒ Total filterable residue (dissolved) (70300)	mg/l	<u>6/18</u>
			☒ Other: <u>CO₃</u>		<u>6/13</u>
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					

Laboratory remarks

SLD Sodium confirmation: 432 mg/l 3/11/87 A/P/B

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified Phone or letter? Initials



LOCATION: GBR-18

TEST: Metals

	06/05/86	11/21/86
	mg/l	mg/l
ALUMINUM	ND	6.9
ARSENIC	NA	ND
BARIUM	ND	ND
BERYLLIUM	ND	ND
BORON	0.2	0.3
CADMIUM	ND	ND
CALCIUM	440	460
HEXAVALENT CHROMIUM	ND	ND
TOTAL CHROMIUM	ND	ND
COBALT	ND	ND
COPPER	ND	ND
IRON	ND	7.5
LEAD	ND	0.2
MAGNESIUM	46	45
MANGANESE	ND	0.18
MERCURY	NA	NA
MOLYBDENUM	ND	ND
NICKEL	ND	ND
SELENIUM	NA	NA
SILICON	2.1	11
SILVER	ND	ND
STRONTIUM	11	11
TIN	ND	ND
VANADIUM	ND	ND
ZINC	0.5	17

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
GENERAL WATER CHEMISTRY
AND NITROGEN ANALYSIS

DATE RECEIVED	11/26/86	LAB NO.	HM 2430	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	86/11/21	SITE INFORMATION	Sample location		
Collection TIME	1425		Giant, Bloomfield Refinery		
Collected by — Person/Agency	BOYER/OLSON/OCD		Collection site description		
			GBR-18		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	Water Temp. (00010)	Conductivity at 25°C (00094)	
	1950 μ mho	16.5 °C		μ mho
Field comments				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added		☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added
				☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: ICAP			☐ Sodium (00930)	mg/l	
☒ Other: AS			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:			Analyst	Date Reported	Reviewed by
☐ Other:				1/26/87	Jim Ashby
Laboratory remarks					
Sample digested					

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

ICAP SCAN

SLD Lab No. HM 2430

Reviewed by:

Analyst

Date Reported:

Date Analyzed 12/10/86

ELEMENT	ICAP VALUE (mg/l)	AA VALUE (mg/l)
Aluminum	6.9	
Barium	<0.1	
Beryllium	<0.1	
Boron	0.3	
Cadmium	<0.1	
Calcium	460.	
Chromium	<0.1	
Cobalt	<0.1	
Copper	<0.1	
Iron	7.5	
Lead	0.2	
Magnesium	45.	
Manganese	0.18	
Molybdenum	<0.1	
Nickel	<0.1	
Silicon	11.	
Silver	<0.1	
Strontium	11.	
Tin	<0.1	
Vanadium	<0.1	
Zinc	17.	
Arsenic		< 0.005
Selenium		
Mercury		



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

HEAVY METALS

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED	7/16/86	LAB NO.	HM-1357	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	8/10/85	SITE INFORMATION	Sample location		
Collection TIME	1435		GIANT BLOOMFIELD REF GBR-18		
Collected by — Person/Agency		Collection site description			
BOYER		/OCD			

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)		Conductivity (Uncorrected)	Water Temp. (00010)	Conductivity at 25°C (00094)
7		4100 μ mho	17 °C	GRAB μ mho
Field comments				
WELL BELOW RAW WATER POND				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added ☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho	☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l	☐ Magnesium (00925)	mg/l	
☒ Other: ICAP		☐ Sodium (00930)	mg/l	
		☐ Potassium (00935)	mg/l	
		☐ Bicarbonate (00440)	mg/l	
		☐ Chloride (00940)	mg/l	
		☐ Sulfate (00945)	mg/l	
		☐ Total filterable residue (dissolved) (70300)	mg/l	
		☐ Other:		
NF, A-H ₂ SO ₄		F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l	☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l	☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l	☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l	☐ Other:		
☐ Total organic carbon ()	mg/l			
☐ Other:				
☐ Other:				
Laboratory remarks		Analyst	Date Reported	Reviewed by
			7/23/86	Jim Ashby

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified Phone or letter? Initials

Lab Number: HM 1357

Date Submitted: 7/16/86

By: Boyer

Sample Code: GBR-18
Grant Bloomfield Ref.

Date Analyzed: 7/18/86

Reviewed By: Jim Ashby

Date Reported: 7/23/86

Element	ICAP VALUE (MG/L)	AA VALUE (MG/L)
Aluminum	<u><0.1</u>	<u> </u>
Barium	<u><0.1</u>	<u> </u>
Beryllium	<u><0.1</u>	<u> </u>
Boron	<u>0.2</u>	<u> </u>
Cadmium	<u><0.1</u>	<u> </u>
Calcium	<u>440.</u>	<u> </u>
Chromium	<u><0.1</u>	<u> </u>
Cobalt	<u><0.1</u>	<u> </u>
Copper	<u><0.1</u>	<u> </u>
Iron	<u><0.1</u>	<u> </u>
Lead	<u><0.1</u>	<u> </u>
Magnesium	<u>46.</u>	<u> </u>
Manganese	<u><0.05</u>	<u> </u>
Molybdenum	<u><0.1</u>	<u> </u>
Nickel	<u><0.1</u>	<u> </u>
Silicon	<u>2.1</u>	<u> </u>
Silver	<u><0.1</u>	<u> </u>
Strontium	<u>11.</u>	<u> </u>
Tin	<u><0.1</u>	<u> </u>
Vanadium	<u><0.1</u>	<u> </u>
Zinc	<u>0.5</u>	<u> </u>
Arsenic		<u> </u>
Selenium		<u> </u>
Mercury		<u> </u>

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-19

<u>SAMPLER</u>	<u>GIANT</u>	<u>OCD</u>	<u>GIANT</u>	<u>EID</u>	<u>GIANT</u>
<u>DATE</u>	<u>10/17/86</u>	<u>11/21/86</u>	<u>4/20/88</u>	<u>4/20/88</u>	<u>8/25/88</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	5.0	<1.0	100.0	(BELOW)
BENZENE	112.0	200.0	26.0	ND	ND(5.0)
BROMODICHLOROMETHANE	ND(5.0)	ND	ND	ND	ND(2.0)
BROMOFORM	ND(5.0)	ND	ND	ND	ND(2.0)
BROMOMETHANE	NA	ND	ND	ND	ND(2.0)
CARBON TETRACHLORIDE	ND(5.0)	ND	ND	ND	ND(2.0)
CHLOROBENZENE	NA	ND	ND	ND	ND(5.0)
CHLOROETHANE	ND(5.0)	ND	ND	ND	ND(2.0)
CHLOROFORM	ND(5.0)	ND	ND	ND	ND(2.0)
CHLOROMETHANE	NA	ND	ND	ND	ND(2.0)
DIBROMOCHLOROMETHANE	ND(5.0)	ND	ND	ND	ND(2.0)
1,2-DICHLOROBENZENE	NA	TR	ND	ND	ND(5.0)
1,3-DICHLOROBENZENE	NA	ND	ND	ND	ND(5.0)
1,4-DICHLOROBENZENE	NA	ND	ND	ND	ND(5.0)
DICHLORODIFLUOROMETHANE	NA	ND	ND	ND	ND(2.0)
1,1-DICHLOROETHANE	12.0	4.0	5.9	ND	6.0
1,2-DICHLOROETHANE	5.9	10.0	5.0	ND	ND(2.0)
1,1-DICHLOROETHENE	ND(5.0)	ND	ND	ND	ND(2.0)
CIS-1,2-DICHLOROETHENE	NA	4.0	ND	ND	ND(2.0)
TRANS-1,2-DICHLOROETHENE	14.0	ND	35.0	ND	ND(2.0)
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA	33.0
1,2-DICHLOROPROPANE	ND(5.0)	ND	ND	ND	ND(2.0)
ETHYLBENZENE	111.0	270.0	17.0	ND	ND(5.0)
METHYLENE CHLORIDE	ND(5.0)	ND	ND	ND	ND(20.0)
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	ND	ND	ND	ND(2.0)
TETRACHLOROETHENE	ND(5.0)	TR	1.0	ND	8.0
TOLUENE	105.0	18.0	3.3	ND	ND(5.0)
1,1,1-TRICHLOROETHANE	ND(5.0)	ND	ND	ND	ND(2.0)
1,1,2-TRICHLOROETHANE	ND(5.0)	ND	ND	ND	ND(2.0)
TRICHLOROETHENE	9.3	11.0	7.2	ND	5.0
TRICHLOROFLUOROMETHANE	NA	ND	ND	ND	ND(20.0)
VINYL CHLORIDE	ND(5.0)	ND	ND	ND	ND(2.0)
TOTAL XYLENES	306.0	274.0	120.0	ND	ND(5.0)

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
** - DUPLICATE ANALYSIS

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-19

SAMPLER

EID

DATE

8/25/88

PARAMETER

DETECTION LIMIT

50.0

BENZENE	ND
BROMODICHLOROMETHANE	ND
BROMOFORM	ND
BROMOMETHANE	ND
CARBON TETRACHLORIDE	ND
CHLOROBENZENE	ND
CHLOROETHANE	ND
CHLOROFORM	ND
CHLOROMETHANE	ND
DIBROMOCHLOROMETHANE	ND
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
DICHLORODIFLUOROMETHANE	ND
1,1-DICHLOROETHANE	ND
1,2-DICHLOROETHANE	ND
1,1-DICHLOROETHENE	ND
CIS-1,2-DICHLOROETHENE	ND
TRANS-1,2-DICHLOROETHENE	ND
1,2-DICHLOROPROPANE	ND
ETHYLBENZENE	ND
METHYLENE CHLORIDE	ND
1,1,2,2-TETRACHLOROETHANE	ND
TETRACHLOROETHENE	ND
TOLUENE	ND
1,1,1-TRICHLOROETHANE	ND
1,1,2-TRICHLOROETHANE	ND
TRICHLOROETHENE	ND
TRICHLOROFLUOROMETHANE	ND
VINYL CHLORIDE	ND
TOTAL XYLENES	ND

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
*	-	DUPLICATE ANALYSIS



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

754
WPH

88-1426-C

REPORT TO:

William Olson
EID Ground Water Bureau
1190 St. Francis Dr.
Santa Fe, N.M. 87504-0968

S.L.D. No. OR-

1426 A1B

DATE REC.

8-26-98

PRIORITY

3

PHONE(S):

827-2899

COLLECTION CITY:

Lee Acres

COUNTY:

San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

8808250826

LOCATION CODE: (Township-Range-Section-Tracts)

10N06E24342

USER CODE:

59300

SUBMITTER:

Olson

CODE:

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: ☐

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

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

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= 7.4; Conductivity= 3300 umho/cm at 17.2°C; Chlorine Residual= mg/L

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water 38.285 ft.; Depth of well 57 ft.; Perforation Interval - ft.

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Mountain GBR-19

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): William Olson Method of Shipment to the Lab: hand

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Gary Edon
at (location) SLD on 8/26/98 at 14:55 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☒ OR Seals Intact: Yes ☐ No ☐

Signatures

William Olson

Gary L. Edon

ANALYSES PERFORMED

LAB. No.: OR- 1426

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
 Other Specific Compounds or Classes
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>	<i>N.D.</i>		
<i>halogenated purgeables</i>	<i>N.D.</i>		
* DETECTION LIMIT *	<i>50 ¹¹⁹h</i>	+ DETECTION LIMIT +	<i>+</i>

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: *Mary C. Egan* date: *9/13/88*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *9/13/88* Analyst's signature: *Mary C. Egan*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *R. Meyers*



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80816108

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : GIANT REFINING
PROJECT # : (NONE)
PROJECT NAME : GIANT BLOOMFIELD
CLIENT I.D. : GBR 19
SAMPLE MATRIX : AQUEOUS

DATE SAMPLED : 08/25/88
DATE RECEIVED : 08/26/88
DATE EXTRACTED : N/A
DATE ANALYZED : 09/01/88
UNITS : UG/L
DILUTION FACTOR : 10

COMPOUNDS	RESULTS
BENZENE	<5.0
BROMODICHLOROMETHANE	<2.0
BROMOFORM	<2.0
BROMOMETHANE	<2.0
CARBON TETRACHLORIDE	<2.0
CHLOROBENZENE	<5.0
CHLOROETHANE	<2.0
CHLOROFORM	<2.0
CHLOROMETHANE	<2.0
DIBROMOCHLOROMETHANE	<2.0
1,2-DICHLOROBENZENE	<5.0
1,3-DICHLOROBENZENE	<5.0
1,4-DICHLOROBENZENE	<5.0
DICHLORODIFLUOROMETHANE	<2.0
1,1-DICHLOROETHANE	6
1,2-DICHLOROETHANE	<2.0
1,1-DICHLOROETHENE	<2.0
1,2-DICHLOROETHENE (TOTAL)	33
1,2-DICHLOROPROPANE	<2.0
CIS-1,3-DICHLOROPROPENE	<2.0
TRANS-1,3-DICHLOROPROPENE	<2.0
ETHYLBENZENE	<5.0
METHYLENE CHLORIDE	<20.0
1,1,2,2-TETRACHLOROETHANE	<2.0
TETRACHLOROETHENE	8
TOLUENE	<5.0
1,1,1-TRICHLOROETHANE	<2.0
1,1,2-TRICHLOROETHANE	<2.0
TRICHLOROETHENE	5
TRICHLOROFLUOROMETHANE	<20.0
VINYL CHLORIDE	<2.0
META XYLENE	<5.0
ORTHO & PARA XYLENE	<5.0

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	89
TRIFLUOROTOLUENE (%)	89

Western Region
4080-C Pike Lane, Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

05/10/88 rw
PROJECT MGR: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming NE
Albuquerque, NM 87111

PROJECT #: 232-799-5009-8
LOCATION: Farmington, NM

SAMPLED: 04/20/88 BY: T. LePage
RECEIVED: 04/22/88 BY: K. Biava
ANALYZED: 04/29/88 BY: P. Sra
MATRIX: Water
UNITS: ug/L (ppb)

TEST RESULTS

COMPOUNDS	MDL	LAB #	21156	21157	21158	21159
		I.D. #	6BR-17	6BR-19	6BR-31	6BR-32
Benzene	0.5		<0.5	26	<0.5	<0.5
Toluene	0.5		<0.5	3.3	<0.5	<0.5
Ethylbenzene	0.5		<0.5	17	<0.5	<0.5
Xylenes	0.5		<0.5	120	<0.5	<0.5
Chlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD:
EPA Method 8020

Safy Khalifa EMF
SAFY KHALIFA, Ph.D., Director

Western Region

4080-C Pike Lane, Concord, CA 94520

(415) 685-7852

(800) 544-3422 from inside California

(800) 423-7143 from outside California

05/10/88 rw

PROJECT MGR: Michael Wood
Groundwater Technology, Inc.
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LOCATION: Farmington, NM

SAMPLED: 04/20/88 BY: T. LePage

RECEIVED: 04/22/88 BY: K. Biava

ANALYZED: 04/29/88 BY: P. Sra

MATRIX: Water

UNITS: ug/L (ppb)

TEST RESULTS

COMPOUND	MDL	LAB #	21156	21157	21158	21159
		I.D. #	6BR-17	6BR-19	6BR-31	BR-32
Bromodichloromethane	0.5		<0.5	<0.5	<0.5	<0.5
Bromoform	0.5		<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5		<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	0.5		<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
Chloroethane	0.5		<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1.0		<1.0	<1.0	<1.0	<1.0
Chloroform	0.5		<0.5	<0.5	<0.5	1.1
Chloromethane	0.5		<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	0.5		<0.5	<0.5	0.76	<0.5
1,2-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	0.5		<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5		<0.5	5.9	4.8	5.7
1,2-Dichloroethane	0.5		<0.5	5.0	<0.5	<0.5
1,1-Dichloroethene	0.2		<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene	0.5		<0.5	35	58	160
1,2-Dichloropropane	0.5		<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5		<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.5		<0.5	<0.5	<0.5	<0.5
Methylene chloride	0.5		<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5		<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5		<0.5	1.0	<0.5	17
1,1,1-Trichloroethane	0.5		4.4	<0.5	2.9	1.9
1,1,2-Trichloroethane	0.5		<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5		<0.5	7.2	7.3	16
Trichlorofluoromethane	0.5		<0.5	<0.5	<0.5	<0.5
Vinyl Chloride	1.0		<1.0	<1.0	<1.0	<1.0

MDL = Method Detection Limit.

METHOD:

EPA Method 8010

Safy Khalifa /emf

SAFY KHALIFA, Ph.D., Director



SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO:

McQuillan

S.L.D. No. OR-

525-A+B

88-0525

EID Ground Water/Haz. Waste

DATE REC.

4/22/88

1190 St. Francis Dr.

PRIORITY

3

Santa Fe 87504-0968

PHONE(S):

827-2912

COLLECTION CITY: Lee Acres

COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

8/8/04/2/01/7/2/5

LOCATION CODE: (Township-Range-Section-Tracts)

29N+12W+27+113 (10N06E24S42)

USER CODE:

593000

SUBMITTER:

McQuillan

CODE:

MCIQ

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

☐ NP:

No Preservation; Sample stored at room temperature.

☒ P-Ice

Sample stored in an ice bath (Not Frozen).

☐ P-Na₂S₂O₃

Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.**PURGEABLE SCREENS**☐ (733) Aliphatic Headspace (1-5 Carbons)☒ (734) Aromatic & Halogenated Purgeables☐ (765) Mass Spectrometer Purgeables☐ (766) Trihalomethanes

Other Specific Compounds or Classes

☐
☐
☐
☐
☐
☐**EXTRACTABLE SCREENS**☐ (751) Aliphatic Hydrocarbons☐ (755) Base/Neutral Extractables☐ (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: _____

FIELD DATA:

pH= _____; Conductivity= _____ umho/cm at _____ °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Well GBR-19; bailed w PVC bailer; floating hydrocarbons

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): _____ Method of Shipment to the Lab: _____

CHAIN OF CUSTODY

I certify that this sample was transferred from _____ to _____

at (location) _____ on _____ / _____ / _____ and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☐ No ☐

Signatures _____

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-6 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐ _____
☐ _____
☐ _____
☐ _____

EXTRACTABLE SCREENS

- ☐ (781) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>	<i>see remarks</i>		
<i>halogenated purgeables</i>	<i>N.D.</i>		
<i>xylene</i>	<i>N.D.</i>		
<i>toluene</i>	<i>N.D.</i>		
* DETECTION LIMIT *	<i>100 ppb</i>	- DETECTION LIMIT -	

ABBREVIATIONS USED:

- N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT
 T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)
 [RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: *Sixty compounds ranging from the aromatic screen region thru to the C3 substituted benzene region at 200-500 ppb detected by the photoionization detector but not identified. Compounds appear not to be that of normal gasoline but are in the gasoline range.*

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☐ No ☒ Seal(s) broken by: *not sealed* date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

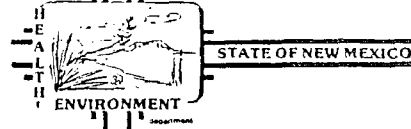
Date(s) of analysis: *5/3/88* Analyst's signature: *Harry C. Eden*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *R. Meyersheim*

86- 1355-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1355 A+B
DATE REC. 11-26-86

PHONE(S): 827-5812 USER CODE: 8 2 2 3 5

SUBMITTER: David Boyer CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8 6 1 1 2 1 1 5 1 0 8 2 8

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: CODE:

COUNTY: San Juan; CITY: Lee Acres CODE:

LOCATION CODE: (Township-Range-Section-Tracts) 29 N+ 12 W+ 27+ 11 13 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= ; Conductivity= 1100 umho/cm at 16 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant, GBR-19

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): A. H. Ray Method of Shipment to the Lab: Handcarried

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from Willie Olson to Mary C. Eden
at (location) HED / SLD on 11/26/86 - 4:15 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures Willie Olson Mary C. Eden

For OCD Use: Date Owner Notified Phone or Letter? Initials

ANALYSES PERFORMED

LAB. No.: OR- 1355

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
Benzene	200	1,1-dichloroethane	4
Toluene	18	cis-1,2-dichloroethane	4
Ethylbenzene	270	Trichloroethane	11
p-Xylene	140	1,2-dichloroethane	10
m-Xylene	34	Tetrachloroethane	TR
o-Xylene	100	1,2-dichlorobenzene	TR
* DETECTION LIMIT *	* 5 ppb	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Ten other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: JFZ

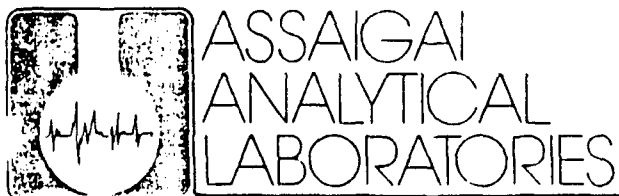
date: 12-4/12-9-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4+9 Dec 86 Analyst's signature: J. Finney

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: Richard Meyerheim



TO: Geoscience Consultants Ltd.
 Attn: Jan Martin
 500 Copper NW Suite 325
 Albuquerque, NM 87158

DATE: 17 December 1986
 1787

SAMPLE ID: 8610171515 GBR-19

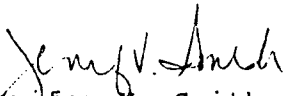
ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Benzene	0.112 mg/l	0.001 mg/l
Toluene	0.105 mg/l	0.001 mg/l
Ethylbenzene	0.111 mg/l	0.001 mg/l
Xylenes	0.306 mg/l	0.001 mg/l
Acrolein	<25 ug/l	25 ug/l
Acrylonitrile	<25 ug/l	25 ug/l
Bromoform	<5.0 ug/l	5.0 ug/l
Carbon Tetrachloride	<5.0 ug/l	5.0 ug/l
Chlorodibromomethane	<5.0 ug/l	5.0 ug/l
Chloroethane	<5.0 ug/l	5.0 ug/l
2-Chloroethylvinyl Ether	<5.0 ug/l	5.0 ug/l
Chloroform	<5.0 ug/l	5.0 ug/l
Dichlorobromomethane	<5.0 ug/l	5.0 ug/l
1,1-Dichloroethane	12 ug/l	5.0 ug/l
1,2-Dichloroethane	5.9 ug/l	5.0 ug/l
1,1-Dichloroethene	<5.0 ug/l	5.0 ug/l
1,2-Dichloropropane	<5.0 ug/l	5.0 ug/l
1,3-Dichloropropylene	<5.0 ug/l	5.0 ug/l
Methyl Bromide	<5.0 ug/l	5.0 ug/l
Methyl Chloride	<5.0 ug/l	5.0 ug/l
Methylene Chloride	<5.0 ug/l	5.0 ug/l
1,1,2,2-Tetrachloroethane	<5.0 ug/l	5.0 ug/l
Tetrachloroethene	<5.0 ug/l	5.0 ug/l
Trans-1,2-Dichloroethene	14 ug/l	5.0 ug/l
1,1,1-Trichloroethane	<5.0 ug/l	5.0 ug/l
1,1,2-Trichloroethane	<5.0 ug/l	5.0 ug/l
Trichloroethene	9.3 ug/l	5.0 ug/l
Vinyl Chloride	<5.0 ug/l	5.0 ug/l
Napthalene	0.028 mg/l	0.001 mg/l
Acenapthalene	0.071 mg/l	0.001 mg/l
Acenapthene	0.160 mg/l	0.001 mg/l
Fluroene	0.122 mg/l	0.001 mg/l
Anthracene	0.021 mg/l	0.001 mg/l
Phenanthracene	<0.001 mg/l	0.001 mg/l
Fluoranthene	0.001 mg/l	0.001 mg/l
Pyrene	<0.001 mg/l	0.001 mg/l
Benzo(a)anthracene	<0.001 mg/l	0.001 mg/l
Chrysene	<0.001 mg/l	0.001 mg/l
Benzo(b)fluoranthene	<0.001 mg/l	0.001 mg/l

Benzo(k)fluoranthene	<0.001 mg/l	0.001 mg/l
Benzo(a)pyrene	<0.001 mg/l	0.001 mg/l
Dibenzo(a,h)anthracene	<0.001 mg/l	0.001 mg/l
Indeno(1,2,3-cd)pyrene	<0.001 mg/l	0.001 mg/l
Benzo(g,h,i)perylene	<0.001 mg/l	0.001 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,


Jennifer V. Smith, Ph.D.
Laboratory Director





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WMS

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED	8/26/88	LAB NO	WC-3449	USER CODE	☒ 59300	☐ 59600	☐ OTHER:
Collection DATE	8/25/88	SITE INFORMATION		Sample location			
Collection TIME	0826			Collection site description			
Collected by — Person/Agency		O/son		OCT 18 1988			

SEND
FINAL
REPORT
TO

William Olson
GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: _____

GROUND WATER/HAZARDOUS WASTE
BUREAU

GROUND WATER/HAZARDOUS WASTE
BUREAU

Station/
well code GBR-19
Owner Giant Bloomfield

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	38.265	Discharge		Sample type	S196
pH (00400)		7.4		Conductivity (Uncorrected)		3300 μ mho	
				Water Temp. (00010)		17.2 °C	
						Conductivity at 25°C (00094) μ mho	
Field comments							

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	/	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify:				

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	4375 μ mho	8/29	☒ Calcium (00915)	356 mg/l	9/28
☐ Total non-filterable residue (suspended) (00530)	_____ mg/l	_____	☒ Magnesium (00925)	40.9 mg/l	9/28
☐ Other:	_____	_____	☒ Sodium (00930)	654 mg/l	9/27
☐ Other:	_____	_____	☒ Potassium (00935)	2.9 mg/l	9/27
☐ Other:	_____	_____	☒ Bicarbonate (00440)	349 mg/l	9/15
			☒ Chloride (00940)	465 mg/l	9/22
			☒ Sulfate (00945)	1520 mg/l	9/22
			☒ Total filterable residue (dissolved) (70300)	3302 mg/l	9/14
			☒ Other: Cation-Anion balance	9690	
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	_____ mg/l	_____	☐ Nitrate-N +, Nitrate-N dissolved (00631)	_____ mg/l	_____
☐ Ammonia-N total (00610)	_____ mg/l	_____	☐ Ammonia-N dissolved (00608)	_____ mg/l	_____
☐ Total Kjeldahl-N ()	_____ mg/l	_____	☐ Total Kjeldahl-N ()	_____ mg/l	_____
☐ Chemical oxygen demand (00340)	_____ mg/l	_____	☐ Other:	_____	_____
☐ Total organic carbon ()	_____ mg/l	_____			
☐ Other:	_____	_____	Analyst	Date Reported	Reviewed by
☐ Other:	_____	_____		10/11/88	
Laboratory remarks					



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
Wm

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 4/22/88		LAB NO. 40-1362	USER CODE ☒ 59300 ☐ 59600 ☐ OTHER:			
Collection DATE 88/04/20		SITE INFORMATION	Sample location Well GBR-19 Lee Acres			
Collection TIME 17:25			Collection site description W side Giant Refinery			
Collected by — Person/Agency McQuillan/Doremus			29N.12W.27.113			
SEND FINAL REPORT TO GROUND WATER & HAZARDOUS WASTE RECEIVED NM ENVIRONMENT IMPROVEMENT DIVISION/HED PO Box 968 Santa Fe, NM 87504-0968 Attn: McQuillan JUL 01 1988						
SAMPLING CONDITIONS			GROUND WATER/HAZARDOUS WASTE BUREAU			
☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type		
pH (00400)	Conductivity (Uncorrected) μ mho	Water Temp. (00010) $^{\circ}$ C	Conductivity at 25 $^{\circ}$ C (00094) μ mho			
Field comments well bailed w/ PVC trailer; hydrocarbons floating inside casing						
SAMPLE FIELD TREATMENT — Check proper boxes						
No. of samples submitted one	☒ NF: Whole sample (Non-filtered)	☐ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added			
☒ NA: No acid added ☐ Other-specify:						
ANALYTICAL RESULTS from SAMPLES						
NF, NA		Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25 $^{\circ}$ C (00095)	μ mho			☒ Calcium (00915)	160 mg/l	5/19
☐ Total non-filterable residue (suspended) (00530)	mg/l			☒ Magnesium (00925)	53.7 mg/l	5/19
☐ Other:				☒ Sodium (00930)	548 mg/l	5/12
☐ Other:				☒ Potassium (00935)	3 mg/l	5/12
☐ Other:				☒ Bicarbonate (00440)	248 mg/l	6/2
				☒ Chloride (00940)	427 mg/l	5/25
				☒ Sulfate (00945)	1065 mg/l	"
				☒ Total filterable residue (dissolved) (70300)	2976 mg/l	5/25
				☒ Other: bromide	1.83 mg/l	6/20
NF, A-H₂SO₄		F, A-H₂SO₄				
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l	☐ Nitrate-N +, Nitrate-N dissolved (00631)				mg/l
☐ Ammonia-N total (00610)	mg/l	☐ Ammonia-N dissolved (00608)				mg/l
☐ Total Kjeldahl-N ()	mg/l	☐ Total Kjeldahl-N ()				mg/l
☐ Chemical oxygen demand (00340)	mg/l	☐ Other:				
☐ Total organic carbon ()	mg/l					
☐ Other:						
☐ Other:						
Laboratory remarks 476 95		Analyst		Date Reported 6/28/88	Reviewed by CW	



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

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GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED	11/26/86	LAB NO.	WC 5450	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	12/1/86	SITE INFORMATION	Sample location	Giant, Bloom Field Refinery	
Collection TIME	1:51 D		Collection site description	GBR-19	
Collected by — Person/Agency BOYER/OLSON /OCD					

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) 1100 μ mho	Water Temp. (00010) 16 °C	Conductivity at 25°C (00094) μ mho	
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	/	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	2655 μ mho	12/1/86	☒ Calcium (00915)	300 mg/l	12-1
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	12.2 mg/l	12-1
☒ Other: pH	7.86	12/8	☒ Sodium (00930)	296 mg/l	12-4
☐ Other:			☒ Potassium (00935)	0.72 mg/l	12-4
☐ Other:			☒ Bicarbonate (00440)	514 mg/l	12/8
			☒ Chloride (00940)	547 mg/l	12/5
			☒ Sulfate (00945)	401 mg/l	12/1/8
			☒ Total filterable residue (dissolved) (70300)	1884 mg/l	12/1/8
			☒ Other: CO ₃ BR	1.5	12/1/8
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
				12/16/86	CJ

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED	11/26/86	LAB NO.	HM 2428	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	86/11/21	SITE INFORMATION	Sample location		
Collection TIME	1510		Giant, Bloomfield Refinery		
Collected by — Person/Agency		Collection site description			
BOYER/OLSON/OCD		GBR-19			

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

Station/
well code
Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) 1100 μ mho		Water Temp. (00010) 16 °C	Conductivity at 25 °C (00094) μ mho
Field comments				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added		☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added
				☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25 °C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: ICAP			☐ Sodium (00930)	mg/l	
☒ Other: AS			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N + , Nitrate-N total (00630)	mg/l		☐ Nitrate-N + , Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:			Analyst	Date Reported	Reviewed by
☐ Other:				11/13/87	Jim Ashby
Laboratory remarks					

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

ICAP SCAN

SLD Lab No. HM 2428

Reviewed by: Jim Ashby

Analyst JB

Date Reported: 1/13/87

Date Analyzed 12/5/86

ELEMENT	ICAP VALUE (mg/l)	AA VALUE (mg/l)
Aluminum	40.1	
Barium	0.4	
Beryllium	40.1	
Boron	0.2	
Cadmium	40.1	
Calcium	390.	
Chromium	40.1	
Cobalt	40.1	
Copper	40.1	
Iron	0.7	
Lead	40.1	
Magnesium	35.	
Manganese	5.2	
Molybdenum	40.1	
Nickel	40.1	
Silicon	8.5	
Silver	40.1	
Strontium	7.4	
Tin	40.1	
Vanadium	40.1	
Zinc	40.1	
Arsenic		<0.005
Selenium		
Mercury		

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

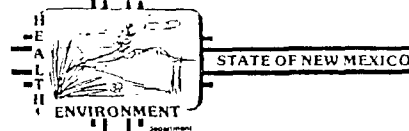
MONITOR WELL GBR-20

<u>SAMPLER</u>	GIANT	OCD	OCD
<u>DATE</u>	<u>5/9/86</u>	<u>6/5/86</u>	<u>11/20/86</u>
<u>PARAMETER</u>			
DETECTION LIMIT	1.0	2.0	5.0
BENZENE	ND	4.0	41.0
BROMODICHLOROMETHANE	NA	ND	ND
BROMOFORM	NA	ND	ND
BROMOMETHANE	NA	ND	ND
CARBON TETRACHLORIDE	NA	ND	ND
CHLOROBENZENE	NA	ND	ND
CHLOROETHANE	NA	ND	ND
CHLOROFORM	NA	ND	ND
CHLOROMETHANE	NA	ND	ND
DIBROMOCHLOROMETHANE	NA	ND	ND
1,2-DICHLOROBENZENE	NA	ND	ND
1,3-DICHLOROBENZENE	NA	ND	ND
1,4-DICHLOROBENZENE	NA	ND	ND
DICHLORODIFLUOROMETHANE	NA	ND	ND
1,1-DICHLOROETHANE	NA	ND	ND
1,2-DICHLOROETHANE	NA	TR	ND
1,1-DICHLOROETHENE	NA	ND	ND
CIS-1,2-DICHLOROETHENE	NA	ND	ND
TRANS-1,2-DICHLOROETHENE	NA	ND	ND
DICHLOROMETHANE	NA	ND	ND
1,2-DICHLOROPROPANE	NA	ND	ND
ETHYLBENZENE	ND	TR	ND
METHYLENE CHLORIDE	NA	ND	ND
1,1,2,2-TETRACHLOROETHANE	NA	ND	ND
TETRACHLOROETHENE	NA	ND	TR
TOLUENE	ND	ND	ND
1,1,1-TRICHLOROETHANE	NA	ND	ND
1,1,2-TRICHLOROETHANE	NA	ND	ND
TRICHLOROETHENE	NA	ND	TR
TRICHLOROFLUOROMETHANE	NA	ND	ND
VINYL CHLORIDE	NA	ND	ND
TOTAL XYLENES	ND	ND	50.0

TR - TRACE
 ND - NOT DETECTED
 NA - NOT ANALYZED
 * - DUPLICATE ANALYSIS

86- 1372-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1372A/B
DATE REC. 11-26-86

PHONE(S): 327-5812
SUBMITTER: David Boyer

PRIORITY
USER CODE: 3 2 2 3 5
CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8611201211A/B
SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: CODE: ☐
COUNTY: San Juan; CITY: Los Alamos CODE: ☐
LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+27+113 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= ; Conductivity= 1400 umho/cm at 14.5 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.) Free

Giant, GBR-20, No product

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): W.H. Boyer Method of Shipment to the Lab: Handcarried

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from Will Olson to Gary C. Tolson
at (location) HEP/SLD on 11/26/86 4:06PM and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures Will Olson Gary C. Tolson

For OCD Use: Date Owner Notified Phone or Letter? Initials

ANALYSES PERFORMED

LAB. No. OR- 1372

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes

Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>Halogenated Purgeables</i>	<i>ND</i>	<i>{CHCl₃}</i>	<i>TR</i>
<i>Benzene</i>	<i>41</i>	<i>{Trichloroethene}</i>	<i>TR</i>
<i>p-Xylene</i>	<i>28</i>	<i>{Tetrachloroethene}</i>	<i>TR</i>
<i>m-Xylene</i>	<i>22</i>		
<i>O-Xylene</i>	<i>TR</i>		
* DETECTION LIMIT *	* <i>5 ppb</i>	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: *Six other compounds were detected by the aromatic screen that were not identified. There is a possibility that trace of one unidentified halogenated compound, like {CHCl₃}.*

CERTIFICATE OF ANALYTICAL PERSONNEL

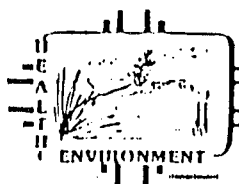
Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: *[Signature]* date: *12-4-86*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *4 Dec 86* Analyst's signature: *M Finney*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *R Meyerheim*



STATE OF NEW MEXICO

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

86-0679-C

REPORT TO:
PLEASE PRINT

DAVID G. BOYER

NEW MEXICO OIL CONSERVATION DIV.

P.O. BOX 2088

SANTA FE, NM 87504-2088

S.L.D. No.: OR-679-17.B

DATE REC.: 06/09/86

SLD PRIORITY #:

PHONE(S):

827-5812

USER CODE: 8 2 2 3 5

SUBMITTER:

DAVID BOYER

SUBMITTER CODE: | | | | |

SAMPLE TYPE: WATER ☒, SOIL ☐, OTHER ☐

SAMPLE TYPE CODE: | | |

COLLECTED: 86/06/05 - 17:30 BY DGB

CODE: | | | | | | | | | | | | | | | |

Y Y M M D D H H M M I I I

SOURCE: GBR-20

CODE: | | | | | | | | | | | | | | | |

AQUIFER DEPTH

NEAREST CITY: Bloomfield

CODE: | | | | |

LOCATION: Giant Bloomfield Refinery

CODE: 2 9 14 1 2 14 2 7 1 1 1 1

TOWNSHIP RANGE SECTION TRACTS

pH= 7; Conductivity= 3400 umho/cm at 21 °C; Chlorine Residual=

Dissolved Oxygen= mg/l; Alkalinity=; Flow Rate=

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Monitor well, Hydrocarbon odor at start of sampling

I certify that the statements in this block accurately reflect the results of my field analyses, observations and activities. DGB

Method of shipment to the Laboratory Hand carried

This form accompanies 2 Septum Vials, Glass Jugs, Containers are marked as follows to indicate preservation:

- ☐ NP: No preservation; sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (not frozen).
☐ P-Na₂S₂O₃; Sample preserved with Na₂S₂O₃ to remove chlorine residual.

I (we) certify that this sample was transferred from DGB to R Meyerlein at (location) SLD on

4/9/86 - 16:19 and that the statements in this block are correct.

DATE AND TIME

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures R Meyerlein

DGB

(we) certify that this sample was transferred from

at (location) on

and that the statements in this block are correct.

DATE AND TIME

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures

ANALYSES REQUESTED

LAB. No.: ORG- 679

PLEASE CHECK THE APPROPRIATE BOXES BELOW TO INDICATE THE TYPE OF ANALYTICAL SCREENS REQUIRED. WHENEVER POSSIBLE LIST SPECIFIC COMPOUNDS SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
		ALIPHATIC HYDROCARBON SCREEN			ALIPHATIC HYDROCARBONS
X	X	AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
X	X	HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
					ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
					POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS

REMARKS:

ANALYTICAL RESULTS

COMPOUND	[PPB]	COMPOUND	[PPB]
1,2-dichloroethane	Possible trace < 1 ppb		
benzene	4		
ethylbenzene	trace < 5 ppb		
		* DETECTION LIMIT	2 ug/ml

REMARKS: Six other compounds were detected by the aromatic screen that were not identified

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes X NO ____ Seal(s) broken by: JAF date: 12/13 June 86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 12/13 June 86 Analyst's signature: J. TurnerI certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block. Reviewers signature: L. Meyer

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____

8605091700
8605091700

Assigned Analytical Laboratories, Inc.
1300 Jefferson N.E.
Albuquerque, NM 87109

TO: Geoscience Consultants Ltd. DATE: 29 May 1986
Attn: Randy Hicks 0752 revised
500 Copper N.W. Suite 325
Albuquerque, NM 87102

ANALYTE	SAMPLE ID/ ANALYTICAL RESULTS			
	8605091550 A & B GBR 18	8605091040 A & B GBR 20	8605091140 Steel Well	8605091210 A & B GBR 25
Benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Toluene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Xylenes	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Ethyl benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
EC		3840 umhos/cm		4980 umhos/cm
TDS				5096 mg/l
	8605091550 A & B GBR 18	8605091625 GBR 24	8605091700 GBR 21	8605091350 A & B GBR 22
Benzene	129 ug/l	1154 ug/l	<1.0 ug/l	<1.0 ug/l
Toluene	32 ug/l	803 ug/l	22 ug/l	<1.0 ug/l
Xylenes	105 ug/l	1020 ug/l	234 ug/l	<1.0 ug/l
Ethyl benzene	3 ug/l	147 ug/l	2 ug/l	<1.0 ug/l
EC	6300 umhos/cm	2690 umhos/cm		
TDS				

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846 EMSL-Cincinnati, 1982

An invoice for services is enclosed. Thank you for contacting Assigned Laboratories.

Sincerely,
James V. Smith
James V. Smith, Ph.D.
Laboratory Director





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 wnt
GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED 11/26/84	LAB NO. WC 5438	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE 06/11/20	SITE INFORMATION	Sample location Giant, Bloom Field Refinery
Collection TIME 1711		Collection site description GBR-20
Collected by — Person/Agency BOYER/OLSON /OCD		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) 1400 μ mho	Water Temp. (00010) 14.5 $^{\circ}$ C	Conductivity at 25 $^{\circ}$ C (00094) μ mho	
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted /	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25 $^{\circ}$ C (00095)	3230 μ mho	12/12	☒ Calcium (00915)	376 mg/l	12-1
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	46.9 mg/l	12-1
☒ Other: pH	7.60	12/8	☒ Sodium (00930)	627 mg/l	12-4
☐ Other:			☒ Potassium (00935)	10.9 mg/l	12-4
☐ Other:			☒ Bicarbonate (00440)	655 mg/l	12/8
			☒ Chloride (00940)	180 mg/l	12/2
			☒ Sulfate (00945)	1537 mg/l	12/8
			☒ Total filterable residue (dissolved) (70300)	3074 mg/l	12/4
			☒ Other: CO ₃ BR	0.9	12/10
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:			Analyst	Date Reported 12/12/86	Reviewed by
☐ Other:					
Laboratory remarks					

FOR OCD USE -- Date Owner Notified Phone or Letter? Initials



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED <u>6/10/86</u>	LAB NO. <u>WC-2519</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>6/10/86</u>	Collection TIME <u>1730</u>	Sample location <u>GIANT BLOOMFIELD REF. GBR-26</u>
Collected by — Person/Agency <u>Boyer /OCD</u>	Collection site description	

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type <u>GRAB</u>
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>3400</u> μ mho	Water Temp. (00010) <u>21</u> °C	Conductivity at 25°C (00094) <u> </u> μ mho	
Field comments				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify: ☐ A: 5ml conc. HNO ₃ added ☒ 4ml fuming HNO ₃ added			

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☒ Calcium (00915)	mg/l	<u>6-11</u>
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	mg/l	<u>14.6</u>
☐ Other:			☒ Sodium (00930)	mg/l	<u>248.4</u>
☐ Other:			☒ Potassium (00935)	mg/l	<u>10.1</u>
☐ Other:			☒ Bicarbonate (00440)	mg/l	<u>428</u>
			☒ Chloride (00940)	mg/l	<u>290</u>
			☒ Sulfate (00945)	mg/l	<u>1776</u>
			☒ Total filterable residue (dissolved) (70300)	mg/l	<u>3473</u>
			☒ Other:		<u>0</u>
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported <u>6/20/86</u>	Reviewed by <u>CS</u>

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

ADD - 1 1986

HEAVY METALS
GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED	7/16/86	LAB NO.	HM-1356	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	7/16/86	SITE INFORMATION	Sample location		
Collection TIME	1730		GIANT BLOOMFIELD REF. GBR-20		
Collected by — Person/Agency		Collection site description			
Boyer /OCD					

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	7	Conductivity (Uncorrected)	3400 μ mho	GRAB
		Water Temp. (00010)	21 $^{\circ}$ C	Conductivity at 25 $^{\circ}$ C (00094)
Field comments				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added		☐ Other-specify:		☒ 5ml conc. HNO ₃ added
				☒ 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25 $^{\circ}$ C (00095)	μ mho	☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l	☐ Magnesium (00925)	mg/l	
☒ Other: ICAP SCAN		☐ Sodium (00930)	mg/l	
☒ Other: ICAP SCAN		☐ Potassium (00935)	mg/l	
☒ Other: ICAP SCAN		☐ Bicarbonate (00440)	mg/l	
		☐ Chloride (00940)	mg/l	
		☐ Sulfate (00945)	mg/l	
		☐ Total filterable residue (dissolved) (70300)	mg/l	
		☐ Other:		
NF, A-H ₂ SO ₄		F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l	☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l	☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l	☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l	☐ Other:		
☐ Total organic carbon ()	mg/l			
☐ Other:				
☐ Other:				

Analyst

Date Reported

Reviewed by

7/23/86

Jim Leiby

Laboratory remarks

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____

Lab Number: HM 1356
Date Submitted: 7/16/86
By: Boyer

GBR -20

Sample Code: Grant Bloomfield Ref.
Date Analyzed: 7/18/86
Reviewed By: Jim Ashby
Date Reported: 7/23/86

Element	ICAP VALUE (MG/L)	AA VALUE (MG/L)
Aluminum	<u>40.1</u>	<u> </u>
Barium	<u>40.1</u>	<u> </u>
Beryllium	<u>40.1</u>	<u> </u>
Boron	<u>0.4</u>	<u> </u>
Cadmium	<u>40.1</u>	<u> </u>
Calcium	<u>450.</u>	<u> </u>
Chromium	<u>40.1</u>	<u> </u>
Cobalt	<u>40.1</u>	<u> </u>
Copper	<u>40.1</u>	<u> </u>
Iron	<u>40.1</u>	<u> </u>
Lead	<u>40.1</u>	<u> </u>
Magnesium	<u>42.</u>	<u> </u>
Manganese	<u>9.5</u>	<u> </u>
Molybdenum	<u>40.1</u>	<u> </u>
Nickel	<u>40.1</u>	<u> </u>
Silicon	<u>7.8</u>	<u> </u>
Silver	<u>40.1</u>	<u> </u>
Strontium	<u>6.3</u>	<u> </u>
Tin	<u>40.1</u>	<u> </u>
Vanadium	<u>40.1</u>	<u> </u>
Zinc	<u>40.1</u>	<u> </u>
Arsenic		<u> </u>
Selenium		<u> </u>
Mercury		<u> </u>

GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-22

GIANT

5/9/86

PARAMETER

1.0

BENZENE	ND
BROMODICHLOROMETHANE	NA
BROMOFORM	NA
BROMOMETHANE	NA
CARBON TETRACHLORIDE	NA
CHLOROBENZENE	NA
CHLOROETHANE	NA
CHLOROFORM	NA
CHLOROMETHANE	NA
DIBROMOCHLOROMETHANE	NA
1,2-DICHLOROBENZENE	NA
1,3-DICHLOROBENZENE	NA
1,4-DICHLOROBENZENE	NA
DICHLORODIFLUOROMETHANE	NA
1,1-DICHLOROETHANE	NA
1,2-DICHLOROETHANE	NA
1,1-DICHLOROETHENE	NA
CIS-1,2-DICHLOROETHENE	NA
TRANS-1,2-DICHLOROETHENE	NA
1,2-DICHLOROPROPANE	NA
ETHYLBENZENE	ND
METHYLENE CHLORIDE	NA
1,1,2,2-TETRACHLOROETHANE	NA
TETRACHLOROETHENE	NA
TOLUENE	ND
1,1,1-TRICHLOROETHANE	NA
1,1,2-TRICHLOROETHANE	NA
TRICHLOROETHENE	NA
TRICHLOROFLUOROMETHANE	NA
VINYL CHLORIDE	NA
TOTAL XYLENES	ND

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
*	-	DUPLICATE ANALYSIS

8605090925
that 8605091700

Assaigal Analytical Laboratories, Inc.
1300 Jefferson N.E.
Albuquerque, NM 87109

TO: Geoscience Consultants Ltd. DATE: 22 May 1986
Attn: Randy Hicks 0752 revised
500 Copper N.W. Suite 325
Albuquerque, NM 87102

ANALYTE	SAMPLE ID/ ANALYTICAL RESULTS					
	8605090925 A & B GBR 18	8605091040 A & B GBR 20	8605091140 Steel Well	8605091210 A & B GBR 25	8605091250 A & B GBR 22	8605091515 A & B GBR 26
Benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Toluene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Xylenes	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Ethyl benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
EC		3840 umhos/cm		4980 umhos/cm		
TDS				5096 mg/l		
	8605091550 A & B GBR 13	8605091625 GBR 24	8605091700 GBR 21	NOMINAL DETECTION LIMITS		
Benzene	129 ug/l	1154 ug/l	<1.0 ug/l	1.0 ug/l	1.0 ug/l	1.0 ug/l
Toluene	32 ug/l	803 ug/l	22 ug/l	1.0 ug/l	1.0 ug/l	1.0 ug/l
Xylenes	105 ug/l	1020 ug/l	234 ug/l	1.0 ug/l	1.0 ug/l	1.0 ug/l
Ethyl benzene	3 ug/l	147 ug/l	2 ug/l	1.0 ug/l	1.0 ug/l	1.0 ug/l
EC	6300 umhos/cm	3690 umhos/cm		1 umhos/cm	1 umhos/cm	
TDS				1 mg/l		

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846 EMSL-Cincinnati, 1982

An invoice for services is enclosed. Thank you for contacting Assaigal Laboratories.

Sincerely,
James V. Smith
James V. Smith, Ph.D.
Laboratory Director

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-21

<u>SAMPLER</u>	<u>GIANT</u>
<u>DATE</u>	<u>5/9/88</u>
<u>PARAMETER</u>	
DETECTION LIMIT	1.0
BENZENE	ND
BROMODICHLOROMETHANE	NA
BROMOFORM	NA
BROMOMETHANE	NA
CARBON TETRACHLORIDE	NA
CHLOROBENZENE	NA
CHLOROETHANE	NA
CHLOROFORM	NA
CHLOROMETHANE	NA
DIBROMOCHLOROMETHANE	NA
1,2-DICHLOROBENZENE	NA
1,3-DICHLOROBENZENE	NA
1,4-DICHLOROBENZENE	NA
DICHLORODIFLUOROMETHANE	NA
1,1-DICHLOROETHANE	NA
1,2-DICHLOROETHANE	NA
1,1-DICHLOROETHENE	NA
CIS-1,2-DICHLOROETHENE	NA
TRANS-1,2-DICHLOROETHENE	NA
1,2-DICHLOROPROPANE	NA
ETHYLBENZENE	2.0
METHYLENE CHLORIDE	NA
1,1,2,2-TETRACHLOROETHANE	NA
TETRACHLOROETHENE	NA
TOLUENE	22.0
1,1,1-TRICHLOROETHANE	NA
1,1,2-TRICHLOROETHANE	NA
TRICHLOROETHENE	NA
TRICHLOROFLUOROMETHANE	NA
VINYL CHLORIDE	NA
TOTAL XYLENES	234.0

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
*	-	DUPLICATE ANALYSIS

8605090925
 8605091700

Assaigai Analytical Laboratories, Inc.
 1300 Jefferson N.E.
 Albuquerque, NM 87109

TO: Geoscience Consultants Ltd. DATE: 29 May 1986
 Attn: Randy Hicks 0752 revised
 500 Copper N.W. Suite 325
 Albuquerque, NM 87102

ANALYTE

SAMPLE ID/ ANALYTICAL RESULTS

ANALYTE	8605090925 A & B GBR 18	8605091040 A & B GBR 20	8605091140 Steel Well	8605091210 A & B GBR 25	8605091350 A & B GBR 22	8605091515 A & B GBR 26
Benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Toluene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Xylenes	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Ethyl benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
EC		3840 umhos/cm		4980 umhos/cm		
TDS				5096 mg/l		

ANALYTE	8605091550 A & B GBR 13	8605091625 GBR 24	8605091700 GBR 21	NOMINAL DETECTION LIMITS
Benzene	129 ug/l	1154 ug/l	<1.0 ug/l	1.0 ug/l
Toluene	32 ug/l	803 ug/l	22 ug/l	1.0 ug/l
Xylenes	105 ug/l	1020 ug/l	234 ug/l	1.0 ug/l
Ethyl benzene	3 ug/l	147 ug/l	2 ug/l	1.0 ug/l
EC	6300 umhos/cm	2690 umhos/cm		1 umhos/cm
TDS				1 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846 EMSL-Cincinnati, 1982

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

James V. Smith
 James V. Smith, Ph.D.
 Laboratory Director

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-24D

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>9/13/89</u>	<u>12/12/89</u>	<u>4/3/90</u>	<u>7/18/90</u>	<u>10/8/90</u>
<u>PARAMETER</u>					
DETECTION LIMIT	<1.0	(BELOW)	<1.0	(BELOW)	(BELOW)
BENZENE	12.0	21.0	31.0	39.0	25.0
BROMODICHLOROMETHANE	ND	ND(<1.0)	ND	ND(<1.0)	ND(0.1)
BROMOFORM	ND	ND(<1.0)	ND	ND(2.5)	ND(0.5)
BROMOMETHANE	ND	ND(<1.0)	ND	ND(5.9)	ND(5.9)
CARBON TETRACHLORIDE	ND	ND(<1.0)	ND	ND(<1.0)	ND(0.12)
CHLOROBENZENE	0.47	ND(2.0)	ND	16.0	ND(1.0)
CHLOROETHANE	ND	ND(<1.0)	ND	ND(2.6)	ND(2.6)
CHLOROFORM	ND	ND(<1.0)	ND	ND(<1.0)	ND(0.5)
CHLOROMETHANE	ND	ND(<1.0)	ND	ND(1.5)	ND(1.5)
DIBROMOCHLOROMETHANE	ND	ND(<1.0)	ND	ND(1.0)	ND(1.0)
1,2-DICHLOROBENZENE	ND	0.6	ND	ND(2.0)	ND(2.0)
1,3-DICHLOROBENZENE	ND	ND(<1.0)	ND	ND(2.0)	ND(2.0)
1,4-DICHLOROBENZENE	ND	ND(<1.0)	ND	ND(1.5)	1.7 X
1,1-DICHLOROETHANE	ND	ND(<1.0)	ND	ND(2.5)	ND(2.5)
1,2-DICHLOROETHANE	18.0	18.0	16.0	57.0	44.0
1,1-DICHLOROETHENE	ND	ND(<1.0)	ND	ND(1.0)	ND(1.0)
CIS-1,2-DICHLOROETHENE	ND	NA	ND	ND(1.0)	ND(1.0)
TRANS-1,2-DICHLOROETHENE	ND	ND(<1.0)	ND	ND(1.0)	ND(1.0)
1,2-DICHLOROPROPANE	ND	ND(<1.0)	ND	ND(<1.0)	ND(0.5)
ETHYLBENZENE	18.0	27.0	13.0	28.0	29.0
METHYLENE CHLORIDE	0.5	ND(<1.0)	ND	ND(2.0)	ND(2.0)
1,1,2,2-TETRACHLOROETHANE	ND	ND(<1.0)	ND	ND(<1.0)	ND(0.15)
TETRACHLOROETHENE	ND	ND(<1.0)	0.21	4.0	ND(0.5)
TOLUENE	2.8	ND(2.0)	2.3	4.8	4.8
1,1,1-TRICHLOROETHANE	ND	ND(<1.0)	ND	6.8	ND(1.0)
1,1,2-TRICHLOROETHANE	ND	ND(<1.0)	ND	ND(1.0)	ND(1.0)
TRICHLOROETHENE	ND	ND(<1.0)	ND	56.0	ND(1.0)
TRICHLOROFLUOROMETHANE	2.5	ND(<1.0)	ND	ND(1.0)	ND(1.0)
VINYL CHLORIDE	ND	ND(<1.0)	ND	ND(1.0)	ND(1.0)
TOTAL XYLENES	19.0	6.9	6.7	8.8	16.0

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS
X - PRESENCE NOT CONFIRMED

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
IN GROUND WATER, GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-24D

<u>SAMPLER</u>	GIANT	OCD**	GIANT	GIANT	GIANT
<u>DATE</u>	<u>8/25/88</u>	<u>8/25/88</u>	<u>12/7/88</u>	<u>3/14/89</u>	<u>6/13/89</u>
<u>PARAMETER</u>					
DETECTION LIMIT	<1.0	5.0	<1.0	(BELOW)	1.0
BENZENE	39.1	27.0	28.0	28.7	19.4
BROMODICHLOROMETHANE	ND	ND	ND	ND(<1.0)	ND
BROMOFORM	ND	ND	ND	ND(<1.0)	ND
BROMOMETHANE	ND	ND	ND	ND(1.0)	ND
CARBON TETRACHLORIDE	ND	ND	ND	ND(<1.0)	ND
CHLOROBENZENE	ND	ND	ND	ND(<1.0)	ND
CHLOROETHANE	ND	ND	ND	ND(1.0)	ND
CHLOROFORM	ND	ND	ND	ND(<1.0)	ND
CHLOROMETHANE	ND	ND	ND	ND(1.0)	ND
DIBROMOCHLOROMETHANE	ND	ND	ND	ND(<1.0)	ND
1,2-DICHLOROBENZENE	1.1	ND	ND	ND(<1.0)	ND
1,3-DICHLOROBENZENE	ND	ND	ND	ND(<1.0)	ND
1,4-DICHLOROBENZENE	ND	ND	ND	ND(<1.0)	ND
DICHLORODIFLUOROMETHANE	ND	ND	ND	ND(1.0)	ND
1,1-DICHLOROETHANE	ND	ND	ND	ND(<1.0)	ND
1,2-DICHLOROETHANE	25.7	6.0	21.0	6.8	13.1
1,1-DICHLOROETHENE	ND	ND	ND	ND(<1.0)	ND
CIS-1,2-DICHLOROETHENE	NA	ND	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	ND	ND	ND(<1.0)	ND
TOTAL 1,2-DICHLOROETHENE	ND	NA	NA	NA	NA
1,2-DICHLOROPROPANE	ND	ND	ND	ND(<1.0)	ND
ETHYLBENZENE	87.3	55.0	45.0	58.9	34.0
METHYLENE CHLORIDE	ND	ND	ND	ND(<1.0)	4.3
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND(<1.0)	ND
TETRACHLOROETHENE	0.6	ND	ND	ND(<1.0)	ND
TOLUENE	6.5	TR	4.8	8.9	6.9
1,1,1-TRICHLOROETHANE	ND	ND	ND	ND(<1.0)	ND
1,1,2-TRICHLOROETHANE	ND	ND	ND	ND(<1.0)	ND
TRICHLOROETHENE	ND	ND	ND	ND(<1.0)	ND
TRICHLOROFLUOROMETHANE	ND	ND	ND	ND(<1.0)	ND
VINYL CHLORIDE	ND	ND	ND	ND(1.0)	ND
TOTAL XYLENES	30.4	10.0	25.0	18.9	10.6

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
** - SPLIT SAMPLE

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-24D

<u>SAMPLER</u>	OCD	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>11/21/86</u>	<u>9/10/87</u>	<u>10/7/87</u>	<u>11/12/87</u>	<u>6/1/88</u>
<u>PARAMETER</u>					
DETECTION LIMIT	5.0	<1.0	(BELOW)	(BELOW)	<1.0
BENZENE	230.0	100.0	100.0	1,200	63.0
BROMODICHLOROMETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND
BROMOFORM	ND	ND	ND(<1.0)	ND(2.0)	ND
BROMOMETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND
CARBON TETRACHLORIDE	ND	ND	ND(<1.0)	ND(2.0)	ND
CHLOROBENZENE	ND	ND	ND(1.6)	ND(5.0)	ND
CHLOROETHANE	ND	ND	ND(1.0)	ND(2.0)	ND
CHLOROFORM	ND	ND	ND(<1.0)	23.0	ND
CHLOROMETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND
DIBROMOCHLOROMETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND
1,2-DICHLOROBENZENE	TR	1.9	ND(4.0)	ND(5.0)	ND
1,3-DICHLOROBENZENE	ND	ND	ND(4.0)	ND(5.0)	1.3
1,4-DICHLOROBENZENE	ND	ND	ND(6.0)	ND(5.0)	ND
DICHLORODIFLUOROMETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND
1,1-DICHLOROETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND
1,2-DICHLOROETHANE	69.0	44.7	35.0	34.0	55.0
1,1-DICHLOROETHENE	ND	ND	ND(<1.0)	ND(2.0)	ND
CIS-1,2-DICHLOROETHENE	ND	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	ND	ND	ND(<1.0)	ND(2.0)	ND
1,2-DICHLOROPROPANE	ND	ND	ND(<1.0)	ND(2.0)	ND
ETHYLBENZENE	180.0	211.0	181.0	1,100	73.0
METHYLENE CHLORIDE	ND	ND	ND(<1.0)	ND(20.0)	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND
TETRACHLOROETHENE	TR	1.1	ND(<1.0)	2.9	0.69
TOLUENE	5.0	47.7	35.0	22.0	11.0
1,1,1-TRICHLOROETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND
1,1,2-TRICHLOROETHANE	ND	ND	ND(<1.0)	ND(2.0)	ND
TRICHLOROETHENE	ND	ND	ND(<1.0)	2.0	ND
TRICHLOROFLUOROMETHANE	ND	ND	ND(<1.0)	ND(20.0)	ND
VINYL CHLORIDE	ND	ND	ND(<1.0)	ND(2.0)	ND
TOTAL XYLENES	147.0	246.1	165.0	55.0	40.0

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

Giant Refining Company
 Radian Work Order: S0-10-082

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9010081350	REAGENT BLANK	REAGENT BLANK
	GBR-24D		
Factor:	5	1	1
Results in:	ug/L	ug/L	ug/L
	11A	12A	12B
Matrix:	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	25 C	1.0	ND	0.20	ND	0.20		
Chlorobenzene	ND	1.0	ND	0.20	ND	0.20		
1,2-Dichlorobenzene	ND	2.0	ND	0.40	ND	0.40		
1,3-Dichlorobenzene	ND	2.0	ND	0.40	ND	0.40		
1,4-Dichlorobenzene	1.7 Xa	1.5	ND	0.30	ND	0.30		
Ethylbenzene	29 C	1.0	ND	0.20	ND	0.20		
Toluene	4.8 Ga	1.0	ND	0.20	ND	0.20		
Xylenes (total)	16 C	1.0	ND	0.20	ND	0.20		

Surrogate Recovery(%)

1-Bromo-4-fluorobenzene

126

118

127

Control Limits: 40 to 140

C Confirmed on second column or by GC/MS

X See definition in report narrative

G Indicates an estimated GC value due to interferences.

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-10-082

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9010081350	REAGENT BLANK
	GBR-240	
Factor:	5	1
Results in:	ug/L	ug/L
	05A	06A
Matrix:	water	water

	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.50	ND	0.10
Bromoform	ND	2.5	ND	0.50
Bromomethane	ND	5.9	ND	1.2
Carbon tetrachloride	ND	0.60	ND	0.12
Chlorobenzene	ND	1.3	ND	0.25
Chloroethane	ND	2.6	ND	0.52
2-Chloroethylvinylether	ND	2.5	ND	0.50
Chloroform	ND	0.50	ND	0.10
Chloromethane	ND	1.5	ND	0.30
Dibromochloromethane	ND	1.0	ND	0.20
1,2-Dichlorobenzene	ND	2.5	ND	0.50
1,3-Dichlorobenzene	ND	1.6	ND	0.32
1,4-Dichlorobenzene	ND	1.2	ND	0.24
1,1-Dichloroethane	ND	2.5	ND	0.50
1,2-Dichloroethane	44 C	0.50	ND	0.10
1,1-Dichloroethene	ND	1.0	ND	0.20
cis-1,2-Dichloroethene	ND	1.0	ND	0.20
trans-1,2-Dichloroethene	ND	1.0	ND	0.20
1,2-Dichloropropane	ND	0.50	ND	0.10
cis-1,3-Dichloropropene	ND	1.0	ND	0.20
trans-1,3-Dichloropropene	ND	1.7	ND	0.34
Methylene chloride	ND	2.0	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.75	ND	0.15
Tetrachloroethene	ND	0.50	ND	0.10
1,1,1-Trichloroethane	ND	1.0	ND	0.20
1,1,2-Trichloroethane	ND	1.0	ND	0.20
Trichloroethene	ND	1.0	ND	0.20
Trichlorofluoromethane	ND	1.0	ND	0.20
Vinyl chloride	ND	1.0	ND	0.20

ND Not detected at specified detection limit

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: SO-07-146

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	900718937	9007181100	9007181305	9007181345
	GBR-31	GBR-24D	GBR-30	GBR-33
Factor:	10	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	02A	04A	06A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	2.0	39 C	1.0	ND	0.20	ND	0.20
Chlorobenzene	ND	2.0	16 X	1.0	1.8 X	0.20	2.5 X	0.20
1,2-Dichlorobenzene	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	3.0	ND	1.5	ND	0.30	12 C	0.30
Ethylbenzene	ND	2.0	28 X	1.0	0.55 X@	0.20	3.7 C	0.20
Toluene	ND	2.0	4.8 C@	1.0	ND	0.20	0.35 C@	0.20
Xylenes (total)	ND	2.0	8.8 C	1.0	2.4 C	0.20	6.6 C	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	102		96		106		45	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

X See definition in report narrative

C Confirmed on second column or by GC/MS

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-07-146

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	900718937	9007181100	9007181305	9007181345
	GBR-31	GBR-24D	GBR-30	GBR-33
Factor:	10	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	03A	05A	07A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	0.50	ND	0.10	ND	0.10
Bromoform	ND	5.0	ND	2.5	ND	0.50	ND	0.50
Bromomethane	ND	12	ND	5.9	ND	1.2	ND	1.2
Carbon tetrachloride	ND	1.2	ND	0.60	ND	0.12	ND	0.12
Chlorobenzene	ND	2.5	ND	1.2	ND	0.25	ND	0.25
Chloroethane	ND	5.2	ND	2.6	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	5.0	ND	2.5	ND	0.50	ND	0.50
Chloroform	ND	1.0	ND	0.50	ND	0.10	ND	0.10
Chloromethane	ND	3.0	ND	1.5	ND	0.30	ND	0.30
Dibromochloromethane	ND	2.0	ND	1.0	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	2.5	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	1.6	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	1.2	ND	0.24	ND	0.24
1,1-Dichloroethane	5.5 Xa	5.0	ND	2.5	0.67 Ca	0.50	ND	0.50
1,2-Dichloroethane	ND	1.0	57 C	0.50	0.75 C	0.10	0.28 Ca	0.10
1,1-Dichloroethene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	81 C	2.0	ND	1.0	5.6 C	0.20	4.9 C	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	0.50	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	1.7	ND	0.34	ND	0.34
Methylene chloride	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	1.5	ND	0.75	ND	0.15	ND	0.15
Tetrachloroethene	12 G	1.0	4.0 C	0.50	0.44 Ca	0.10	0.60 C	0.10
1,1,1-Trichloroethane	15 X	2.0	6.8 X	1.0	ND	0.20	ND	0.20
1,1,2-Trichloroethane	ND	2.0	ND	1.0	ND	0.20	ND	0.20
Trichloroethene	34 G	2.0	56 X	1.0	0.44 Ca	0.20	3.2 G	0.20
Trichlorofluoromethane	ND	2.0	ND	1.0	ND	0.20	0.28 Xa	0.20
Vinyl chloride	ND	2.0	ND	1.0	ND	0.20	ND	0.20

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

G Indicates an estimated GC value due to interferences.

X See definition in report narrative

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: S0-04-020

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9004031005	9004031109	9004031150	9004031359
	/GBR-17	/GBR-30	/GBR-240	/GBR-15
Factor:	1	1	1	20
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	31 C	0.20	110 C	4.0
Chlorobenzene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	0.30	ND	6.0
Ethylbenzene	ND	0.20	2.0 C	0.20	13 C	0.20	ND	4.0
Toluene	ND	0.20	3.1 CG	0.20	2.3 C	0.20	ND	4.0
Xylenes (total)	ND	0.20	ND	0.20	6.7 C	0.20	ND	4.0
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	99		111		90		86	
Control Limits: 40 to 140								

ND Not detected at specified detection limit.

C Confirmed on second column or by GC/MS.

G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Company
 Radian Work Order: SO-04-020

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9004031005	9004031109	9004031150	9004031359
	/GBR-17	/GBR-30	/GBR-24D	/GBR-15
Factor:	1	1	1	20
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	2.0
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	10
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	24
Carbon tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	2.4
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	5.0
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	10
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	10
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	2.0
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	6.0
Dibromochloromethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	10
1,3-Dichlorobenzene	ND	0.52	ND	0.52	ND	0.52	ND	6.4
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	4.8
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	0.50	84 C	10
1,2-Dichloroethane	ND	0.10	ND	0.10	16 C	0.10	ND	2.0
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
cis-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	2.0
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	0.34	ND	6.8
Methylene chloride	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	0.15	ND	3.0
Tetrachloroethene	0.37 Ca	0.10	ND	0.10	0.21 Ca	0.10	ND	2.0
1,1,1-Trichloroethane	1.7 C	0.20	ND	0.20	ND	0.20	ND	4.0
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Trichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Vinyl chloride	ND	0.20	ND	0.20	ND	0.20	ND	4.0

ND Not detected at specified detection limit

C Confirmed on second column or by GC/MS

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Co.
 Radian Work Order: 90-04-043

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9004031005	9004031109	9004031150	9004031359
	GBR-17	GBR-30	GBR-24D	GBR-15
Factor:	0.94	9.6	4.7	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	2.2	ND	22	ND	11	ND	2.2
Acenaphthene	ND	1.7	ND	17	ND	8.5	ND	1.7
Anthracene	ND	0.62	ND	6.3	ND	3.1	ND	0.62
Benzo(a)anthracene	ND	0.012	ND	0.12	ND	0.061	ND	0.012
Benzo(a)pyrene	ND	0.022	ND	0.22	ND	0.11	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.17	ND	0.085	ND	0.017
Benzo(g,h,i)perylene	ND	0.071	ND	0.73	ND	0.36	ND	0.071
Benzo(k)fluoranthene	ND	0.016	ND	0.16	ND	0.080	ND	0.016
Chrysene	ND	0.012	ND	0.12	ND	0.061	ND	0.012
Dibenzo(a,h)anthracene	ND	0.028	ND	0.29	ND	0.14	ND	0.028
Fluoranthene	ND	0.20	ND	2.0	ND	0.99	ND	0.20
Fluorene	ND	0.20	2.8 *	2.0	2.0 *	0.99	0.35 *	0.20
Indeno(1,2,3-cd)pyrene	ND	0.040	ND	0.41	ND	0.20	ND	0.040
Naphthalene	ND	1.7	ND	17	ND	8.5	ND	1.7
Phenanthrene	ND	0.60	ND	6.1	ND	3.0	ND	0.60
Pyrene	ND	0.25	ND	2.6	ND	1.3	ND	0.25
Surrogate Recovery(%)								
Terphenyl-d14	54		234 Q		69		72	
Control Limits: 24 to 146								

 ND Not detected at specified detection limit
 Q Outside control limits

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Volatile aromatics (1)	SHS-1	Stripper Eff	Stripper Inf	GBR-24D
List: SW8020				
Sample ID:	8912121410	8912121145E	8912121145I	8912121130
Factor:	250	1	5	10
Results in:	ug/L	ug/L	ug/L	ug/L
	058	068	078	088
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	50	<u>3.3</u>	0.20	<u>110</u>	1.0	<u>21</u>	2.0
Chlorobenzene	ND	50	ND	0.20	ND	1.0	ND	2.0
1,2-Dichlorobenzene	ND	100	ND	0.40	ND	2.0	ND	4.0
1,3-Dichlorobenzene	ND	100	ND	0.40	ND	2.0	ND	4.0
1,4-Dichlorobenzene	ND	75	<u>1.4 *</u>	0.30	<u>8.6</u>	1.5	ND	3.0
Ethylbenzene	ND	50	<u>0.55 *</u>	0.20	<u>18</u>	1.0	<u>27</u>	2.0
Toluene	ND	50	ND	0.20	ND	1.0	ND	2.0
Total xylenes	<u>330</u>	50	ND	0.20	<u>9.1</u>	1.0	<u>6.9 *</u>	2.0
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	113		94		114		110	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Halogenated volatiles (1)	SHS-1	Stripper Eff	Stripper Inf	GBR-24D
List: SW8010				
Sample ID:	8912121410	8912121145E	8912121145I	8912121130
Factor:	5	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	05A	06A	07A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.50	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	2.5	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	5.9	ND	1.2	ND	1.2	ND	1.2
Carbon Tetrachloride	ND	0.60	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	1.3	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	2.6	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	2.5	ND	0.50	ND	0.50	ND	0.50
Chloroform	5.7	0.50	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	1.5	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane-(2)	ND	1.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	2.5	ND	0.50	ND	0.50	0.60 *	0.50
1,3-Dichlorobenzene	ND	1.6	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	1.2	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	0.72 *	2.5	ND	0.50	1.9 *	0.50	ND	0.50
1,2-Dichloroethane	7.1	0.50	1.0	0.10	3.5	0.10	18	0.10
1,1-Dichloroethene	ND	1.0	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	21	1.0	0.97 *	0.20	9.3	0.20	ND	0.20
1,2-Dichloropropane	ND	0.50	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene-(2)	N\A	N\A	N\A	N\A	N\A	N\A	N\A	N\A
trans-1,3-Dichloropropene	ND	1.5	ND	0.30	ND	0.30	ND	0.30
Methylene Chloride	ND	2.0	ND	0.40	1.0 *	0.40	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.75	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene-(3)	ND	0.50	ND	0.10	1.3	0.10	ND	0.10
1,1,2-Trichloroethane-(2)	ND	1.0	ND	0.20	ND	0.20	ND	0.20
1,1,1-Trichloroethane	ND	1.0	ND	0.20	0.80 *	0.20	ND	0.20
Trichloroethene	6.2	1.0	ND	0.20	2.0	0.20	ND	0.20
Trichlorofluoromethane	ND	1.0	ND	0.20	ND	0.20	ND	0.20
Vinyl Chloride	ND	1.0	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

N\A Not available

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

(2) Dibromochloromethane, 1,1,2-Trichloroethane, and cis-1,3-Dichloropropene coelute. Quantitated as Dibromochloromethane unless otherwise noted.

(3) Tetrachloroethene and 1,1,2,2-Tetrachloroethane coelute. Quantitated as Tetrachloroethene unless otherwise noted.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: SW8310 PAH's by HPLC (1)	Stripper Eff	Stripper Inf	GBR-24D	GRW-13
List: 8310 Method analytes				
Sample ID:	8912121145E	8912121145I	8912121130	8912121200
Factor:	0.94	1.9	0.94	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	06C	07C	08C	09C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	2.2	ND	4.4	ND	2.2	ND	2.2
Acenaphthene	ND	1.7	ND	3.4	144 D	1.7	ND	1.7
Anthracene	ND	0.62	ND	1.3	ND	0.62	ND	0.62
Benzo(a)anthracene	ND	0.012	ND	0.025	ND	0.012	ND	0.012
Benzo(a)pyrene	ND	0.022	ND	0.044	ND	0.022	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.034	ND	0.017	ND	0.017
Benzo(g,h,i)perylene	ND	0.071	ND	0.14	ND	0.071	ND	0.071
Benzo(k)fluoranthene	ND	0.016	ND	0.032	ND	0.016	ND	0.016
Chrysene	ND	0.012	ND	0.025	ND	0.012	ND	0.012
Dibenzo(a,h)anthracene	ND	0.028	ND	0.057	ND	0.028	ND	0.028
Fluoranthene	ND	0.20	ND	0.40	ND	0.20	ND	0.20
Fluorene	3.4 D	0.20	4.0 D	0.40	2.6 D	0.20	ND	0.20
Indeno(1,2,3-cd)pyrene	ND	0.040	ND	0.082	ND	0.040	ND	0.040
Naphthalene	8.9 D	1.7	14 *D	3.4	1.9 *D	1.7	4.3 *D	1.7
Phenanthrene	11	0.60	13	1.2	3.0	0.60	ND	0.60
Pyrene	0.62 *	0.25	0.54 *	0.51	0.29 *	0.25	ND	0.25
Surrogate Recovery(%)								
Terphenyl-d14	93		80		79		80	
Control Limits: 37 to 139								

ND Not detected at specified detection limit

D Sample diluted for this analyte

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: PAHs by GC 8100 (1) List: 8100, special list	Stripper Eff	Stripper Inf	GBR-24D	GRW-13
Sample ID:	8912121145E	8912121145I	8912121130	8912121200
Factor:	0.94	0.94	0.94	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	06C	07C	08C	09C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1-Methylnaphthalene	<u>2.0</u> *	0.94	<u>6.3</u>	0.94	<u>5.8</u>	0.94	ND	0.94
2-Methylnaphthalene	<u>2.8</u> *	0.94	<u>2.8</u> *	0.94	ND	0.94	ND	0.94

* Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

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Received: 09/14/89

RAS Sacramento

Results by Sample

Work Order # S9-09-081

SAMPLE ID 8909130915 H2O GBR-240 FRACTION 06A TEST CODE 601 NAME Purgeable Halocarbons H2O
Date & Time Collected 09/13/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST _____
INSTRMT _____

INJECTD 09/27/89

FILE # DB092720
FACTOR 1

VERIFIED _____
UNITS ug/L

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	ND	0.50	1
74-83-9	Bromomethane	ND	1.0	1
75-01-4	Vinyl Chloride	ND	0.20	1
75-00-3	Chloroethane	ND	0.50	1
75-09-2	Methylene Chloride	0.50 C	0.40	1
75-69-4	Trichlorofluoromethane	2.5 C	0.10	1
75-35-4	1,1-Dichloroethene	ND	0.10	1
75-34-3	1,1-Dichloroethane	ND	0.10	1
540-59-0	Total 1,2-Dichloroethene (2)	ND	0.10	1
67-66-3	Chloroform	ND	0.10	1
107-06-2	1,2-Dichloroethane	18 C	0.10	1
71-55-6	1,1,1-Trichloroethane	ND	0.20	1
56-23-5	Carbon Tetrachloride	ND	0.20	1
75-27-4	Bromodichloromethane	ND	0.10	1
78-87-5	1,2-Dichloropropane	ND	0.10	1
10061-01-5	cis-1,3-Dichloropropene	ND	0.40	1
79-01-6	Trichloroethene	ND	0.20	1
124-48-1	Dibromochloromethane (3)	ND	0.20	1
79-00-5	1,1,2-Trichloroethane (3)	ND	0.20	1
10061-02-6	trans-1,3-Dichloropropene (3)	ND	0.40	1
110-75-8	2-Chloroethylvinyl Ether	ND	2.0	1
75-25-2	Bromoform	ND	2.0	1
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	0.20	1
127-18-4	Tetrachloroethene (4)	ND	0.10	1
108-90-7	Chlorobenzene	ND	0.20	1
541-73-1	1,3-Dichlorobenzene	ND	0.50	1
95-50-1	1,2-Dichlorobenzene	ND	0.20	1
106-46-7	1,4-Dichlorobenzene	ND	0.20	1

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RAS Sacramento

REPORT

Results by Sample

Work Order # S9-09-081
Continued From Above

SAMPLE ID 8909130915 H2O GBR-240

FRACTION 06A

TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/13/89

Category

SURROGATES

540-36-3

1-4-Difluorobenzene

460-00-4

1-Bromo-4-Fluorobenzene

NA % Recovery

100 % Recovery

- (1) See Appendix A for Glossary of Report and Data Flag Definitions
- (2) Quantitated as the Trans-isomer
- (3) Dibromochloromethane, 1,1,2-Trichloroethane and Trans-1,3-dichloropropene co-elute.
- (4) 1,1,2,2-Tetrachloroethane and tetrachloroethene co-elute.

Analytical Data Summary

Page: 2

Geoscience Consultants, Ltd.
Radian Work Order: 89-09-111

Method: PAHs by MPLC (1)

Lists

Sample IDs:

GBR-13

GBR-8

GBR-6

GBR-33

GBR-15

GBR-240

8909121550

8909121615

8909121650

8909121750

8909130830

8909130915

Factors:

94

95

24

9

1

1

Results in:

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

water

water

Acenaphthalene

<220

<220

<55

<21

<2.3

<2.3

Acenaphthene

<170

<170

580

<16

<1.8

<1.8

Anthracene

<62

<63

<16

<5.9

<0.66

<0.66

Benzo(a)anthracene

<1.2

<1.2

<0.31

<0.12

<0.013

<0.013

Benzo(a)pyrene

<2.2

<2.2

<0.55

<0.21

<0.023

<0.023

Benzo(b)fluoranthene

<1.7

<1.7

<0.43

<0.16

<0.018

<0.018

Benzo(g,h,i)perylene

<7.1

<7.2

<1.8

<0.68

<0.076

<0.076

Benzo(k)fluoranthene

<1.6

<1.6

<0.41

<0.15

<0.017

<0.017

Chrysene

<1.2

<1.2

<0.31

<0.12

<0.013

<0.013

Dibenzo(a,h)anthracene

<2.8

<2.9

<0.72

<0.27

<0.030

<0.030

Fluoranthene

830

<20

<5.8

<1.9

<0.21

<0.21

Fluorene

<20

<20

57

6*

<0.21

4.6

Indeno(1,2,3-cd)pyrene

<4.0

<4.1

<1.8

<0.39

<0.043

<0.043

Naphthalene

330*

420*

120*

16*

<1.8

<1.8

Phenanthrene

<60

320

25*

<5.8

<0.64

7.4

Pyrene

<25

59*

<6.5

<2.4

<0.27

<0.27

Surrogate Recovery(%)

Terphenyl-d14

NC

NC

NC

NC

122

110

Control Limits: 37 to 139

* Est. result less than 5 times detection limit

NC Not calculated

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



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

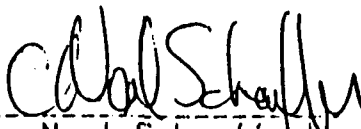
Client: GCL #8906131111
Site: GBR-24D
IML #: F1575

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
BENZENE	19.4 (0.2)	ug/l
TOLUENE	6.9 (0.2)	ug/l
ETHYLBENZENE	34.0 (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	10.6 (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

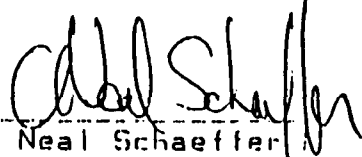
Client: GCL #8706131111
Site: GBR-24D
IML #: F1575

Date of report: 06/23/87
Date sampled: 06/13/87
Date received: 06/14/87

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	4.3 (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	13.1 (1.0)	ug/l
1,1,1-TRICHLOROETHANE	ND (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	ND (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
401 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parentheses.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUNDWATER
POLYNUCLEAR AROMATIC HYDROCARBONS
(ug/ml unless otherwise noted)
(Sampling Event: 06/13/89)

ANALYTE	GBR-17	GBR-240	GBR-30	GBR-31	GBR-33
Acenaphthene	NA	0.010 (0.005)	2.3 (0.6)	ND (0.003)	0.34 (0.25)
Acenaphthylene	NA	0.008 (0.005)	ND (0.6)	ND (0.003)	0.44 (0.25)
Anthracene	NA	0.006 (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(a)anthracene	NA	ND (0.005)	ND (0.6)	ND (0.003)	0.59 (0.25)
Benzo(a)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(b)fluoranthene	NA	0.007 (0.005)	ND (0.6)	0.014 (0.003)	1.58 (0.25)
Benzo(j)fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(k)fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(g,h,i)perylene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Chrysene	NA	ND (0.005)	ND (0.6)	0.008 (0.003)	0.67 (0.25)
Dibenz(a,h)acridine	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,j)acridine	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,h)anthracene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,e)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,h)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Fluorene	NA	0.009 (0.005)	ND (0.6)	0.005 (0.003)	ND (0.25)
Indeno(1,2,3-cd)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Naphthalene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Phenanthrene	NA	0.013 (0.005)	2.0 (0.6)	0.006 (0.003)	0.53 (0.25)
Pyrene	NA	ND (0.005)	ND (0.6)	0.004 (0.003)	ND (0.25)
1-Methylnaphthalene	NA	NA (0.005)	NA (0.6)	NA (0.003)	NA (0.25)
3-Methylnaphthalene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)

() = Detection limit

ND = Not detected

T = Detected below quantifiable level

NA = Not analyzed

ICAP SCAN

SLD Lab No. HM 2425

Reviewed by:

Analyst

Date Reported:

Date Analyzed 12/10/86

ELEMENT	ICAP VALUE (mg/l)	AA VALUE (mg/l)
Aluminum	40.1	
Barium	0.1	
Beryllium	40.1	
Boron	0.3	
Cadmium	40.1	
Calcium	330.	
Chromium	40.1	
Cobalt	40.1	
Copper	40.1	
Iron	40.1	
Lead	40.1	
Magnesium	43.	
Manganese	0.6	
Molybdenum	40.1	
Nickel	40.1	
Silicon	7.5	
Silver	40.1	
Strontium	7.1	
Tin	40.1	
Vanadium	40.1	
Zinc	40.1	
Arsenic		<0.005
Selenium		
Mercury		

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-24S

<u>SAMPLER</u>	<u>GIANT</u>	<u>OCD</u>	<u>OCD</u>
<u>DATE</u>	<u>5/9/86</u>	<u>6/5/86</u>	<u>11/21/86</u>
<u>PARAMETER</u>			
DETECTION LIMIT	1.0	10.0	10.0
BENZENE	1,154	680.0	580.0
BROMODICHLOROETHANE	NA	TR	ND
BROMOFORM	NA	ND	ND
BROMOMETHANE	NA	ND	ND
CARBON TETRACHLORIDE	NA	ND	ND
CHLOROBENZENE	NA	ND	ND
CHLOROETHANE	NA	ND	ND
CHLOROFORM	NA	ND	ND
CHLOROMETHANE	NA	ND	ND
DIBROMOCHLOROMETHANE	NA	ND	ND
1,2-DICHLOROBENZENE	NA	ND	TR
1,3-DICHLOROBENZENE	NA	ND	ND
1,4-DICHLOROBENZENE	NA	ND	ND
DICHLORODIFLUOROMETHANE	NA	ND	ND
1,1-DICHLOROETHANE	NA	ND	ND
1,2-DICHLOROETHANE	NA	TR	60.0
1,1-DICHLOROETHENE	NA	ND	ND
CIS-1,2-DICHLOROETHENE	NA	ND	ND
TRANS-1,2-DICHLOROETHENE	NA	ND	ND
1,2-DICHLOROPROPANE	NA	ND	ND
ETHYLBENZENE	147.0	140.0	300.0
METHYLENE CHLORIDE	NA	ND	ND
1,1,2,2-TETRACHLOROETHANE	NA	ND	ND
TETRACHLOROETHENE	NA	TR	ND
TOLUENE	803.0	690.0	200.0
1,1,1-TRICHLOROETHANE	NA	ND	ND
1,1,2-TRICHLOROETHANE	NA	ND	ND
TRICHLOROETHENE	NA	TR	ND
TRICHLOROFLUOROMETHANE	NA	ND	ND
VINYL CHLORIDE	NA	ND	ND
TOTAL XYLENES	1,020	890.0	495.0

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

86-1364-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

STATE OF NEW MEXICO

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1364A/B

DATE REC. 11-26-86

PHONE(S): 327-5812 USER CODE: 8 2 2 3 5

SUBMITTER: David Boyer CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8611210945A 28

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: CODE: ☐ ☐ ☐COUNTY: San Juan; CITY: Los Alamos CODE: ☐ ☐ ☐

LOCATION CODE: (Township-Range-Section-Tracts) 29N 12W 27+1 11 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

☐
☐
☐
☐
☐**EXTRACTABLE SCREENS**

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH=; Conductivity=1775 umho/cm at 15 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant, GBR-24 Shallow

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer Method of Shipment to the Lab: Hand Carried

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Gary C. Ealen
at (location) HED/SLD on 11/26/86 4:14 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures William Olson Gary C. Ealen

For OCD Use: Date Owner Notified Phone or Letter? Initials

ANALYSES PERFORMED

LAB. No. OR-

1364

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
benzene	580	tetrachloroethene	TR
toluene	200	1,2-dichlorobenzene	TR
ethylbenzene	300	trichloroethene	TR
p-xylene	270		
m-xylene	150		
o-xylene	75		
1,2-dichloroethane	60		
1,2-dibromoethane	11		
* DETECTION LIMIT *	10ppb	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

Ten other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: JFZ

date: 12-4-86

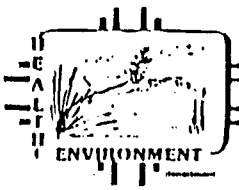
I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4 Dec 86 Analyst's signature: JFZ

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R Meyerheim

754



STATE OF NE

86-0686-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE

Albuquerque, NM 87106 841-2570

REPORT TO: DAVID G. BOYER
PLEASE PRINT
NEW MEXICO OIL CONSERVATION DIV.
P.O. BOX 2088
SANTA FE, NM 87504-2088

S.L.D. No.: OR-686-P.B.
DATE REC.: 6/09/86
SLD PRIORITY #:

PHONE(S): 827-5812

USER CODE: 8 2 2 3 5

SUBMITTER: DAVID BOYER

SUBMITTER CODE: | | | |

SAMPLE TYPE: WATER ☒, SOIL ☐, OTHER ☐

SAMPLE TYPE CODE: | | |

COLLECTED: 86/06/05-20:40 BY DGB
DATE TIME INITIALS

CODE: | | | | | | | | | | | | | | | |
Y Y M M D D H H M M I I I I

SOURCE: GBR-24

CODE: | | | | | | | | | | | | | | | |
AQUIFER DEPTH

NEAREST CITY: Bloomfield

CODE: | | | | |

LOCATION: Giant Refinery

CODE: 2 9 N 1 2 W 2 7 1 1 1 1
TOWNSHIP RANGE SECTION TRACTS

pH= — ; Conductivity= — umho/cm at — °C; Chlorine Residual= —

Dissolved Oxygen= — mg/l; Alkalinity= — ; Flow Rate= —

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Monitor well - sample of water beneath gasoline-like floating product 1" thick
Shallow well sample

I certify that the statements in this block accurately reflect the results of my field analyses, observations and activities. David G. Boyer

Method of shipment to the Laboratory Hand carried

This form accompanies 2 Septum Vials, Glass Jugs,
Containers are marked as follows to indicate preservation:

- ☐ NP: No preservation; sample stored at room temperature.
- ☒ P-Ice Sample stored in an ice bath (not frozen).
- ☐ P- $\text{Na}_2\text{S}_2\text{O}_3$; Sample preserved with $\text{Na}_2\text{S}_2\text{O}_3$ to remove chlorine residual.

I (we) certify that this sample was transferred from David G. Boyer to — at (location) SLD on —

— : — and that the statements in this block are correct.
DATE AND TIME

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☒

Signatures David G. Boyer

(we) certify that this sample was transferred from — at (location) — on —

— : — and that the statements in this block are correct.
DATE AND TIME

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures

ANALYSES REQUESTED

LAB. No.: ORG- 686

PLEASE CHECK THE APPROPRIATE BOXES BELOW TO INDICATE THE TYPE OF ANALYTICAL SCREENS REQUIRED. WHENEVER POSSIBLE LIST SPECIFIC COMPOUNDS SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
		ALIPHATIC HYDROCARBON SCREEN			ALIPHATIC HYDROCARBONS
X	X	AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
X	X	HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
					ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
					POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS

REMARKS:

ANALYTICAL RESULTS

COMPOUND	[PPB]	COMPOUND	[PPB]
<i>benzene</i>	<i>680</i>	<i>trichloroethene</i>	<i>trace < 10 ppb</i>
<i>toluene</i>	<i>690</i>	<i>1,2-dichloroethane</i>	<i>trace < 10 ppb</i>
<i>ethylbenzene</i>	<i>140</i>	<i>tetrachloroethene</i>	<i>trace < 10 ppb</i>
<i>p-xylene</i>	<i>290</i>	<i>1,2-dibromoethane</i>	<i>trace < 10 ppb</i>
<i>m-xylene</i>	<i>410</i>		
<i>o-xylene</i>	<i>190</i>		
		* DETECTION LIMIT	<i>10 µg/m³</i>

REMARKS: *Twenty compounds detected by the aromatic screen that were not identified.*

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes NO *X*. Seal(s) broken by: _____ date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *6-13-86, 6-24-86, 7-1-86, 7-2-86*. Analyst's signature: *[Signature]*I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block. Reviewers signature: *[Signature]*

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____

8605090925
8605091700

Assaiged Analytical Laboratories, Inc.
1900 Jefferson N.E.
Albuquerque, NM 87109

TO: Geoscience Consultants Ltd. DATE: 29 May 1986
Attn: Randy Hicks 0752 revised
500 Copper N.W. Suite 325
Albuquerque, NM 87102

ANALYTE

SAMPLE ID/ ANALYTICAL RESULTS

ANALYTE	8605090925 A & B GBR 18	8605091040 A & B GBR 20	8605091140 Steel Well	8605091210 A & B GBR 25	8605091250 A & B GBR 22	8605091515 A & B GBR 26
Benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Toluene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Xylenes	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Ethyl benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
EC		3840 umhos/cm		4980 umhos/cm		
TDS				5096 mg/l		

NOMINAL DETECTION LIMITS

ANALYTE	8605091550 A & B GBR 13	8605091625 GBR 24	8605091700 GBR 21
Benzene	129 ug/l	1154 ug/l	<1.0 ug/l
Toluene	32 ug/l	803 ug/l	1.0 ug/l
Xylenes	105 ug/l	1020 ug/l	1.0 ug/l
Ethyl benzene	3 ug/l	147 ug/l	1.0 ug/l
EC	6300 umhos/cm	2690 umhos/cm	1 umhos/cm
TDS			1 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846 ENSL-Cincinnati, 1982
An invoice for services is enclosed. Thank you for contacting Assaiged Laboratories.

Sincerely,

Kevin V. Smith
Kevin V. Smith, Ph.D.
Laboratory Director

* *Shall we do GBR 2?*

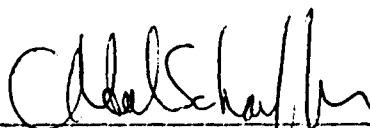


CLIENT: GBR
ID: 9007101326
SITE: GBR-17
LAB NO: F4589

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/10/90
DATE COLLECTED: 07/10/90

Lab pH (s.u.).....	8.20
Lab conductivity, umhos/cm.....	2851
Lab resistivity, ohm-m.....	3.5075
Total dissolved solids (180), mg/l..	2346
Total dissolved solids (calc), mg/l.	2214
Total alkalinity as CaCO ₃ , mg/l.....	219.65
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1084.32
Sodium absorption ratio.....	3.61

	mg/l	meq/l
Bicarbonate as HCO ₃	268.0	4.39
Carbonate as CO ₃	0.0	0.00
Chloride.....	110.2	3.11
Sulfate.....	1290.9	26.89
Calcium.....	365.5	18.24
Magnesium.....	42.0	3.45
Potassium.....	0.5	0.01
Sodium.....	273.6	11.90
Major cations.....		33.60
Major anions.....		34.39
Cation/anion difference.....		1.17 %



C. Neal Schaeffer
Lab Director



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 wnt
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

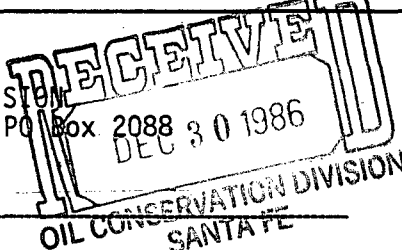
DATE RECEIVED <u>11/26/86</u>	LAB NO. <u>WC 5442</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: <u>82235</u>
Collection DATE <u>86/11/21</u>	SITE INFORMATION	Sample location <u>Giant, Bloom Field Refinery</u>
Collection TIME <u>0945</u>		Collection site description <u>GBR-24 Shallow</u>
Collected by — Person/Agency <u>BOYER / OLSON / OCD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code

Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) <u>1775</u> μ mho	Water Temp. (00010) <u>15</u> °C	Conductivity at 25°C (00094) μ mho	
Field comments				

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 m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	<u>4645</u> μ mho	<u>12/12</u>	☒ Calcium (00915)	<u>620.</u> mg/l	<u>12-1</u>
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	<u>48.8</u> mg/l	<u>12-1</u>
☒ Other: <u>pH</u>	<u>8.01</u> mg/l	<u>12/8</u>	☒ Sodium (00930)	<u>634</u> mg/l	<u>12/4</u>
☐ Other:			☒ Potassium (00935)	<u>5.85</u> mg/l	<u>12/4</u>
☐ Other:			☒ Bicarbonate (00440)	<u>272</u> mg/l	<u>12/8</u>
			☒ Chloride (00940)	<u>667.79</u> mg/l	<u>12/5</u>
			☒ Sulfate (00945)	<u>1905</u> mg/l	<u>12/8</u>
			☒ Total filterable residue (dissolved) (70300)	<u>3988</u> mg/l	<u>12/4</u>
			☒ Other: <u>CO3</u> <u>BR</u>	<u>0</u>	<u>12/8</u>
				<u>2.4</u>	<u>12/12</u>
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported <u>12/12/86</u>	Reviewed by <u>[Signature]</u>

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED	11/26/86	LAB NO.	HM 2426	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	8/11/87	SITE INFORMATION	Sample location	Giant, Bloomfield Refinery	
Collection TIME	0945		Collection site description	GBR-24 Shallow	
Collected by — Person/Agency BOYER/OLSON/OCD					

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) 1225 μ mho	Water Temp. (00010) 15 °C	Conductivity at 25 °C (00094) μ mho	
Field comments				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added	☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25 °C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: ICAP			☐ Sodium (00930)	mg/l	
☒ Other: AS			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported 1/13/87	Reviewed by JFA

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

ICAP SCAN

SLD Lab No. HM 2426

Reviewed by: Jim Ashby

Analyst OB

Date Reported: 7/1/89

Date Analyzed 12/5/86

<u>ELEMENT</u>	<u>ICAP VALUE (mg/l)</u>	<u>AA VALUE (mg/l)</u>
Aluminum	<0.1	
Barium	<0.1	
Beryllium	<0.1	
Boron	0.2	
Cadmium	<0.1	
Calcium	630.	
Chromium	<0.1	
Cobalt	<0.1	
Copper	<0.1	
Iron	<0.1	
Lead	<0.1	
Magnesium	68.	
Manganese	4.4	
Molybdenum	<0.1	
Nickel	<0.1	
Silicon	6.0	
Silver	<0.1	
Strontium	12.	
Tin	<0.1	
Vanadium	<0.1	
Zinc	<0.1	
Arsenic		<0.005
Selenium		
Mercury		

GIANT BLOOMFIELD REFINERY

MONITOR WELL GBR-25

GIANT

5/9/86

PARAMETER

1.0

BENZENE	NA
BROMODICHLOROMETHANE	NA
BROMOFORM	NA
BROMOMETHANE	NA
CARBON TETRACHLORIDE	NA
CHLOROBENZENE	NA
CHLOROETHANE	NA
CHLOROFORM	NA
CHLOROMETHANE	NA
DIBROMOCHLOROMETHANE	NA
1,2-DICHLOROBENZENE	NA
1,3-DICHLOROBENZENE	NA
1,4-DICHLOROBENZENE	NA
DICHLORODIFLUOROMETHANE	NA
1,1-DICHLOROETHANE	NA
1,2-DICHLOROETHANE	NA
1,1-DICHLOROETHENE	NA
CIS-1,2-DICHLOROETHENE	NA
TRANS-1,2-DICHLOROETHENE	NA
1,2-DICHLOROPROPANE	NA
ETHYLBENZENE	ND
METHYLENE CHLORIDE	NA
1,1,2,2-TETRACHLOROETHANE	NA
TETRACHLOROETHENE	NA
TOLUENE	ND
1,1,1-TRICHLOROETHANE	NA
1,1,2-TRICHLOROETHANE	NA
TRICHLOROETHENE	NA
TRICHLOROFLUOROMETHANE	NA
VINYL CHLORIDE	NA
TOTAL XYLENES	ND

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
*	-	DUPLICATE ANALYSIS

8605091700

Assigned Analytical Laboratories, Inc.
1900 Jefferson N.E.
Albuquerque, NM 87109

TO: Geoscience Consultants Ltd. DATE: 29 May 1986
Attn: Randy Hicks 0752 revised
500 Copper N.W. Suite 325
Albuquerque, NM 87102

ANALYTE

SAMPLE ID/ ANALYTICAL RESULTS

ANALYTE	8605091040 A & B GBR 18	8605091140 Steel Well	8605091210 A & B GBR 25	8605091250 A & B GBR 22	8605091515 A & B GBR 26
Benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Toluene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Xylenes	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Ethyl benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
EC	3840 umhos/cm		4980 umhos/cm		
TDS			5096 mg/l		

NOMINAL DETECTION LIMITS

ANALYTE	8605091550 A & B GBR 13	8605091625 GBR 24	8605091700 GBR 21	8605091210 A & B GBR 25	8605091250 A & B GBR 22	8605091515 A & B GBR 26
Benzene	129 ug/l	1154 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Toluene	32 ug/l	803 ug/l	22 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Xylenes	105 ug/l	1020 ug/l	234 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Ethyl benzene	3 ug/l	147 ug/l	2 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
EC	6300 umhos/cm	2690 umhos/cm		1 umhos/cm		
TDS				1 mg/l		

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846 EMSL-Cincinnati, 1982
An invoice for services is enclosed. Thank you for contacting Assigned Laboratories.

Sincerely,

James V. Smith
James V. Smith, Ph.D.
Laboratory Director



Inter-Mountain
Laboratories, Inc.

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

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903141423

Sample Site: GBR-24D

IML Lab No: F890870

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/14/89

Date Received: 03/14/89

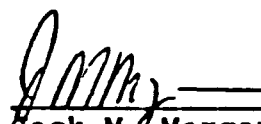
Date Extracted: NA

Date Analyzed: 03/27/89

Parameter	Concentration	Units
BENZENE	28.7 (0.2)	ug/l
TOLUENE	8.9 (0.2)	ug/l
ETHYLBENZENE	58.9 (0.2)	ug/l
m,p-XYLENE	16.7 (0.2)	ug/l
o-XYLENE	2.2 (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


Jack M. Morgan
Senior Organic Chemist

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141423
Sample Site: GBR-24D Date Sampled: 03/14/89
IML Sample No: F890870 Date Received: 03/14/89
Analysis Requested: Purgeable Halocarbons Date Extracted: N/A
Sample Matrix: Water Date Analyzed: 03/28/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	ND (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	6.8 (0.03)	ug/l
1,1,1-TRICHLOROETHANE	ND (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	ND (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	ND (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

Date: April 08, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141423
Sample Site: GBR-24D
IML Sample No: F890870
Analysis: Polynuclear Aromatic Hydrocarbons
Sample Matrix: Water

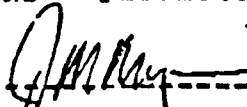
Date Sampled: 03/14/89
Date Received: 03/14/89
Date Extracted: 03/16/89
Date Analyzed: 04/04/89

Parameter	Concentration	Units
Acetnaphthene	ND (1.0)	ug/l
Acenaphthylene	ND (1.0)	ug/l
Anthracene	ND (1.0)	ug/l
Benzo(a)Anthracene	ND (0.5)	ug/l
Benzo(a)pyrene	ND (0.5)	ug/l
Benzo(b)fluoranthene	ND (0.5)	ug/l
Benzo(g,h,i)perylene	ND (0.5)	ug/l
Benzo(k)fluoranthene	ND (0.5)	ug/l
Chrysene	ND (0.5)	ug/l
Dibenzo(a,h)anthracene	ND (0.5)	ug/l
Fluoranthene	ND (1.0)	ug/l
Fluorene	ND (1.0)	ug/l
Indeno(1,2,3-cd)pyrene	ND (0.5)	ug/l
Naphthalene	ND (1.0)	ug/l
Phenanthrene	ND (1.0)	ug/l
Pyrene	ND (1.0)	ug/l
1-Methylnaphthalene	ND (1.0)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1986)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

2219 11
Received: 12/09/88

RAS - Austin

REPORT

Work Order # 88-12-057

Results by Sample

SAMPLE ID 8812071016 602-240

FRACTION 02A TEST CODE EPA602 NAME EPA method 602

Date & Time Collected 12/07/88

Category

ANALYST INSTRMT	CL D	INJECTED 12/12/88	FILE #	VERIFIED	CL	UNITS	ug/L
		CASE#	COMPOUND	RESULT	DET LIMIT		
		71-43-2	Benzene	28	0.20		
		108-88-3	Toluene	4.8	0.20		
		100-41-4	Ethylbenzene	45	0.30		
		108-90-7	Chlorobenzene-A	ND	0.30		
		106-46-7	1,4-Dichlorobenzene	ND	0.30		
		541-73-1	1,3-Dichlorobenzene	ND	0.40		
		95-50-1	1,2-Dichlorobenzene	ND	0.40		
			SURROGATES				
		98-08-8	a, a, a-Trifluorotoluene	115%	recovery		

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NOT performed unless otherwise noted.

Page 13
Received: 12/09/88

RAD - ANALYST

REPORT
Results by Sample

Work Order # 88-12-057

SAMPLE ID 8812071016

GBR-240

FRACTION 024

TEST CODE XYLENE

NAME Xylenes, EPA 602

Date & Time Collected 12/07/88

Category

VERIFIED CL

ANALYST CL FILE # UNITS ug/L
INSTRMT D INJECTED 12/12/88

CAS #	COMPOUND	RESULT	DET LIMIT
106-42-3	p-Xylene-A	12	0.20
108-38-3	m-Xylene	3.4	0.20
95-47-6	o-Xylene	3.6	0.10

SURROGATES

98-08-8 m,p,a-Trifluorotoluene 115% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

- DET LIMIT = DETECTION LIMIT
- ND = not detected at detection limit
- NA = not analyzed
- * = less than 5 times the detection limit
- N/A = not available
- Second column confirmation NOT performed unless otherwise noted.
- G = daily EPA standard recovery outside 95% confidence interval.
- Chlorobenzene and p-xylene co-elute.
- Quantitated as chlorobenzene unless otherwise noted.

Received: 12/09/88

RAS - Austin
Results by Sample

REPORT

Work Order # 88-12-057

SAMPLE ID 8812071016 682-240

FRACTION 22B

TEST CODE EPA601

NAME EPA method 601

Date & Time collected 12/07/88

Category

ANALYST _____ BM _____
INSTRMT _____ B _____
INJECTED 12/14/88
FILE # _____
VERIFIED _____ CL _____
UNITS _____ ug/L _____

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	0.60
74-83-9	Bromomethane	ND	2.4
75-01-4	Vinyl chloride	ND	0.40
75-00-3	Chloroethane	ND	1.0
75-09-2	Methylene chloride	ND	0.60
75-69-4	Trichlorofluoromethane	ND	0.20
75-35-4	1,1-Dichloroethene	ND	0.20
75-34-3	1,1-Dichloroethane	ND	0.18
156-60-5	trans-1,2-Dichloroethene	ND	0.40
67-66-3	Chloroform	ND	0.10
107-06-2	1,2-Dichloroethane	21	0.040
71-55-6	1,1,1-Trichloroethane	ND	0.18
56-23-5	Carbon tetrachloride	ND	0.20
75-27-4	Bromodichloromethane	ND	0.20

5216 9
 Received: 12/09/88

RAS - Austin

REPORT

 Work Order # 88-12-057
 Continued From Above

Results by Sample

 SAMPLE ID 8812071016 *GBL-24D*

FRACTION DEC TEST CODE EPA601 NAME EPA method 601

Date & Time Collected 12/07/88

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropene	ND	0.20
10061-02-6	trans-1,3-Dichloropropene	ND	0.60
79-01-2	Trichloroethene	ND	0.40
124-48-1	Dibromochloromethane-A	ND	0.40
79-00-5	1,1,2-Trichloroethane-A	ND	0.14
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-76-8	2-Chloroethylvinyl ether	ND	0.40
75-25-2	Bromoform	ND	0.60
79-34-5	1,1,2,2-Tetrachloroethane-B	ND	0.24
127-18-4	Tetrachloroethene-B	ND	0.060
108-90-7	Chlorobenzene	ND	0.60
541-73-1	1,3-Dichlorobenzene	ND	0.60
95-50-1	1,2-Dichlorobenzene	ND	1.0
106-46-7	1,4-Dichlorobenzene	ND	0.80

SURROGATES

74-97-5	Bromochloromethane	122 % Recovery
460-00-4	1-Bromo-4-fluorobenzene	99 % Recovery



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

88-1420-C

REPORT TO:

William Olson
EID Ground Water Bureau
1190 St. Francis Dr.
Santa Fe, N.M. 87504-0968

S.L.D. No. OR- 1420 A+B

DATE REC. 8-26-88

PRIORITY 3

PHONE(S): 827-2899

COLLECTION CITY: Lee Acres; COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8808250655

LOCATION CODE: (Township-Range-Section-Tracts) (10N06E24342)

USER CODE: 59300 SUBMITTER: Olson CODE:

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER:

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

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

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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:

R E C E I V E D

FIELD DATA:

pH= 7.9; Conductivity= 2800 umho/cm at 17 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate / **GROUND WATER BUREAU**

Depth to water 26.02 ft.; Depth of well 51.44 ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Bloomfield GBR-240

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): William Olson Method of Shipment to the Lab: Hand

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Gary Eden
at (location) SLD on 8/26/88 - 14:55 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☒ OR Seals Intact: Yes ☐ No ☐

Signatures William Olson Gary Eden

ANALYSES PERFORMED

LAB. No.: OR-

1420

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
☐ Other Specific Compounds or Classes
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>	<i>all remarks</i>		
<i>benzene</i>	<i>27</i>		
<i>toluene</i>	<i>T.R.</i>		
<i>ethylbenzene</i>	<i>55</i>		
<i>p + m - xylene</i>	<i>10</i>		
<i>o-xylene</i>	<i>FE ND</i>		
<i>halogenated purgeables</i>			
<i>1,2-dichloroethane</i>	<i>6</i>		
* DETECTION LIMIT *	<i>548/L</i>	+ DETECTION LIMIT +	

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

lighter lat. eluting compounds in the C3 substituted benzene region at 5-10 ppb detected photoionization detector but not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: *Mary C. Egan* date: *9/14/88*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *9/14/88* Analyst's signature: *Mary C. Egan*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *R. Meyers*



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80816106

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : GIANT REFINING
PROJECT # : (NONE)
PROJECT NAME : GIANT BLOOMFIELD
CLIENT I.D. : GBR 24D
SAMPLE MATRIX : AQUEOUS

DATE SAMPLED : 08/25/88
DATE RECEIVED : 08/26/88
DATE EXTRACTED : N/A
DATE ANALYZED : 08/31/88
UNITS : UG/L
DILUTION FACTOR : 1

COMPOUNDS	RESULTS
BENZENE	39.1
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	1.1
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	25.7
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE (TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	87.3
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	0.6
TOLUENE	6.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	30.4

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	97
TRIFLUOROTOLUENE (%)	130

LOCATION

GBR-24D

TEST CODE

EPA-8010

COMPOUND

06/01/88

1,1,1-TRICHLOROETHANE	ND
1,1,2,2-TETRACHLOROETHANE	ND
1,1,2-TRICHLOROETHANE	ND
1,1-DICHLOROETHANE	ND
1,1-DICHLOROETHENE	ND
1,2-DICHLOROBENZENE	ND
1,2-DICHLOROETHANE	55
1,2-DICHLOROPROPANE	ND
1,3-DICHLOROBENZENE	1.3
1,4-DICHLOROBENZENE	ND
2-CHLOROETHYL VINYL ETHER	ND
BENZENE	63
BROMODICHLOROMETHANE	ND
BROMOFORM	ND
BROMOMETHANE	ND
CARBON TETRACHLORIDE	ND
CHLOROBENZENE	ND
CHLOROFORM	ND
CHLOROMETHANE	ND
CIS-1,3-DICHLOROPROPENE	ND
DIBROMOCHLOROMETHANE	ND
DICHLORODIFLUOROMETHANE	ND
ETHYLBENZENE	73.
METHYLENE CHLORIDE	ND
TETRACHLOROETHANE	0.69
TOLUENE	11.
TRANS-1,2-DICHLOROETHENE	ND
TRANS-1,3-DICHLOROPROPENE	ND
TRICHLOROETHANE	ND
TRICHLOROFLUOROMETHANE	ND
VINYL CHLORIDE	ND
XYLENES	40.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

06/29/88 mh

Page 1 of 3

PROJECT MGR: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming N.E. Suite 104
Albuquerque, NM 87111

PROJECT#: 232-799-5009-10

LOCATION: Farmington, NM

SAMPLED: 06/01/88 BY: T. LePage

RECEIVED: 06/03/88 BY: J. Floro

ANALYZED: 06/15/88 BY: P. Sra

MATRIX: Water

UNITS: ug/L (ppb)

GBR-248

GBR-31

TEST RESULTS

COMPOUND	MDL	LAB #	I.D.#	24489	24490	24491	24492
				010530	010347	TRIPBLANK	021015
Benzene	0.5			0.5	63	0.5	0.5
Bromodichloromethane	0.5			0.5	0.5	0.5	0.5
Bromoform	0.5			0.5	0.5	0.5	0.5
Bromomethane	0.5			0.5	0.5	0.5	0.5
Carbon tetrachloride	0.5			0.5	0.5	0.5	0.5
Chlorobenzene	0.5			0.5	0.5	0.5	0.5
Chloroethane	0.5			0.5	0.5	0.5	0.5
2-Chloroethylvinyl ether	1.0			1.0	1.0	1.0	1.0
Chloroform	0.5			0.5	0.5	0.5	0.5
Chloromethane	0.5			0.5	0.5	0.5	0.5
Dibromochloromethane	0.5			0.5	0.5	0.5	0.5
1,2-Dichlorobenzene	0.5			0.5	0.5	0.5	0.5
1,3-Dichlorobenzene	0.5			0.5	1.3	0.5	0.5
1,4-Dichlorobenzene	0.2			0.2	0.2	0.2	0.2
Dichlorodifluoromethane	0.5			0.5	0.5	0.5	0.5
1,1-Dichloroethane	0.5			0.98	0.5	0.5	4.6
1,2-Dichloroethane	0.5			0.5	55	0.5	0.5
1,1-Dichloroethene	0.2			0.2	0.2	0.2	0.2
trans-1,2-Dichloroethene	0.5			1.0	0.5	0.5	53
1,2-Dichloropropane	0.5			0.5	0.5	0.5	0.5
cis-1,3-Dichloropropene	0.5			0.5	0.5	0.5	0.5
trans-1,3-Dichloropropene	0.5			0.5	0.5	0.5	0.5
Ethylbenzene	0.5			0.5	73	0.5	0.5
Methylene chloride	0.5			0.5	0.5	0.5	0.5
1,1,2,2-Tetrachloroethane	0.5			0.5	0.5	0.5	0.5
Tetrachloroethene	0.5			0.61	0.69	0.5	5.0
1,1,1-Trichloroethane	0.5			0.5	0.5	0.5	1.8
1,1,2-Trichloroethane	0.5			0.5	0.5	0.5	0.5
Trichloroethene	0.5			0.52	0.5	0.5	7.6
Trichlorofluoromethane	0.5			0.5	0.5	0.5	0.5
Vinyl Chloride	1.0			1.0	1.0	1.0	1.0
Xylenes	0.5			20	40	0.5	0.5
Toluene	0.5			0.5	11	0.5	0.5

MDL = Method Detection Limit.
METHODS: EPA 8010/8020.

6/1/88



A division of Groundwater Technology, Inc.

Western Region
4080-C Pike Lane
Concord, CA 94520

(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

07/14/88 MH

Page 1 of 3

R-21/3

CLIENT: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming Northeast #104
Albuquerque, NM 87111

PROJECT#: 232-799-5009-17

LOCATION: Farmington, NM

SAMPLED: 06/1,2/88

BY: T. LePage

RECEIVED: 06/27/88

BY: K. Biava

ANALYZED: 7/6-8, 11/88

BY: L. Hinson

MATRIX: Water

UNITS:

ug/L

GBR-30

GBR-240

TK-22

GBR-31

TEST RESULTS

COMPOUNDS	MDL	LAB #	24480C	24481C	24482C	24483C
	I.D.#		010530	010347	020135	021015
Acenaphthene	10		<10	<10	<10	<10
Acenaphthylene	10		<10	<10	<10	<10
Anthracene	10		<10	<10	<10	<10
Benzo (a) anthracene	10		<10	<10	<10	<10
Benzo (a) pyrene	10		<10	<10	<10	<10
Benzo (b) fluoranthene	10		<10	<10	<10	<10
Benzo (ghi) perylene	10		<10	<10	<10	<10
Benzo (k) fluoranthene	10		<10	<10	<10	<10
Chrysene	10		<10	<10	<10	<10
Dibenzo (a,h) anthracene	10		<10	<10	<10	<10
Fluoranthene	10		<10	<10	<10	<10
Fluorene	10		<10	<10	<10	<10
Indeno (1,2,3-cd) pyrene	10		<10	<10	<10	<10
Naphthalene	10		<10	<10	<10	<10
Phenanthrene	10		<10	<10	<10	<10
Pyrene	10		<10	<10	<10	<10

MDL=Method Detection Limit.
METHOD: EPA Method 610.

6/1/88

LOCATION

GBR-24D

TEST CODE

EPA-8310

COMPOUND

06/01/88

1-METHYLNAMHTHALENE	ND
ACENAPHTHENE	ND
ACENAPHTHYLENE	ND
ANTHRACENE	ND
BENZ(A)ANTHRACENE	ND
BENZO(A)PYRENE	ND
BENZO(B)FLUORANTHENE	ND
BENZO(GHI)PERYLENE	ND
BENZO(K)FLUORANTHENE	ND
CHRYSENE	ND
DIBENZO(A,H)ANTHRACENE	ND
FLUORANTHENE	ND
FLUORENE	ND
INDENO(1,2,3-CD)PYRENE	ND
NAPHTHALENE	10
PHENANTHRENE	ND
PYRENE	ND
1-METHYLNAMHTHALENE	ND
ACENAPHTHENE	ND
ACENAPHTHYLENE	ND
ANTHRACENE	ND
BENZ(A)ANTHRACENE	ND
BENZO(A)PYRENE	ND
BENZO(B)FLUORANTHENE	ND
BENZO(GHI)PERYLENE	ND
BENZO(K)FLUORANTHENE	ND
CHRYSENE	ND
DIBENZO(A,H)ANTHRACENE	ND
FLUORANTHENE	ND
FLUORENE	ND
INDENO(1,2,3-CD)PYRENE	ND
NAPHTHALENE	10
PHENANTHRENE	ND
PYRENE	ND
1-METHYLNAMHTHALENE	ND
ACENAPHTHENE	ND
ACENAPHTHYLENE	ND
ANTHRACENE	ND
BENZ(A)ANTHRACENE	ND
BENZO(A)PYRENE	ND
BENZO(B)FLUORANTHENE	ND
BENZO(GHI)PERYLENE	ND
BENZO(K)FLUORANTHENE	ND
CHRYSENE	ND
DIBENZO(A,H)ANTHRACENE	ND

FLUORANTHENE
FLUORENE
INDENO(1,2,3-CD)PYRENE
NAPHTHALENE
PHENANTHRENE
PYRENE

ND
ND
ND
ND
ND
ND



Analytical Technologies, Inc.

EPA METHOD 601/602

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/12/87
 LAB RECEIPT DATE: 11/16/87
 ANALYSIS DATE: 11/17/87
 MATRIX: WATER
 ANALYST: MGB

SAMPLE ID: 8711120947
 LOCATION: 6BR-24D
 LAB SAMPLE #: 3574-9
 UNITS: ug/l
 DILUTION FACTOR: 10

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	2.0	ND
BROMOMETHANE	2.0	ND
DICHLORODIFLUOROMETHANE	2.0	ND
VINYL CHLORIDE	2.0	ND
CHLOROETHANE	2.0	ND
METHYLENE CHLORIDE	20	ND
TRICHLOROFLUOROMETHANE	20	ND
1,1-DICHLOROETHENE	2.0	ND
1,1-DICHLOROETHANE	2.0	ND
TRANS-1,2-DICHLOROETHENE	2.0	ND
CHLOROFORM	2.0	23
1,2-DICHLOROETHANE	2.0	34
1,1,1-TRICHLOROETHANE	2.0	ND
CARBON TETRACHLORIDE	2.0	ND
BROMODICHLOROMETHANE	2.0	ND
1,2-DICHLOROPROPANE	2.0	ND
TRANS-1,3-DICHLOROPROPENE	2.0	ND
TRICHLOROETHENE	2.0	2.0
DIBROMOCHLOROMETHANE	2.0	ND
1,1,2-TRICHLOROETHANE	2.0	ND
CIS-1,3-DICHLOROPROPENE	2.0	ND
2-CHLOROETHYL VINYL ETHER	2.0	ND
BROMOFORM	2.0	ND
1,1,2,2-TETRACHLOROETHANE	2.0	ND
TETRACHLOROETHENE	2.0	2.9
BENZENE	5.0	1200
TOLUENE	10	22
CHLOROBENZENE	5.0	ND
ETHYLBENZENE	5.0	1100
1,3-DICHLOROBENZENE	5.0	ND
1,2-DICHLOROBENZENE	5.0	ND
1,4-DICHLOROBENZENE	5.0	ND
M-XYLENE	5.0	12
O,P-XYLENE	5.0	43

104 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED

HIGH LEVELS REQUIRED DILUTION

PROJECT MANAGER:

DATE: 12/10/87



Analytical **Technologies, Inc.**

EPA METHOD 601/602
PROJECT: GBR

SAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
ANALYSIS DATE/TIME: 10/12/87, 22:41
MATRIX: WATER
ANALYST: MGB

1600
SAMPLE ID: 871007-1004
LOCATION: GBR-24 D
LAB SAMPLE #: 3439-11
UNITS: ug/l
DILUTION FACTOR: 10

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.2	ND
BROMOMETHANE	0.6	ND
DICHLORODIFLUOROMETHANE	0.4	ND
VINYL CHLORIDE	0.5	ND
CHLOROETHANE	1	ND
METHYLENE CHLORIDE	0.2	ND
TRICHLOROFLUOROMETHANE	0.7	ND
1,1-DICHLOROETHENE	0.7	ND
1,1-DICHLOROETHANE	0.5	ND
TRANS-1,2-DICHLOROETHENE	0.9	ND
CHLOROFORM	0.5	ND
1,2-DICHLOROETHANE	0.7	35
1,1,1-TRICHLOROETHANE	0.3	ND
CARBON TETRACHLORIDE	0.8	ND
BROMODICHLOROMETHANE	0.4	ND
1,2-DICHLOROPROPANE	0.3	ND
TRANS-1,3-DICHLOROPROPENE	1.1	ND
TRICHLOROETHENE	0.6	ND
DIBROMOCHLOROMETHANE	0.7	ND
1,1,2-TRICHLOROETHANE	0.3	ND
CIS-1,3-DICHLOROPROPENE	0.7	ND
2-CHLOROETHYL VINYL ETHER	0.3	ND
BROMOFORM	0.9	ND
1,1,2,2-TETRACHLOROETHANE	0.3	ND
TETRACHLOROETHENE	0.3	ND
BENZENE	2	100
TOLUENE	4	35
CHLOROBENZENE	1.6	ND
ETHYLBENZENE	1	181
1,3-DICHLOROBENZENE	4	ND
1,2-DICHLOROBENZENE	4	ND
1,4-DICHLOROBENZENE	6	ND
M-XYLENE	1.8	40.0
O,P-XYLENE	1.5	125

112 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
MDL 10 x NORMAL DUE TO HIGH LEVELS

PROJECT MANAGER: *JMA*

DATE: 10/28/87



EPA METHOD 601/602

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 9/10/87

LAB RECEIPT DATE: 9/11/87

ANALYSIS DATE: 9/18/87

MATRIX: WATER

ANALYST: MGB

SAMPLE ID: 8709100815

LOCATION: GBR-248

LAB SAMPLE #: 3328-2

UNITS: ug/l

DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.02	ND
BROMOMETHANE	0.06	ND
DICHLORODIFLUOROMETHANE	0.04	ND
VINYL CHLORIDE	0.05	ND
CHLOROETHANE	0.1	ND
METHYLENE CHLORIDE	0.02	ND
TRICHLOROFLUOROMETHANE	0.07	ND
1,1-DICHLOROETHENE	0.07	ND
1,1-DICHLOROETHANE	0.05	ND
TRANS-1,2-DICHLOROETHENE	0.09	ND
CHLOROFORM	0.05	ND
1,2-DICHLOROETHANE	0.07	44.7
1,1,1-TRICHLOROETHANE	0.03	ND
CARBON TETRACHLORIDE	0.08	ND
BROMODICHLOROMETHANE	0.04	ND
1,2-DICHLOROPROPANE	0.03	ND
TRANS-1,3-DICHLOROPROPENE	0.11	ND
TRICHLOROETHENE	0.06	ND
DIBROMOCHLOROMETHANE	0.07	ND
1,1,2-TRICHLOROETHANE	0.03	ND
CIS-1,3-DICHLOROPROPENE	0.07	ND
2-CHLOROETHYL VINYL ETHER	0.03	ND
BROMOFORM	0.09	ND
1,1,2,2-TETRACHLOROETHANE	0.03	ND
TETRACHLOROETHENE	0.03	1.1
BENZENE	0.2	100
TOLUENE	0.4	47.7
CHLOROBENZENE	0.16	ND
ETHYLBENZENE	0.1	211
1,3-DICHLOROBENZENE	0.4	ND
1,2-DICHLOROBENZENE	0.4	1.9
1,4-DICHLOROBENZENE	0.6	ND
M-XYLENE	0.18	71.1
O,P-XYLENE	0.15	175

115 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
NA = NOT ANALYZED

86-1375-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

STATE OF NEW MEXICO

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1376 AB
DATE REC. 11-26-86

PHONE(S): 327-5812 USER CODE: 3 2 2 3 5
SUBMITTER: David Boyer CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8 6 1 1 2 1 1 1 0 5 R 2 8
SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: CODE: ☐ ☐ ☐
COUNTY: San Juan; CITY: Los Alamos CODE: ☐ ☐ ☐
LOCATION CODE: (Township-Range-Section-Tracts) 29 N+ 12 W+ 27+ 1 1 1 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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:

FIELD DATA:

pH= ; Conductivity= 1675 umho/cm at 18.5° C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant, GBR-24 deep

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer Method of Shipment to the Lab: Hand Carried

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Mary C. Eden
at (location) HED/SLD on 11/26/86 at 4:03PM and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐Signatures William Olson Mary C. Eden

For OCD Use: Date Owner Notified Phone or Letter? Initials

ANALYSES PERFORMED

LAB. NO.: OR- 1375

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes

Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (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

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
Benzene	230	Tetrachloroethene	TR
Toluene	5	1,2-dichlorobenzene	TR
Ethylbenzene	180		
p-Xylene	140		
m-Xylene	ND		
o-Xylene	7		
1,2-dichloroethane	69		
1,2-dibromoethane	TR		
* DETECTION LIMIT *	5 ppb	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Twelve other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: JSZ

date: 12-4-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4 Dec 86 Analyst's signature: JSZ

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R Meyer



6/7/89 GBR Report

LOCATION: GBR-24D

TEST: General Chemistry

	11/21/86 mg/l	06/01/88 mg/l	08/25/88 mg/l	03/14/89 mg/l
CALCIUM	320	500	524	543
MAGNESIUM	63.4	75	99.4	83
SODIUM	634	491	493	479
POTASSIUM	5.85	5.3	6	6
AMMONIA-N	NA	NA	NA	NA
BICARBONATE	489	130	229	292
BROMIDE	ND	NA	NA	NA
CARBONATE	0	ND	NA	0
CHLORIDE	618	630	624	630
NITRATE-N+, NITRITE-N	NA	NA	NA	0.08
SULFATE	943	1640	1800	1593
TFS	2826	3487	3642	3616
ACIDITY AS CaCO3	NA	NA	NA	<1
ALKALINITY AS CaCO3	NA	NA	NA	240
HARDNESS AS CaCO3	NA	NA	NA	1696
CHARGE BALANCE (%)	NA	NA	98	99.24
pH	7.86	NA	7.9	NA
CONDUCTIVITY (umho)	3807	NA	4397	NA

TFS = TOTAL FILTERABLE SOLIDS (DISSOLVED)

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

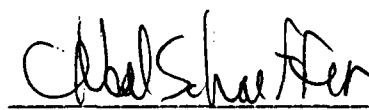
TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMITS

CLIENT: GBR
ID: 9010081350
SITE: GBR-24D
LAB NO: F5233

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/08/90
DATE COLLECTED: 10/08/90

Lab pH (s.u.).....	7.89
Lab conductivity, umhos/cm.....	4930
Lab resistivity, ohm-m.....	2.03
Total dissolved solids (180), mg/l..	3730
Total dissolved solids (calc), mg/l.	3580
Total alkalinity as CaCO ₃ , mg/l.....	246
Total acidity as CaCO ₃ , mg/l.....	0
Total hardness as CaCO ₃ , mg/l.....	1790
Sodium absorption ratio.....	4.75

	mg/l	meq/l
Bicarbonate as HCO ₃	300	4.92
Carbonate as CO ₃	0	0
Chloride.....	679	19.2
Sulfate.....	1620	33.7
Calcium.....	578	28.9
Magnesium.....	83.7	6.88
Potassium.....	5.04	0.13
Sodium.....	462	20.1
Major cations.....		56
Major anions.....		57.8
Cation/anion difference.....		1.63 %


C. Neal Schaeffer
Lab Director



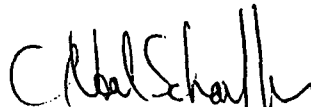
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GBR
ID: 9007111105
SITE: GBR 24-D
LAB NO: F4594

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/11/90
DATE COLLECTED: 07/11/90

Lab pH (s.u.).....	8.07
Lab conductivity, umhos/cm.....	4659
Lab resistivity, ohm-m.....	2.1464
Total dissolved solids (180), mg/l..	3704
Total dissolved solids (calc), mg/l.	3539
Total alkalinity as CaCO ₃ , mg/l.....	210.10
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1746.96
Sodium absorption ratio.....	4.92

	mg/l	meq/l
Bicarbonate as HCO ₃	256.3	4.20
Carbonate as CO ₃	0.0	0.00
Chloride.....	697.8	19.68
Sulfate.....	1603.6	33.41
Calcium.....	526.1	26.25
Magnesium.....	105.6	8.69
Potassium.....	6.5	0.16
Sodium.....	473.0	20.57
Major cations.....		55.68
Major anions.....		57.29
Cation/anion difference.....		1.43 %

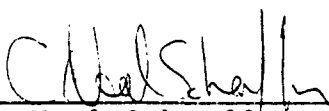

C. Neal Schaeffer
Lab Director

CLIENT: Giant Refinery
ID: GBR-24-D
SITE: GBR
LAB NO: F4090

DATE REPORTED: 04/17/90
DATE RECEIVED: 04/03/90
DATE COLLECTED: 04/03/90

Lab pH (s.u.).....	7.75
Lab Conductivity, umhos/cm.....	4699
Lab resistivity, ohm-m.....	2.1281
Total Dissolved Solids (180), mg/l..	3534
Total Dissolved Solids (calc), mg/l.	3106
Total Alkalinity as CaCO ₃ , mg/l.....	245.63
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1586.32
Sodium Absorption Ratio.....	4.60

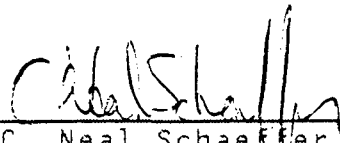
	mg/l	meq/l
Bicarbonate as HCO ₃	299.7	4.91
Carbonate as CO ₃	0.0	0.00
Chloride.....	548.3	15.47
Sulfate.....	1381.8	28.79
Calcium.....	551.6	27.53
Magnesium.....	51.1	4.20
Potassium.....	4.3	0.11
Sodium.....	421.4	18.33
Major Cations.....		50.17
Major Anions.....		49.17
Cation/Anion Difference.....		1.01 %


C. Neal Schaeffer
Lab Director

CLIENT: Geoscience Consultants DATE REPORTED: 12/20/89
SITE: GBR-240 DATE RECEIVED: 12/13/89
LAB NO: F3671 DATE COLLECTED: 12/12/89

Lab pH (s.u.).....	7.59
Lab Conductivity, umhos/cm.....	4718
Lab resistivity, ohm-m.....	2.1195
Total Dissolved Solids (180), mg/l..	3700
Total Dissolved Solids (calc), mg/l.	3573
Total Alkalinity as CaCO ₃ , mg/l.....	253.44
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1789.42
Sodium Absorption Ratio.....	4.93

	mg/l	meq/l
Bicarbonate as HCO ₃	309.20	5.07
Carbonate as CO ₃	0.00	0.00
Chloride.....	658.41	18.57
Sulfate.....	1658.35	34.55
Calcium.....	467.42	23.32
Magnesium.....	151.56	12.46
Potassium.....	5.52	0.14
Sodium.....	479.40	20.85
Major Cations.....		56.78
Major Anions.....		58.19
Cation/Anion Difference.....		1.23 %


C. Neal Schaeffer
Senior Chemist

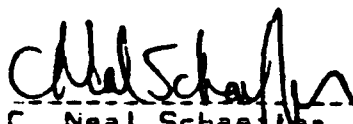


2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/27/89
SAMPLE: 8909130915
SITE: G2R 240 DATE RECEIVED: 09/13/89
LAB NO: F3158 DATE COLLECTED: 09/13/89

Lab pH.....	8.21
Lab Conductivity, umhos/cm.....	4629
Lab resistivity, ohm-m.....	2.1603
Total Dissolved Solids (180), mg/l..	3666
Total Dissolved Solids (calc), mg/l..	3527
Total Alkalinity as CaCO ₃ , mg/l.....	229.11
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1483.36
Sodium Absorption Ratio.....	5.38

	mg/l	meq/l
Bicarbonate as HCO ₃	279.51	4.59
Carbonate as CO ₃	0.00	0.00
Chloride.....	545.15	15.38
Sulfate.....	1692.09	35.25
Calcium.....	585.33	29.21
Magnesium.....	54.22	4.46
Potassium.....	5.16	0.13
Sodium.....	507.20	22.06
Major Cations.....		55.86
Major Anions.....		55.21
Cation/Anion Difference.....		0.58 %


C. Neal Schaeffer
Senior Chemist



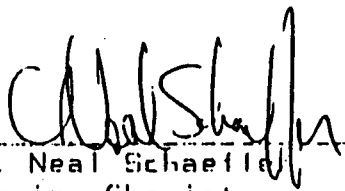
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

Client: GCL #8906131111
Site: GBR-24D
IML #: F1575

Date of report: 06/23/07
Date sampled: 06/13/07
Date received: 06/14/07

Total dissolved solids (180)..... 3722.00 mg/l
Total dissolved solids (calculated). 3504.62 mg/l
Total alkalinity (as CaCO3)..... 246.67 mg/l
Total hardness (as CaCO3)..... 1736.77 mg/l
Lab pH..... 8.02
Lab conductivity..... 4690 umhos/cm @ 25C
Lab resistivity..... 2.1322 ohm-cm

	mg/l	meq/l
Acidity (as CaCO3).....	<1.0	<0.01
Bicarbonate (as HCO3).....	300.93	4.93
Carbonate (as CO3).....	0.00	0.00
Chloride.....	591.32	16.68
Sulfate.....	1644.77	34.27
Calcium.....	545.17	27.20
Magnesium.....	71.63	7.54
Potassium.....	5.08	0.13
Sodium.....	480.40	20.90
Major cations.....		55.77
Major anions.....		55.80
Anion/cation % difference.....		0.10 %


C. Neal Schaeffer
Senior Chemist

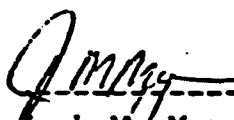
Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141423
Site: GBR-24D
IML Lab No: F890870
Date Collected: 3/14/89
Date Received: 3/14/89

Total Dissolved Solids (180), mg/l.....	3616
Total Dissolved Solids (calc), mg/l.....	3478
Total Alkalinity as CaCO ₃ , mg/l.....	240
Total Hardness as CaCO ₃ , mg/l.....	1696

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	292	4.79
Carbonate as CO ₃	0	0.00
Chloride.....	630	17.78
Sulfate.....	1593	33.19
Calcium.....	543	27.08
Magnesium.....	83	6.85
Potassium.....	6	0.15
Sodium.....	479	20.84
Nitrate/Nitrite.....	0.08	0.01

Major Cations.....	54.92
Major Anions.....	55.76
Cation/Anion Difference.....	0.76 %



Jack M. Morgan
Senior Organic Chemist

SAMPLE	Test:CA E	Test:CL IC	Test:EG5010	Test:F IC	Test:K E
Sample Id	ug/ml	mg/L	date complete	mg/L	ug/ml
602-17 01 8812070930	370	170	12/30/88	2.4	<5.0
602-24 02 8812071016	450	600	12/30/88	3.2	<5.0
602-14 03 8812071123	470	690	12/30/88	3.8@	5.2*
602-30 04 8812071201	460	620	12/30/88	3.6	<5.0
602-15 05 8812071352	450	230	12/30/88	3.7	9.6*
602-31 06 8812071431	500	450	12/30/88	3.5	<5.0
602-33 07 8812071501	390	540	12/30/88	0.63	<5.0
602-13 08 8812071601	470	720	12/30/88	0.56	<5.0
602-6 09 8812071647	280	240	12/30/88	0.35	<5.0
602-8 10 8812071738	360	630	12/30/88	0.70	6.7%
11 8812071738 oil	<10				30%

SAMPLE	Test:MG E	Test:MG E	Test:PREP X	Test:SD4 IC
Sample Id	ug/ml	ug/ml	date complete	mg/L as SD4
602-17 01 8812070930	42	290		1300

Received: 12/09/88

RAS - Austin

REPORT

Results by Test

Work Order # 88-12-056
Continued From Above

SAMPLE	Test: ME E	Test: ME E	Test: PREP X	Test: S04 IC
Sample Id	ug/ml	mg/L	mg/L as S04	
602-24 002 8812071016	81	400		1600
602-14 03 8812071123	39	500		1500
602-30 04 8812071201	36	440		1300
602-15 05 8812071352	30	570		2000
602-31 06 8812071431	44	500		1700
602-33 07 8812071501	40	480		1400
602-13 08 8812071601	48	700		1600
602-6 09 8812071647	72	420		660
602-8 10 8812071736	59	660		490
8812071738 11	<10	<10	12/30/88	

Received: 12/09/88

RAS - AUSTIN

REPORT
RESULTS BY SAMPLE

Work Order # 88-12-056
Continued From Above

SAMPLE ID 8812070920 602-17

FRACTION Q20 TEST CODE IDS NAME Total dissolved solids
Date & Time Collected not specified Category

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available

SAMPLE ID 8812071016 602-24 D

FRACTION Q20 TEST CODE OPUA NAME Orthophosphate
Date & Time Collected not specified Category

ANALYST HJS
INSTRMT CA

ANALYZED 12/09/88

VERIFIED LN

UNITS mg/L as P

ANALYTE RESULT DET LIMIT

Orthophosphate 0.063 0.063

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available

SAMPLE ID 8812071016 602-24 D

FRACTION Q20 TEST CODE IDS NAME Total dissolved solids
Date & Time Collected not specified Category

VERIFIED LN

Received: 12/09/88

RAS -

ANALYST

REPORT

Work Order # 88-12-056

Continued From Above

SAMPLE ID 8812071016 602-2440

FRACTION 02A

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

ANALYST DLB
INSTRMT _____

ANALYZED 12/12/88

UNITS mg/L

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) 3.00 10

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8812071123 602-14

FRACTION 03A

TEST CODE OP04

NAME Orthophosphate

Date & Time Collected not specified

Category

ANALYST HJS
INSTRMT SI

ANALYZED 12/09/88

UNITS mg/L as P

ANALYTE RESULT DET LIMIT

Orthophosphate 0.004 0.020

VERIFIED LM

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
wnf

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED	8/26/88	LAB NO.	WC-3456	USER CODE	☒ 59300	☐ 59600	☐ OTHER:
Collection DATE	8/25/88	SITE INFORMATION	Sample location				
Collection TIME	0655		Collection site description				
Collected by — Person/Agency			Olsen				

SEND
FINAL
REPORT
TO

GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: William Olsen

RECEIVED
OCT 1 1988
GROUND WATER/HAZARDOUS WASTE
BUREAU

Station/
well code GBR-24D
Owner Grant Bloomfield

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	26.02	Discharge		Sample type	grab
pH (00400)	7.9	Conductivity (Uncorrected)	3800 μ mho	Water Temp. (00010)	17 °C	Conductivity at 25°C (00094)	μ mho
Field comments							

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	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify:				

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	4397 μ mho	8/29	☒ Calcium (00915)	524 mg/l	9/29
			☒ Magnesium (00925)	99.4 mg/l	9/29
			☒ Sodium (00930)	493 mg/l	10/3
			☒ Potassium (00935)	6 mg/l	10/3
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Bicarbonate (00440)	229 mg/l	9/20
☐ Other:			☒ Chloride (00940)	624 mg/l	9/27
☐ Other:			☒ Sulfate (00945)	1800 mg/l	9/27
☐ Other:			☒ Total filterable residue (dissolved) (70300)	3642 mg/l	9/14
NF, A-H ₂ SO ₄			☒ Other: Calcium-Arabin balance	989	
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		F, A-H ₂ SO ₄		
☐ Ammonia-N total (00610)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Total organic carbon ()	mg/l		☐ Other:		
☐ Other:			Analyst	Date Reported	Reviewed by
☐ Other:				10/4/88	
Laboratory remarks					
624					



GTEL Environmental Laboratories

A division of Groundwater Technology, Inc.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

MAJOR CATIONS TEST RESULTS

Page 1 of 3

06/16/88 rw

MANAGER: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming Northeast, Suite 104
Albuquerque, NM 87111

PROJECT#: 232-799-5009-11

LOCATION: Farmington, NM

SAMPLED: 06/01/88 BY: T. LePage
RECEIVED: 06/03/88 BY: J. Floro
ANALYZED: 06/15/88 BY: C. Miller
MATRIX: Water

				GBR-30	GBR-24D	TK 22	GBR-31
PARAMETER	UNITS	MDL	LAB # I.D.#	24480A 010530	24481A 010347	24482A 020135	24483A 021015
Sodium	mg/L	0.1		578	491	686	769
Potassium	mg/L	1.0		3.3	5.3	3.4	3.5
Calcium	mg/L	0.1		586	500	558	598
Magnesium	mg/L	0.1		50	75	52	51

6/1/88

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD: EPA 3005/6010

RECEIVED
7/13/88

GTEL
Environmental
Laboratories

A division of Groundwater Technology, Inc.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 885-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

Page 1 of 2

07/12/88 JP
MANAGER: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming N.E. Suite 104
Albuquerque, NM 87111

PROJECT#: 232-799-5009-9
LOCATION: Farmington, NM

SAMPLED: 06/01/88 BY: T. LePage
RECEIVED: 06/03/88 BY: J. Floro
ANALYZED: 06/07/88 BY: R. Heines
MATRIX: Water
UNITS: mg/L

TEST RESULTS

				69R-30	69R-24D	TK 22	69R-31	69R-17
	MDL	LAB #		24480	24481	24482	24483	24484
PARAMETER		I.D.#		010530	010347	020135	021015	021220

Total Dissolved Solids	10		3996	3487	4094	4374	2382
Bicarbonate	20		124	130	297	211	140
Carbonate	20		(20)	(20)	(20)	(20)	(20)
Chloride	1		370	630	910	850	190
Sulfate	1		2270	1640	1570	1920	1350

6/1/88

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD: TDS by Standard Method 209B
Bicarbonate by Standard Method 403
Carbonate by Standard Method 403
Chloride by Standard Method 429
Sulfate by Standard Method 429



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 wmt
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

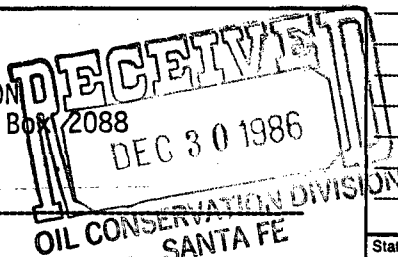
DATE RECEIVED	11/24/86	LAB NO.	WC 544	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	06/11/21	SITE INFORMATION	Sample location		
Collection TIME	1105		Giant, Bloom Field Refinery		
Collected by — Person/Agency		Collection site description			
BOYER / OLSON / OCD		GBR-54 Deep			

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code
Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	1675 μ mho	Water Temp. (00010)	18.5°C
Field comments		Conductivity at 25°C (00094) μ mho		

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	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	3807 μ mho	12/12	☒ Calcium (00915)	320 mg/l	12-1
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	63.4 mg/l	12-1
☒ Other: pH	7.86	12/8	☒ Sodium (00930)	634 mg/l	12/4
☐ Other:			☒ Potassium (00935)	5.85 mg/l	12/4
☐ Other:			☒ Bicarbonate (00440)	489 mg/l	12/5
			☒ Chloride (00940)	618 mg/l	12/2
			☒ Sulfate (00945)	943 mg/l	12/5
			☒ Total filterable residue (dissolved) (70300)	2826 mg/l	12/4
			☒ Other: CO ₃ BR	< 0.2	12/8
			12/10		
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l		Analyst		
☐ Other:			Date Reported		
☐ Other:			12/12/86		
Laboratory remarks			Reviewed by		
			GD		

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____



6/7/89 GBR Report

LOCATION: GBR-24D

TEST: Metals

	11/21/86 mg/l	9/10/87 mg/l	10/7/87 mg/l	11/12/87 mg/l
ALUMINUM	ND	NA	NA	NA
ARSENIC	ND	ND	ND	0.19
BARIUM	0.1	0.1	ND	0.21
BERYLLIUM	ND	NA	NA	NA
BORON	0.3	NA	NA	NA
CADMIUM	ND	0.019	0.006	0.011
CALCIUM	330	NA	NA	NA
HEXAVALENT CHROMIUM	ND	ND	ND	ND
TOTAL CHROMIUM	ND	0.09	ND	0.093
COBALT	ND	NA	NA	NA
COPPER	ND	NA	NA	NA
IRON	ND	NA	NA	NA
LEAD	ND	0.027	0.003	0.019
MAGNESIUM	43	NA	NA	NA
MANGANESE	0.6	NA	NA	NA
MERCURY	NA	ND	ND	ND
MOLYBDENUM	ND	NA	NA	NA
NICKEL	ND	NA	NA	NA
SELENIUM	NA	ND	ND	ND
SILICON	7.5	NA	NA	NA
SILVER	ND	0.017	0.021	0.013
STRONTIUM	7.1	NA	NA	NA
TIN	ND	NA	NA	NA
VANADIUM	ND	NA	NA	NA
ZINC	ND	NA	NA	NA

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMITS



Analytical Technologies, Inc.

METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/12/87
 LAB RECEIPT DATE: 11/16/87
 MATRIX: WATER

SAMPLE ID: 8711120947
 LOCATION: 6BR-24D
 LAB SAMPLE #: 3574-9
 UNITS: mg/l

ANALYSIS DATE	CONSTITUENT NAME	DILUTION FACTOR	DETECTION LIMIT	RESULT
12/01/87	ARSENIC (As)	1	0.010	0.19
12/02/87	BARIUM (Ba)	1	0.060	0.21
12/01/87	CADMIUM (Cd)	1	0.003	0.011
11/16/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
12/01/87	TOTAL CHROMIUM (Cr Tot)	1	0.010	0.093
11/30/87	LEAD (Pb)	1	0.002	0.019
11/19/87	MERCURY (Hg)	1	0.0005	ND
12/01/87	SELENIUM (Se)	1	0.010	ND
12/01/87	SILVER (Ag)	1	0.010	0.013

* THE LISTED DETECTION LIMITS REFLECT ANY SAMPLE DILUTION.

NOTE: ND = NOT DETECTED
 NA = NOT ANALYZED

PROJECT MANAGER:

DATE: 12/10/87



Analytical Technologies, Inc.

METALS
PROJECT: GBRSAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
MATRIX: WATER1600
SAMPLE ID: 8710071604
LOCATION: 24D CA
LAB SAMPLE #: 3439-11
UNITS: mg/l

ANALYSIS DATE	CONSTITUENT NAME	DILUTION FACTOR	DETECTION LIMIT	RESULT
10/14/87	ARSENIC (As)	1	0.010	ND
10/15/87	BARIUM (Ba)	1	0.060	ND
10/13/87	CADMIUM (Cd)	1	0.003	0.006
10/12/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
10/13/87	TOTAL CHROMIUM (T. Cr)	1	0.010	ND
10/12/87	LEAD (Pb)	1	0.002	0.003
10/18/87	MERCURY (Hg)	1	0.0002	ND
10/14/87	SELENIUM (Se)	1	0.010	ND
10/14/87	SILVER (Ag)	1	0.010	0.021

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER:

*Jm14*346
DATE: 10/28/87



METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 9/10/87
LAB RECEIPT DATE: 9/11/87
MATRIX: WATER

SAMPLE ID: 8709100815
LOCATION: GGR-24D
LAB SAMPLE #: 3328-2
UNITS: mg/l

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
9/16/87	ARSENIC (As)	1	0.010	ND
9/23/87	BARIUM (Ba)	1	0.060	0.10
9/21/87	CADMIUM (Cd)	1	0.003	0.019
9/16/87	HEXAVALENT CHROMIUM (Cr+6)	1	0.03	ND
9/21/87	TOTAL CHROMIUM (Cr Tot)	1	0.010	0.095
9/17/87	LEAD (Pb)	1	0.002	0.027
9/25/87	MERCURY (Hg)	1	0.0002	ND
9/16/87	SELENIUM (Se)	1	0.010	ND
9/22/87	SILVER (Ag)	1	0.010	0.017

NOTE: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: JKH

DATE: 27 SEPTEMBER 1987



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED 11/26/86	LAB NO. HM 2425	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE 11/21	SITE INFORMATION	Sample location Giant, Bloomfield Refinery
Collection TIME 11:05		Collection site description GBR-24 KGBA-Deep
Collected by — Person/Agency BOYER/OLSON/OCD		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)		Conductivity (Uncorrected) 1675 μ mho	Water Temp. (00010) 18.5 °C	Conductivity at 25°C (00094) μ mho
Field comments				

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	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added ☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added	☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: ICAP			☐ Sodium (00930)	mg/l	
☒ Other: AS			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
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☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					

Laboratory remarks

Sample digested

Analyst

Date Reported

Reviewed by

1/13/87

Jim Bailey

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